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IT Freelancers as Knowledge Workers: Shifts in Working Conditions and Work Autonomy in Crowd Work

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Abstract

New forms of work via online platforms—here referred to as crowd work—have caused big shifts in the organization of work. This article addresses the question as to how the institutional and organizational conditions in crowd work have had an impact on IT freelancers working at a platform in Germany. The article starts with a literature review on the settings of IT freelancers in the 1990s—forming a spirit of optimism towards the IT sector—which is followed by a review of current developments in crowd work with regard to worker's autonomy and organizational control. We complement these findings with a qualitative interview case study from the year 2020 about the platform Upwork. Our aim is to analyze how previous expectations from the 1990s are related to societal and organizational processes of today. Based on our results we argue that for

IT freelancers closing processes, both on societal and organizational levels, prevail in the context of crowd work.

Keywords

collective action – crowd work – digital economy – digital platform work – gig economy – IT freelancer – Upwork

1 Introduction

In the last decades, digitalization and the emergence of online platforms have led to new forms of global work organization, a development which has been intensely discussed in the scientific debate around the phenomenon of platform work (Drahokoupil and Fabo, 2016; Lehdonvirta, 2018; Wood et al., 2018; Huws, 2019; Curchod et al., 2020; Kellogg et al., 2020; Stark and Pais, 2020; Ferrari and Graham, 2021; Krzywdzinski and Gerber, 2021; Woodcock, 2021). According to Eurofound,

> Platform work is an employment form in which organisations or individuals use an online platform to access other organisations or individuals to solve specific problems or to provide specific services in exchange for payment.

Central characteristics are:

> paid work is organised through online platforms; three parties are involved: the online platform, the worker and the client; work is contracted out; jobs are broken down into tasks; services are provided on demand
>
> EUROFOUND, 2018.

Until today, a variety of platform-driven developments have been started as the following examples show. First, the platform Uber is challenging the taxi business around the globe. It also represents such a challenge to businesses that the ongoing development of platform-based business models that are being introduced in more and more sectors is being called "Uberisation" (Trojansky, 2020), painting Uber as the paragon of the platform economy. A second example are the food couriers that are not only visible on the streets all over the world, but that have also provided new business models that coordinate restaurants, clients, and riders efficiently. This business model came with

a new mechanism for the coordination of workers, as the drivers are organized by using an app, creating the development of software-based control, often referred to as the "algorithmic coordination of work" (Schreyer and Schrape, 2018). Third, and last but not least, IT work has been a model for platform coordination—which stands in the focus of this article, in which the German context will be addressed.

At the beginning of the debate on IT-based platform labor, the creative and innovative potential of crowd work was highlighted. By trusting the wisdom of the crowd, novel formats like "crowd creation" have produced innovative contributions that were generated by the internet crowd. These solutions were used to solve specified tasks for companies or other institutions but also had a high creative potential and comprised, for example, new product ideas, graphic designs, or IT programming (Leimeister et al., 2016). Parallel to this, a debate driven by German trade unions started warning that these new developments in digital labor would lead to an increased precariousness of work because platforms offered a new form of work organization separate from company structures and social regulations, which traditionally guarantee both the level of pay and measures for social security (Benner, 2015).

Platforms thus not only offer new business models but also establish new digital labor markets, with platforms acting as intermediaries between customers and workers. According to current research, crowd work comes with mainly disadvantageous working conditions, as it is often connected with less social protection, income, and job security and with new forms of control by platforms and customers on the basis of algorithmic management systems (Heiland, 2020; Johnston, 2020; Kellogg et al., 2020; Krzywdzinski and Gerber, 2021; Woodcock, 2021).

This contribution will focus on a specific group of crowd workers, namely IT freelancers. Following actual debates on digital labor and taking account of the high relevance of this professional group for understanding digital capitalism (Dorschel 2022), we will contrast the spirit of optimism that was connected with this occupational group in the context of the new economy in the 1990s with current working conditions in the setting of crowd work. We will address the question as to how both the work setting and the working conditions of IT freelancers have changed. We will draw upon the hypothesis that, in the context of crowd work, IT freelancers face and experience social and organizational closing processes compared to the earlier occupational profile of IT freelancers in the 1990s.[1]

1 The use of "opening and closing processes" in the article is based on the sociological concept of "opening and closing processes" in social theory. When describing industrial society after World War II, the German sociologist Ralf Dahrendorf observes social conflicts in German

This article starts with a reflection on the shifts and changes that IT freelancers experience in crowd work by looking at the great promises of IT work that were coined at the end of the 1990s and the beginning of the 2000s as a new type of IT labor that promised high worker's autonomy following the boom of the digital economy. This is followed by the actual debate on new work coordination models in crowd work. According to a literature review, online platforms today provide IT freelancers a new institutional and organizational context for work, one which rather shows a trend of closing the aforementioned opening processes with regard to work autonomy (Section 2). Subsequently, a qualitative case study will be presented that was conducted with workers from Germany at the platform Upwork. We will analyze crowd work in the IT freelancing sector at this platform and reflect on how, for example, the occupational biographies and motifs of workers and principles of algorithmic management are contributing to this shift (Section 3). Finally, for IT freelancers the new economy of the 1990s held out the promise of opening processes with regard to work autonomy. We will conclude that this promise has meanwhile shifted towards closing processes that characterize the actual working conditions and work autonomy in crowd work today (Section 4).

2 Work Autonomy of IT Freelancers: From the Beginnings of the IT Sector to Crowd Work

2.1 *IT Freelancers and the IT Sector in the 1990s*

The introduction of the World Wide Web (WWW) in 1990[2] can be considered as the technological starting point for digitalization processes which have been

society after the 1970s. However, these conflicts are not viewed as antagonistic conflicts between two parties, but as "hidden" conflicts. He described them as an (long-term) impact of inequalities, which restrict and limit individuals in their civil participation with regard to access to politics or to labor markets (Dahrendorf, 1964). These impacts are manifold and refer to, e.g., real income, access to educational systems, and cultural and social barriers to social mobility. Today, the analysis of social opening and closing processes is focusing basically on educational and labor systems (Groß, 2009).

2 On 12 November 1990 Robert Cailliau published a more formal proposal to build a "Hypertext project" called "WorldWideWeb" (one word, abbreviated 'W3') as a "web" of "hypertext documents" to be viewed by "browsers" using a client—server architecture. At this point HTML and HTTP had already been in development for about two months and the first Web server was about a month from completing its first successful test. This proposal estimated that a read-only web would be developed within three months and that it would take six months to achieve "the creation of new links and new material by readers, [so that] authorship becomes universal" as well as "the automatic notification of a reader when new

ongoing at the national and global levels until today. Although there has been a long and continuing debate on the transformation of knowledge into technical and standardized work processes since the 1960s (Drucker, 1969; Bell, 1976; Stehr, 1994; Webster, 1995), technical options have supported the development of the "network society" (Castells, 1996) and the notion of the "knowledge society" (Stehr, 1994; Davenport et al., 1996). These two ideas implied social, organizational, and cultural shifts which are still ongoing. This seemed specifically true for the societal organization of work with all the inconsistencies resulting from different speeds of technological change. Besides the rapid and massive dissemination of IT in industry and service sectors, IT's basic features of being able to "store, process, and disseminate knowledge" (Soete, 2001: p. 151) made it technically possible and economically attractive to codify formal knowledge that had remained tacit knowledge (Krings, 2011). Specifically, in Europe, the self-observation and self-description of the shift from information-based to knowledge-based societies became evident for economic, political, and scientific activities (Stehr, 1994; Castells, 1996).[3] Thus, transformation towards "knowledge-based economies" became evident at the following levels (according to Maasen, 1999: p. 60ff):

- In addition to money and power, information, knowledge, and expertise are now regarded as being resources of equal rank for societal production;
- The organization of value chains becomes crucial for the increased flexibilization and segmentation of the production of goods ("on demand"); the increasing demands put on research, development, logistics, marketing, design, and advertising; the greater need for innovation by accelerated innovation and marketing cycles; and the globalization of the markets.
- The so-called "knowledge-based professions" are gaining ground. On the one hand they are creating new professions, like IT freelancers, which are active in different sectors. On the other hand, information and data as well as digital technologies have each had an impact on the development of persisting professions. Correspondingly, the demands on education and qualification have increased. Yet a result of the increased demands placed on flexibility and qualification is that many more careers and educational paths run less

material of interest to him/her has become available" (see https://de.wikipedia.org/wiki/World_Wide_Web (accessed 3 September 2021)).

3 In the last decade, the notion of creative work in the IT sector has changed and the focus has shifted more to culture and the creative economy (i.e., music, books and movies) as well as on design, architecture and advertising. At the same time, the game industry has gained in importance (German Ministry for Economy and Energy, 2020).

linearly and less continuously; there are now many diverse options available to the professionals.

The rise of information and knowledge as a "productive factor" (Stehr, 1994) in capitalist economies and the development of new patterns of global value chains (Huws and Flecker, 2004; Huws, 2016) have been discussed intensely as being an enabler for new fields for workers (ILO, 2015; Huws, 2019). The characteristics of this new dynamic at the organizational and individual levels were manifold and have been described comprehensively (e.g., Huws and Flecker, 2004; Barbrook, 2006; Cohen, 2006; Zuboff, 2019). Especially in the growing IT sector, one issue was strengthened explicitly within this debate: the need for creativity. According to Huws, the notion of "creativity" became crucial for IT freelancers in this sector. Without a doubt, there was a growing expectation that to "exercise creativity, workers need to be at liberty to imagine new possibilities, to exercise curiosity, to be able to access a wide range of information freely, to have the resources to experiment with new ideas and to 'think outside the box'" (Huws, 2019: p. 79ff.).

In doing so, these expectations have led to new forms of organization of IT professionals and their work, which were discussed as a kind of opening process that provided a higher level of work autonomy to IT workers. However, empirical observations also showed the other side of the coin in this new sector. On the one hand, the introduction of IT led to processes of "degradation of work" (Huws, 2019: p. 79), which has to be evaluated mostly on a global level. On the other hand—and this seems interesting for the creation of a new professional group in this sector—innovations in the IT sector have adapted existing technologies for new uses, they have created dynamic markets, and they constantly had to find "an ingenious way to attract new investment[s]" (Huws, 2019: p. 79). This dynamic of continuous innovation became a process that strengthened organizational and societal transformation (Baukrowitz et al., 2006).

Specifically in the German sociological debate, the organizational, societal, and individual transformation of work in the IT sector has been debated intensely (Baukrowitz et al., 1998, 2006). The scientific debate has been focused explicitly on the changes in the organization of work (Minssen, 2000). These changes were identified empirically as manifold and complex with regard to the hypothesis of an "erosion" of the traditional model of work (Boes and Baukrowitz, 2002). Theoretically, this dynamic was identified as a blurring of boundaries (Minssen, 2000; Kratzer, 2003) and was initiated by several issues such as the innovative options offered by information technologies, the new organizational pattern, and global economic developments (Dörre et al., 1997; Boes and Kämpf, 2011). These blurring of boundaries had a significant impact

on the transformation of work in many sectors in Germany as well as worldwide (Pfeiffer, 2021). Against the background of these developments, the focus of research in the rising German IT sector in the 1990s was, on the one hand, on the analysis of changes in the organizational structure with regard to the coordination, decentralization, and control of work processes and power relation in organizations (Boes and Baukrowitz, 2002; Krenn et al., 2010). On the other hand, new forms of subjective integration in work were identified, stressing the individual and organizational consequences of a highly subjective involvement in employment (Pongratz and Voß, 2003). Here, the blurring of boundaries in work and the labor force within organizations have been highlighted (Voß, 1998). Furthermore, many studies have analyzed the blurring of boundaries between "work and life" (Gottschall and Voss, 2005) with regard to the work-life balance and care work (Jurzcyk and Voß, 2000). These characteristics have also been defined as part of knowledge-intensive industries, which implies branches such as software development, design, architecture, and advertising (Reidl et al., 2006). Research on IT freelancers and this new mode of work was focused on sectoral and economic clusters, on new organizational patterns, on work-life patterns, and on gender issues in this new professional group (Valenduc et al., 2008). Because of the increasing blurring of boundaries in patterns of work in these branches, research on the quality of work in knowledge-based industries has "found a variety of different situations ranging from self-determination and successful 'enterprising selves', to self-exploitation and work insecurity" (Pongratz and Voß, 2003; Valenduc et al., 2008: p. 49). These studies led to critical evaluations of the new modes of work. However, there was also a large number of studies on creative work in the IT sector, which showed a "greater autonomy, intrinsic potential for motivation, and highly developed lifestyles and concepts of the self" of the workers (Holtgrewe, 2006; Anthun, 2007; Valenduc et al. 2008: p. 49).[4] There was wide agreement that these new modes of work have created opening processes with regard to the individual working conditions of IT freelancers. IT freelancers became a visible professional group based on the following working mode (according to Krings, 2006: 91ff; Krings et al., 2010):

– First, new organizational structures, such as flat hierarchies, less formal career paths, and open enterprise cultures, which offered increased scope for individual and creative performance;
– Second, the shift to costumer orientation changed core competences, supported the acquisition of social competence, and created space for

4 *Supra*, note 3.

self-employment, which was comparatively well paid for a visible group of IT freelancers in many European countries;
– Third, the lack of spatial separation of workplace and life enabled issues such as work-life balance to be given a high profile; and last but not least the sector's needs for creativity and innovative ideas pushed the individual autonomy of IT freelancers, particularly with regard to life style (Valenduc et al., 2006).

In sum, the emergence of IT freelancers as a professional group was described as an intersectional occupational group with its own profile characterized by few organizational controls, an employment status as freelancers with considerable income, and a certain degree of individual autonomy in performing their work (Valenduc et al. 2006; Huws 2007, 2019). Interestingly, this new type of IT work was defined as a new working culture in many European countries, which awarded a certain degree of autonomy to the IT worker and was culturally present in nearly all highly industrialized countries. In contrast, there were also studies from the US American IT sector that focused on the difference between "flexible work" and "flexible employment" (Benner 2002: 4). From the very beginning of these developments, the rate of unionization among IT-workers was relatively low (Krenn et al. 2010). This was the case for IT workers in companies (Boes and Baukrowitz, 2002), where the reasons are described as the high qualification of the IT professionals, the self-determination of their working processes, and "a new type of work regulation", namely self-representation (Boes and Baukrowitz, 2002: p. 15; Boes and Trinks, 2006; Ittermann, 2009) where collective agreements do not play an important role. This argumentation partly holds for IT freelancers as well (Eurofound, 2001). However, after the financial crisis in 2008, developments have shown that there have been attempts to create new forms of acting on interests and of creating new forms of organized solidarity between IT professionals, sometimes also including IT freelancers (Boes and Kämpf, 2011; Horan and Staples, 2018).

2.2 *New Work Coordination Models in Crowd Work*

Taking this dynamic into account, one may conclude that at the very beginning of the IT sector a new work culture arose that led to opening processes towards greater autonomy of workers with regard to how they conducted their work. However, the further development of digitization and the exponential "growth of online labor changes, also known as 'crowdsourcing', 'platform work' has changed completely the intermediation between workers and clients" (Huws, 2019: p. 91), which has had an impact on the developments at the beginning of the 2000s.

Thus, amidst the development of knowledge-based economies, of creative industries, and of technological change, online labor platforms emerged as a novel form of economic organization. They create a triangular relationship between workers who advertise their labor to clients at online platforms (Drahokoupil and Fabo, 2016). Based on these new organizational forms of work, the term "crowd work" was introduced to describe work performed via online platforms (Kittur et al., 2013). In this article, we use the following definition of crowd work:

> [There are] two main types of digital labour platforms: online web-based platforms, where tasks are performed online and remotely by workers and are allocated to a crowd (on microtask and competitive programming platforms) or to individuals (on freelance and contest-based platforms); and location-based platforms, where tasks are performed at a specified physical location by individuals such as taxi drivers and delivery workers [...]. These platforms have emerged as a distinctive feature of the digital economy in the way they connect businesses and clients to workers, and provide new opportunities for both workers and businesses. In addition, technological advances have facilitated new ways of organizing work, thereby transforming work processes and how people work
>
> ILO, 2021.

In this understanding, crowd work can take various forms, namely online crowd work as well as time- and place-dependent on-demand work, both of which are coordinated by online web-based platforms (see also Vandaele, 2018). For IT freelancers the first type, online crowd work, is of central importance and will be the focus of this paper. A central question is how to evaluate the emergence of online crowd work with respect to work autonomy from the perspective of IT freelancers.

At first glance, the emergence of online crowd work seems like a continuation of the opening processes for IT freelancers. Online labor platforms provide this group with access to jobs in markets that were formally unattainable, which has been shown to be valuable for workers who would otherwise be confronted with dire opportunities in their local job market, especially in the Global South (Graham et al., 2020). Entry requirements to these labor markets are low since formal qualifications are usually not a criterion that restricts the pool of potential workers. Therefore, it comes as no surprise that platforms are advertising the flexibility to being able to perform whatever work at any preferred time.

Furthermore, platforms for IT freelancers often simplify communication and payment processes and offer in-house procedures for dispute settlement. However, the extent to which these elements of platform design and management favor the interests of IT freelancers varies strongly between different platforms (Fairwork 2022).

However, there are many reasons to assume that the emergence of online labor platforms also result in a loss of autonomy and an increasingly precarious situation for IT freelancers.

Many of these challenges are related to the algorithms that match the supply and demand at online labor platforms and therefore make it possible for the triangular relationship between platforms, workers, and clients to function. A key element is the role of reputation systems such as ratings, which are also linked to search algorithms and therefore to how workers are publicly ranked for the clients. Stark and Pais (2020) argue that online reputation replaces trust in traditional networks as a mode of building relationships, which also changes the nature of the relationships away from long-term stable relationships between workers and clients (Ferrari and Graham, 2021). Gandini (2016) provides empirical evidence that the wages workers obtain at the online platform Elance (the predecessor of Upwork) are strongly linked to their online reputation. This was supported by Wood et al. (2019), who found that the lack of an online reputation increases the likelihood of working for low wages.

This comes with a series of problems for crowd workers. Usually, the reputation acquired at a specific labor platform cannot be transferred to other platforms. This creates locked-in effects (Ciotti et al., 2021) as a platform-specific reputation disincentivizes workers from switching platforms.

Furthermore, online platforms have been shown to discriminate against group-specific characteristics. While some authors argue that reputation systems can be a counterforce to discrimination since they provide clients with easily identifiable signals related to the quality of the service (Cui et al., 2020), recent evidence suggests otherwise. Kas et al. (2020) show that reputation systems perpetuate ethnic discrimination since the selection-process of who can build a strong profile is biased against certain ethnicities (see also Silva and Kenney, 2019; Grohmann and Qiu, 2020).

Moreover, workers at online platforms face global competition, which comes with the risk of creating an oversupply of workers, starting a downward wage spiral. Empirical support for oversupplies of workers in the platform economy comes from Wood et al. (2019), who surveyed crowd workers in Southeast Asia and sub-Saharan Africa and found that the majority feels that there are too few jobs available for the number of workers. Graham and Anwar (2019) analyzed this supply and demand at Upwork and found that globally the

number of searchable users (1 891 648) as potential global workforce significantly exceeds the searchable 128 259 users who have been able to earn money via the platform.

These problems that arise from the algorithmic management in the platform economy have been linked to worrying social outcomes that go beyond material precariousness. Curchod et al. (2020) show that the ratings for algorithms for eBay sellers are linked to negative feelings such as anxiety. Lehdonvirta (2018) compares how crowd workers manage time at different platforms. He finds that platforms that seem to offer the greatest autonomy to workers often in practice create dynamics (e.g., via unpredictable availability of work) that limit IT freelancers' control over their daily schedule.

Beyond these critical ramifications, the limited opportunities for workers to address these conditions is another key characteristic of online crowd work. By accepting the terms and conditions of the platform, workers "consent" to allowing platforms to unilaterally change the functioning of their algorithms (Cutolo and Kenney, 2020). Furthermore, the global nature of online crowd work makes it difficult for unions to operate across national jurisdictions.

However, this should not suggest that no forms of worker organization and representation exist. Workers use social media groups to connect about work-related issues (Wood et al., 2018). Further, it is important to recall that in the traditional economy IT freelancers operate as self-employed outside the collective bargaining system.

Following this analysis of work organisation and the working conditions of IT freelancers in the 1990s as well as under the conditions of crowd work today, we will examine the hypothesis that with regard to working time and work autonomy there has been a shift from opening processes towards closing processes especially regarding working conditions in crowd work. In the following an empirical study on the platform Upwork will be presented, focussing on working conditions, specifically on work autonomy, access to jobs, control mechanisms, and conflicts at work.

3 The German Case of Upwork

3.1 *Methods*

The aim of the German country case study in the context of the EU project "Crowd work 21"[5] was to get detailed insights into the working conditions in

5 This international project was funded by DG Employment with a duration of 2 years, from 2019 to 2021. It had four international partners (Hungary, Germany, Portugal, Spain). The aim

crowd work in the field of IT services and to analyze the way in which workers conflicts are addressed by a trade union's activities or whether self-organized, bottom-up strategies are in place in this field of IT services, here Upwork.[6] Case studies are "empirical inquiries that investigate a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2014: p. 6). It is therefore a method that allows the collection of useful information to describe current working conditions of crowd workers and to characterize strategies and actions to organize workers at online platforms. Our case study on crowd work was based on semi-structured qualitative interviews conducted at the national level. In order to conduct the research under the Covid-19 conditions, the interviews took place as video conferences between May and July 2020, lasted approximately 60–90 minutes, and were recorded and transcribed. Two different groups of interviewees were chosen. In the first group, four interviews were conducted with workers active at the German branch of the Upwork platform. Using Upwork's filter function, we identified possible respondents (filter: various job categories related to IT work and location: Germany) for the interviews and contacted them individually. These criteria reflect the paper's focus on qualified IT crowd work in Germany and formed the basis of the qualitative case study (see Table 1). We further contacted IT workers whose stated level of German suggested that they are non-native speakers to capture the experiences of migrants at the platform. Unfortunately, we had difficulties

of the project was to analyze emerging forms of digital labor called crowd work to contribute to a better (self-) organization of crowd workers in the European context while involving relevant stakeholders such as labor unions into the research. The overall empirical design of the case was composed within the frame of the European project with the overall aim of an international comparison of different cases in crowd work, which is the reason for the composition and size of the sample. Thus, the international comparison was in the foreground of the empirical design and less the complete stocktaking of the German case of Upwork. This overall research design is also the reason why only four interviews with crowd workers were conducted, since the case study consisted of crowd workers as well as stakeholders in this field. In the research design of the project, the overall developments and trends were in the focus, which means in turn that there was no focus of representativeness or covering gender diversity in the sample.

6 Upwork is short for the company "Upwork Global Inc." and was formerly Elance-oDesk. It is an US freelancing platform, headquartered in Santa Clara and San Francisco, CA, USA. The company was initially founded in 1998 as Elance which merged in 2013 with oDesk, founded in 2003. In 2015 the name was rebranded to Upwork. In 2017 there were over 12 million freelancers at Upwork, as well as 5 000 000 registered clients. In 2020 jobs together worth over $2,5 billion USD were posted. Upwork also has 540 employees and employs 1500 freelancers. The revenue in 2020 was $373 million USD (Wikipedia; Annual Report by Upwork, 2020).

TABLE 1 Sociographic Characteristics of IT Workers (Group 1)

No.	Organization	Type	Position	Professional/ academic background	Age	Nationality	Gender
1	Upworker 1	Crowd worker	Game Designer	App and Game developer	33	German	Male
2	Upworker 2	Crowd worker	Game Designer	n/s	n/s	Non-German	Male
3	Upworker 3	Crowd worker	Programming	Game artist	33	German	Male
4	Upworker 4	Crowd worker	Programming	Software developer	26	Non-German	Male

recruiting female IT workers for the interviews since most active IT workers at Upwork located in Germany are male. Hence, our sample only comprises male interviewees.

The second group comprised six interviews with relevant national experts from unions, but also from science and other interested groups (see Tables 1 and 2). They were chosen by desktop research and by directly contacting unions. These interviews concerned the strategies of the relevant stakeholder organizations in the broader context of IT freelancing and crowd work and serve as background information for the argumentation of the case study with regard to working conditions and work conflicts.[7] The analytical strategy for the classification and interpretation of the qualitative data was oriented along subcategories developed from the research focus in the first group of interviews, which was dedicated to the crowd worker's perspective regarding working conditions, conflicts, and collective action.

7 The first set of interviews was dedicated to working conditions, work organization, and attitudes towards collective action including actual conflicts in crowd work. The second set looked at the strategies and actions of organizations to approach and support crowd workers as well as at the overall strategic issues of these organizations. The written content of the interviews was coded along the main categories of the interview guidelines following the rules of qualitative content analysis (Mayring, 2007) with software support (MAXQDA Version 11). The direct quotes provided in this paper follow the transcription reference: the name of the interview (i.e., crowd worker or expert) and the line of the transcription (e.g., 10).

TABLE 2 Institution and Gender of the Experts (Group 2)

No.	Occupation	Level	Organization	Gender
1	Scientist	Expert	Institute for Employment Research	Male
2	Unionist Ver.di 1	Expert	Ver.di	Female
3	Unionist Ver.di 2	Expert	Ver.di	Male
4	Unionist IGM	Expert	IG Metall	Female
5	Expert Crowd Sourcing	Expert	Crowdsourcing Association	Male
6	Expert Bitkom	Expert	Bitkom e.V.	Male

In the following, first, the occupational profile of the IT freelancers will be described. Second, based on that the specific process of gaining and achieving a reputation at the platform is presented. Third, we point out what type of conflicts can be observed and to what extent there is exchange and work cooperation among Upworkers.

3.2 *Occupational Profile*

The Upworkers in our sample are mostly solo-self-employed IT freelancers who do freelancing as fulltime work and use Upwork as an important channel for acquiring projects and perform the majority of their projects here. Thus, for two of our four interview partners (Upworker 1 and 2), both solo-self-employed game designers, Upwork is an important channel for acquiring projects. Around fifty percent of their projects are done via Upwork. While both describe their overall freelancing activities as full-time work, they highlight that the weekly time spent on Upwork projects varies strongly according to the current priority of the projects. To work as a freelancer in general and via Upwork in particular was a conscious decision by Upworker 1 and 2. Both of these interviewees state that they still prefer it over regular employment due to the higher degree of flexibility, although the income they can reach is far lower than they could in regular employment. While both Upworkers plan to maintain their current mix of Upwork and non-Upwork projects in the future, the circumstances under which they discovered Upwork differed. Upworker 1 started freelancing right after obtaining a master's degree in computer science from a German research university. He found his first projects with the help of

a regional chamber of commerce (IHK), which he had asked for advice. After a period of "conventional" freelancing he got interested in online platforms:

> And then I saw for the first time that you can also work online as a freelancer. Because then you not only can have the jobs of your region but worldwide. That is simply way, way easier
>
> UPWORKER 1: 30

However, it took him around one and a half years to find his first job via Upwork after signing up. His projects usually last two to three months, and he is able to achieve an hourly rate well above €50 on Upwork.[8]

Upworker 2 had already been registered at Upwork's predecessor oDesk. However, it is only since 2018 that he has been using Upwork as an important source of income. Having first started an apprenticeship in a different sector a decade ago, he became interested in game design and completed a certificate in this field after years of autodidact training. His decision to work as a freelancer was not only influenced by his intrinsic interest in self-employment but also in Germany's underdeveloped industry for game design, which offered limited employment options at that time. On Upwork, he is currently achieving approximately half of the hourly rate of Upworker 1.

In contrast, the other two Upworkers regard crowd work as an interim solution and work part-time on a monthly basis for Upwork. Both of these crowd workers migrated to Germany only recently and do not have a good command of the German language yet. Upworker 3 moved from a low wage country, in which he obtained a master's degree in a STEM subject, to Germany where he is currently working in a major city. He joined Upwork before coming to Germany:

> And the reason why I joined Upwork was because at the time I had a paying job, a full-time job and I wasn't really okay with my salary. So, I needed an extra source of income
>
> UPWORKER 3: 23

He prefers looking for short-term projects in programming (less than 1000 €) because that fits best with the obligations he has at his full-time position. He mostly achieves two thirds of the hourly rates of Upworker 1, although he

8 The exact achieved hourly wages which are visible on the Upwork profile are not mentioned to guarantee the anonymity of our respondents.

sometimes works for significantly less. For the future, he plans to leave Upwork to start his own business.

Upworker 4 has an even more international biography: Originally from an OECD country, he moved to a developing country to join his parents and complete his undergraduate studies in a STEM subject. He then moved to Germany to obtain a master's degree from a German research university and graduated during the Covid-19 pandemic. Because of the pandemic situation, he lost his job at a IT company and started doing crowd work via Upwork. By the time of the interview, in June 2020, he was working full-time via Upwork. After offering a variety of basic IT services in the beginning for a low hourly rate (less than a third of the hourly rates of Upworker 1), he is now working on more specialized IT projects and has been able to slightly improve his pay. He clearly states that Upwork is a temporary employment option for him and that he will try to find regular employment once the Covid-19 situation has improved. He further plans to move back to his native country.

With regard to opening processes, the platforms offer access to the job market, which is especially important for international crowd workers since it make it possible for them to join an otherwise closed job market. Furthermore, since the platforms do not explicitly value academic and formal qualifications, it offers an opening process for workers without formal qualification and skills and is thus open for IT freelancers with different backgrounds. All in all, despite the many challenges that the four Upworkers described, working via Upwork still comes with a variety of advantages for them with respect to work autonomy. First and foremost, Upwork offers them access to a global job market. It seems that Upwork also offers a good amount of flexibility. Every interviewed worker was satisfied with the number of projects they do via the platform and reported that they are able to choose the project lengths they prefer. Finally, according to the workers, the platform offers a good option to learn new techniques and gain experience.

3.3 *Control Mechanisms of the Platform*

3.3.1 Access to Jobs

Although the interview partners have diverse professional backgrounds and occupational biographies, some aspects of what they describe about working at online platforms seem strikingly similar. A major challenge for three of our interview partners was to build a profile at the platform, which enables them to charge adequate prices. Upworker 1 needed one and half years, during which he actively applied for projects via Upwork, to get his first project. However, he was also able to get an hourly rate above the average price range of most IT Projects right with his first project. Upworker 2 pursued a different strategy. He described that, although he had signed up at the platform years before he

began using it, he managed to find his first job relatively quickly after actively searching for the first time. However, he started with an hourly pay under 20 €, which is less than half of what he is paid nowadays. The same pattern can be observed in the case of Upworker 4. In order to find employment during the Covid-19 pandemic, he worked for significantly less than 20 € despite having just obtained a master's degree in a STEM subject. To accelerate the process, he continued to accept projects outside of his qualifications such as transcribing, although he managed to apply his programming skills creatively in this connection:

> No, I'm not really interested in transcription. And even with that work, I wrote a script which did half the work for me. So that's like kind of… The whole idea was to move towards software development and use everything that I could get to build a profile
>
> UPWORKER 4: 47

He describes his initiatives as successful since he is now able to work on more specialized IT projects via Upwork despite still earning wages "*in the low end of what you can get in software development*" (Upworker 4: 89). This demonstrates that starting with low payment at Upwork can result in a process of adjusting to the standard pricing level of the industry. Upworker 2, as someone, who has already gone through this process, describes it as follows when he was asked whether he regrets setting a low price in the beginning:

> On the contrary. Most of the people, I know, had to start this way. Because as I said you don't have many references to show. I also know people who didn't do it this way. And they are still struggling because they cannot show much. Even after years, they only have done minor projects
>
> UPWORK 2: 80

This statement is not only an example of how (up)workers can accept a temporary disadvantageous situation before experiencing long-term success but also raises the question whether the challenge to establish oneself as a freelancer is different in the online world that it is in traditional—offline—freelancing.

3.3.2 Ratings

The interviews strongly suggest that signaling competence at online labor platforms is indeed different from conventional freelancing. At Upwork ratings play an important role. Key numbers are, first, the job success score, which is an overall number representing the share of successfully accomplished projects, that is an up to five-star rating for every project accomplished at the

platform including details concerning the hourly rates and the length of the project. Also listed is how many hours the Upworker worked in total at Upwork and how much he or she earned. It is further possible to add one's employment history outside of Upwork to the profile. However, this will not be counted for the ratings mentioned above and is not featured by Upwork's filter system. Furthermore, it does not contribute to bringing your profile up on the first pages of the search results, which is described as key by Upworker 1 in order to be requested by clients. Consequently, having a competitive project history at Upwork is described as crucial by our interview partners.

> [...] it is more effective to do something here on Upwork because having a high job-success score demonstrates that you [...] have earned a lot of money at the platform alone. And that makes the employer feel secure. If you would come [to the platform] with the same portfolio but without having done anything on Upwork, nobody would know whether it is really you. And since I have done more on Upwork, even people from Upwork come to propose a job to me
>
> UPWORK 2: 82

This makes it very hard for new workers to find projects unless they are able to accept very low salaries despite having references from outside projects, such as demonstrated by Upworker 1, who needed one and a half years to get find his first project despite having worked on projects outside of Upwork for the entire period. Yet building a highly rated profile has not been the only challenge for our interview partners; maintaining the ratings has also been a challenge:

> Luckily, I have never had this problem [a bad review]. However, this of course causes pressure to me. Because if you are working for a client, who is a real asshole. [...] And if you would like to say, sorry, not this way. I can't continue this way, then you would face the problem that he would surely let you feel in case you are not finishing or continue working with the people
>
> UPWORKER 2: 90

For Upworker 3, who has the lowest job success score in our sample, this is not just an abstract fear but one that also has an impact on how he selects projects.

> So, because of that, I sometimes have to reduce my hourly rates, so that I can at least get more customers. Then as soon as my job satisfaction is high enough again, I go back to my standard rate
>
> UPWORKER 3: 105

With regard to algorithmic management mechanisms, these statements demonstrate how effectively the incentives for maintaining a competitive profile are working in practice. While developing a good reputation and having satisfied customers is certainly an important motif for all freelancers irrespective of whether they work via online platforms, crowd workers are not able to highlight or conceal particular projects, which puts pressure on them to get the highest rating for every single project.

Furthermore, the reputation mechanisms cover the work process far beyond the quality of the final product. An important key figure is for example the average response time. While Upworker 1 is satisfied to have access to clients from other continents and is willing to coordinate communication across time zones, he interestingly reports that he is not stressed by the client expectations but by Upwork's statistics:

> If I receive an invitation—When I take longer than five hours to respond, it will affect my statistics. I am a bit annoyed by this. When I get a request at night, [I need to respond] early in the morning
>
> UPWORKER 1: 60

A further challenge that all participants describe is the global competition at Upwork. Upworker 1, when asked how the platform economy can be improved, stated that there should be platforms which operate in the same way as Upwork but with exclusive access for crowd workers from wealthy countries. Upworker 2 demands regulations to end dumping prizes at platforms like Upwork. That especially these two Upworkers highlight the need for protectionist measures at online platforms is indeed interesting as both of them have gained their status through the algorithmic management system (reputation), in which they can negotiate high salaries and find most of their jobs not by applying but by being recruited. Upworker 2 even got the feedback that his client was glad that he chose the most expensive Upworker for his project. This indicates that even within the platform, different markets have emerged—one for cheap labor and one for highly qualified and specialized projects, or as Upworker 4 puts it:

> The competition at Upwork is really bad when it comes to like the low tier jobs. Those are- you really shouldn't be pursuing that stuff anymore. Because there's so many people and one particular problem is that if you also consider that there are people in the, in like terrible countries who would for- like for them, 10 euros would be like a big amount of money. So, they ruin the market by offering really low-price jobs and really low-price services and that kind of hurts someone working like in Europe or

> yeah, so that's a bad side. And once you get beyond a certain point, then your experience is beyond like those menial jobs and I think that's kind of where you are differentiated
>
> UPWORKER 4: 111

This raises the question why workers formulate such a strong rejection of the cheap labor market when they are not being seriously affected by it. This reaction might show that a uniform understanding as Upworker and thus the formation of shared solidarity among workers has to be actively shaped and developed across a diverse workforce with regard to competence but also to payment.

With regard to the process of gaining and achieving a reputation at the platform, the features with regard to work autonomy, referred to as global access, even entry without formal qualifications, and working time flexibility in the first part, are put in a different light once one is active at the platform and has to deal with closing processes regarding work autonomy and quality of work. The access to jobs at the platform is a bottleneck which leads to lower rate of pay, since long waiting times for projects which can only be actively countered by offering work at a lower payment or working under qualification.

3.3.3 Worker's Conflicts and Workers' Communication Strategies with Co-Workers on the Platform

If work conflicts arise at Upwork, as a first step the platform is contacted to act as mediator between workers and clients. A typical conflict, which two Upworkers in our sample report, concerns unclear job descriptions from clients that are fixed in the system and changes in the instructions after the price for the project has been agreed:

> Yeah, it's, I mean, like I said, because I was trying to get into this thing and learn it as well. So, I knew that I would have to spend extra time. But if I knew all of this from the start, I would think it's a fair price project. But the thing is that the client didn't really know their specifications so well. So, they kind of changed stuff a bit in the middle, which is kind of a problem. Because they think that it's okay, yeah, you can do that. It's a small thing. But on the coding side of stuff, you have to change like a lot of things and because it's a fixed price project, you're not getting anything out of that
>
> UPWORKER 4: 75

It seems that Upworkers have developed own, self-determined strategies to deal with cases like this by avoiding jobs which might have conflict potential.

This is mainly because even Upworker 4, who has the lowest hourly rates, is usually careful when picking the jobs he is interested in and skips the far majority of the jobs he comes across at the platform.

Only one worker described a situation in which mediation through the platform was required due to unclear communication with the client. In order to achieve the requirements stored in the system, Upworker 4 had to work extra hours and tried to add an additional 100 € to the milestones that had been agreed upon, which was not accepted by the client. After Upwork told the worker that his options to act are limited, he accepted it and did not pursue the dispute further.

In two other conflicts with clients in which our interview partners decided to contact Upwork, they were more successful in achieving their goals. Upworker 3 was confronted with a client who complained about the quality of his work and requested a refund via the system. An Upwork employee looked at the case and ruled that the quality is acceptable and rejected the client's request. Upworker 1 contacted Upwork because a client did not respond any more. After an Upwork employee unsuccessfully tried to contact him, they decided to close the project. This indicates that Upwork's mediation procedure mostly led to satisfactory results for the Upworkers in our sample.

When asking our interview partners about collective action, none of our participants was able to name a labor union active in freelancing or crowd work. Further, Upworkers who migrated to Germany were not well informed about employment rights and social security in the country. Also with regard to the self-organization of crowd workers, we could identify any major bottom-up movement. Nonetheless, Upworkers and other crowd workers still find ways to interact, cautiously indicating that there is a demand for a tighter community. The official Upwork community forum has already been offering a platform for coordination between crowd workers and the platform. However, the Upworkers in our sample worked in a rather isolated manner. None of them has ever met a fellow Upworker in real life or built closer connections online. Further, they use online forums in a rather functional way, e.g., using Q&A when struggling with a task for a project.

Nevertheless, not being connected to the Upwork community does not imply that they have no connections to fellow freelancers. The two Upworkers from our sample with the most freelancing experience in Germany are well aware of offline freelancer meetings but are still reluctant to take part, if for different reasons. Upworker 1 likes to attend freelancer meetings organized by the local chamber of commerce. A friend told him furthermore that another freelancer platform is organizing offline meetings in German cities, which he wants to attend in the future. He explains his motives as follows:

> Generally, seeing what others are doing. Maybe you come across tips and tricks. Or just meeting people, who are doing the same. Maybe I could team up for a project. Or just in general
>
> UPWORKER 1: 98

In contrast, Upworker 2 thinks differently about such meetings:

> Here in [a major German city], there are regular meetings within the gaming industry but I try to avoid them as much as possible. Because I find them rather strenuous. Of course, it is part of my job, as I am a freelancer, to network. However, if it is not really necessary and if they are not people I already know or who are friends of mine, then I don't need to go every week to such a meeting
>
> UPWORKER 2: 162

He further states that he finds such meetings rather boring because everyone just talks about work-related issues since he generally dislikes the idea of talking about work in his free time. This shows how difficult it is to come up with events that appeal to crowd workers with contrasting demands concerning social interaction.

With regard to online spaces for contact between crowd workers, the Upwork forum is a tool that is available. The official Upwork community is open to all registered Upworkers.

> From what I've seen, is mostly like, complaints about how something went wrong or how certain change to the algorithm made this worse or better and like, stuff like that, and like anything that Upwork would like to announce, for example, recently, they told the community that their ranking algorithm is changing and how it would favor things differently now. So those kinds of discussions, I guess. I've only been there whenever I have a problem
>
> UPWORKER 4: 145

And indeed, Upwork posts every change to their algorithm into the forum on the platform, which usually leads to hundreds of comments. Within such posts Upwork officials often claim that certain changes are made because of the feedback from the community. While this cannot be validated within our case study, it is clear that the forum is a sphere where the development of the platform is discussed intensely and suggestions for improvement are made. Furthermore, it offers a section where Upworkers are encouraged to share fun

and free-time related content, which strongly suggests that Upwork is indeed trying to connect to its members.

To sum up, it came as no surprise that our research on Upwork in Germany did not reveal a major bottom-up movement of Upworkers protesting for better control of algorithmic management.[9] However, the literature on online crowd work suggests that having no Upworkers flocking to protests at public squares does not imply that there are no forms of collective organizing (Lehdonvirta, 2016; Wood et al., 2018).Finally, in our cases, exchange via the internet, e.g., social media, have turned out to be the most important tools for internal coordination and action.

4 Conclusions

In this article we started with a reflection on the early development of the IT sector in the 1990s, which held the promise of greater work autonomy and freedom. On the basis of a qualitative case study, we compared this to an analysis of current working conditions and work autonomy of IT freelancers working in the context of crowd work today. We followed the hypothesis that there has been a shift from opening processes to closing ones with regard to work autonomy for IT freelancers now working in the context of crowd work.

However, this shift does not mean that there are no forms of "freedom" that were opened up in the beginning of the sector in the 1990s. Being a freelancer in the IT sector implies a high flexibility, which is still an important motif. For them, it is mainly positively framed as flexibility, not only timewise but also with regard to access to a global job market, especially if workers come from the global South. Furthermore, the platform offers flexible learning opportunities which can be individually shaped and exploited in the projects. Last but not least, workers report that they were free in deciding which projects they choose and which they declined. These processes still stand in the tradition of individuals gaining autonomy in shaping their own professional careers while remaining outside organizational and hierarchical contexts.

However, to change our perspective now to closing processes, it seems obvious that the disadvantages of closing processes are much more prominent than the advantages of opening processes in the everyday work experience of IT freelancers in crowd work. According to our empirical analysis we see that

9 With regard to worker's resistance, Ferrari and Graham (2021) described several strategies crowd workers could use to challenge algorithmic power: In the case of Upwork, workers were circumventing Upwork's monitoring system which takes screenshots every 10 minutes.

such closing processes are effective at different levels, namely with regard to occupational profiles and to the consequences of the reputation system.

With respect to the first aspect, the occupational profile, the platform has a strong control implication. This is especially true when considering that formal qualification and skills like university degrees are not valued or required as such by the platform as well as by clients. Here, Upwork exerts a strong control function, by setting its own qualification criteria and standards, which brings us to the next aspect, acquisition of a reputation. Here, a development can be seen which was coined as algorithmic management of competence, which forms a very strict and persuasive bottle neck for workers applying for projects and negotiating salaries, while depending substantially on the client's satisfaction with the work results. The Upwork system thus restricts worker's autonomy, leading to a kind of lock-in of a person on the platform since there are only limited possibilities for one's portfolio to be transferred to other platforms. Thus, the algorithmic reputation system forms the most important part of the closing process at the organizational level by means of power asymmetries toward crowd workers, or in the words of Stark and Pais: "*Platform owners are interested in long-term relationships—so long as the long term is on their terms. Instead of the logic of loyalty, they prefer that of lock-in*" (Stark and Pauis, 2020: p. 53).

Moreover, the platform's reputation system creates insider-outsider dynamics within the platform. Workers with a record of excellent reviews are in a position to negotiate good wages and have job offers to choose from while most registered workers with few or no reviews are strongly incentivized to accept low wages in order to build a "profile" on the platform. With regard to worker's conflicts, the platform is contacted mostly to provide mediation and there are no external parties involved. Also, with regard to conflicts, no opening strategy is obvious since conflicts are solved in internal communication.

Although there have been several empirical studies conducted on crowd work in Europe, numerous research questions are still unanswered. As our study from the IT sector shows, first, the sociotechnical constellation of crowd work remains difficult to grasp and cannot be described using a traditional understanding of work organization. On the contrary, the different technical functions and control mechanisms of the variety of platforms have to be evaluated from a social perspective or regarding the specific impact they have had on the organization of work on the societal (governments), organizational (platforms), and individual (worker) levels. Therefore, further research should focus on the contexts in which crowd work is performed. Here, research should contribute by defining principles for ethical criteria for the development of algorithms and for accompanying their implementation in crowd work, such

as trust, transparency, and fairness, for example by developing widely accepted criteria of a trustworthy cross-platform reputation.

Second, it seems important to establish a profound knowledge base of the working conditions and technological infrastructure in crowd work and orient them on human needs. Technological advances and their implementations are proceeding rapidly which are changing working conditions and transforming human labor into a "human cloud" (Daugareilh et al., 2019: p. 30). This means that human work—on global scale—is becoming "a virtually inexhaustible global resource, available on demand" (Daugareilh et al., 2019: p. 30). The continuous observation and analysis of these dynamics seems important to continuously reflect on and to critically debate the state of the art of crowd work. Issues like the impact of algorithms calculating a worker's reputation, such as the impact on work autonomy, and the organizational measures to limit time pressure should be included in the observation, as should an assessment of working conditions in crowd work.

And third, many practical issues are raised in the everyday organization of crowd work, e.g., technical problems, task instructions, payment and fee transparency, terms for payment, and dispute resolution. These issues should be integrated in a structured and constructive evaluation of the quality of crowd work. While it is crucial for research to know about these developments from the worker's perspective and to continue to include them in the sociological debates on digital work, research should also focus on transforming these results into governance innovations for platform work that include the perspectives of crowd workers and the social partners.

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