tripleC 22 (1): 265-291, 2024
http://www.triple-c.at

Chained to the App: German Bike Couriers Riding into Digital Capitalism

Jasmin Schreyer

Institute of Sociology, Friedrich-Alexander University Erlangen-Nuremberg, Germany, jasmin.schreyer@fau.de

Abstract: In the digital age of platformisation and digital capitalism, this study demonstrates the significant role of institutionalised relationships in influencing autonomy-control dynamics within platform companies. By contrasting multinational food delivery corporations with local cooperative courier services in Germany, we find that algorithmic management centralises control in commercial platforms, thereby limiting worker autonomy. In contrast, cooperative models prioritise communication, trust, and self-determination. These findings underscore the role of works councils and collective representation of interests as countervailing powers in commercial platforms, actively advocating for worker protections. In summary, this study highlights the pivotal role of institutionalised relationships in shaping the evolving landscape of work. It also emphasises the significance of these relationships in achieving a more equitable and humane work environment.

Keywords: platform capitalism, platform cooperativism, algorithmic management, riders' resistance, co-determination, collective management

Acknowledgement: The author acknowledges funding from the German Research Foundation (DFG) - project number 442171541 (DFG Priority Program 2267: Digitalisation of Working Worlds).

1. Work, Employment, and the New Rules of Digital Capitalism

In our contemporary landscape, the rise of digital capitalism and the phenomenon of platformisation have become inseparable. The life and work of individuals and organisations, as well as their perceptions and self-perceptions, are permeated by 'smart' gadgets, personal training apps and algorithms creating automated network profiles and filtering job applications. Platform companies are shaping the present political economy and increasingly inscribing themselves in various dimensions of everyday life (Altenried 2021, 51). This phenomenon, often referred to as 'platformisation', is closely linked to the broader transformations we are witnessing – transformations characterised by increased flexibility, the evolution of deregulated working relationships, and the relentless march of communication technologies and financialisation (Altenried, Dück, and Wallis 2021). In essence, it is akin to a form of rationalisation that, as Habermas (2019) points out, verges on a 'colonisation of the lifeworld'.

Datafication and algorithmisation have become socially established standards that provide orientation for diverse societal actors. This platform-based digital capitalism and the gig economy have transformed work and employment relationships. Additionally, neoliberalism has eroded worker protections and increased employer power. Artificial intelligence and its commercial distribution in business contexts ensure that the 'digital aristocracy' retains the profits. As platform-based companies grow in size and influence, they gain more social control and accelerate the marketisation of human

Date of Acceptance: 26 February 2024
Date of Publication: 26 April 2024

lives. As a result, it is essential to recognise that gig work has metamorphosed into data work, fuelled by the algorithmic infrastructures that enable its operation (Lata et al., 2023). This transformation brings about complex forms of control (Habermas 2019) and modes of accumulation rooted in new forms of domination. Platforms meticulously organise, control, and measure work processes through standardisation and modularisation. Here algorithmic management takes centre stage as a precise mechanism of worker control, reshaping the power dynamics between employers and workers.

This paper, based on two qualitative case studies conducted in Germany, examines the tensions between autonomy and control inherent in platformisation and digital capitalism. The research questions are as follows: On the one hand, how does the presence of institutionalised relationships as countervailing power structures influence the autonomy-control dynamics within platform companies in the context of digital capitalism and platformisation? On the other hand, how does algorithmic management influence these dynamics in the context of different types of labour arrangements, in multinational bike courier businesses and local cooperative bike messenger services? The first section provides the theoretical framework and discusses the relationship between rationalisation, culturalisation, autonomy and control, and the transformative impact of datafication, algorithmic management, and platformisation on the gig economy and modern labour markets. It highlights the paradoxical tension between promises of autonomy and the reality of increased control in platform work. The second section focuses on the logic of algorithmic labour coordination and investigates the effects of (institutionalised) relationships that can function as a countervailing power to platform companies. The study offers a comparative lens, contrasting a multinational bike courier business reliant on an on-demand workforce with a local cooperative bike messenger service in Germany, where bike messengers operate as self-employed entities. This juxtaposition reveals disparities in power dynamics, providing insights into the oscillation between autonomy and control within the workforce. And it exposes the dichotomy between the ‘digital aristocracy’, the people ‘above the algorithm’ (who own or program the algorithms), and the sizeable precarious workforce ‘below the algorithm’. These power imbalances have generated various labour struggles and have gradually brought forth institutionalised relationships serving as countervailing powers. These relationships wield influence, compelling employers to heed worker concerns and act accordingly.

In contrast, the cooperative model presents an entirely different narrative. The collective ownership structure, devoid of formal hierarchies, is a defining feature. Here the challenge lies in coordinating a smaller workforce through an algorithmic labour application crafted exclusively for democratic enterprises. Yet, even within this context, datafication processes persist, because of the utilisation of free software. In the third section, the comparative discussion of these two cases shows how algorithmic management shapes these distinct labour landscapes, whether stifling or enhancing communication and interactions, restricting or amplifying worker autonomy, and empowering or restricting the ‘digital aristocracy’. This section explores how institutionalised relationships can either facilitate or hinder labour protests. The conclusion highlights the broader implications of platformisation and digital capitalism for worker protection and labour activism.

2. Gig Work as Data Work: The Role of Algorithms in Shaping the Future of Employment

Modern society is characterised by processes of rationalisation, standardisation, formalisation, and generalisation of the social in general and the working world in particular (Weber 1984; Helmond 2015; Reckwitz 2017a; Minssen 2023). Rationalisation uses technology to enhance production efficiency and is seen as bringing both progress and alienation. Technology as an exogenous factor has a considerable influence on working conditions, though the objectifying effect of technical and bureaucratic processes obscures domination (Popitz 1995, 138). Technology as an endogenous factor, on the other hand, is based on the capitalist goal of cheapening labour and can lead to a de-skilling process (Marx 1863). These rationalisation effects are closely linked to capitalism and its crises. Efforts at rationalisation in recent decades have therefore been accompanied by a process of culturalisation. Culturalisation, the supposed opposite of rationalisation, stabilises capitalism as the dominant paradigm. This shows that rationalisation and culturalisation are two sides of the same coin.

Culturalisation, as distinct from rationalisation, emphasises social recognition (Reckwitz 2017b). The processes of culturalisation are tied to 'doing singularity', that is, expressing the uniqueness of people, objects, and organisations. It involves sacralising people or elements as special and non-exchangeable (Reckwitz 2017a). Digital technology enhances identity formation and the connection between autonomy and technology. Besides the commodification of culture, culturalisation also integrates culture into work contexts, inspired by the principles of positive psychology (Seligman 2011), in order to engage and retain employees. It promotes a 'culture of positive emotions' and highlights employees' subjective involvement, self-responsibility, and personal satisfaction. This shift toward individuality, enabled by digital technology, promotes autonomy in identity formation and the emergence of subjectification in organisations.

Subjectivation, denoted in German as the *Subjektivierung von Arbeit* (subjectification of work), is prominent in today's post-industrial economy. It signifies management changes in coordination, control, and work structure to harness the desired subject' potential (Kleemann, Matuschek, and Voß 2002; Kleemann and Voß 2018). Subjectification refers to companies' structural approach to human labour, emphasising their demand for this labour (Kleemann, Matuschek, and Voß 2002). Internationally, 'subjectification' or 'subjectivity' is understood to mean that the structural nature of the capital-labour relationship is relegated to the background, while the relationship between power, domination, and control is foregrounded (Foucault 2013; Foucault 2017), as is the negotiation relationship between management and employees (Thompson and Smith 2009; Murgia, Maestripieri, and Armano 2016). It acknowledges that strict control and hierarchies can limit motivation and flexibility, leading to a need for greater autonomy. The normative subjectivation of work asserts claims to meaning and self-fulfilment, and to foster self-organisation, management, rationalisation, and discipline. It reflects the 'new spirit of capitalism', which promises autonomy and creativity (Boltanski and Chiapello 2006). This shift towards individuality, facilitated by digital technology, suggests the idea of increased autonomy in identity formation.

The shift toward autonomy in work also raises questions about the balance between individual freedom and organisational control. Autonomy in the work context encompasses self-determination, decision-making, responsibility, and self-efficacy, enhancing worker satisfaction and motivation (Faust 2016). It aims to create a partnership between managers and employees, fostering trust and cooperation (Gilbert and Sutherland 2013). Autonomy cannot exist without some control, aligning employees' activities with organisational goals. Control in organisations refers to a spectrum of 'doing control', which usually includes observing, evaluating and reacting to actions

(Hensen 2020). Control can be conceptualised on the one hand as a technical function to fulfil operational tasks (German: *Steuerung*), or as a management function to achieve corporate goals and put plans into effect. On the other hand, control focuses on monitoring the workforce. So, control can lead to a stable operational order. However, it can also be interpreted as force, surveillance, and restriction, leading to alienation of the workforce. The spirit of new capitalism therefore functions as an ideology, creating new individualised working conditions and concealing alienation behind aspirations to self-realisation (Fuchs 2023). This new spirit of digital capitalism promises autonomy and creativity to workers while maintaining specific controls.

In sum, the interplay between rationalisation, culturalisation, and subjectification is a defining feature of modern society and the evolving workplace. These concepts are reflected in digital capitalism (Törnberg 2023; Fuchs 2023). While rationalisation and culturalisation may seem like opposing forces, they are, in fact, two sides of the same coin, influencing our perceptions of progress, alienation, and the structure of work. Subjectification emerges as a compelling response, emphasising autonomy and creativity within organisations. Digital capitalism as a transformative force is characterised by a cultural logic centred around manipulation through digital control. As an interplay between rationalisation and culturalisation, it shapes new forms of domination and control within society. 'This phenomenon is rooted in the privatisation, digitalisation, and financialisation of market regulation' (Törnberg 2023, 9).

2.1. The Gig Economy and the Suggestive Power of Numbers

In post-industrial societies, characterised by tertiarisation, labour market deregulation, and financialisation, neoliberal reforms have reshaped markets and employment relations. Precarious employment has undercut traditional company structures (Artus 2008). The gig economy embodies the trend towards flexibilisation, financialisation, deregulated labour, and the digitalisation of work, with digital technology adding a new dimension to precarious work: algorithmic management and digital control define today's gig economy (Altenried 2021; Huws 2016). Central to this transformation are digital platforms, which privatise markets (Törnberg 2023, 6), act as intermediaries, and organise a contingent workforce (Srnicek 2017).

Platforms offer various services requiring a stable pool of workers. Access to these platforms is relatively straightforward due to standardised and modular work arrangements, making it attractive to individuals with migration backgrounds facing language barriers. Most platforms use smartphone applications to connect workers with consumers, altering traditional working relationships. However, this shift transfers risks to the predominantly precarious workforce (Schreyer and Schrape 2018; Schor and Vallas 2021). Digital permeation, facilitated by platform companies, their technology as a mediating infrastructure and their relationship with the workforce explains the growing importance of digital platforms.

Platform concepts are based on collecting and using (personal and meta) data as a business model (Schreyer 2022). While practical designs vary, data-driven business models fuelled by algorithm-based data processing are central to Western platform companies. Data aggregation, reassembly, and calculation create scalable subjects, informing rationalisation and subject' potential. Data is the 'symptomatic' expression of the numerical knowledge that becomes dominant with digitalisation. It also reflects an automated or computerised production of knowledge, which develops its own reality and, as such, has a performative feedback effect on analogue life (Becker and Seubert 2020). The collected data also becomes an asset, offering economic returns through controlled access and optimisation of algorithmic infrastructure (Veen, Barratt, and

Goods 2020; Muldoon 2022). This process, known as datafication, involves quantifying nearly all aspects of life (van Dijck 2014), reflecting social power relations and simplification (Levermann 2018; König 2020). The datafication of work performance is essential for algorithmic management, which relies on quantification and categorisation.

Despite promoting themselves as 'neutral' intermediaries producing 'higher' intelligence, knowledge, truth, and objectivity, platforms exhibit an asymmetry between users and data-collecting organisations. Numbers and statistics create an appearance of accuracy and reliability, masking the scale and purpose of their efforts. Personalised social realities based on social criteria shape behaviour (Zuboff 2018, 309) and enable behaviour manipulation. Algorithmic governance is coupled with 'data-behaviourism' (Rouvroy 2013), as aggregated data knowledge leads to internalised power relations and behavioural modification based solely on aggregated data. The resulting digital panopticon[1] is often portrayed positively, with attributes such as transparency, networking, and sharing (Schreyer 2020).

Platformisation refers to the rise of digital tech platforms in society since the 2010s (van Dijck, Nieborg, and Poell 2019; Helmond 2015), marked by the pervasive presence of platform elements in the economy (Eisenegger 2021). This transformation intensifies commoditisation efforts tied to culturalisation processes. Platformisation accounts for a large share of the transformation process, which is characterised by a double movement. On the one hand, as platforms expand into a wide variety of spheres of life, we are witnessing the dissolution of the boundaries of technical infrastructure architectures (Dolata 2018; 2019). On the other hand, we are seeing an increase in the social significance and reach of tech platforms (Kirchner 2019; Kirchner and Schüßler 2019; Kirchner and Wenzel 2020). Platforms are becoming prerequisites for value creation, and their logics of algorithmisation and datafication are becoming societal norms, granting platforms more social power (Ametowobla 2020). These platforms control access, structure user actions, and play an indispensable role in daily life (Piletić 2023). Datafication leads to increased surveillance of individuals and society, blurring the boundaries between private, public, and economic spaces. Data is an instrument of surveillance, particularly in monitoring precarious workers (Lata, Burdon, and Reddel, 2023). The COVID-19 pandemic has accelerated the platformisation of labour, heightening the alienation caused by digital powers in their efforts to impose social control within contemporary capitalism.

2.2. Platforms as Infrastructures and Their Impact on Power Dynamics

The gig economy offers a global labour market. However, gig work is always data work since it cannot be performed without the underlying algorithmic infrastructures. The algorithmic infrastructures of digital platforms facilitate supply-demand coordination and reduce transaction costs in service work. Standardisation and modularisation enable people with varying skill levels to participate in diverse work contexts. This algorithmic infrastructure, termed 'algorithmic management', governs workforce coordination and behaviour through self-learning algorithms (Rosenblat and Stark 2016; Rosenblat 2018). This datafication of labour has far-reaching implications. These digital systems meticulously organise, monitor, and measure work, ensuring the

[1] The concept of the 'digital panopticon,' a ubiquitous surveillance mechanism facilitated by contemporary data technologies, is characterised by its imperceptibility, its reliance on historical, current, and extrapolated future data, and its ability to operate without explicit psychological inducements. The amalgamation of diverse data streams creates an illusion of omnipresent observation, potentially prompting proactive behavioural adjustments.

effectiveness of algorithmic management. In essence, algorithmic management relies on minimal human intervention, operating through a rigid numerical control system (Shapiro 2018; van Doorn 2020). Consequently, it reduces the promised autonomy in platform labour to a mere illusion.

Modularised data on work performance serves the dual purpose of enhancing the functionality of algorithmic management and controlling workers. At the micro level, algorithmic management must efficiently coordinate workers. Simultaneously, it collects, stores, checks, and analyses all activity data, comparing it with past values to predict future behaviour. Proprietary algorithmic infrastructure conceals additional data. Data-driven services provide extensive options for monitoring, controlling, and distributing work processes. At the same time, algorithmic management relies heavily on tracking mechanisms, which are crucial for workforce management. Performance data, working hours, and shifts can be stored and visualised in the app or company databases (Wood et al. 2019; Wood 2021). This technical infrastructure maintains control.

As a depersonalised authority, algorithmic management relies on aggregated metrics from collected data for personnel policy decisions. Algorithmic monitoring and real-time tracking create a knowledge and power imbalance favouring the platform (Walker, Fleming, and Berti 2021). This dual control function exposes hierarchical and asymmetrical power structures. On the one hand, the modularised data on work performance is necessary to ensure the functionality of algorithmic management; on the other hand, this data also controls and monitors the workers. At the micro level, algorithmic management must enable the business model, that is, coordinate the workers efficiently. In addition, all activity data is collected, stored, monitored, checked, merged with other (for example, past) data and analysed. All data, such as the time spent on the platform, the average speed of riders, reaction times within the app, delivery times on average, etc., are constantly compared with past empirical values, and future behaviour is predicted on this basis. However, this is only the apparent data. Much more accumulates, but it is not transparent due to the proprietary algorithmic infrastructure.

Motivation in this context involves nudges and gamification elements (Thaler and Sunstein 2008; Lanzing 2019). These game-theoretical aspects create a facade of self-improvement and autonomy, concealing underlying exploitation. Platform companies initially consider workers' financial needs but may disregard regional conditions or external regulations such as traffic laws. Performance monitoring, nudging, and user data history enhance app utility while scoring introduces behavioural incentives, rewarding or penalising past behaviour. Gamification leads to competitive dynamics among colleagues and behavioural adjustments driven by social pressure and algorithmic control. This is because opaque value generation has real effects on users, who are rewarded or sanctioned according to the numerical value assigned by the company's non-transparent algorithms, and optimise their behaviour based on the metrics provided (Schreyer 2022; König 2020; Lanzing 2019b; Levermann 2018; Foucault 2015).

This tension between autonomy and control reflects the rationalisation and culturalisation in the platform economy. As technology spreads, subjectivity becomes crucial for handling uncertainties. Gamification and performance indicators shape worker subjectivities and create a peer-to-peer system of domination (Törnberg 2023). However, these qualitative factors must be quantified for algorithmic process management, fostering a culture of numbers. Employee apps, tracking measures, and predictive analysis permeate the modern workplace, emphasising control through surveillance and data management. The quantification of qualitative aspects further embeds a culturalised working environment. This shift towards data-driven decision-making conceals

domination and exploitation for capital accumulation. Proprietary algorithms promise objectivity but are challenging to decipher from an external perspective, resulting in non-linear causalities and realities.

2.3. Digital Platform Cooperativism as an Alternative Paradigm of Gig Work

The gig economy phenomenon has generated controversy and ambivalent assessments in recent years. The rise of the platform-based gig economy coincided with the financial and economic crisis of 2007/08. It was initially termed the sharing economy, associated with ideals of egalitarian participation, environmental sustainability, and a move away from capitalism (Botsman and Rogers 2011; Belk 2014; Rifkin 2014; Sundararajan 2016; Goods, Veen, and Barratt 2019). This 'imagined future' of the sharing economy, as well as 'the unredeemed surplus, thus sets in motion a cycle of enchantment and disenchantment' (Kirchner and Wenzel 2020, 112). This applies particularly to the commodification of various aspects of life as a result of platformisation.

The hope of harnessing the potential of digital infrastructures to create an economy of sharing now lies in cooperatively managed platform companies (Scholz 2014; Pentzien 2021; Fuchs 2023; Törnberg 2023). Because:

> Technologies should not be seen as neutral, entirely deterministic, nor as univocal in their effect. Instead, we should look at technology as 'value(s)-sensitive' responding to the material interests and social imaginaries of those that fund, develop and use them. (Bauwens, Kostakis, and Pazaitis 2019, 33)

The cooperative concept aligns with the principles of gift exchange (Mauss 2016; Polanyi 2021), emphasising resource sharing, civic engagement, and diverse synergies in a semi-public space known as the (digital) commons (Wittel 2020). Commoning involves people, shared resources, and negotiated rules of usage. It prioritises sustainable resource utilisation over property rights, fostering cooperation and emancipation (Ostrom and Helfrich 2012; Helfrich 2021) while reducing market dependency. Success here requires a cooperative and needs-oriented approach, and the relational level of togetherness among equals is central. Furthermore, the lived practices can develop an emancipatory potential.

Platform cooperatives represent a public-good-oriented alternative to monopolistic platform companies. Characterised by shared ownership and democratic control, they are considered the 'oldest form of the sharing economy' (Gerling 2018, 35). Cooperative associations are closely tied to the values expressed in their mission statements and encourage identification (Bolsinger 2006, 175). They adhere to four fundamental principles: member ownership, collective self-management, democratic rights, and the distribution of a living income. The self-governance derived from this corresponds to a 'highly demanding conception of order that includes commonality, equality, and voluntariness' (Frank and Lueger 1993, 49, translated by the author). Due to their shared ownership and democratic control, they emerged as a more ethical alternative to shareholder-owned monopolistic platform companies (Zhu and Marjanovic 2021). The subsistence principle contains the purpose of ensuring that all members can make a living from the work. After deduction of all costs, the remaining sum is divided among the members (Voigt-Weber 1993, 186).

According to the International Cooperatives Alliance (ICA), cooperative values such as democratic control by members, autonomy, independence, cooperation, and community are the core of co-ops. Scholz (2014) proposed additional principles for platform cooperativism, adapting to the specifics of digital labour. These include decent pay,

transparent and portable data, co-determination, legal protection, recognition, freedom from excessive supervision, and the right to log off. The platform cooperativism movement seeks to work towards democratising the creation and distribution of value in digital capitalism. It is essential to differentiate between legal and social forms of organisation within platform cooperativism. Not all legally defined cooperatives embody cooperative values, and vice versa. As an interface between the market and civil society, the movement oscillates between activist and entrepreneurial orientations. In political terms, it is more reformist than revolutionary (Pentzien 2021, 276). Nevertheless, there is the hope that cooperatives have the potential to shift the balance of power within capitalism (Brandl 2021).

Classic platform companies dominate the current shape of the gig economy. This economy, as described above, is characterised by precarious working conditions, economic reliance on platforms, and significant control exerted over workers. Addressing these challenges, Bunders et al. (2022, 2) propose four cooperative models, detailed in the table below.

	Members are self-employed	**Members are employed**
Cooperative does not own platform	Producer cooperative that does not provide gig workers with labour rights, and does not own a matchmaking platform (e.g. https://decooperatie.org/)	Worker cooperative that does provide gig workers with labour rights, but does not own a matchmaking platform (e.g. https://smartbe.be/)
Cooperative owns platform	Producer cooperative that does not provide gig workers with labour rights, but does own a matchmaking platform (e.g. https://taxiapp.uk.com/)	Worker cooperative that does provide gig workers with labour rights, and does own a matchmaking platform (e.g. https://www.upandgo.coop/)

Table 1: Cooperative types by platform ownership and member employment status (Bunders et al. 2022, 2)

The first model, represented in the top row, involves platform models financed by venture capital, in which gig workers hold membership status, granting them access to various benefits. While this model mitigates the issue of precarity, it fails to alleviate economic dependence on the platform. In contrast, the second model, outlined in the bottom row, describes 'real' platform cooperatives. Here gig workers, while maintaining formal independence, influence the platform's operations through their membership. Although economic dependence is less pronounced in this model, precariousness remains a concern, as discussed in section 3.2. The logical progression from this model is the permanent employment of members by the platform. This approach circumvents the problems of precariousness and economic dependency, offering a more stable and sustainable alternative.

In the discussion below, the preceding points will be elucidated through the examination of two distinct case studies, similar to Saner, Yiu, and Nguyen 2019. The first case study is a platform company operating within the food delivery sector, which will illustrate the influence of precarity and economic dependence on the autonomy-control dynamics experienced by gig workers. The analysis will then shift focus to a platform cooperative comprised of solo self-employed members, to assess the impact of equal relationships on the autonomy-control dynamics within the gig economy.

3. Between Autonomy and Control in Gig Work

This section examines the commercial and cooperative facets of the gig economy through two contrasting examples in the bicycle courier business. The first case highlights a commercial platform company specialising in regional, national, and international meal delivery, via bicycle couriers managed through algorithmic coordination. The second case centres on a local bicycle courier collective striving to break free from incentive-driven policies and discipline by implementing automated processes. Both cases share the utilisation of algorithmic infrastructure for work coordination.[2]

The analysis delves into the influence of algorithmic infrastructure systems on communication, autonomy, and control within these food delivery contexts. The operational, monitoring, and quantification practices differ based on the platform company's orientation. Aspects of rationalisation and culturalisation, as part of these companies' daily operations, yield varying levels of autonomy and control for the workers, and differing methods of (self-)discipline and employee monitoring. This leads to tensions, ambivalence, and challenges.

3.1. Methodology

The qualitative study used interviews – conversational interactions characterised by immediacy and reciprocity – as its primary method of data collection. Transcripts containing narrative passages were created, offering insights into the context of the interviews. Grounded theory guided the analysis, emphasising inductive category formation and comparative analysis.

Two qualitative case studies from the bicycle courier industry within the platform economy were used to compare and contrast organisations with the greatest possible. The data collection period in company 1, the commercial food delivery platform, lasted from 2017 to 2023 and included document analyses (newspaper articles, homepage, annual reports, social media), as well as the evaluation of a closed chat group for bike couriers from this company and 12 semi-structured interviews with 18 riders from three different locations and all hierarchy levels. Company 2, the bike courier collective, is presented as a self-managed company with collaborative management. Due to initial access difficulties, the investigation period only extended from 2019 to 2021. There was thus considerably less data material for this company. This explorative study is based on web content, project documents, a four-hour face-to-face conversation with two members of the collective, and five telephone interviews, as the planned

[2] The empirical data presented here were collected as part of a qualitative study in the context of the Hans Böckler Foundation-funded project: 'Digital Project Communities as Innovation Incubators' (see Schreyer/ Schrape 2018; 2021; Schreyer 2019, 2020) from 2017-2020. The following analysis was partly developed within the framework of funding from the German Research Foundation (DFG) - project number 442171541 (DFG Priority Program 2267: Digitalisation of Working Worlds).

participant-observation had to be abandoned due to the COVID-19 pandemic. In total, eight interviews were conducted in English.

The data analysis used grounded theory (Strauss and Corbin 1996; Glaser and Strauss 1998). Here data analysis progressed through several steps, beginning with document analysis, which informs the development of 'natural' data categories. Inductive categories were utilised to explore the layers of meaning in gig work phenomena, acknowledging the inherent limitations in the study's validity due to resource constraints. The iterative processes of data collection and analysis inform each other, with initial interpretations shaping the subsequent selection of interviewees. This 'theoretical sampling' guides the process by iteratively selecting and analysing cases. Concepts are generated and organised into categories, with a focus on understanding speakers' intentions and layers of meaning. Coding plays a crucial role, with open coding used to name and categorise phenomena, followed by a gradual process of refinement. The development of structuring dimensions leads to the formation of a preliminary category system. Although theoretical saturation is not achieved, the analysis prioritises a general exploration of the field over theory production. In keeping with the methods of grounded theory, the following comparison is also based on an analysis of similarities and differences.

3.2. Gig Work on a Multinational Platform

An international food delivery company entered the German market in 2014 by acquiring a local brand. In the years that followed, the parent company expanded both internationally and nationally. It eventually purchased the remaining delivery services on the German market after Deliveroo announced that it would leave Germany. This gave the company both market leadership (as of 2019) and a monopoly on food delivery (the latter only for a short time, as the food delivery field is very volatile and other competitors have since entered the market).

Employing approximately 7,000 to 10,000 couriers, who work under the algorithms and 1,000 to 2,000 employees, who work over the algorithms in Germany, the company relies on unskilled work with a high turnover. It is important to note that couriers in Germany are employed, distinguishing them from couriers in other countries. The company's market leadership is based on a careful analysis of the issues faced by Foodora and Deliveroo. Deliveroo had problems with sham self-employment, while Foodora struggled to prevent worker representation. To gain a foothold, the company promised e-bikes to couriers and opted for direct employment. The aim was to enhance brand visibility and discourage restaurants from establishing their own delivery services.

The company presents itself as a socially responsible business, emphasising sustainability, food quality, and employee empowerment. Despite this self-presentation, a clear distinction is made in communication, treatment, and performance between people who work above and below the algorithm. The former group, the 'digital aristocracy' (Fuchs 2023), includes all those who work in the office (with gradations in value) and who program, maintain, or own the algorithm. In contrast, those who work below the algorithm constitute the 'digital proletariat'. These workers are not even employed by the company itself, but by a limited liability company set up specifically for this purpose.[3] This is not mentioned in external communications; on the contrary, the

[3] In this case, the division is even more general, since it is mainly about those who work in the office as opposed to those who work on the street. While office employees in start-up settings enjoy various benefits within working hours (e.g. canteen allowance, additional vacation

corresponding rider pages suggest that they are part of the larger team. Nor do the team events advertised on the website give any indication of this segregation. The information page for prospective riders talks a lot about the care, services and additional benefits the company offers its couriers. It also emphasises the flexibility the riders enjoy and the low threshold for entry (ID, insurance, and a minimum age of 18). Communication with management is another area of inequality. While office staff communicate through the Workday platform, riders experience delays in responses, if they receive any at all.

The riders are presented as key performers in the company's media communications. Yet they report that this kind of appreciation is not shown to them in practice. On the contrary, they state that the prevailing management practices neither reflect the value supposedly attributed to the workers nor perceive them as a 'real' part of the company. This was also repeatedly evident in court disputes over benefits that were taken for granted by people working in the office but not extended to those working on the road.[4]

> 'Community' is a huge speech bubble [...]. However, there are team events organised by the employer, which take place once a quarter. That's for all riders, you do some kind of outdoor activity or go to a pub or a club, and then you meet up and have a rider party or rider event and that's where you get together. The problem is that it's once a quarter, so every three months it's completely different people you meet there. (Rider B 2018)

The promised team events do occur once a quarter, but due to the high turnover among the riders, these are not perceived as a team-building measure. While events like pub nights are organised for the digital proletariat, there are expensive ski and pool parties for the digital aristocracy (Briegleb 2022).

According to the riders, another point of conflict marking the division within the workforce is 'limited' communication. Couriers do have various options to contact management digitally (messenger, ticket system, email):

> The riders are also treated like customers. Writing tickets to the personnel department. And they are kept out of the company. The aim is to control them remotely and they [the riders; J.S.] are supposed to provide the cell phone data, and the customers do that, too. (Senior Rider Captain 5, 2020)

Even for acute issues, however, it takes some time to get a response, and sometimes no response is given. For the office staff, on the other hand, the introduction of the software 'Workday' (only for office staff for the time being) has virtually streamlined communication through the use of artificial intelligence and established an extensive with an extensive feedback culture. As a service solution, the software promises to listen to employees and give them a voice, thereby increasing employee involvement. According to Workday's own self-description, its products primarily support the challenges of the changing world of work in the respective organisation. They free up the capacity to focus on the 'human dimension of work' (Workday 2023) by actively listening and taking the needs of employees seriously. One module, in particular, is based

days, etc.), these regulations do not apply to riders. On the contrary, they had to go to court to win their right to work materials in addition to the branded functional clothing.

[4] While the riders do not receive any meal allowances or extra leave for extraordinary events, this is a standard for the office workers.

on various people analytics functionalities, which enable the analysis of large data sets and help to predict employee behaviour. In particular, it uses personalised surveys and machine learning technology to provide insights into the workforce and 'turn[s] insights into action that drives engagement and growth'.[5] By using natural language processing, the application claims to be able to detect meaning from feedback data. This software seems to represent the link between rationalisation and culturalisation in the world of work. The company's General Works Council[6] prevented Workday from being introduced for riders and stipulated how the software could be used for office employees in a company agreement (cf. General Works Council Agreement on Workday HCM & Finance 2021).

For the courier, algorithmic management plays a central role in daily work through the company's app, standardising processes and tracking data. However, algorithmic management is not fully automatic; it mediates management decisions through the app, but regular interventions by the management are necessary:

> Personnel planning is first carried out by the algorithm, but then there is also a business planner team. The guys who optimise the personnel planning afterwards. These are the HR department and the people from local hubs. (Senior Rider Captain 6, 2022)

Nonetheless, algorithmic management has the capacity to control many workers with a relatively small number of people working above the app.

> With the combination of location, route, and time you can evaluate and create entire profiles of your employees. And you can also look at your operational business, at where the weaknesses are, because you can triangulate the data from several riders. (Senior Rider Captain 4, 2020)

While riders lack full access to order information, impacting their qualitative input, the standardisation of work processes involves full tracking of each courier's status and order history and the bonus thresholds reached. Social knowledge about the workforce can be derived from this data, increasing the company's power over them. The quantitative control mechanisms integrated into the workflow through algorithmic management are flanked by qualitative measures such as gamification and nudging. For example, the Soober app works similarly to the Workday app, with a colour guidance system based on real-time and predictive analysis, and can potentially change behaviour.

The strictly standardised and controlled work environment offers little worker participation. They are the object of rationalisation. The lack of a workplace and the absence of a company social order constitute a further disciplinary dimension that pushes alienation to the extreme. Moreover, the heterogeneity of the couriers makes it difficult

[5] See: https://www.workday.com/en-us/products/employee-voice/our-technology.html (accessed June 2, 2023).

[6] The implementation of employment contracts paved the way for worker participation in company decision-making based on the principle of co-determination. In Germany, the works council is the central institution of co-determination, while in other countries, it is often the trade union. The employees elect the works council. It has the right to be informed and consulted on company decisions because the system is based on the idea that employees are not just a factor of production but also stakeholders in the company. The works council can also make proposals and negotiate with the management on behalf of the employees.

to overcome this atomisation. However, the advertised autonomy of riders and the practice of algorithmic management have led workers to unite – regionally, nationally and internationally – to voice their displeasure (Schreyer 2021; Tassinari and Maccarrone 2020; Healy and Pekarek 2021).

Attempts to establish works councils[7] faced resistance but ultimately succeeded, providing a space for collective organising.

> We have a sort of parallel structure here, the riders are actually outside the company, although the works council has been established inside. And then you first have to assert your rights everywhere. (Rider 7, 2020)

Establishing works councils is vital to creating a space on the ground for further organising. Works councils are a traditional institutional power resource. And it was hoped that they could also be a solution for the gig economy. Because workers' interests were explored and physical meetings initiated via digital communication. This helped offset the conflict between management and works councils, characterised by intimidation, the suppression of dissent, management ignorance, and the failure to share information in a timely manner.

> We have this works council management team [contact persons for the works councils], so at the beginning, you don't hear anything from them, they first get an induction into the company and then they get seminars on conducting talks and union busting and so on. And suddenly, as if they had learnt to speak, they are able to use rhetorical phrases and distortions, like politicians on television, to talk you out of whatever you have in mind, so to speak. (Senior Rider Captain 4, 2020)

Some meetings between management and the works council were terminated by the police, as documented on social media. Currently, there is a variety of arrangements for the representation of the collective. In recent years, the various institutions for the representation of collective interests have increasingly organised the digital proletariat and helped to build up a countervailing power to algorithmic management and the digital aristocracy. Works councils, in close cooperation with the union NGG,[8] have even demanded a collective agreement and reinforced their demands with several strikes. These developments may shape further strikes as workers seek to strengthen their collective identity and turn it into a meaningful movement.

3.3. Gig Work in a Platform Collective

This platform cooperative was established by six individuals who had previously worked at Deliveroo. Their goal was to avoid management based on algorithmic governance. This initiative began in 2016 and became official in December 2017. They aimed to maintain the advantages of independent work, characterised by self-

[7] Germany has extensive legislation on co-determination, which places employee representation within labour law rather than company law. Works councils are the focal point of co-determination, unlike in other countries where it is often the trade union.

[8] The Food, Beverages and Catering Union (NGG) represents various sectors, including the hospitality industry and food production as well as Lieferando, a food delivery service. In 2023, the NGG recorded 187,679 members, over 400 strikes and a 1.3% increase in membership (see: https://www.ngg.net/presse/pressemitteilungen/2024/gewerkschaft-ngg-zahl-der-mitglieder-steigt/) (NGG 2024).

determination and self-organisation while addressing issues like poor working conditions and courier atomisation. The cooperative is entirely self-governed and self-organised, aiming to drive social change through digital technologies that empower participation and decision-making in all aspects of their business.

The platform cooperative, which is very small compared to the commercial platform companies, consisted (in January 2021) of 15 people, three of whom act as shareholders in the GbR[9]. They avoided the use of venture or private capital to maintain their independence.

> This is the downside of not working with investors and money from outside. Because if you only operate with the money the company earns you can only do little baby steps. And all those things we actually want, we would all be able to pay us money for a certain amount of hours every month, to actually see us as employees but to come there we do need to grow as a company. And like, you know, that's the point, no loans and nothing from outside to like to achieve that. And that's the point, we have to grow as a group of people, we have to grow as a company. (Bike Messenger 5, 2020)[10]

Therefore, all the participants have to pay their own expenses and bring their equipment independently. Members share the work, profits, and risks. The collective's profits cover its running costs and allow for risk-based payment for members. At the time of the analysis, the cooperative paid its members an hourly wage equal to the minimum wage. At the same time, it made situational decisions about who would receive what compensation for what work, based on the profit generated. The collective enterprise of solo self-employed workers did not award formal employment contracts in 2020.

> I mean there's some kind of a verbal contract which could be seen as a social contract you know like you have and as soon as you say you dedicate to a group of people and to work then you say you dedicate and then you have to deal with the consequences of like not showing up anymore, just like being gone by not saying anything, but it's like no one is pinned to working with [Company 2] by having a contract. (Bike Messenger 6, 2020)

Instead, there was an unwritten social contract that everyone implicitly agreed to when they joined the project: because the collective is based on active participation, communication and commitment beyond paid employment is taken for granted. The cooperative operates on a foundation of grassroots self-governance, guided by principles like identity, democracy, and living income (subsistence).

> Having strict ethical rules is always nice for your karma or something like this which exists, but usually has an impact on business development. […]. Sure, that is what we basically stand for, that we don't work with everyone. (Bike Messenger 7, 2021)

> Every member of the collective has an insight into every aspect of the collective. So, our financing is open to everyone. How much each one of us earns is also

[9] The legal form of this cooperative is the Gesellschaft bürgerlichen Rechts, a partnership organised under the German Civil Code (BGB).

[10] As mentioned in the methodology section, the following interviews were conducted in English, but none of the interviewees was a native speaker.

> known, because we put the hours down. How much work or how much time does someone spend on the road, or how much does someone spend on dispatching? So, we are truly equal. Who spend some time acquiring customers and so on. Everything is open, there is no mystery. It is not like you are working in an office and you don't know the person who you hire and there is a senior and a junior. So, we are actually equal. And there is no boss, there is no person who stands above and that's not like in an office. And we make all the decisions collectively. We have a plenary every two weeks. We write down everything. The topics of the plenary, we want to discuss. We are working on the decision we are making. So eh, yeah, I think it is a privilege to work in such a small group." (Bike Messenger 5, 2020).

Eight members work full-time for the collective, while the others engage in different professional activities but actively participate in meetings and have voting rights. Of the eight members, six people are involved every day, either on the road or working from their own homes as dispatchers. In addition, one person works exclusively in accounting, and the eighth position is for those members with other professional arrangements, who have little time to spend.

The cooperative embraces open communication and engagement as part of its ethos because communication is the basis of the collective. The lingua franca in the collective is English since not all members speak German. Overarchingly, the collective focuses on what people inside (and outside) the collective need and what they can provide. The cooperative's goal is to bring about a change in consciousness and initiate social change that will lead to a more social and less exploitative world of work.

> I think it is that people see more and more that there is no need for a van or a car to transport 50 kilos or so. All this bike messenger can do this. And it is cheaper and emission-free, it is ehm and maybe it is a tiny tiny difference, but instead of a car in this place somewhere it will be a bike messenger. But even this tiny difference is worth fighting for. And that was also a main idea. To provide people with logistic services, which reflect the change in society. (Bike Messenger 4, 2020)

The cooperative seeks to empower workers, allowing them to shape their own work rules and conditions. The plenum thus functions as a collective management that builds legitimacy through bottom-up decisions. In addition to the internal coordination processes, the collective is constantly exchanging information and ideas with other cooperatives. It works on the conviction that labour policy changes can be achieved through the overarching cooperation of individual and collective actors.

By encouraging all members to communicate, the cooperative explicitly aims to set itself apart from the commercial work contexts of the gig economy, in which the organisation of work is predetermined by centrally defined and technically mediated rules, over which employees have no influence. The unique feature here, however, is that the software is programmed by CoopCycle, the 'cooperative of cooperatives'. This is a common-good-oriented bicycle courier network founded in France in 2016 (Spier 2022), which shares its software exclusively with democratically constituted collectives (Schreyer and Schrape 2021).

CoopCycle's software provides decentralised infrastructure for local cooperatives but maintains human decision-making over central algorithmic management. The cooperative gives feedback to CoopCycle and requests adjustments to adapt the software to its own needs.

> Gm [founding member] is also involved in this coop platform, which is called CoopCycle. It is an urban French-based ehm cooperative. It is a cooperative called cooperative, it is a cooperative which includes other cooperatives from around Europe and provides them with a network and provides them with ehm, a computer program with dispatching on the platform. (Bike Messenger 2, 2020)

Since 2018, the cooperative has been an active member of the public interest bicycle courier network CoopCycle, which develops overarching legal and technical frameworks for its members. Like the other cooperatives affiliated with CoopCycle, the collective has no direct access to the software code. But constant feedback loops through an online portal and immediate support in case of problems means that it is always possible to adapt the software to their own needs and thus develop it further.

> If you use CoopCycle, then you are CoopCycle. You have a right to co-determination. We can say from our side what is important for further development. And then, of course, we push our things. (Bike Messenger 3, 2019)

The developers at CoopCycle usually deal with the relevant problems promptly; a solution is often implemented within a few minutes. In addition, there is an online portal for further development of the software, where all CoopCycle users can submit change requests for discussion. These are then evaluated by the community and implemented on a case-by-case basis. Errors in the app that could lead to a monetary loss are prioritised.

Although the basic design of the CoopCycle app allows live tracking to follow the work of the riders in real-time, the collective has deliberately chosen not to use this function (Fiedler 2019). This is because live tracking is, in their opinion, the couriers' 'prison'. It increases the stress level for riders since the customers tracking them expect them to keep moving and cannot tell when they need a break or have a flat tyre. The CoopCycle application allows riders to decline orders, and has no quantified and aggregated performance data and no gamification or nudging. However, full-time riders use the tracking app Strava. This self-measurement is voluntary and primarily serves as an exchange between 'bike geeks', independent of the collective. But this ignores the fact that the comparisons among riders and the public sharing of the performance data that they enter establish a reality sui generis. Because Strava motivates its users with reward and warning systems, it turns a lonely form of exercise into an exciting game in which friends and unknown users (based on age, location, gender, similar performance data, etc.) can be involved (Lanzing 2019). These game elements encourage users to constantly measure themselves and compete with others. Game-theoretical factors such as leaderboards based on performance data and rewards such as awards and badges are designed to motivate users and encourage them to constantly log in and improve their performance.

While the cooperative's day-to-day work is inconceivable without the CoopCycle app, the algorithm is not the sole central coordination mechanism, as is the case with commercial delivery platforms. Instead, the functioning of the cooperative enterprise is based on the interplay of diverse digital communication tools, with personal coordination possible at all times. Whereas in the case of the commercial platform company, access to gainful employment (as well as to the use of the service) only functions via the previously created account, the criteria for admission to the collective are tied to certain principles and goals as well as the intrinsic motivation to participate. Communication as the central coordination principle also relies on the jointly shared and used resource of needs-based employment. This only works sustainably for all members

due to an elaborate and long-negotiated system of rules. These jointly established practices ensure community building based on social similarity because all members share a high intrinsic motivation to participate. The aim is to enable all members to combine life and work according to their respective needs. Trust, solidarity, and recognition are indispensable to meeting these goals. However, this creates a culture of constant involvement, which can lead to individual overload and dissolve the boundaries between work and private life.

3.4. Algorithmic Management, the Interplay of Autonomy, Control, and Subjectivation

In both case studies, the algorithmic infrastructure is a central pillar for work coordination. It is pivotal in shaping how these platforms organise and carry out work. This algorithmic system takes control of all coordination tasks and activates work steps sequentially, enabling easy participation by all the parties involved. Algorithmic management is a crucial component, albeit with distinct consequences for each model. In the commercial variant, the associated standardisation does not allow any deviation from the predefined paths (van Doorn 2017; 2020; Duggan et al. 2020). In this commercial setting, fully automated and modularised work coordination significantly limits individual autonomy, turning couriers into monitored variables subject to strict performance controls.

Algorithmic governance influences behaviour through incentives and rewards, with the aim of addressing individual motives and desires (Bröckling 2016; 2017). While the algorithms' mode of operation remains opaque to the workforce (Goods, Veen, and Barratt 2019; Levermann 2018; Wood et al. 2019b), algorithmic management can perform a gatekeeping function and establish an extensive control paradigm through data management. The problem with using software products such as Workday lies in the complexity of collecting and aggregating the data, as it includes emotional tracking (Doellgast 2022).

The commercial platform's algorithmic management tightly controls all aspects of work, leaving riders with little autonomy and no room for deviation from predefined paths. Here, algorithmic management dominates employee management, restricting worker autonomy through technology-mediated rule-setting and modularisation (Veen, Barratt, and Goods, 2020; Kellogg, Valentine, and Christin 2020). Although workers experience some autonomy without a physical employer, algorithmic management remains a constant presence throughout the work process. This corporate platform architecture reinforces the power asymmetry between capital and labour and increases the pressure on the German model of industrial relations (Kirchner 2019). However, autonomy and control are two sides of the same coin. Hence, an imbalance causes resistance, so the self-organised resistance on the part of the riders was not only a logical outcome but led to a revitalisation of the union NGG.

While communication is limited at all levels of the digital proletariat, collective communication is the all-encompassing principle of coordination (Schreyer and Schrape 2021). The rider and the dispatcher are communicatively linked and can thus always reach other agreements that may counter the algorithmically predefined decisions (Spier 2022). Unlike in commercial platform contexts, face-to-face and digital communication provide an essential functional basis for the collective, which consists of equal partners who can take over all tasks and functions at any time if they want to (cf. Bike Messenger 5, 2020, quoted above). The accompanying transparency ensures mutually trusting work relationships and self-determined ways of working without formal hierarchies.

> Even if you, ehm, even if you always try not to have a hierarchy in collectives, it doesn't work one hundred per cent. Some people are longer on board and are therefore more respected, and new people feel like they can't somehow contribute their opinion. (Bike messenger 5, 2020)

Implicit hierarchies have emerged, based on personality, duration of affiliation, communication activity, etc. But members have equal participation and decision-making rights. Communication is all-encompassing, and the cooperative aims to empower members by distributing creative power and allowing rule-setting through consensus or majority vote. Live tracking is deliberately rejected to create a less stressful work environment (Schreyer 2021a). Unlike the commercial platform, face-to-face and digital communication play essential roles in the cooperative, fostering trusting working relationships without formal hierarchies. All members enjoy equal rights of participation and co-determination.

> It requires a lot of communication, but you have to respect the plenum as the authority, then it works. (Bike Messenger 3, 2019)

The cooperative counteracts the atomisation of riders in the classic gig economy by using multiple channels of exchange. The technical infrastructures chosen by the cooperative facilitate internal coordination and agreement. They do not, however, shape the fundamental structure of the collective and they remain an object of social negotiation. The multilayered technical infrastructures, which cannot be reduced to an algorithm that coordinates everything, reduce the susceptibility to errors since there are always fallback options available in the event of disruptions. While the infrastructures used remain a black box, all members of the collective can interact directly with the developers of the CoopCycle app to report bugs in the platform architectures and suggest further developments.

> We do our daily operations with Coop. We dispatch with Coop. And in the end, I think, like the way Coop works, it is basically, we give them feedback and they implement in their system what we actually want them to implement. So, ehm, like: They feed us and we feed them. So, that's how we build a ehm, I don't want it to be called a bubble, because the bubble usually like blister after some time, but we create our own system in this wired digital capitalistic system in which usually the simple worker doesn't have any influence. (Bike Messenger 4, 2020)

The data collected through the software and the aggregation of this data have created new possibilities for control and monitoring, which show that employers' power has dramatically increased compared to the power of employees. The real-time evaluation of feedback, scoring, and the comparison of key figures allow employers to determine the workforce's morale based on the numbers and, subsequently, to implement concrete measures. The quantified presentation of qualitative data conveys the impression of an objective view. This feedback culture aims at the subjectification of labour and results in employee activation through technology designed to increase satisfaction and productivity, thus concealing the alienation experienced by workers. For the riders of the commercial enterprise, this means that any accident, conflict, or delay could also be taken as a reference for future evaluation, discipline, and control. In contrast, this is not equally true of the cooperatively managed enterprise. In the case of the collective, behavioural conditioning is 'voluntary' and external to the company. Since Strava's algorithms cannot know that the members of the collective are self-measuring in the work

context, and that the nudges encourage them to improve performance, it may well be that the incentives encourage riders to ride faster and more dangerously. Regardless of the design and consequences for subjects, it enables real-time data collection, combination, and analysis. This provides a personalised set of options based on behavioural predictions and is thus highly likely to evoke the desired behaviour.

> We do this [gamification; J.S.] with Strava but this is completely different. It is not linked to the business. There is no ranking stuff in Company 2. The only gamification is this gamification we do ourselves by ourselves, but not something work-connected. There is no ranking of how many deliveries people did in a month for Company 2. Because it is not about being the best in town. (Bike Messenger 2, 2019)

As an intensification of existing rationalisation tendencies, the automated mechanisms for quantifying and standardising work practices – to coordinate workers and control their behaviour – appear objective. The stored numbers (working hours and shifts, digital participation, interactions, and individual performance data) generate a 'bigger picture of the truth'**.** The opportunities presented have an implicitly obligatory character. The suggestive power of numbers and the constant comparison with the app's key figures certainly generate pressure, which is reinforced by gamification and (hyper)nudging. While these tools are often praised as encouraging autonomy and agency, fostering employee empowerment, participation, and even well-being, they also exercise 'algorithmic control' (Kellogg, Valentine, and Christin 2020) over employees by guiding and evaluating their performance. In this manner, such applications produce numerical knowledge that makes it possible to describe, compare, and prescribe employee behaviour.

> The whole thing is based on some kind of competitive thinking. That's, uh, complete nonsense, because we're in traffic, you can't just turn the traffic light to green as you need it. You have to be alert all the time, you have to see what the weather is like and where the people live, they live on the fourth floor, that's where you get tired, exhausted, during work. And then perhaps you're no longer focused. And then it's easy to create a competition out of it. And I found that very cheeky, shortly after I became team leader, so it was impertinent what you ask of people. It's probably because people don't know any better and they don't know how to defend themselves. And, because it is such a competition, there are also very ambitious people in team leadership positions. Or even our site manager is also like that. (Senior Rider Captain 1, 2018)

The rejection of algorithmic disciplining allows the members of the community-led platform greater scope for action, but they face other problems:

> Also working collectively as much as it's very rewarding, but there are also different problems that you encounter, it's not all sunshine and rainbows, because there are also, of course, there are always small things that happen between people and we have to clarify that and so on. It's about the individual members too. Arguments can get personal. You always have to like... I mean maybe that's one of the disadvantages compared to like the standard capitalistic structure where your boss is your boss and it's not linked to you. I mean we all, we grow up with hierarchy. So just to throw yourself in a pool of non-hierarchic systems and then say, 'You know, we're all equal and we're getting rid of the things we've

> internalised for years' is not easy. So then there are arguments and then you have this like personal bullshit going on. And when your boss is your boss, he's an asshole, but he's your boss and he tells you what to do. So as you said, it's not only rainbow colours. It's demanding as well. It's also demanding. But, we have a basis, trust, and stuff. (Bike Messenger 1, 2019)

However, increased autonomy comes with blurred boundaries between work and personal life. Moreover, the precarious nature of collective work contexts operating in capitalistically structured markets appears problematic. It is true that the members of the collective have freely chosen their conditions of employment and have consciously decided on the advantages and disadvantages of their activity in individual processes of deliberation. However, the collective can hardly influence the general market conditions, which directly determine the project's scope of action and can quickly threaten the independence it has gained (Bierhoff and Wienold 2010; Pongratz and Simon 2010).

> All work is paid, in any case. Of course, there's a lot of extra work, and there are also a lot of people who don't write down their hours for the extra work. That's a personal decision. (Bike Messenger 2, 2019)

In particular, undercapitalisation in the early years posed an enormous challenge (Hardwig and Jäger 1991). In the initial phase, the willingness to perform unpaid work was high. Overall, however, the collective's focus is not on a profit maximisation strategy but, if anything, on a profit optimisation strategy (Voigt-Weber 1993), aimed at creating new spaces for trusting social relationships and for self-development and self-determination.

> The plan is to, at some point employ working for Company 2 when the business model changes it, at least on the paper. But now, it is like it is always for freelancers. You work and usually, the work you do is paid well, so it includes all the social services and holidays. Ahm, Company 2 is still a young company. It is definitively dedication and not have, having an accident. (Bike Messenger 4, 2020)

At least in part, then, the cooperative overrides standard capitalist logic because the focus is not solely on profit maximisation but also on addressing non-economic needs such as job satisfaction, self-realisation, and co-determination. This social rationality, in contrast to purely economic rationality, focuses on social utility, ecological compatibility, and the members' needs. On the one hand, this leads to a high degree of identification with the collective. On the other hand, it is accompanied by a moral pressure to attend to the concerns of the collective even beyond regular working hours. It blurs the lines between work and personal life as part of the claim of a holistic approach to work and life.

In summary, algorithmic management profoundly impacts platform operations, but its consequences for workers differ significantly between commercial and cooperative platforms. These insights highlight the need for a nuanced understanding of how algorithmic management shapes the gig economy and its implications for workers and society.

4. (Im)Balance of Autonomy and Control

The rise of digital capitalism and platformisation has transformed the world of work. The coexistence of commercial platforms and cooperative alternatives in the complex landscape of digital capitalism and platformisation shows how autonomy and control intersect within the modern workforce. Examining specific examples within the gig economy, we encounter two contrasting narratives. On the one hand, we find that commercial platform companies are often characterised by top-down management, algorithmic governance, and a focus on profit maximisation. These entities dominate the gig economy and exert significant control over their workforce through data-driven surveillance and performance metrics. This tight control, primarily determined by algorithmic management, has led to partial resistance. In order to alter the autonomy-control balance somewhat in favour of gig workers, the idea of establishing institutionalised counter-power structures has gained traction. These initially emerged in the digital realm, mostly on social media platforms, separate from the work platform. To ameliorate their precarious situation and economic dependence, gig workers subsequently established works councils as structures for interest representation, with the assistance of the NGG trade union. These councils now endeavour, with varying degrees of success, to advocate for the concerns of gig workers and thereby shift the imbalance of control and autonomy somewhat.

On the other hand, cooperative platforms, driven by the vision of reshaping the digital economy into a more equitable and participatory model, provide a compelling alternative to traditional commercial platforms. The cooperative model hinges on collective ownership, democratic control, and shared responsibility, embodying a commitment to values like autonomy, cooperation, and community. Here algorithmic management functions not as a central control authority but rather as a digital task list. The software developed by CoopCycle can be seen as an underlying structure that ensures smooth interaction between dispatchers and bike messengers through additional technical applications. The autonomy of the members, established through institutionalised relationships such as plenum decisions, is deemed more important than the control function, which is why features such as live tracking or gamification are absent. In this case, the autonomy-control complex leans more towards autonomy.

The divergent outcomes in these two labour models underscore the critical role of institutionalised relationships. On commercial platforms, these relationships often emerge as a result of labour struggles, ultimately serving as a countervailing power to algorithmic management and the ‘digital aristocracy’. Works councils and collective representation of interests have proven essential in balancing the power asymmetry and pushing for better worker protections. The study highlights the need for labour activists to adapt to the digital era’s unique challenges. It underscores the role of institutionalised relationships as a countervailing power in addressing the power imbalances within platform companies. As workers navigate the challenges posed by algorithmic management and platformisation, labour activists may play a crucial role in educating workers about their rights and providing advocacy support when disputes arise.

Conversely, institutionalised relationships are deeply ingrained in the collective ethos of cooperative endeavours. They foster trust, collaboration, and decision-making grounded in the community’s interests. The cooperative-led platform places communication at the forefront of its operations, emphasising autonomy, cooperation, and community-building. Members of the collective have equal participation and decision-making rights, and technical infrastructures facilitate internal coordination while remaining open to social negotiation. Fallback options reduce susceptibility to errors, and

members can interact directly with developers for platform improvements. The rejection of live tracking fosters a less stressful work environment for riders.

Nevertheless, both labour models grapple with the subjectification of labour, albeit in distinct ways. While algorithmic management in commercial platforms exercises control through data collection and behavioural incentives, the cooperative model emphasises autonomy but faces challenges in delineating work-life boundaries and addressing market-related constraints. In spite of this, the success of cooperative-led models can serve as an example of how to create more equitable and worker-centred gig economy platforms. It may also inspire discussions on the societal benefits of alternative labour models prioritising worker agency.

In conclusion, the presence of institutionalised relationships as countervailing power structures plays a pivotal role in shaping the autonomy-control dynamics within platform companies in the era of digital capitalism and platformisation. These relationships are instrumental in safeguarding worker rights, influencing the balance of power, and facilitating collective organising. The interplay of autonomy and control remains central to understanding the implications of platformisation for workers and the future of labour.

References

Altenried, Moritz. 2021. Was ist eine Plattform? Politische Ökonomie und Arbeit im Plattformkapitalismus. In *Plattformkapitalismus und die Krise der sozialen Reproduktion*, edited by Moritz Altenried, Julia Dück and Mira Wallis, 50-69. Münster: Westfälisches Dampfboot.

Altenried, Moritz, Julia Dück and Mira Wallis, eds. 2021. *Plattformkapitalismus und die Krise der sozialen Reproduktion*. Münster: Westfälisches Dampfboot.

Ametowobla, Dzifa. 2020. Die Plattformarchitektur als Strukturmuster: Ein Plattformbegriff für die soziologische Debatte. In *TUTS - Working Papers*, No. 3: 1-35.

Annalisa Murgia, Lara Maestripieri and Emiliana Armano. 2016. The Precariousness of Knowledge Workers: Hybridisation, Self-Employment and Subjectification. In *Work Organisation, Labour and Globalisation* 10 (2). https://doi.org/10.13169/workorgalaboglob.10.2.0001

Artus, Ingrid. 2008. *Interessenhandeln jenseits der Norm: mittelständische Betriebe und prekäre Dienstleistungsarbeit in Deutschland und Frankreich*. Arbeit - Interessen - Partizipation. Frankfurt/Main: Campus-Verlag.

Bauwens, Michel, Vasilis Kostakis and Alex Pazaitis. 2019. *The Commons Manifesto*. *Critical, Digital and Social Media Studies*. London: University of Westminster Press.

Becker, Carlos and Sandra Seubert. 2020. Die Selbstgefährdung der Autonomie. Eckpunkte einer Kritischen Theorie der Privatheit im digitalen Zeitalter. In *Digitale Transformationen der Öffentlichkeit*, edited by Jan-Philipp Kruse and Sabine Müller-Mall, 229-261. Weilerswist: Velbrück Wissenschaft.

Belk, Russell. 2014. You Are What You Can Access: Sharing and Collaborative Consumption Online. In *Journal of Business Research* 67 (8): 1595-1600. https://doi.org/10.1016/j.jbusres.2013.10.001

Bierhoff, Oliver and Hanns Wienold. 2010. Suchbewegungen. Kooperative Unternehmungen zwischen kapitalistischer Prekarität und solidarischer Ökonomie. In *Prekäres Unternehmertum: Unsicherheiten von selbstständiger Erwerbstätigkeit und Unternehmensgründung*, edited by Andrea Bührmann and Hans Pongratz, 219-244. Wiesbaden: VS Verlag für Sozialwissenschaften.

Bolsinger, Harald J. 2006. *Die Genossenschaft als Kooperationsmodell für symbiotische KMU-Netzwerke: eine Vision zukunftsfähiger Kooperativen für den Mittelstand*. Forschungsinstitut für Genossenschaftswesen Universität Erlangen-Nürnberg.

Boltanski, Luc and Ève Chiapello. 2006. *Der neue Geist des Kapitalismus*. Konstanz: UVK Verlagsgesellschaft.

Botsman, Rachel and Roo Rogers. 2011. *What's Mine Is Yours: How Collaborative Consumption Is Changing the Way We Live*. London: Collins.

Brandl, Barbara. 2021. Dave Elder-Vass: Profit and Gift in the Digital Economy. In *Schlüsselwerke der Wirtschaftssoziologie*, edited by Klaus Kraemer and Florian Brugger, 607-612. Wirtschaft + Gesellschaft. Wiesbaden: Springer Fachmedien Wiesbaden.

Briegleb, Volker. 2022. Lieferando: Firmenfeier ohne Fahrer. In *heise online.* July, 1. Accessed 24 January 2024. https://www.heise.de/news/Lieferando-Firmenfeier-ohne-Fahrer-7160543.html

Bröckling, Ulrich. 2002. Das unternehmerische Selbst und seine Geschlechter: Gender-Konstruktionen in Erfolgsratgebern. In *Leviathan* 30 (2): 175-194.

Bröckling, Ulrich. 2018. Governmentality Studies. In *Sozialpsychologie und Sozialtheorie: Zugänge*, edited by Oliver Decker, 31-45. Wiesbaden: Springer Fachmedien.

Bunders, Damion Jonathan, Martijn Arets, Koen Frenken and Tine De Moor. 2022. The Feasibility of Platform Cooperatives in the Gig Economy. In *Journal of Co-Operative Organization and Management* 10 (1): 100167. https://doi.org/10.1016/j.jcom.2022.100167

Dijck, José van. 2014. Datafication, dataism and dataveillance: Big Data between scientific paradigm and ideology. In *Surveillance & Society* 12 (2): 197-208.

Dijck, José van, David Nieborg and Thomas Poell. 2019. Reframing Platform Power. In *Internet Policy Review* 8 (2). https://doi.org/10.14763/2019.2.1414

Doellgast, Virginia Lee. 2022. *Exit, voice, and solidarity: contesting precarity in the US and European telecommunications industries*. New York: Oxford University Press.

Dolata, Ulrich. 2018. Privatisierung, Kuratierung, Kommodifizierung. Kommerzielle Plattformen im Internet. In *SOI Discussion Paper* 04. Stuttgart.

Dolata, Ulrich. 2019. Plattform-Regulierung. Koordination von Märkten und Kuratierung von Sozialität im Internet. In *Berliner Journal für Soziologie* 29 (3-4): 179-206. https://doi.org/10.1007/s11609-020-00403-9

Doorn, Niels van. 2017. Platform Labor: On the Gendered and Racialized Exploitation of Low-Income Service Work in the 'on-Demand' Economy. In *Information, Communication & Society* 20 (6): 898-914. https://doi.org/10.1080/1369118X.2017.1294194

Doorn, Niels van. 2020. At what price? Labour politics and calculative power struggles in on-demand food delivery. In *Work Organisation, Labour & Globalisation* 14 (1): 136-149.

Duggan, James, Ultan Sherman, Ronan Carbery and Anthony McDonnell. 2020. Algorithmic Management and App-work in the Gig Economy: A Research Agenda for Employment Relations and HRM. In *Human Resource Management Journal* 30 (1): 114-32. https://doi.org/10.1111/1748-8583.12258

Eisenegger, Mark. 2021. Dritter, digitaler Strukturwandel der Öffentlichkeit als Folge der Plattformisierung. In *Digitaler Strukturwandel der Öffentlichkeit: historische Verortung, Modelle und Konsequenzen*, edited by Mark Eisenegger, Marlis Prinzing, Patrik Ettinger and Roger Blum, 17-40. Mediensymposium. Wiesbaden: Springer VS.

Faust, Johanna. 2016. Autonomie. In *Psychologie der Werte*, edited by Dieter Frey, 25-35. Berlin: Springer.

Fiedler, Lena. 2019. Fahrradkuriere: Im Kollektiv gegen die Gig-Economy. In *Die Zeit*, September, 27. Accessed 24 January 2024. https://www.zeit.de/arbeit/2019-09/fahrradkuriere-crow-cycle-courier-collective-nachhaltigkeit/komplettansicht

Foucault, Michel. 2013. *Überwachen und Strafen: die Geburt des Gefängnisses*. Frankfurt am Main: Suhrkamp.

Foucault, Michel. 2015. *Die Wahrheit und die juristischen Formen*. Frankfurt am Main: Suhrkamp.

Foucault, Michel. 2017. *Analytik der Macht*. Frankfurt am Main: Suhrkamp.

Frank, Hermann and Manfred Lueger. 1993. Transformation kooperativen Handelns. Von der Gründung eines selbstverwalteten Betriebes zum erfolgreichen kooperativ geführten Unternehmen. In *Zeitschrift für Soziologie* 22 (1): 49-64.

Fuchs, Christian. 2023. *Der digitale Kapitalismus: Arbeit, Entfremdung und Ideologie im Informationszeitalter*. Arbeitsgesellschaft im Wandel. Weinheim Basel: Beltz Juventa.
Gerling, Wilfried. 2018. Eröffnet die kollaborative Ökonomie den Genossenschaftsbanken neue Chancen? Wenn ja: Wie nutzen sie diese? In *enorm. Weconomy* 1: 35.
Goods, Caleb, Alex Veen and Tom Barratt. 2019. Is Your Gig Any Good? Analysing Job Quality in the Australian Platform-Based Food-Delivery Sector. In *Journal of Industrial Relations* 61 (4): 502-27. https://doi.org/10.1177/0022185618817069
Habermas, Jürgen. 2019. *Handlungsrationalität und gesellschaftliche Rationalisierung*. Theorie des kommunikativen Handelns. Band 1. Frankfurt am Main: Suhrkamp.
Hardwig, Thomas and Wieland Jäger. 1991. *Selbstverwaltung im Betrieb: Fallstudie eines mittelständischen Unternehmens*. Wiesbaden: Gabler.
Healy, Joshua and Andreas Pekarek. 2021. In *Work in the Gig Economy: Pay and Protest at Munchy*. London. https://doi.org/10.4135/9781529753011
Helmond, Anne. 2015. The Platformization of the Web: Making Web Data Platform Ready. In *Social Media + Society* 1 (2): https://doi.org/10.1177/2056305115603080
Hensen, Peter. 2020. Die Rolle der Kontrolle in Organisationen: Konzeptionen und Nutzenaspekte eines facettenreichen Begriffs. In *Gruppe, Interaktion, Organisation* 51: 223-34.
Huws, Ursula. 2016. Logged labour: a new paradigm of work organisation? In *Work Organisation, Labour & Globalisation* 10 (1): 7-26.
Kellogg, Katherine C., Melissa A. Valentine and Angèle Christin. 2020. Algorithms at Work: The New Contested Terrain of Control. In *Academy of Management Annals* 14 (1): 366-410. https://doi.org/10.5465/annals.2018.0174
Kirchner, Stefan. 2019. Arbeiten in der Plattformökonomie: Grundlagen und Grenzen von ‚Cloudwork' und ‚Gigwork'. In *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie* 71 (1): 3-25. https://doi.org/10.1007/s11577-019-00587-w
Kirchner, Stefan and Elke Schüßler. 2019. The Organization of Digital Marketplaces: Unmasking the Role of Internet Platforms in the Sharing Economy. In *Organization outside Organizations*, edited by Göran Ahrne and Nils Brunsson, 131-154. Cambridge University Press. https://doi.org/10.1017/9781108604994.006
Kirchner, Stefan and Matiaske Wenzel. 2020. Plattformökonomie und Arbeitsbeziehungen – Digitalisierung zwischen imaginierter Zukunft und empirischer Gegenwart. In *Industrielle Beziehungen. Zeitschrift für Arbeit, Organisation und Management* 27 (2): 105-119. https://doi.org/10.3224/indbez.v27i2.01
Kleemann, Frank and Günther Voß. 2018. Arbeit und Subjekt. In *Handbuch Arbeitssoziologie: Band 2: Akteure und Institutionen*, edited by Fritz Böhle, Günter Voß and Günther Wachtler. Wiesbaden: Springer Fachmedien Wiesbaden.
Kleemann, Ingo, Ingo Matuschek and Günther Voß. 2002. Subjektivierung von Arbeit - Ein Überblick zum Stand der soziologischen Diskussion. In *Subjektivierung von Arbeit*, edited by Manfred Moldaschl and Günther Voß, 415-450. München: Rainer Hampp.
König, Pascal D. 2020. Dissecting the Algorithmic Leviathan: On the Socio-Political Anatomy of Algorithmic Governance. In *Philosophy & Technology* 33 (3): 467-85. https://doi.org/10.1007/s13347-019-00363-w
Lanzing, Marjolein. 2019. "Strongly Recommended" Revisiting Decisional Privacy to Judge Hypernudging in Self-Tracking Technologies. In *Philosophy & Technology* 32 (3): 549-68. https://doi.org/10.1007/s13347-018-0316-4
Lata, Lutfun Nahar, Jasmine Burdon and Tim Reddel. 2023. New Tech, Old Exploitation: Gig Economy, Algorithmic Control and Migrant Labour. In *Sociology Compass* 17 (1). https://doi.org/10.1111/soc4.13028
Levermann, Thomas. 2018. Wie Algorithmen eine Kultur der Digitalität konstituieren: Über die kulturelle Wirkmacht automatisierter Handlungsanweisungen in der Infosphäre. In *Journal für korporative Kommunikation* 2: 31-42.
Mauss, Marcel. 2016. *Die Gabe: Form und Funktion des Austauschs in archaischen Gesellschaften*. Frankfurt am Main: Suhrkamp.

Minssen, Heiner. 2023. Rationalisierung. In *Lexikon der Arbeits- und Industriesoziologie*, edited by Rainer Bohn, Hartmut Hirsch-Kreinsen, Sabine Pfeiffer and Mascha Will-Zocholl, 322-326. Baden-Baden: Nomos Verlagsgesellschaft.

Muldoon, James. 2022. *Platform Socialism: How to Reclaim Our Digital Future from Big Tech*. London: Pluto Press.

NGG. 2024. Gewerkschaft NGG: Zahl der Mitglieder steigt. Accessed 24 January 2024. https://www.ngg.net/presse/pressemitteilungen/2024/gewerkschaft-ngg-zahl-der-mitglieder-steigt/

Pentzien, Jonas. 2021. Vom Plattform-Kapitalismus zum Plattform-Kooperativismus? Potenziale und Grenzen kooperativer Unternehmungen. In *Plattformkapitalismus und die Krise der sozialen Reproduktion*, edited by Moritz Altenried, Julia Dück and Mira Wallis, 274-292. Münster: Westfälisches Dampfboot.

Piletić, Aleksandra. 2023. Continuity or Change? Platforms and the Hybridization of Neoliberal Institutional Contexts. In *Review of International Political Economy*, Juni: 1-25. https://doi.org/10.1080/09692290.2023.2220088

Polanyi, Karl. 2021. *The Great Transformation: politische und ökonomische Ursprünge von Gesellschaften und Wirtschaftssystemen*. Berlin: Suhrkamp.

Pongratz, Hans and Stefanie Simon. 2010. Prekaritätsrisiken unternehmerischen Handelns. In *Prekäres Unternehmertum: Unsicherheiten von selbstständiger Erwerbstätigkeit und Unternehmensgründung*, edited by Andrea Bührmann and Hans Pongratz, 25-60. Wiesbaden: VS Verlag für Sozialwissenschaften.

Popitz, Heinrich. 1995. *Der Aufbuch zur Artifiziellen Gesellschaft: zur Anthropologie der Technik*. Tübingen: J.C.B. Mohr.

Reckwitz, Andreas. 2017a. *Die Gesellschaft der Singularitäten: Zum Strukturwandel der Moderne*. Berlin: Suhrkamp.

Reckwitz, Andreas. 2017b. Zwischen Hyperkultur und Kulturessenzialismus. Die Spätmoderne im Widerstreit zweier Kulturalisierungsregime. In *bpb*. Accessed 24 January 2024. https://www.bpb.de/themen/parteien/rechtspopulismus/240826/zwischen-hyperkultur-und-kulturessenzialismus

Rifkin, Jeremy. 2014. *Die Null Grenzkosten Gesellschaft: das Internet der Dinge, kollaboratives Gemeingut und der Rückzug des Kapitalismus*. Frankfurt: Campus Verlag.

Rosenblat, Alex and Luke Stark. 2016. Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers. In *International Journal of Communication*, Nr. 10: 3758-3784.

Rosenblat, Alexander. 2018. *Uberland: How Aglorithms Are Rewriting the World of Work.* Berkeley: University of California Press.

Rouvroy Antoinette. 2013. The end(s) of critique: data behaviorism versus due process. In *Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology*, edited by Mireille Hildebrandt and Katja de Vries, 143-167. London: Routledge.

Saner, Raymond, Lichia Yiu and Melanie Nguyen. 2019. Platform Cooperatives: The Social and Solidarity Economy and the Future of Work: A Preliminary Assessment of Platform Capitalism and Platform Cooperativism and their Effects on Workers' Satisfaction. In *UNTFSSE International Confercence*, Geneva.

Scholz, Trebor. 2014. Platform Cooperativism vs. the Sharing Economy. In *Medium.* Accessed 24 January 2024. https://medium.com/@trebors

Schor, Juliet B. and Steven P. Vallas. 2021. The Sharing Economy: Rhetoric and Reality. In *Annual Review of Sociology* 47 (1): 369-89. https://doi.org/10.1146/annurev-soc-082620-031411

Schreyer, Jasmin. 2020. Sharing ≠ Sharing Economy. Ausprägungen der digitalen Sharing Economy im Lebensmittelsektor. In *SOI Discussion Paper 03.* Stuttgart.

Schreyer, Jasmin. 2021a. Soloselbständige Erwerbsarbeit in der Plattformökonomie. Am Beispiel eines selbstverwalteten Fahrradkurierunternehmens. In *Gesellschaft unter*

Spannung. Verhandlungen des 40. Kongresses der Deutschen Gesellschaft für Soziologie 2020, edited by Brigit Blättel-Mink, Digital.

Schreyer, Jasmin. 2021b. Algorithmic management versus organising protest and co-determination? The case of Foodora/Lieferando in Germany. In *Studi Organizzativi* 1 (1): 105-128. https://doi.org/10.3280/SO2021-001005

Schreyer, Jasmin. 2022. Digitale Subjekte in der Plattformökonomie: Datenschutz als zentrale Machtfrage. In *Künstliche Intelligenz, Demokratie und Privatheit*, edited by Michael Friedewald, Alexander Roßnagel, Jessica Heesen, Nicole Krämer and Jörn Lamla, 131-152. Nomos Verlagsgesellschaft.

Schreyer, Jasmin and Jan-Felix Schrape. 2018. Algorithmische Arbeitskoordination in der plattformbasierten Gig Economy: Das Beispiel Foodora. In *Arbeits- und Industriesoziologische Studien* 11 (2): 262-278.

Schreyer, Jasmin and Jan-Felix Schrape. 2021. Plattformzentrierte Arbeitskoordination im kommerziellen und kooperativen Fahrradkurierwesen. In *Arbeit* 30 (4): 283-306. https://doi.org/10.1515/arbeit-2021-0020

Seligman, Martin E. P. 2011. *Flourish: a visionary new understanding of happiness and well-being*. New York: Free Press.

Shapiro, Aaron. 2018. Between Autonomy and Control: Strategies of Arbitrage in the "on-Demand" Economy. In *New Media & Society* 20 (8): 2954-2971. https://doi.org/10.1177/1461444817738236

Spier, Shaked. 2022. The Ethics and Politics of Platform Cooperatives. In *Institute for the Cooperative Digital Economy.* Twente.

Srnicek, Nick. 2017. *Platform capitalism*. Theory redux. Cambridge: Polity.

Sundararajan, Arun. 2016. *The sharing economy: the end of employment and the rise of crowd-based capitalism*. Cambridge: MIT Press.

Tassinari, Arianna and Vincenzo Maccarrone. 2020. Riders on the Storm: Workplace Solidarity among Gig Economy Couriers in Italy and the UK. In *Work, Employment and Society* 34 (1): 35-54. https://doi.org/10.1177/0950017019862954

Thaler, Richard H. and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth and Happiness*. New Haven: Yale University Press.

Thompson, Paul and Chris Smith. 2009. Labour Power and Labour Process: Contesting the Marginality of the Sociology of Work. In *Sociology* 43 (5): 913-930. https://doi.org/10.1177/0038038509340728

Törnberg, Petter. 2023. How Platforms Govern: Social Regulation in Digital Capitalism. In *Big Data & Society* 10 (1). DOI: https://doi.org/10.1177/20539517231153808

Veen, Alex, Tom Barratt and Caleb Goods. 2020. Platform-Capital's 'App-Etite' for Control: A Labour Process Analysis of Food-Delivery Work in Australia. In *Work, Employment and Society* 34 (3): 388-406. https://doi.org/10.1177/0950017019836911

Voigt-Weber, Lore. 1993. *Inklusive Organisationen: Genese, Struktur, Chancen selbstverwalteter Betriebe*. Wiesbaden: DUV.

Walker, Michael, Peter Fleming and Marco Berti. 2021. 'You Can't Pick up a Phone and Talk to Someone': How Algorithms Function as Biopower in the Gig Economy. In *Organization* 28 (1): 26-43. https://doi.org/10.1177/1350508420978831

Weber, Max. 1984. *Soziologische Grundbegriffe*. Tübingen: Mohr.

Wittel, Andreas. 2020. Die Zukunft der Arbeit in der digitalen Welt. In *Handbuch Soziale Praktiken und Digitale Alltagswelten*, edited by Heidrun Friese, Marcus Nolden, Gala Rebane and Miriam Schreiter, 149-157. Wiesbaden: Springer.

Wood, Alex J. 2021. Algorithmic Management Consequences for Work Organisation and Working Conditions. In *JRC Working Papers Series on Labour, Education and Technology*, Working Paper 2021/07.

Wood, Alex J., Mark Graham, Vili Lehdonvirta and Isis Hjorth. 2019. Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy. In *Work, Employment and Society* 33 (1): 56-75. https://doi.org/10.1177/0950017018785616

Zhu, Jiang and Olivera Marjanovic. 2021. A Different Kind of Sharing Economy: A Literature Review of Platform Cooperatives. In *International Conference on System Sciences*. Hawaii.

Zuboff, Shoshana. 2018. *Das Zeitalter des Überwachungskapitalismus*. Frankfurt: Campus Verlag.

About the Author

Jasmin Schreyer
Jasmin Schreyer: *2020-2023* Researcher at the Institute of Sociology, Chair of Technology, Work, Society, Friedrich-Alexander University Erlangen-Nuremberg. She is working in the coordination project of the DFG Priority Program: The Digitalisation of Working Worlds. From 2017-2020 she was an academic assistant at the Institute of Social Sciences, Department of Organisational and Innovation Sociology, University of Stuttgart; working in a Hans-Boeckler Foundation project with the title: Digital Project Communities as Innovation Incubators.