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Embedded in the Crowd: Creative Freelancers, Crowdsourced Work, and Occupational Community

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Abstract

Although scholars are beginning to examine the experience of crowdsourced work, the extant literature and popular accounts paint an undersocialized picture of the labor process. This study explores how crowdsourced work remains socially embedded in the structure of an occupational community that exists exclusively online and in relation to a focal firm. The findings draw on interviews and observation of creative freelancers who designed, developed, and distributed digital goods in a crowdsourced work arrangement with an entertainment publisher. The online meeting places of an occupational community supported workers in their responses to three challenges of contingency: limited communication with the firm, sporadic and unpredictable compensation for their work, and unclear career trajectory. Within the community, freelancers found direction and meaning for their work, built collective strategies to smooth compensation, and illuminated a pathway from amateur to expert. As an occupational institution, the community also structured collaborations that transferred knowledge of industry standard practice and coordinated work in the absence of bureaucratic organization.

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Reliable estimates suggest that all net employment growth in the United States between 2005 and 2015 can be attributed to the rise in alternative work arrangements, an increase of roughly 9.4 million jobs (Katz & Krueger, 2016), with acceleration in recent years owing to the development of online platforms for organizing independent contractors or *crowdsourcing* work (Beynon, 2015; Farrell & Greig, 2016; Kaganer, Carmel, Hirschheim, & Olsen, 2012). In crowdsourced work arrangements, organizations source a global supply of contingent labor and rely on software applications to compartmentalize work tasks, monitor performance, certify the work product, and compensate workers. Although researchers are beginning to understand the extent and effects of the shift toward contingent work, many questions remain regarding the experience of contingency in the emergent context of crowdsourced work arrangements. In particular, we lack an account of how crowdsourcing remains socially embedded (Granovetter, 1985) despite apparent technological pressures toward atomization.

Existing accounts of crowdsourcing often draw conclusions about workers as isolated from clients and each other. Adopting an undersocialized perspective of economic activity, some depict crowdsourcing as disintermediation of work (Katz & Krueger, 2016), in which software applications unproblematically link workers to consumers or firms on the basis of impersonal optimization functions. Others have found evidence of excessive risk, alienation, and fragmentation among globally dispersed workers (Graham, Hjorth, & Lehdonvirta, 2017; Lehdonvirta, 2016; Scholz, 2013). Popular and business rhetoric surrounding crowdsourcing stresses the efficiency of spot transactions between anonymous buyers and sellers, allegedly providing flexibility for workers while ensuring speed and savings for buyers (Boudreau & Lakhani, 2013; Sundararajan, 2016). If the rhetoric is to be believed, crowdsourcing represents the disembedded (Giddens, 1990) exchange once the object of economic imagination.

Despite the recent affordances of information and communication technologies in facilitating apparently atomized work online, previous research on contingent work would have us consider the social embeddedness of crowdsourcing. Scholars show how individuals experience

the precarity of contingent work absent stable employment relationships with one firm (Kalleberg, 2009; Kalleberg, Reskin, & Hudson, 2000; Lane, 2011; Marx, 2011; Neff, 2012; Weil, 2014). Workers not only respond to challenges of contingency through reliance on individual strategies (Occhiuto, 2017; O'Mahony & Bechky, 2006; Sallaz, 2015) but also draw on collective resources, including those found in occupational associations, labor market intermediaries, and local networks (Barley & Kunda, 2004; Osnowitz & Henson, 2016). In this way, contingent work remains embedded despite tenuous relationships to firms.

Research on contingent work has yet to confront the more recent shift toward work conducted online. Although crowdsourced workers and firms may be largely disconnected save for spot transactions, it is likely there are meaningful connections among workers with implications for the labor process. Indeed, research using network analysis shows the existence of collaborative ties between workers in platforms such as Amazon's Mechanical Turk and Microsoft's Universal Human Relevance System (Gray, Suri, Ali, & Kulkarni, 2016). Thus, theoretical and empirical work suggests these connections exist, but the content of the relationships between workers and firms and among workers remains obscured within the black boxes of online platforms. The task of this article is to demonstrate the nature and implications of embeddedness in crowdsourced work.

To understand one process through which crowdsourced work remains embedded in social relations, I examine the work experiences of creative freelancers who collaborated and competed with one another while producing content for a video game development firm. Relying on data collected through interviews and observations, I show how an occupational community (Van Maanen & Barley, 1984) grounds the crowdsourced work experience in a social structure of fellow workers and consumers, acting as a proving ground in which freelancers developed portfolios, learned expert practice, and confronted the challenges of contingency in a competitive market. These individuals used collective resources to develop occupational expertise alongside freelance production for the video games they enjoyed. Further, absent task-related interaction with the firm, an occupational community fostered social devices, or strategies, tools, and structures (Beckert, 1996), with which freelancers found meaning in their work, smoothed sporadic compensation, and navigated their career progression outside of formal employment.

Through analysis of the worker experience in relation to occupational community and the firm, this article makes a contribution to

the literature on contingent work and sheds light on new patterns of occupational community formation. In particular, I demonstrate forms of occupational organizing in a system of crowdsourced work, representing a collectivist rather than individualist orientation toward work often considered in design and scholarship as isolated and alienating. By focusing on the challenges of work in this setting and the strategies developed by freelancers in concert, I show an emergent process of occupational coordination and identification that exists exclusively online and independent of formal organizations, yet in reference to industry standard practice.

Literature Review

Crowdsourced Work

As an alternative work arrangement, crowdsourcing has seen limited sociological study, yet popular attention is directed toward services like Uber, Upwork, TaskRabbit, and Amazon's Mechanical Turk, foundations of the so-called sharing or gig economy (Schor & Attwood-Charles, 2017; Sundararajan, 2016). To date, we lack official employment statistics on this emerging population of workers. In one of the only labor market estimates, Katz and Krueger (2016) found that 0.50% of the U.S. working population now earn money through an online platform economy, a figure that appears to be growing rapidly (Farrell & Greig, 2016). Much of the scant research on these platforms is limited to questions of clients' experience or consumer market impact (Bardhi & Eckhardt, 2012; Zervas, Proserpio, & Byers, 2016) rather than the work experience itself.

Those who study the crowdsourced work experience maintain an undersocialized perspective. Treating workers in isolation, Scholz (2013), Fuchs (2014), and colleagues have mostly focused on the individualized risks of paid and unpaid work online. With new modes of productivity on social media networks, online labor markets, and crowdsourcing platforms, these scholars find commodification of labor, as firms recognize the extractive possibilities of treating consumers as producers (Terranova, 2013). Likewise, focusing on the relationship between Uber and its crowdsourced workforce, Rosenblat and Stark (2016) show how the company's algorithmic management (Lee, Kusbit, Metsky, & Dabbish, 2015) structures control through information and power asymmetries that strongly favor the firm. Little research on the crowdsourced work experience points to the benefits of

participation or enactment of control by workers. As an exception, De Kosnik (2013) showed how members of fan communities on YouTube, Facebook, and Twitter, while uncompensated for their content creation, treated their creative efforts as stepping-stones toward careers in creative industries. Like standard internships (Frenette, 2013), crowdsourced work may offer job skills training in lieu of compensation, especially for creative freelancers.

Where they do examine embeddedness in crowdsourcing, scholars focus on spatio-temporal fixes, highlighting the relevance of local networks and labor regulations in globalized production (Wood, Graham, & Lehdonvirta, 2016). Accounts of crowdsourcing emphasize the technological properties that facilitate compartmentalization and distribution of work to individuals while overlooking the possibilities for digital collaboration that those same technologies afford. For instance, although they rely on online message boards to study the work experience of Uber drivers, Rosenblat and Stark (2016) ignore the relevance of information sharing among drivers that takes place therein. While we know many crowdsourced workers execute tasks as individuals, there are also opportunities to experience teamwork on temporary projects organized online (Retelny et al., 2014; Valentine et al., 2017) and share business and task advice (Gray et al., 2016) with colleagues around the world. These sociotechnical systems of collaboration are comprised of communication technologies, knowledge sharing, and worker relationships that extend beyond local context, but we know little about how the crowdsourced work experience remains embedded.

Contingent Work Experience

The literature on contingent work not only highlights individualized management of risk but also points to labor market intermediaries and occupations that structure contingent work experiences in lieu of employment relationships. The growth of contingent work in the United States is often framed as a shift from employment-based labor relations, with the job security, health, and pension benefits of a long-term employment contract and internal career ladder, to those more closely resembling the ideal of atomized transaction in a market, where employer and employee loyalty are eschewed in favor of self-reliance (Cappelli, 1999; Kalleberg, 2009; Pfeffer & Baron, 1988). Competing positions stress relative gains for workers, in the form of increased spatial and occupational mobility (Bridges, 1995; Jurik, 1998; D. H. Pink, 2001), or for firms, as they can practice more dynamic

staffing strategies (Cappelli & Neumark, 2003; Connelly & Gallagher, 2004). Setting aside the benefits for firms and workers (Arthur & Rousseau, 1996), it is well established that individuals and teams working on a contingent basis often experience added risk as a result (De Witte, 1999; Kalleberg, 2009; Sennett, 1998).

The literature identifies individual and structural responses to the challenges of contingent work. First, individualist accounts focus on strategies to maximize employability and enact control over work. Due to limited employer-based training, contingent workers must cultivate job-specific skills for career trajectories that will be shaped by various projects rather than long-term employment (Hardy & Walker, 2003; Marler, Barringer, & Milkovich, 2002). O'Mahony and Bechky (2006) show that, absent well-defined career ladders, freelancers piece together relevant work experience to fashion a coherent career progression. In addition, some contingent workers enact control over their work experience through tipping games (Sallaz, 2015), resisting overtime and overwork (Osnowitz & Henson, 2016), and discretion in scheduling (Occhiuto, 2017). Freelancers also develop personal brands of entrepreneurship (Vallas & Christin, 2018) and work identities of self-reliance and expertise, such as gurus or hired guns, as narrative buffers against the vagaries of the contingent work (Barley & Kunda, 2004).

Widening their scope from the individualist perspective, scholars have also explored the structural landscape of contingent work. Many contingent workers are embedded in local networks (Neff, 2012; Saxenian, 1999), frequently supported by intermediary organizations to link buyers and sellers of labor (Bidwell & Fernandez-Mateo, 2008; Kalleberg, Reynolds, & Marsden, 2003). Staffing agencies, professional associations, and professional networking websites are a few of the organizational forms that mediate the allocation of labor within fields (Benner, 2003; Cappelli, 2008). Rather than merely allocate labor, these intermediaries also provide services previously offered by firms-as-employers and once expected by workers-as-employees, such as communicating expectations between firms and contingent workers, smoothing compensation across periods of sporadic work, and crafting narratives of career progression (Barley & Kunda, 2004).

Contingent workers are also embedded, to varying degrees, in the firms that coordinate their work and the occupational groups with which they associate. For instance, Osnowitz and Henson (2016) show how occupational networks provide resources for enacting control over working time among contract professionals, and Damarin (2006) documents the role of occupations in structuring web development work in

flexible organizations. In addition, Van Dyne and Ang (1998) identify strong affective connection of contingent professionals to firms on the basis of their shared occupational identification with employees such as fellow accountants. The result is that firms see strong engagement from contingent workers with shared occupational identity, some of whom rarely work on-site or interact with employed staff, yet labor loyally for their client firm without the benefits of employment.

Occupational Communities

The role of occupations has received the least attention in early studies of crowdsourced and contingent work. Yet following studies of contingent work reviewed above, there are reasons to expect the structural embeddedness of crowdsourced workers along the lines of occupations, as is the case for itinerant professionals in high-tech industries (Barley & Kunda, 2004). Cornfield (2015) demonstrates how an occupational community serves to resocialize risk in an increasingly entrepreneurial era. In his place-based account, Cornfield shows how Nashville played host to horizontal occupational generalism within the music industry, wherein independent musicians expressed strong solidarity with a diverse occupational community. Likewise, Ocejo (2017) posits identification with occupational communities as crucial for contemporary craftspeople who recode formerly low-status service jobs into meaningful vocations despite their precarity in a knowledge-based economy.

According to Van Maanen and Barley (1984), occupational communities form around individuals who are engaged in similar work tasks, who have a positive identification to their work, who share a culture related to their work that extends beyond the work tasks themselves, and who maintain relationships that blend work and leisure. There is also a fundamental claim to autonomy within occupational communities (Orr, 1996), as

> work domains where member identities and work practices have not been fragmented into organizationally-defined positions by highly detailed job descriptions, where work performance is not ultimately judged by a management cadre, and where entrance to and exit from the occupation is not controlled by any one heterogeneous organization. (Van Maanen & Barley, 1984, p. 100)

As work that takes place in the absence of strong coordination by formal organizations, blends work and leisure, and engenders positive

identification, certain crowdsourced work, particularly which is high-skilled or creative, may be influenced by occupational communities.

To be sure, there are reasons to doubt the significance of occupational communities for crowdsourced work, particularly because firms rely on such work as complement or substitute for certified occupational work (Lifshitz-Assaf, 2017). Crowdsourcing is often intended by firms to aggregate the lay perspective with the work of professionals, such that inexperienced practitioners without credentials enter the market alongside formally trained experts. Unsurprisingly, there are no occupationally based barriers to entry in the present setting, wherein the three most active occupational categories, multimedia artist and animator, graphic designer, and software developer, already exhibit low levels of social closure (Weeden, 2002).

In addition, existing theory on occupational communities often considers socialization and knowledge production as occurring within institutions of higher education (Anteby, 2013; Becker, Geer, Hughes, & Strauss, 1961) as well as in formal organizations that coordinate effort among one or several occupations (Anteby, Chan, & DiBenigno, 2016; Bechky, 2003; Michel, 2011; Van Maanen, 1975). These two features, credentialing and membership in a formal organization, are absent in most cases of crowdsourced work. Without the familiar sites of occupational learning, identification with an occupational community may lapse or be irrelevant for crowdsourced workers.

There is limited study of occupational institutions online. Following Lave and Wenger's (1991) related work on situated learning and communities of practice (Wenger, 1998), researchers study virtual communities of practice (Dubé, Bourhis, & Jacob, 2005; Hara & Hew, 2007; Murillo, 2008) as online meeting places for shared skill development among amateurs and experts. Similarly, the literature covering online knowledge networks focuses on occupational learning within firms, particularly the importance of knowledge networks among distributed teams (Hwang, Sing, & Argote, 2015; Leonardi & Bailey, 2008). Organizational scholars now frequently consider the relevance of Internet-mediated work arrangements for firms but rarely for occupations as such (for an exception, see Cetina & Bruegger, 2002). Moving beyond the place-based and organizational accounts of occupational communities, it remains to be shown how and if they matter for work coordinated outside formal organizations and with extensive reliance on Internet technologies. Following a methodological discussion, I show how crowdsourced workers relied on an occupational community to confront challenges of contingency.

Data and Methods

The Work Setting

Crowdsourced workers in this study produced and marketed goods alone or in teams using specialized software tools. I consider them to be creative freelancers because they regularly worked to ''transform things of the world to create value'' (Sallaz, 2013, p. 10), were engaged in artistic production, were compensated for their work by an entertainment publisher, and did not work on the basis of an employment contract. They varied in skill level and experience ranging from the freshest amateurs to industry veterans. Expensive hardware and software were often used in the most polished productions, but the barriers to submission were quite low, making participation broadly accessible for individuals with an Internet connection and an interest in the work. There were 5 women and 42 men in the sample, and all participants were between 18 and 40 years old, with roughly half possessing some relevant formal training. In collaboration, they sent written and diagnostic feedback, as well as digital work products, to one another via the Internet. When they finished products, freelancers uploaded and distributed them via a crowdsourcing platform, in partnership with a large entertainment publisher (hereafter *the firm*).

The crowdsourcing platform was one component of the firm's multimedia platform, a 200-million-user software suite used to distribute digital content. The firm earned revenue through the sale of video games and various supplemental goods for video games. The freelancers created these supplementary goods, known in the industry as *assets*, which were purchased with local currency by consumers. Unlike an online freelancing intermediary, such as the company Upwork or Amazon's Mechanical Turk, the firm did not intend to create an online labor market but instead solicited content submissions from freelancers, selected certain products for distribution, and shared revenue (paid in local currency) based on the sale of goods created by freelancers. Importantly, freelancers hoped to be included in the firm's curated market of goods. As such, when freelancers produced new assets, they balanced the expectations of the firm-as-curator with the preferences of consumers.

While the firm did not report the number of unique freelancers, the distribution platform, which emerged within the past 5 years, was viewed by some 10 million people at any given time, included about 180,000 assets, and had generated upward of US$50 million in revenue for freelancers. The number of individual submissions per freelancer

varied widely from a handful to several hundred in the present sample. In addition, the production of these assets continued, in parallel, by colocated employees of the firm. Thus, this flexible firm (Kalleberg, 2001) relied on revenue-based compensation of freelancers alongside long-term employment contracts for core staff.

The Work Product

If unfamiliar with markets for digital goods, one might wonder what goods people are buying and how these goods are made. Imagine I open the firm's distribution webpage in my browser, where I see goods listed with prices and quantities available. Perusing this market, I see a purple pirate's hat and decide to buy it for one of my avatars in a video game. This type of asset, known as a *cosmetic asset*, is made using the skills of *concept design*, to sketch the basic idea of the object in two dimensions, *3D modeling*, to create the digital object and give it the structural properties of a pirate's hat, and *texture design*, to apply the shade of purple and other visual accents. Similarly, I could acquire a new video game environment, known as a *map*, created using the skills of *level design*, to organize the layout and facilitate good gameplay, and *environmental art*, to beautify the map with graphical textures. Like the pirate's hat, this map acts as a supplement to an existing game, available for free or for several dollars via download to anyone who purchased the corresponding video game.

Data Collection

The analysis presented in this article is based on data collected over a year of study, including digital ethnographic observation and 47 semi-structured interviews with participants in three continents and eight countries. The interviews were conducted by video conferences, which lasted for an average of 1 hour and 15 minutes each. The interviews were recorded, transcribed, and anonymized with the written consent of the participants. Video conferencing was not only familiar to the participants from their own collaborative work but also aided the interview process by providing a space for visual props and the collection of documentation. Participants would often present me with images of work in progress, promotional material for their submissions, links to conversation threads on message boards, and administrative documents from their exchanges with collaborators and the firm. Mimicking a common collaborative technique, a few even shared their

screens during our conversations, allowing me a direct window into their work process.

Each semistructured interview began with a description of the freelancer's introduction to digital asset creation, traced his or her career trajectory, and then varied depending on the current roles of each participant in the production process. As is common in artistic careers (Iyengar, 2013; Lingo & Tepper, 2013), these freelancers were creative generalists, with specialized skill sets that often overlapped in practice and shifted across projects. They were concept artists, 3D modelers, texture artists, programmers, environment artists, level designers, animators, and filmmakers. The primary inclusion criterion for the sample was freelance production for at least one of the three video games distributed by the firm, and individuals were sampled using either random sampling or snowball sampling via participant networks.

To initialize snowball paths for interviewing, I randomly chose 2 of the top 16 most recent worker submissions per day for 2 weeks and requested interviews with the creators. As new submissions were added to the system each day, the platform's sorting algorithms repopulated the list and provided a fresh sampling frame. Although the submissions of amateur and expert freelancers coexisted on the platform, many thought that popular freelancers were structurally advantaged when promoting new submissions, thus introducing the threat of oversampling those with a larger network of followers. To avoid sampling on network centrality, I selected recent rather than popular contributions as my sampling frame. Once a path was initialized, I sampled on the basis of referrals, following a network path until no new leads were available.

As an observer, I tried to achieve the same digital sense of presence experienced by freelancers (S. Pink et al., 2016). This required interacting regularly with freelancers in messaging applications, visiting online message boards where I tracked project developments, viewing live broadcasts of freelancers' production processes, and even playing video games with freelancers. These were all cyberspaces in which freelancers constructed a community (Kozinets, 2010), so I introduced myself as a researcher and developed my connected presence in a networked fieldsite (Burrell, 2017).

To analyze the interview transcripts, field notes, and supplemental material, I coded documents in three rounds following the grounded theory approach of Glaser and Strauss (1967). In my first pass through the data, a collection of loosely connected, online meeting places came into focus as relevant to the work experience. The challenges of sporadic compensation and unclear career trajectory, as well as limited

communication with the firm, also emerged as themes. I then made a second pass through the data to identify resources and collaborative strategies that originated from within these community groups as well as contestation around goals, membership, and tool use. Occupational community, dependent upon websites, video conferencing chat rooms, and message boards impacted amateur and expert freelancers. The individual-level experience with the occupational community led me to pursue a third round of interviews. I conducted 10 contextual interviews with leaders of online meeting places and employees of the firm. Finally, as a validity check, I prepared a summary memo and presented it to a random subset of six workers who found my account tracked closely with their emic perspective of the work experience.

Results

Occupational Community Goes Online

Interviews and observations exposed the centrality to freelancers' day-to-day work of collaborative relationships and information accessed online, yet separate from the crowdsourcing platform and the resources of the firm. In speaking about these knowledge sources, freelancers frequently relied on phrases like *the community*, *our website*, and *my team*, each referring to one or several online meeting places. Along with their shared reliance on these domains for collaboration and information, freelancers saw themselves as engaged in similar work and leisure with peers.

Paul,[1] an owner of one such meeting place, described what drew freelancers to his website:

> Our most enduring sections on the site are the assets, the maps, and our work-in-progress section in our studios. The studios are essentially groups where members can join together and then release collaboratively their work as what we call a "studio release".[. . .] To get actual critique from another professional, that's not something you're going to get on the [firm's platform].

Paul is describing collective resources that proved consequential for the work and development of freelancers. Rather than relying on professional associations, local networks, or firms to coordinate activity, this occupational community functioned as a sociotechnical system, reliant on Internet technology to centralize information sharing, develop work-

based identity, and facilitate collaboration among individuals with similar work tasks and occupational culture. In particular, this community was built upon online meeting places that freelancers used for leisure, learning, and collaboration.

Not aligned with one firm or game, the online meeting places were variously operated as for-profit or nonprofit entities, as independent websites or components of larger platforms (such as Facebook or Skype), and as permanent or ephemeral connections. All of the online meeting places I encountered allowed for noncredentialed membership and open access to information and so deviated from the image of occupational groups as tending toward social closure. In some cases, the meeting places organized toward commons-based peer production, as in one of the collaborative modes identified here, but this was not necessary to draw active participation by freelancers.

Within the community, workers practiced situated learning, received feedback from fellow consumers in place of interaction with the firm, shared resources to make compensation more predictable, and identified a pathway toward employment in the video game industry. In these ways, the occupational community and its online meeting places formed the structure within which freelancers faced the challenges of contingency.

Further, amateur and expert freelancers adopted occupational standards to meet the expectations of the firm. Within the online meeting places, I frequently observed instructional material referencing the *professional* quality work that would satisfy the firm's production requirements, such as the following post made by an expert freelancer:

> This is a community for people who make (usually) serious [assets]. We want to make [assets] that follow the general [game] style and theme that most players will enjoy with the hopes of servers putting them into rotation or, at best, [the firm] buying it. [. . .] The idea here is to make professional grade, quality [assets]. We are pretending we have a job. We want to do our job right.

Adopting these standards entailed occupational learning apart from the firm or other formal training. As described below, the exchange of knowledge required "to do our job right" happened external to the firm, but in reference to the firm's work process as the dominant model (recall Paul's reference to "studio release"). The firm did not attempt to organize the production of freelancers but instead set the technical and design parameters for acceptable products, such as

the number of polygons rendered per frame on individual assets or acceptable color palettes. To be sure, freelancers considered these general parameters when submitting products. However, as guiding principles, the scant instructional resources and standards were overshadowed as freelancers turned to the occupational community.

Relatively more consequential for the work of freelancers was a mass of instructional material, works-in-progress sessions, temporary teams, and network-based feedback provided by peer freelancers like Lane who described his wide-ranging efforts to make the firm's expectations legible to the occupational community:

> I was finding out by myself and I was posting everything I was learning to people who wanted to do the same thing. [. . .] You had to figure out a lot of stuff and a lot of stuff wasn't supposed to be done. [. . .] For example, making a character and adding it to the game was kind of impossible at that time. There was no way to do it unless you knew how to code it. But there was no documentation about that.

Within online meeting places, freelancers like Lane developed production knowledge in lieu of transparent guidelines or instructional documentation by the firm. The online meeting places of the occupational community structured collaboration among freelancers and, in doing so, acted as proving grounds for the development of occupational knowledge. This process not only enabled the transition from amateur to expert among freelancers but also helped community members' production align with the firm's expectations. Below, I elaborate on three challenges of contingency, showing in each case how freelancers relied on resources and strategies developed in the online meeting places.

Responding to Challenges of Communication, Compensation, and Career Trajectory

Three challenges of the contingent work experience were salient in my observations and interviews with freelancers: limited communication with the firm regarding work tasks, sporadic compensation, and unclear career trajectory. While perhaps extreme, the challenges felt in the present case are generally familiar to others who have pursued alternative work arrangements, making the setting unique not in the challenges posed, but rather in the patterns of response available to the freelancers. Owing to assumptions about the isolated context of such work, we might expect crowdsourced workers to confront these

challenges mostly using strategies that are individually rational, such as flooding the market with many average or low-quality goods to maximize chances of selection by the firm. Although surely present, I did not observe this individualistic approach, and it was not evoked in explanations by participants who instead relied on descriptions of collective strategies when explaining their work experience. Each challenge was confronted, to varying degrees, through reliance on the online resources of an occupational community, which played host to social devices that limited choice and increased the predictability of contingent work in this setting.

Limited communication with the firm

Susan, a concept and texture artist, held a bachelor's degree in video game art and design. She had been employed by leading development companies but decided to earn her living through work on the platform. She captured the frustration of many who tried to establish regular communication channels with the firm, explaining the primary source of her stress:

> Not being able to communicate with [firm] over things that at a normal job would be simple [. . .] [Firm] selects what they want to consider and it's entirely up to them. We get no feedback in the process. Sometimes we don't even hear anything until it gets in the game. [. . .] You just have to cross your fingers and hope that they like it, and sometimes they ask for some minor changes, like minor feedback, but that's usually all we hear from them.

Because of the potential transaction costs associated with a widely distributed supplier network, the firm tried to streamline communication via the platform. Like Susan, all freelancers were granted communication pages that functioned as a message board, allowing asynchronous communication between the firm and freelancers regarding submissions. According to freelancers, the firm rarely used this functionality, preferring instead to choose assets that were ''ready-to-ship'' rather than dedicating resources to a protracted revision process. One freelancer, with over 500 projects submitted, guessed that only 10% of these projects received any feedback from the firm. When the firm did suggest revisions for submitted work, comments often came unexpectedly, months after submission, and required immediate attention if freelancers hoped to meet distribution deadlines.

Rather than task-related feedback, the bulk of exchanges with the firm happened through automated interaction with the platform. Jason, a freelance texture artist pursuing an associate's degree in computer programming, described the resulting relationship, saying,

> Most of my relationship with them is sending me an automated e-mail telling me that my [asset] got accepted and then automated payments to my bank account. There are a few times that I'll e-mail them [. . .] The only thing [they] say is we'll have this fixed in the next update, thanks.

Nearly all cases I encountered reflect this pattern, where finished work was uploaded by freelancers, selected internally by the firm with automated confirmation, and distributed to consumers via the platform. Rather than operate in isolation without substantive input from the firm, Susan, Jason, and their peers practiced situated learning with fellow freelancers as well as direct feedback from consumers.

Collaboration and feedback among freelancers. Given the firm's stance of limited communication, freelancers relied on fellow workers and consumers for feedback. I found that this feedback impacted the production decisions of all freelancers, if perhaps not for every project. Although I took the individual as the relevant sampling unit, the workers that I interviewed often worked in teams or partnerships. This is because asset production required a range of skills, and while a few experts had strong proficiency in each, most generalists preferred to do one thing well.

Collaboration in this setting included the efforts of large, informal groups as well as smaller, closely-knit teams and peer feedback networks. In these settings, amateur freelancers were put in dialogue with skilled practitioners and benefited from their business and task expertise. Recalling his initial foray into the online meeting places, Jacob, a freelancer who had worked in a firm, explained,

> There's just a network of 3D artists. There's a network of animators. There's a network of 2D artists, like myself, and we all just get together and collaborate [. . .] Somebody in my [game development company] happened to run an [online meeting place], which was just a community of creators, basically, and that's where I kind of met my first reliable person, you know? And we just started working together all the time. I was working with a bunch of different people.

Beginners on this platform, who were otherwise excluded from the work experience of industry employment, found a window to industry standard practice in the occupational community.

A collaborative mode adopted by all level designers in my sample was *playtesting*, the primary goal of which was to distill user feedback in a way that influenced an on-going production process. These collaborations, managed by online meeting places, mimicked the iterative development process at development studios (where in-office playtests are common during development) but depended on the infrastructure of messaging applications, networks of gameplay servers, and message boards for coordination. Below, a forum thread welcomed participation in the playtesting process, with reference to the typical collaborative infrastructure:

> Once you have created a working [asset], be sure to submit it for a playtest. There are two types of playtests we do [. . .] [Some] happen at least once a week and are announced on the [platform] group together with a forum thread. Submit your [asset] in the thread and it will be played on the corresponding day.

Beyond the networking technology and coordinating function, freelancers relied on groups within the community to host and develop tools central to the collective effort of playtesting, including gameplay demos, interactive feedback systems, and analytical software. These tools emerged from within the community as attempts to synthesize feedback and structure the freewheeling design process common in much of amateur game development. That is, the occupational community made a self-conscious effort to construct collaboration in line with industry standard practice. Michael, a self-taught level designer and organizer of playtesting sessions, justified this practice with reference to the firm's focus on gameplay, saying,

> This is all stuff we could have done years ago and we didn't actually need to request anything from [the firm] [. . .] As I understand it, and I could be wrong because I haven't had industry work, but just based off of what I've been told, with industry it's *gameplay*, *gameplay*, *gameplay*.

Blending work and leisure, freelancers regularly gathered online to test each other's creations, providing written feedback as well as diagnostic information via community-developed tools. While diagnostic tools showed how the map played in fact, written feedback offered opinion,

such as "there really should be a route straight from A point to B" or "disable shadows on the door props. Dynamics shadows are ugly." Mark, a self-taught level designer with an advanced degree in physics, described the role of community playtesting through analogy to the scientific method, saying,

> The test version is kind of like my hypothesis on how it's going to work. And the playtests are the data collection. And then after that it's just all analysis [. . .] we now have the tools that actually help create more data.

While the core production teams had final say on revisions, the production process was often shared publicly to solicit feedback.

Networked feedback from peers. The collaborative mode just described was embedded within diffuse feedback networks in which projects were developed, tested, and given meaning for freelancers. Not all freelancers chose to participate in the active collaboration of playtesting or temporary team formation. Roughly 10% of the sample maintained independence in production tasks. Even for these solo practitioners, the occupational community was a valued resource for the feedback. One such individual was central in his feedback network, as he described,

> Every once and awhile my friend will show me a design and I'll draw something on there and help him out or somebody will share a technique or something, but that's all free. That's because they're friends, despite the fact that we're all sort of competing. It's weird, we're all kind of competing, but we're all sort of co-workers in the same sort of bizarre way.

I repeatedly saw him act as a reliable mentor and sounding board for less experienced freelancers, whom he viewed more as coworkers than competitors.

Work-in-progress sessions, which will be discussed later, were one frequent venue for independent and collaborating freelancers alike. A frequent participant in these sessions, Brian summarized the mentality of independent freelancers when he suggested,

> I try not to think about the competition aspect very much. [. . .] My fellow [platform] contributors are some of the most talented, hardworking, and amazing individuals that I have ever known. Being able to foster community is so much more important to me than sequestering out of fear of competition.

In this setting, even those mostly independent freelancers maintained an occupational network online.

Meaningful feedback from consumers. As in many occupational communities, freelancers practiced a hybrid of work and leisure time, which meant they had frequent opportunities to interact with the consumers of their products. As they were avid fans of the games for which they produced content, freelancers interacted with consumers and other freelancers as fellow gamers. Timothy articulated the feelings of freelancers surrounding consumer feedback, saying,

> I'd still like to play it enough to stay involved, I still want to take part in the communities and all that [. . .] I hop in [the game] when I can and take part just to know what the community is up to as far as the player base goes [. . .] I use it as a way to gauge what I should work on as well.

The process that Timothy described is one in which consumers informally offered comments and critiques as freelancers honed their skills and developed new projects alongside their leisure.

In addition, these consumer interactions were crucial supplements that allowed contributors to find meaning in work that went largely unaddressed by the firm. While proud of their submissions, workers often conveyed a sense of inconsequentiality, as they lacked positive reinforcement from the firm acting in its curatorial role. Jim cautioned,

> if [the firm] does not want you, they can cut you out at any moment. So, it's better for you to think like that. Never think you're employed or you're a contractor, because if they want you to be a contractor you can get hired as an outsource worker.

The ratio of firm selection to submissions was such that freelancers, regardless of the quality of their work, attributed their success to good fortune rather than individual talent or workmanship. As a result, freelancers looked to the opinions of peers and consumers to justify their continued investment, finding solidarity in an occupational community. Brian captured this succinctly when he told me, "I love being able to talk to people who either wear my designs or like my work in general. It gives the work you poured into a design meaning when someone else responds to it positively or critically." Community feedback helped entrench commitment from freelancers who otherwise entertained doubts about the value and direction of their work.

Sporadic compensation

Taylor, a self-taught texture artist who supported his family through work on the platform, captured the risks surrounding compensation:

> I'm pretty much a neurotic mess because you are kind of playing a lottery [. . .] Every time, I'm thinking, "Are they gonna pick me or am I going to the poorhouse?" [. . .] I have no forewarning. I don't talk to [the firm]. I have no idea what they're looking for. My best hope is that I made some stuff that I think is cool and they agree.

Taylor's description notwithstanding discussion of compensation was taboo among freelancers, as they worried about running afoul of the firm's nondisclosure agreement pertaining to revenue. As such, individuals were not asked about revenue in detail but instead their reliance on income from freelancing. In the sample, roughly 50% of freelancers fully supported themselves or their household through payments received from the firm, a predictably high percentage given the oversampling of popular contributors. Such support was possible because freelancers were compensated generously for their efforts, conditional on firm acceptance of their finished products and resulting sales performance. These figures varied considerably by season and type of asset, but without predictability, such that most contributors in the population did not earn enough to depend on this work alone.

Successful freelancers were pleased to learn that they were promptly paid if the firm accepted their work. The online platform facilitated fluid payment from the firm to contributors, and a support staff was available to field rare inquiries regarding pay. Still each distribution cycle introduced a new period of tension, as contributors awaited selection of their products by the firm ("getting something in," as Taylor puts it) and anticipated the best strategy for steady income. As often happened in my conversations with freelancers, Taylor invoked the concept of lottery as a metaphor for a context in which he perceived limited agency, yet potential for generous compensation. In addition to maintaining other gigs, freelancers developed collaborative strategies to smooth compensation while they built portfolios and maintained hope for windfall profits.

Smoothing compensation with partnerships. Despite its centrality to their livelihoods, freelancers considered themselves only loosely affiliated with the firm. Even those freelancers who had received considerable compensation in exchange for their products did not acknowledge a significant

business relationship. As in the cases of communication discussed above, strategies for managing compensation strengthened the bonds between fellow freelancers rather than between freelancers and the firm.

Most freelancers engaged in partnerships to spread compensation across groups of team members, but this strategy differed from the one anticipated by the firm in its design of the platform. In the dominant model of compensation, workers who received payment were those directly involved with the core production process. Teams discussed compensation among themselves and set their own rates for revenue sharing, typically based on each member's relative contributions to the production process: modeling, texturing, animation, graphic design, and so on. In most cases, these shares corresponded to hours worked, with more established freelancers setting the terms for newcomers within a team. By asking freelancers to finalize revenue sharing at the time of submission, the firm chose to avoid revenue negotiations between freelancers instead allowing them to resolve disputes and distribute revenue on their own terms. While the revenue percentages were set in advance, creators were unable to predict compensation because conditions of product selection and distribution were closely held secrets within the firm.

Freelancers developed collective solutions to the problems of unpredictable and sporadic compensation. Two methods demonstrate how workers collectively innovated on typical use of the platform to manage risks in their work. In one approach, a core team of freelancers received large percentages for their production responsibilities, but peripheral individuals collected the firm's minimum-allowed revenue percentage, or a token percentage, in exchange for promotion to their personal network of peer freelancers and consumers. Jason, one freelancer who relied upon this method, explained the logic, saying,

> The way we thought it was fair was the whole goal of the group was to generate popularity and bring each other up [. . .] So people that looked at our designs could see our friends' designs, could join our group, and it was all kind of like a hub for us.

Following on the success of their approach, Jason and his team eventually built an online meeting place to grow their influence. While explicitly limiting the revenue splitting to the initial participants, their group's mission statement reads:

> We are a group of hardworking [freelancers] trying to create some of the most unique and creative [assets] currently in the [platform]. We decided

> to create a public community where people can ask questions and get feedback from us and other [platform] members.

In another model, freelancers partnered to receive small-scale revenue percentages for ancillary production tasks, such as translating promotional material for non-English-speaking consumers, in exchange for feedback or granting the same courtesy to peers on their own submissions. Upon encountering one example of a product description translated into multiple languages, including Russian and Swedish, I asked the lead creator why he chose to include translation for his product. He responded, ''it's a lot more fun working together, actually [. . .] you send out some work-in-progress pictures to one of your friends and they can give you feedback on it.'' Besides being an enjoyable, collaborative experience, he then explained that peer feedback is reciprocated with feedback of his own and often complemented by ancillary tasks, like translation on his projects. His friends were happy to help with his project, and he gladly included them in his expected revenue.

From the perspective of the platform and the firm, each of these individuals contributed to work tasks, yet the responsibility of most freelancers was limited to reciprocal promotion among their networks. Even the minimum revenue percentage had the potential to generate hundreds or thousands of dollars a year depending on total sales, thereby providing supplementary income while participants pursued other projects. To smooth compensation, workers organized within the technical boundaries of the platform yet did so in a way that challenged the firm's approach to compensation for freelance work.

Unclear career trajectory

The freedom of freelancing was both liberating and daunting for a self-taught 3D modeler named Matthew who retained a low-paying service job alongside his work on the platform. He described searching for the next step in his career and honing his skills at the same time.

> There's no actual metric that's visible to you to guarantee success. It's the uncertainty. I know nothing's for sure in life, but still it seems even sketchier than, ''Hey, I'm at a traditional job, I want to work my way up.'' There is no avenue to do that. Creatively, it has been fantastic. An excuse to work on 3D and work on something you love is really great.

Despite the opportunities for flexibility, creativity, and profit found through work on the platform, employment remained the standard of success conveyed within the occupational community. Like Matthew, many freelancers used the work experience as practice for a future position, while also saving to afford the formal training helpful in securing employment at a firm. In the sample, all freelancers made a career of game development or had plans to do so in the future, with their current work viewed as a pathway to employment. In this effort, freelancers struggled with variations on the same two questions: what is the next step in my career and how do I get there?

These questions reflected the particularly opaque career pathways common to occupations with low professionalization and frequent contingent work, such as those of video game development and design. Gaining exposure to expert practice, Matthew and his fellow freelancers relied on the collective resources of online meeting places for career development and learning through collaboration with more experienced peers. In this setting, online meeting places served as alternative sources of socialization into an occupational community.

Beginners and mentorship. Sam, a self-taught newcomer to the platform, described the typical learning trajectory of freelancers:

> I realized there was a [design tool] and I just started to play around with it, really. It wasn't anything serious, but as I realized there are these communities that exist where you can show off your work and get feedback, I started to really get into it. I think from that point, I realized that I want to keep making maps and become an actual, professional level designer [. . .] It's all been learning through my own mistakes, through other people's mistakes, and then the feedback process.

Like Sam, roughly one third of the sample began honing their craft within the last 3 years. Most of these beginners had not received income from their contributions, yet they continued to create assets with the hope that the firm would select their work. Some beginners had plans to seek formal education in the future, but all relied on training resources within the occupational community: YouTube tutorials, developer Wikis, instructional discussions on message boards, critiques from team members, and discussions within work-in-progress sessions.

While structured feedback on projects could be found in playtesting, other collaborative modes included more personalized mentorship. Speaking fondly about his mentor, Sam explained, "I had a lot of

help from [him] in the beginning [. . .] If I never spoke to him there would be no question that I would still be really delayed with my work.'' Often, newcomers found such mentorship by participating in temporary teams. Tim, a 3D modeler in school for software engineering, shared his screen to show me a collaboration board, during which time he described open collaboration across expertise:

> Typically beginners post more work-in-progress and more professional or more experienced people will post their finished products or close to finished products, but it's definitely more open [. . .] [We] don't formalize groups of collaborators. Sometimes you work with other people and share revenue on a project, like with a concept artist, but if anything the community is centralized around [this] thread.

Once collaborators identified each other, screenshots and screen sharing facilitated dialogue as assets were created on independent screens, with more experienced participants guiding the process. Susan, an expert freelancer who earlier lamented the barriers to communication outside of a ''normal job,'' described the collaboration of her temporary teams. ''We will screen share to see what we're working on. We just kind of work at the same time, so it's kind of like we are in the same office, but remotely.'' I spoke with a beginner named Robert who worked in one of Susan's teams and credited its communication with refining his style. According to Robert:

> That's an example of the feedback completely affecting what I had in mind. They had mentioned ''magical'' and ''graceful'' in the first place, but I guess I hadn't really understood what they meant by it. That's where back and forth from the beginning is really important.

Even in the absence of temporary teams, experienced participants intervened to provide guidance as newcomers publicly proposed projects or revisions. I often noticed that the collaboration board contained ambitious plans proposed by new participants in a first post, with experts intervening to adjust expectations. In one instance, a longtime freelancer noticed resistance to a new proposal and wrote, ''many people won't collab unless you can show some of your work; therefore it's best to start by learning how to make a map yourself. This entire site is here to help you with your questions too.'' This expert effectively redirected the original poster, who had intended to form a large team, to the instructional material provided on the site, where the beginner could further

develop a portfolio and follow the typical trajectory of membership in the occupational community.

Experts and work-in-progress sessions. Experts were those who worked, either as independent contractors or employees, for development studios at some point in their careers. Most found themselves between more stable employment opportunities, perhaps laidoff from development studios or between contracts, while a few were moonlighting as freelancers to supplement their wages. These experts represented the pinnacle of creativity and technical skill to which less experienced freelancers aspired. From their ranks came the most consistently successful freelancers, although experts who worked full time on the platform felt just as exposed to the vagaries of the firm and often struggled with career advancement.

Their high-quality products and relative likelihood of success made experts particularly visible in the occupational community, and many participants told me I should interview one of the ''professionals'' or ''industry guys.'' Adopting leadership roles, they offered critiques on message boards, created written and visual tutorials of production techniques, mentored promising beginners, participated in work-in-progress sessions, and occasionally video broadcasted their work processes online.

Whereas collaboration boards facilitated team formation, online meeting places hosted work-in-progress sessions in which freelancers posted unfinished work and solicited comments from peers to ''get actual critique from another professional,'' as emphasized by Paul earlier. First, the original poster would summarize his or her creative process alongside a screenshot of the unfinished work. Second, interested parties would offer constructive critiques ranging from technical recommendations to creative feedback. Third, the original poster, hoping to solicit more feedback, would update the thread by presenting a new version in line (or not) with the recommendations. Below, an excerpt from a work-in-progress discussion illustrates this pattern:

> Original poster: I am still trying to figure out the color scheme for [asset] as well as the look. I still have not adjusted the [asset], but I will do that for my next post.
> Critic: Are you using substance painter 2 [tool] for this? They have a shader set up for [game] (just in case you didn't know) [. . .] The other thing that helps is to give your [asset] a general base colors block out. I would recomend [*sic*] you do these two things first before painting in any detail. Everything you need to know is right here [hyperlink to guide].

In this case, the critic offered creative guidance, linked to a hyperlinked guide, and drafted his or her own version of the original design to demonstrate the recommended changes, which the original poster incorporated in a subsequent version and posted for the next round of critique. "I reworked the [asset] by expanding the wings. I followed the guide," the original poster mentioned after thanking the critic. In this example, the conversation unfolded over 4 months as the project developed, with additional participants providing creative feedback and hyperlinks to instructional material.

Along with this asynchronous work in progress on message boards, experts video-broadcasted interactive work demonstrations. To learn a technique or understand a creative decision, viewers regularly posted questions in the accompanying chat channel and experts provided instruction. Ronald, an expert who often broadcasted his work process, explained a common motivation for expert participation in the community:

> You'll get cool people who are trying to learn 3D or something and they will ask very specific and pointed questions [. . .] When you work at a studio, you never get to interact with the end consumer, you never get to interact with the person who plays the game.

Experts appreciated opportunities to instruct less experienced freelancers and to relate as fellow gamers.

Career development resources. Despite their budding skills, less experienced freelancers were unsure how to make the transition from amateurs to industry "professionals," so they sought guidance and models within the occupational community. They came in contact with expert freelancers, like Brad, who told them, "A [degree] does not guarantee a position, it's all about your portfolio. If your portfolio is solid, it's what you can *do*, and if you can do what they want, you're good." Through contact with "professionals," freelancers learned that portfolios figured prominently in hiring decisions within the industry, a goal to which many aspired.

To this end, online meeting places promoted pathways to employment, whether explicitly through networking events and opportunities for portfolio reviews or implicitly through frequent references to industry standard practice. One meeting place, which regularly held contests for asset creation and work-in-progress sessions, advertised its networking functions in a message board dedicated to job postings and portfolio reviews.

> The [online meeting place] is now over 3 years old and growing stronger every day with new members, industry recruiters and students. By joining the group, you get firsthand contact with hundreds of experienced professionals looking to expand their network, share their insight [. . .] or [find] their next challenge.

Earlier, Lane described his role in modeling the development process for less experienced freelancers, but he also facilitated relationships between amateurs and individuals with industry experience. He described this responsibility, saying,

> I used to make contests on [online meeting place] to help new artists get in the [platform] [. . .] We had a deadline, some guides for people, and I got some more professional guys to work together with them. It was a really enjoyable thing.

Freelancers like Lane were transitioning from merely drawing on community resources to contributing and organizing career-relevant knowledge themselves.

Discussion

Adopting an undersocialized perspective, popular and scholarly accounts of crowdsourcing often stress efficiency gains for firms and excessive risk for workers as new technologies support the disintermediation of work. Through a study of creative freelancers, the foregoing analysis shows an emergent structure of embedded exchange within an occupational community, one that complicates accounts of disintermediation or atomized exchange in crowdsourced work. Given their tenuous relationship to the firm, freelancers sought greater communication on projects, more reliable compensation, and career-relevant training to maximize chances for future success. Following scholars who examine the structural support of contingent work, I show how freelancers used collective strategies in pursuit of these goals. This contribution not only deepens our understanding of the crowdsourced work experience but also complements existing scholarship that has emphasized the role of individual strategies and intermediary organizations in contingent work.

Rather than work in isolation, freelancers relied on playtesting, collaboration boards, and feedback networks as dimensions of an occupational community that helped decide what to work on and how

to execute projects in lieu of the firm's guidance. Broadly accessible collaboration allowed for situated learning and offered opportunities for detailed feedback on projects. Blending work and leisure, freelancers relied on feedback networks that included fellow gamers in online meeting places, providing sources of direct engagement with consumers. In addition, the findings show freelancers formed collaborative arrangements to smooth compensation. These collective strategies aligned with the parameters of the firm's platform, a system built to provide sporadic compensation, yet reconfigured freelancer involvement as a more continuous work relationship.

Their embeddedness in an occupational community notwithstanding, freelancers felt exposed to risks of work on the platform. Success depended upon a closed decision-making process within the firm, one that remained consistent in its opacity throughout the period of study. While the occupational community and its online meeting places provided a source of identification outside the firm, this status did not afford bargaining power vis-à-vis the firm, as would be the case if workers held the rights of employment. Not entirely satisfied with the piecemeal and unpredictable work arrangement, freelancers viewed their participation as a stepping-stone toward greater security through employment with a firm.

To this end, individuals developed and relied on publicly available resources, such as work-in-progress sessions, video tutorials, and instructional guides, to develop their skills and learn industry standard practice. They also found more targeted direction in teams, where newcomers encountered task and career models demonstrated by those with industry experience. Developing a portfolio was seen as key in this regard, but no one spoke explicitly about "personal branding" strategies (Vallas & Christin, 2018). In fact, freelancers did not develop the self-aggrandizing identities of "hired guns" or "gurus" (Barley & Kunda, 2004) but rather anticipated their ascension (or return) to full-time employment as "actual professionals" within development studios.

Further, by identifying resources and strategies found exclusively online, this study broadens our understanding of occupational institutions to include occupational communities that are not locally or organizationally embedded. In theorizing a matrixed economy, where "occupations become the nexus for accumulating, developing, and disseminating knowledge," Barley and Kunda (2004) posit local networks and intermediaries as "occupational institutions that would assist contractors in developing skills, social capital, and other resources" (p. 311). While the present findings likewise underscore the relevance

of occupational institutions to contingent work, geographical proximity and organizational membership appear irrelevant to their formation in certain contexts. As work increasingly moves outside of employment, it is worth considering the novel spaces of occupational learning and coordination that support alternative work arrangements, particularly those organized online and with limited interaction between firms and workers.

Conclusion

Embedded in an occupational community, freelancers found resources and strategies with which to confront three familiar challenges of contingent work including those of limited communication with the firm, sporadic compensation, and unclear career trajectory. Echoing recent calls for new occupational scholarship (Anteby, Chan, & DeBenigno, 2016), these findings indicate a need for greater scholarly attention to online occupational activity as relevant for understanding work, technology, and occupations in the 21st century. While the findings may be most relevant for nascent occupations that work exclusively online, future research should reconsider established occupational communities with an eye to online meeting places. To this end, we might consider how traditional sources of occupational knowledge are circumvented or eclipsed, as when sociologists advance theories on blogs rather than in peer-reviewed journals (Carrigan, 2016). We might also consider occupational learning and coordination that happens outside established organizational forms, as when mechanics trade parts and offer technical guidance on message boards rather than in garages or vocational schools.

Further, if considered at all, online communities are typically thought of as tools that can be used for knowledge dissemination within firms (Hwang et al., 2015; Leonardi, 2014, 2015). While productive, this perspective has caused students of occupations to overlook online communities as relevant for occupational learning, particularly in alternative work arrangements. As firms increasingly rely on contingent work, comparative research should consider the significance of coordinating functions among occupational communities with and without online meeting places. For instance, facing limited guidance from academic departments, adjunct professors in some fields may participate in online meeting places to find syllabi, lesson plans, and strategies for managing their temporary status, thereby offering an alternative source of occupational embeddedness with implications for organizational performance (West, 2010).

Among established occupations facing pressures toward contingent work, we might ask whether these spaces of knowledge sharing promote a unified occupational community among contingent and employed practitioners or instead promote occupational splintering along the lines of organizational membership. For instance, scholars could examine the ways in which ethical norms and the division of labor among freelance journalists develop apart from, but in reference to, newsrooms. In the present setting, freelancers interacted with employed artists and developers in online meeting places, promoting a sense of shared identity and spreading industry standard practice, yet these dynamics are likely different among occupations with strong credentialing regimes and high barriers to entry.

Finally, the findings also force us to reconsider the relevance of firm boundaries for workers in the new economy. When discussing contingent work, there is a tendency in the sociological literature, as in official statistics and labor law, to dichotomize workers' experiences as either within or outside firm boundaries, as "employee" or "independent contractor." In providing a corrective to the undersocialized perspective on crowdsourced work, the present case complicates the dichotomized view of firm boundaries. Freelancers worked in the shadow of the firm, with neither the protections of a standard employment contract nor the individualized identities of independent contracting, yet they were not adrift. Instead, they built affective connections, variously positive and negative, to their work, their collaborators, and the firm. These connections, along with possibilities for career mobility through training, sustained freelancer engagement. While the firm played a significant role in facilitating this relationship, it was ultimately one that depended upon occupational community cultivated online.

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