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Labour Struggles in Digital Capitalism: Challenges and Opportunities for Worker Organisation, Mobilisation, and Activism in Germany

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Abstract: In this article, we investigate labour struggles under the condition of digital capitalism. The main research question we address is: How do German unions evaluate and respond to the rapidly accelerating digitalisation of economy and work? Based on a series of interviews with union representatives in Germany, we trace recent developments within an increasingly digitised economy, outlining challenges and opportunities for unions. Our findings show that the large-scale deployment of digital technologies fragments the workforce, reduces social standards, worsens working conditions, and exacerbates power imbalances to the detriment of the employed. These disadvantages are only insufficiently met with new opportunities to raise public awareness and connect with and mobilise workers by means of digital communication technologies. Our study suggests a growing significance of technological expertise for unions, a need to meet global capital with enhanced international and regional cooperation among labour organisations, and the importance of uniting established unions and grassroots workers' movements in shared struggles to improve the situation of workers under technology-enhanced conditions of globalised exploitation and control.

Keywords: digital capitalism, platform capitalism, labour struggle, unions, platform work, gig work, algorithmic management, surveillance, control, grassroots unions, Germany

1. Introduction

In January 2021, Amazon rolled out Mentor in its US logistics centres – a new app allegedly designed to increase the safety of workers who drive vans for last-mile delivery of ordered products (Palmer 2021). The app had to be installed on private phones used for work and was calibrated to automatically register a series of factors assumed to give indications about driving style and habits such as speeding, intensity of braking, safety belt and mobile phone use, and more. However, Mentor was not only designed to increase efficiency and nudge drivers into safer conduct, but also to audit them. The gathered data was employed to rank drivers on a scale from "fantastic+" to "poor", and the results had an impact on issues such as payment, scheduling, and even further employ-

ment. The way the data was acquired, the logics behind the analysis, and the implications of the produced results remained opaque to drivers, who were unable to issue complaints against disciplinary actions perceived as unfair or based on mistakes. In this, Mentor exhibits traits that are typical for the ways digital technologies are used to exploit, direct, evaluate, and discipline workers under the current condition of digital capitalism. As such, they merit continued critical attention from the side of academics, activists and, most importantly, labour organisations.

The case referred to above highlights key issues at stake in this article. In the following, we present data from a series of interviews we conducted with union representatives in Germany to investigate how unions reflect upon such conditions. This article addresses the main research question: How do German unions evaluate and respond to the rapidly accelerating digitalisation of economy and work? This overall research focus is broken down into three sub-questions that guided data collection and analysis:

1) What do German unions perceive as key challenges and opportunities of enhanced digitalisation?
2) By which means do unions address the identified challenges, and how do they attempt to seize perceived opportunities?
3) What concrete changes in terms of tactic, strategy, and structure are seen as necessary or desirable?

Before we present our findings and draw conclusions, we will offer an overview of earlier studies on labour struggles in a digital era. We move from research addressing general trends toward labour-related themes and finally home in on specific conditions in Germany that are most relevant to our inquiry. In this way, we contextualise our own data and further corroborate our main conclusions.

2. Gig Economy, Platform Labour, and Algorithmic Control of Work: Tendencies, Dynamics, and Implications of Digital Capitalism for Workers and Unions

2.1.   General Trends and Dynamics

Today, digital technologies affect all areas of life and work and have become helpful or outright necessary tools for almost all conceivable purposes. As a rapidly growing number of scholars have shown, however, the apparently convenient, smooth, and friction-free 'solutions' to everyday challenges and needs have a 'dark side' and come at an increasingly significant cost to societies, the environment, and the freedom, autonomy, and well-being of citizens (Harcourt 2015; Pasquale 2015; O'Neil 2016; Qiu 2016; Eubanks 2018; Couldry and Mejias 2019; Zuboff 2019; Fuchs 2021; Crawford 2021; Trittin-Ulbrich et al. 2021).

Several studies have already directed focus at the implications of rapidly emerging digital technologies for work, labour relations and the economy (Scholz 2013; 2017; Fuchs 2014; Srnicek 2016; Staab 2019; Woodcock and Graham 2020; Gandini 2021). Philipp Staab (2019), for instance, has shown that investments in the digital and platform economy are often driven by considerations for quick increases in stock market value rather than long-term prospects for sustainable profits. This, he argues, creates pressures to enhance efficiency at all costs, not only impacting new digital and platform businesses but also the established companies forced to compete with them. According to Staab, the burdens of such adaptations are to a large extent shouldered by workers. In his study on the changing nature of work in the digital economy, Trebor Scholz (2017) makes a similar argument that outlines how both individual workers and labour organisations can productively respond to such conditions by, for instance, acquiring the necessary expertise and means to develop alternative technical solutions such as platform

cooperativist applications (155ff.; see also Scholz and Schneider 2017; Ferrari and Graham 2021). Srnicek (2016) and Woodcock and Graham (2020) have laid out additional elements and consequences of this turn towards what they refer to as work under platform capitalism and the gig economy respectively (see also van Doorn 2017; Mrvos 2021; Henning 2021).

The technologies behind digital capitalism have a considerable impact on how work is organised in many sectors. Increasingly, algorithmic systems are developed and deployed that micro-coordinate workflows, schedule working hours, and surveil, audit, control, and profit from employees in an unprecedented fashion (Adler-Bell and Miller 2018; Mateescu and Nguyen 2019; Sánchez-Monedero and Dencik 2019; Kellogg et al. 2020; Ajunwa 2020). These practices have complex implications for workers, unions, and other labour organisations manoeuvring in this relatively new terrain.

For instance, the way Amazon surveils, directs, and micro-manages its workforce without possibility for feedback or appeal, in order to radically increase efficiency and reduce costs (Palmer 2021), has negative impacts on the working conditions of employees in retail businesses forced to compete with Amazon (Apicella 2021; Beverungen 2021). Simultaneously, digital platforms make hiring and firing easier than ever. Most workers in this sector are not formally employed but treated as 'partners' who can be up- or downgraded and deleted from databases or websites whenever it suits the platform owner (Scholz 2017; Kellogg et al. 2020). Global digital networks also make it possible to play out national or regional workers against each other and undermine their activities by redistributing tasks across national and regional borders (Scholz 2017; Adler-Bell 2018). As Felix (2020) observes, a 'platformisation and uberisation of work' makes a hyper-circulation possible that adjusts wages and regulations to minimal standards in a global race to the bottom, thus leading to increased precarisation and a fragmentation of the workforce. Digital platforms also create new sources of profit by enabling a monetisation of worker data assembled by surveilling interactions on company platforms (Sánchez-Monedero and Dencik 2019; Kellogg et al. 2020; Ajunwa 2020).

The aspects mentioned above have been of concern to workers, unions, and other labour organisations for some time and have led to attempts at adjusting structures and practices in line with the new conditions and challenges (Brophy 2009; Scholz and Schneider 2017; Neilson 2018; Tassinari and Maccarrone 2020; Englert et al. 2020; Henning 2021; Mrvos 2021). As, for instance, Scholz (2017, 168) writes, current developments demand "inventive unions" capable of actively appropriating technologies of power and developing their own solutions to efficiently coordinate and bundle responses by workers ranging from unpaid interns via TaskRabbit users and Uber drivers to highly qualified tech workers. Here, technological expertise emerges as crucial to the ability of unions to efficiently engage in labour struggles across sectors, regions, and national borders. Neilson (2018) brings together Marxist autonomist approaches with information-society thinking when he fleshes out current tensions between different forms of organising labour under such conditions of globalised digital capitalism. We will now see how this situation plays out in a German context.

2.2.   Digital Capitalism, Unions, and Workers in Germany

In the present article, we narrow our focus to the ways in which digital capitalism recalibrates labour relations and worker organisation in Germany. More accurately, we investigate how German union representatives perceive challenges and opportunities posed by the emergence of platforms, the gig economy, and algorithmic forms of management and control. Before turning to this data, however, we take a closer look at earlier studies

that have directed attention to how trade unions and grassroots workers' initiatives in Germany approach these problems and dynamics.

In his study about Germany's contemporary digital economy, Simon Schaupp (2021) distinguishes between two main dynamics of change and adaptation: 1) cybernetic proletarianisation and 2) technopolitics from either above or below. According to Schaupp, the first is characterised by recurrent dynamics of de-qualification, automation, and the replacement of human workers. Algorithmic micro-management first concentrates and de-skills tasks and then fully automates them. In this process, workers are de-qualified, precarised and then substituted, before being reintegrated into other sectors under even more precarious conditions. Schaupp states that union and worker responses to these processes take the form of technopolitics – an interaction of unions, companies, and the state at the level of institutional procedures that is characteristic of a German social partnership (from above) and spontaneous grassroots worker initiatives (from below).

Schaupp demonstrates how the constant tensions between cybernetic proletarianisation and technopolitics play out across three key arenas of German society: 1) a regulatory arena where state, business, and established unions negotiate binding juridical and other frameworks, 2) an arena of implementation where concrete technical solutions are developed and deployed at company level, and 3) an arena of appropriation where the actual functioning and use of new technologies is negotiated, and realised or resisted, in practice. Workers and labour organisations, writes Schaupp, engage in each of these arenas when attempting to co-determine the overall direction and consequences of rapidly progressing processes of digitalisation. In the arena of appropriation in particular, an antagonistic technopolitics from below, driven by grassroots movements and syndicalist unions, aims at developing a counterweight to the institutional technopolitics typical of the German model of social partnership between established unions, major business organisations, and key state institutions (see also Englert et al. 2020).

In a recent study for the Rosa Luxemburg Foundation, Butollo and Gaus (2021) have expanded upon the issue of labour organisation, mobilisation and struggle under the conditions of digital capitalism. In their practice-oriented approach, they take a series of recent high-profile labour struggles in Germany and other European countries as departure points and explicate how both established and grassroots unions can productively employ available digital technologies in support of their struggles. According to Butollo and Gaus, digital tools can be used productively to support, mobilise, and connect with a fragmented workforce without shared physical company locations (the platform model), to strengthen collective identity and solidarity among workers, to increase participation and control of union leadership from below, and to foment new alliances, as well as to spread information and influence public opinion.

Many of the concrete instruments available for Schaupp's (2021) technopolitics from below identified by Butollo and Gauss (2021) recur in recent studies about worker mobilisation and struggles at Amazon locations in Italy and Germany and among riders in the food-delivery sector in Berlin (Apicella 2021; de Greef 2020; Wälz 2021). Findings point to an increased necessity to coordinate activities across sectors and national boundaries, and to bring together grassroots movements and established unions in shared struggles for common goals. In particular, de Greef's (2020, 31) adaptation of the concept of "strategic unionism" to the conditions of a precarious, de-localised, and fragmented workforce typical for the digital economy and Apicella's (2021, 83) demand to established unions to adjust their practices to the lifeworlds and experiences of both organised and unorganised workers are important contributions. Henning (2021) has directed attention to attempts at organising highly skilled tech and gig workers in Germany.

In this article, we explicitly draw upon and confirm some of the findings of these authors. At the same time, we offer new insights about the understandings and practices of German unions engaged in labour struggles under the condition of digital capitalism. In particular, our data speaks to the following aspects, which did not receive sufficient attention in earlier studies:

1) COVID-19-related recalibrations of the relationship between digital technologies, employers, unions, and workers;

2) implications of rapid digitalisation for state-driven school education and research;

3) updates on currently ongoing discussions about union tactics and strategies in encounters with platform companies, gig work and algorithmic management;

4) new advances to enhance cooperation across sectors and nations as well as between grassroots organisations and established unions.

3. Method

Our contribution is based on a series of 13 semi-structured qualitative interviews with union representatives that were carried out at various locations in Germany and via Zoom between April and December 2021. Of our 13 informants, 12 were members of unions or other labour organisations and had roles and responsibilities that were relevant to our inquiry. Interview partners were sampled through a snowball method where personal contacts led to an initial round of conversations during which additional relevant candidates for interviews were identified and later contacted.[1]

Our selection of interview partners reflected our research interests concerning the perspective of unions on implications of processes of digitalisation in different sectors of the German economy. To gain an understanding of challenges and opportunities in an increasingly platform-based food-delivery sector, we interviewed two representatives of the Food, Beverages, Catering Industry Union (Gewerkschaft Nahrung-Genuss-Gaststätten; NGG) who are responsible for this segment of the union's operations. Subsequently, we balanced their institutional perspective with insights from one coordinator of the grassroots riders' organisation Gorillas Workers Collective (GWC) and one rider organised in the NGG. Here, our focus was on possible cooperation between established unions and ad-hoc workers' movements in a sector with, so far, low degrees of organisation. We then moved on to address challenges experienced by unions operating in the retail and logistics sector, where Amazon in particular has introduced new digital surveillance and management technologies and actively plays workers off against one another across national boundaries. We interviewed three functionaries of the United Services Trade Union (Vereinte Dienstleistungsgewerkschaft; Ver.di) to learn more about how labour struggles against globally operating tech-savvy corporations can be conducted. One interview with a representative of the Industrial Union of Metal Workers (Industriegewerkschaft Metall; IG Metall) balanced our account: this interviewee is responsible for highly qualified and well-paid gig workers operating at the innovation centre of a large German car manufacturer and voices the perspective of a segment of the workforce that seems to profit from the increased flexibility of digitised workflows and a de-regulated global labour market. Next, we turned our attention to issues of teaching, learning, and knowledge production in a digital era. In interviews with four representa-

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[1] Unfortunately, our selection of informants suffers from a severe gender imbalance with only two female interview partners. This imbalance was maintained despite our efforts to get into contact with additional sources. Several female interview partners either did not respond, pointed to male replacements, or declined to be interviewed.

tives of the Education and Science Workers' Union (Gewerkschaft Erziehung und Wissenschaft; GEW) we gathered data on how work and conditions for mobilisation of employees in this sector have changed. Finally, we added one interview with a tech activist associated with the Chaos Computer Club (CCC) to gain an overview of possible cooperation between unions and civil society organisations. In all interviews the changes due to the COVID-19 pandemic played a role. However, we deliberately bent our conversations away from these emergency conditions to ensure that our data also retained validity for conclusions pointing to general trends characteristic of labour struggles in a digital era, such as those identified by Scholz (2017), Schaupp (2021), de Greef (2020), Apicella (2021), and Henning (2021).

The interviews lasted between 45 minutes and two hours. Most were held in German and a few in English. The interviews were recorded and later transcribed and anonymised. After transcription was complete, the recordings were deleted. For citation in this article, we used pseudonyms ('Informant 1–13'). We translated the specific parts of the interviews we wanted to refer to but refrained from transferring entire transcripts into English. All interview partners received our contact details and were informed about their rights and our obligations in line with established research ethical frameworks. In all phases of the research process, we ensured that no names or other identifying details of our informants were made public. We also took precautions not to publish anything that might hamper future union work and attempts to organise or that would make available any of the tactics used by platform workers to trick or game the systems managing their workdays.

4. German Trade Unions in Digital Capitalism: Problems, Pitfalls, and Potentials

In the following sections, we present findings from the analysis of our interviews with union representatives about the changing conditions for labour and labour struggle in Germany. When working with our data, three salient themes emerged: 1) changes in working conditions and a redistribution of power between capital owners and workers, 2) new challenges and opportunities for labour organisations and worker mobilisation, and 3) new dynamics between traditional and activist approaches to unionism and between regional/national as well as international/global dimensions of labour struggles. Based on our findings, we offer a series of concluding recommendations for union work in digital times.

4.1. Changing Working Conditions and Power Relations Under Digital Capitalism

Through our analysis of the collected interview data we were able to identify four themes referenced as important elements of changing working conditions and power relations under digital capitalism: 1) a blurring of boundaries between work and private life, 2) increased outsourcing of costs from companies to workers, 3) enhanced workplace surveillance that also encroaches on private spheres, and 4) an obscurity of the logics and functionalities of the algorithmic systems (e.g. apps) that organise work life. We will more closely examine each point with reference to our data below.

A majority of the workers and union representatives we interviewed were concerned about what they describe as severe shifts in work-life balance connected to the platform and gig economy and "possible spillovers of new business models […] from digital to traditionally organised companies" (informant 4). One dimension of this problem is the increased use of private tools for work-related purposes (e.g. riders using their own mobile phones and bikes, Uber drivers their own cars and insurance policies). Another is that apps as well as digital platforms make it possible for platform workers to interact

with customers and employers on a 24/7 basis. This enforces a state of almost permanent availability and therefore alertness and stress. According to most of our informants this has negative consequences for employees' mental health, sleeping patterns, and general sense of security.

Informant 5, from Ver.di, tells us about conditions at Amazon and connects this to issues of general worker welfare and workplace safety:

> When I finally get home […] I continue typing and packing. You bring the work with you. And as a burden. As something you are not finished with yet. And with this same anxiety you go to work again the next morning. Therefore, the question of algorithms versus safety and occupational health is not abstract at all.

Directing attention to the use of apps and other digital devices as communication tools for teachers, students, and parents, informant 6, from GEW, connects the debate to COVID-19-related changes:

> [During the pandemic] colleagues were sitting in front of their computers all day until late in the evening and could hardly take breaks. The expectation of accessibility on the part of students and parents has also increased massively.

The problems described by informants 5, 6, and others were exacerbated by the COVID-19-related lockdowns. However, our informants agreed that the pandemic did not initiate this process and that the developments are likely to continue after the current crisis is officially over.

According to informant 8, from GEW, and others, currently most unions are poorly prepared and inadequately staffed to deal with strong pressures to introduce new digital devices. He told us that "in our organisation [GEW], we are quite slow, almost sedate. We need a lot of time to adapt to new processes and to integrate them into union work". This is not an unfamiliar situation for representatives of other unions.

Well-established unions in sectors with strongly institutionalised workers' participation, however, have created better conditions for a critical follow-up of new digital technologies. As informant 3 tells us, IG Metall at BMW has its own workers' council delegate responsible for questions of digitalisation. Considering what other informants told us, this example of 'institutional' and 'company-based' cooperative technopolitics (Schaupp 2021) must be seen as one effect of the very high degree of unionisation and a specific corporate culture at BMW. As Schaupp has pointed out, institutionalised cooperation often holds unions co-responsible for the introduction of allegedly necessary digital tools for the sake of retaining their influence. The innovations then deteriorate working conditions and thus undermine the legitimacy of unions among workers on the ground exposed to these 'solutions'.

Digital technologies also enable new and more efficient forms of management. Informants 4 and 5, working in the retail sector and having roles at the union Ver.di, described increased stress levels and anxiety due to technologies that prescribe worker tasks and movement patterns at Amazon warehouses in an increasingly detailed manner. Informant 5 states that

> when I stand at a shelf at Amazon and take a breath for two minutes, I already receive three warnings. Because the algorithmic timing device determines that one needs X minutes and X seconds for this route. And if a worker remains standing there for more than 30 seconds, an alarm goes off.

Such new devices of management are often combined with gamification tools that pit individual workers against one another. The same informant tells us that

> when you break down how algorithms and AI are used [at Amazon], one can say: how can you get employees to enter into an even more crass competition with one another. Earlier, in the retail sector, whole chain stores were compared to one another. This is not any longer relevant. Today [the comparison] is broken down to single divisions and inside divisions to individual workers.

As Apicella (2021) notes, the Amazon workers she interviewed in Germany and Italy presented similar conditions as important reasons to go on strike.

Similar problems connected to digital technologies arise in purely platform-based businesses such as Uber or various food-delivery services. Our informants lament the anonymity and unpredictability of job assignment and customer feedback practices, as well as the rewarding and disciplining measures by means of apps and other algorithmic systems, the operational logics of which usually remain opaque. Informant 11, representing the GWC and working in the food delivery sector, states that

> there is the option to track who delivers how much per hour. […] One [the dispatcher[2]] sees who worked more, who worked less, and who was sitting around for how much time. But [the system] also ignores some instances: when you do not ride one day but work inside. Or when you had an accident, or the order needs to be delivered to the fifth floor […]. All these are factors, because of which you at some times are slower and other times faster. And these are not considered.

As the informant explains further, it often remains opaque to users if the dispatcher is a human being or a bot.

Surveillance constitutes a crucial condition for the practices of micro-management, commodification and control presented above, and digital solutions tend to enhance the ability of employers to surveil workers, as such exacerbating an already significant power imbalance to the detriment of the employed. In the interviews we conducted, interview partners drew attention to two types of surveillance – workplace/workflow-related surveillance and surveillance of workers' attempts to mobilise and organise.

Informant 5, from Ver.di, tells us about the difficulties surveillance-driven micro-management of workflows creates for mobilisation and activism.

> When you isolate people like it is done at Amazon where you work with 800 people in a huge hall but for 8 hours you hardly have any contact with others and that only when you go to the toilet. This, of course, makes union work more difficult.

Informants 6 and 7, from GEW, extended the problem of surveillance to the state-driven educational sector (for a US-based study with a similar focus, see Overtz 2021). Informant 6 explains how certain school principals had created fake student profiles to access restricted spaces on learning management systems and attended digital lessons without permission by teachers. "In principle", he tells us, "this is no different from setting up a camera in every classroom […] there was a complete lack of awareness among certain school leaders that this might be problematic".

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[2] A dispatcher is a company employee who – in the case of the food-delivery sector – distributes orders to riders and oversees delivery.

Yet another form of surveillance criticised by union representatives is the capacity of employers to surveil workers' spare time and private activities. Informants 10 (NGG) and 11 (GWC) expressed the suspicion that the company apps riders use also track their movements and gather other types of data about their performances even after shifts are over. Informant 11 explains that "[the app] can even track us when we do not use it. Even when it is turned off, it continues to use your GPS". In addition, by creating fake profiles on social media, employers can map connections among employees and gain access to their networks. This can help managers to undermine attempts to mobilise, organise, and unionise at a very early stage. This is particularly problematic in sectors such as platform-based food-delivery services. There, labour organisations so far only exist in rudimentary form and are hence comparably weak and often unable to launch an efficient defence, as explained by informants 1 (NGG) and 13 (Ver.di).

However, social media surveillance is also a potential tool to undermine worker mobilisation and strikes in sectors where established unions have a comparably strong standing. As informant 4 (Ver.di) explains, representatives often end up being at the mercy of certain courts.

> But there are courts in Bavaria where you might lose such things [issues of surveillance to undermine union work]. Then the constitution does not matter much. In particular, Facebook accounts are scanned. There are people [working for employers] who look at such things.

Finally, informant 8, from GEW, draws attention to the detailed data Microsoft 365 acquires about employees regarding app use, network activities, and working times.

> Microsoft Office 365 offers features for control and as soon as such things are available there will be people who use them. If this is not disabled technologically these options for control will be used. And often one will prevent people even from tracing who did the controlling.

This confirms revelations by Schüler (2021) and Hern (2020), among others, about the potentials for surveillance and auditing built into the Microsoft 365 office suite.

All the instances of surveillance presented above demonstrate that unions need expertise regarding the open and hidden affordances of the digital technologies workers use, both in the labour process and in private settings. As informants 1 and 2, both NGG, conclude in a group interview, unions should systematically build juridical and technical expertise in order to gain the capacity to adequately explain and respond to new technologically afforded practices of management and control and to adapt both work contracts and organisational capabilities accordingly. For instance, the informants argue that unions should be able to help employees understand the usually deliberately convoluted terms of service agreements they are subject to when using commercial apps for work. At the same time, labour organisations should improve their technological skills and re-appropriate employer-biased technical solutions to make them subservient to their own interests and needs (informant 4, Ver.di).

The cases referred to above offer first-hand empirical insights into some of the challenges faced by German unions engaged as partners in what Schaupp (2021) has termed institutional and company-based cooperative technopolitics and proves the point that efficient union work also needs to consider grassroots initiatives in a more antagonistic model of unionisation.

Such ideas point to the fact that the current bent of systems of algorithmic management towards supporting the interests of employers are not naturally given but politically

willed and socially constructed. As Scholz (2017) and Butollo and Gaus (2021) explain, when designed for a common good rather than the profit interests of the few, digital tools can open new possibilities for resistance and empower both workers and unions. Furthermore, corporate systems can be cheated or gamed by workers supported by tech-savvy unions or civil society organisations aiming at appropriating or subverting such technologies of power. For example, informants 10 (NGG) and 11 (GWC), both working in the food-delivery sector, reported on specific practices of micro-resistance – such as faking technical problems to gain some free time or holding back completion messages to avoid unattractive orders.

Our findings show that unions attempting to organise fragmented and precarious sectors of the German economy characterised by temporary hiring and high turnover rates among employees might acquire a new role as conveyors of not only organisational and juridical, but also technical knowledge and skills. For such an emergent form of "algoactivism" (Kellogg et al. 2020, 391), forging alliances with tech-savvy civil society organisations becomes increasingly important (see also Ferrari and Graham 2021). Informant 12, a tech expert associated with the CCC, and informant 13 (Ver.di) both tell us that such cooperation until now has been very rare.

However, our findings indicate that establishing such connections would be a comparatively easy concrete step German unions can take to improve their standing in encounters with platform companies and other tech-savvy commercial actors engaged in globally distributed value-creation chains.

Our interview data summarised in the present section show that while unions in Germany seem to be acutely aware of the problems outlined above, their ability to respond to these conditions and efficiently engage in both cooperative and antagonistic forms of technopolitics (Schaupp 2021) appears limited. This finding led us to inquire in more detail how established unions might ally with civil society organisations, grassroots workers movements, and unions in other countries to gain an increased power base and efficiently engage in new forms of struggle against globally organised adversaries.

4.2.   Challenges and Opportunities for Worker Mobilisation and Unionisation

As we have shown in the section above, the digital era has profound impacts on workers and often recalibrates both working conditions and the relations between employers and employees, to the detriment of workers. In the following section, we investigate what union representatives in Germany see as new challenges and opportunities for activism and worker mobilisation connected to the widespread use of digital technologies. We initially present concrete examples from everyday working life before taking a step back to highlight overarching issues such as tensions between 1) different unions attempting to organise the same sector, 2) grassroots mobilisation and traditional unions, and 3) local/regional union work and globally operating multinational corporations. In all cases, we draw on data taken from conversations with our informants.

As, for instance, Butollo and Gaus (2021) have shown, digital communication technologies open new possibilities for organising and mobilising a fragmented and disconnected workforce typical of platform-based sectors such as food delivery or new taxi services. A majority of our informants report using tools such as WhatsApp, Discord, Telegram, or Instagram regularly to 1) connect with a workforce that lacks regular physical meeting places such as offices, cantinas or elsewhere (a condition that has been exacerbated by the COVID-19 pandemic), 2) draw public attention to contentious issues such as poor working conditions, 3) mobilise workers for ad hoc strikes or the formation of grassroots organisations, 4) support traditional forms of struggle (informant 4, Ver.di,

mentions digital strike meetings and online voting procedures), and 5) reach out to previously inaccessible groups such as single mothers employed in the retail sector (example from informant 4, Ver.di).

It is important to note that most informants from all unions we interviewed emphasise that in sectors where labour organisations are already well established, digital tools can only complement more direct forms of interaction between workers and union representatives. Informant 5 (Ver.di) recounts:

> You need access to people to organise them. For me, the personal conversation cannot be replaced by technology [...The technical device] can be a means of support but it cannot replace [the personal conversation].

Repeatedly, the foreclosure of informal arenas for exchange among workers was highlighted as one severe challenge the COVID-19 pandemic poses to the activities of established unions. This factor has less relevance for platform workers used to interacting with employers and co-workers via digital platforms. Here, issues of surveillance of employees and data monetisation emerge as important challenges that need to be addressed by both established and grassroots unions.

In a platform economy characterised by structural problems such as a fragmented and dislocated workforce, digital tools often emerge as the only option to mobilise, reach out, and gain potential members. As informants 2 (NGG), 4 (Ver.di), and 13 (Ver.di) explain, in such cases, unions must ensure that they develop "protected areas" (informant 2) on commercial social media to prevent potential spying by the management. In the food-delivery sector, the raising of public awareness on contentious issues via, for instance, commercial social media proved a highly efficient tool for struggles with employers as it threatened the reputation and therefore the stock market value of targeted businesses. Informant 1 (NGG) puts it like this:

> [we employ] Instagram because it has a low threshold for use [...as] a normal tool for communication. We can then also inform the public. Because Lieferando reacts to public pressure, precisely where we do not have organisational powers yet.

Informants 1, 2, and 10 (all NGG) explained to us in detail how attempts by activists to set up union structures in a platform company were undermined by employers who forced them to use the company's own app to organise their activities and interact with fellow workers. After a workers' council had been formally established, the employer created dedicated space space for union activities inside the company app. However, the rights to edit this space were withheld, making it impossible for the elected representatives to post on or update the site. This created the impression of a lack of engagement and thus undermined the authority and legitimacy of the workers' council in the eyes of fellow workers.

Companies can also gain a legal advantage and challenge unionisation by means of laws and regulations that have not been adapted to current digital environments (Schaupp 2021). To give a detailed example, the main charge of a juridical challenge reported by informant 2 (NGG) was the failure on the part of union representatives to inform all workers on equal terms by setting up physical posters at company locations. However, as the same informant explains, in platform businesses, such physical company structures are often difficult to locate and access. Furthermore, the management did not allow union representatives to use the company's email list to contact their fellow

workers. An additional challenge in this respect is posed by the fact that platform companies often attract a precarious workforce who use a variety of different languages and come from areas with varying cultures for organisation, creating "language barriers as in the old Babylon" (informant 4, Ver.di).

Informants 1 and 2 (both NGG) agreed that it is crucial for unions in need of setting up digital structures for the purpose of interacting with platform workers to systematically build in-house expertise on the technologies used, and to employ their organisational power and influence on lobbying for an update of outdated company and union laws on the "regulatory arena" of the contemporary German economy (Schaupp 2021, 67). This would help to reduce the power imbalances created in digital environments that are usually dominated by corporate actors.

In Germany, as elsewhere, platform capitalism is structured around the basic business idea that connecting supply and demand in novel ways via an app reduces costs and improves the quality and speed of services. However, increased efficiency is often 'paid' for by workers who lose job security and often suffer under low wages. The apps used by platform companies are the nodal point of the interaction between platforms owners, customers, and an increasingly precarised workforce. Therefore, it is also an Achilles' heel of employers, becoming amendable to attacks during labour struggles (informants 4 and 5, both Ver.di). Disabling, overburdening or otherwise confusing the app or its algorithms can deal significant blows to employers at relatively low costs, becoming a potentially powerful weapon in strikes and other conflicts. Moreover, systematic development of in-house expertise combined with increased cooperation with civil society organisation can secure advantages for unions and may help to realise some of the potentials for a "digital workerism" outlined by Englert et al. (2020, 134) that aims at finding ways of understanding technologies from within the context of the workplace and using them to the advantage of employees.

Having addressed some challenges and opportunities connected to technology use for worker mobilisation, strikes, and unionisation, we will now turn to how German union representatives view such issues as cooperation and competition between different unions, between sectors of the economy, and between workforces in different countries that are all enhanced by globalised digital capitalism.

4.3. Unions Between Grassroots and Establishment and Between the Local and the Global

To most of our informants, tensions between established unions and often syndicalist-oriented movements constitute a recurring challenge in attempts to organise a precarious workforce employed in the platform and gig economy. This illustrates tensions between two of Schaupp's (2021) cooperative-institutional and antagonistic technopolitics and throws light upon some of the difficulties of organising digital labour in information societies identified by Neilson (2018).

As informants 1 and 2 (both NGG) explain, established unions often follow a long-term strategy aimed at setting up legally supported structures such as elected workers' councils in carefully selected businesses to gain institutional momentum. According to informant 1 (NGG), one challenge is to retain a core of activists and protect these against firing or the discontinuation of their temporary contracts long enough to enable them to establish lasting institutional structures. Their grassroots counterparts, such as the GWC or the Free Workers' Union (Freie Arbeiter*innen Union; FAU), on the other hand, tend to spontaneously start concrete campaigns around specific issues of contention. Examples that were mentioned by informants 10 and 11 include uneven working hours, unclear rules for payment, and the lack of provision of vehicles, phones, or working clothes.

In this process, grassroots movements usually only develop ad hoc and short-term structures that are created during concrete struggles but prove difficult to sustain in the long run. As the examples offered by informant 11 show, grassroots movements are often inadequately prepared to legally challenge employer actions or to protect workers from various repressions. This view is shared by informants 5 (Ver.di), 6 (GEW), and 13 (Ver.di).

Informant 1 (NGG) tells us that syndicalist grassroots organisations have developed efficient forms of struggle but often misjudge their power base and fail to adequately protect activist workers against legal or other measures taken by employers to curtail their activities. She explains that

> [in terms of strategy] unions are rather conservative and agitation from a radical left position doesn't work after some time. You can't demand a collective labour agreement with an organisational rate of 3%. You can try this, but then you're simply laid off.

Potential repressive responses from management mentioned by our informants range from firing activists, to blocking them from company apps and disadvantaging them in job distribution, to heavy fines of up to 10,000 Euros. This was confirmed by informant 11 (GWC), who co-organised a syndicalist campaign among riders in Berlin, and corresponds to findings by de Greef (2020) from the same sector. Both also point to the importance of legal and other support by more established grassroots movements such as the FAU. Schaupp (2021) also points to the need to use union leverage within the regulatory sphere in order to update the laws regulating strikes and other forms of labour struggle to adapt these to the new conditions of digital capitalism.

Informants 1 (NGG), 5 (Ver.di), and 13 (Ver.di) highlight additional fault lines in the sector. Traditional unions, informant 5 explains, are not inherently political organisations, since they must represent the interests of workers "who are affiliated with parties ranging from Die Linke to the AfD". This factor, combined with the formation of a privileged segment of the workforce at large multinational companies such as BMW (informant 3, IGM), creates tensions between grassroots and established unions as to how and with what aims labour struggles should be conducted. This illustrates some of the challenges encountered when engaging in Schaupp's (2021) cooperative-institutional technopolitics in order to influence the regulatory sphere while at the same time sustaining a viable cooperation with more antagonistically oriented grassroots organisations such as the GWC or FAU, who are more bent on creating fissures and engaging in direct struggles (Ferrari and Graham 2021).

In analyses of our interview data, it became apparent that mutual misperceptions regarding the intentions, capacities, strategies, and tactics of each group's respective counterpart were not unusual. Activists voiced the suspicion that traditional unions are merely interested in retaining a status quo and assumed they had a mere service function to courtesy grassroots initiatives' political needs (e.g. informant 11, GWC). In contrast, traditional unions often hold the false impression that grassroots alternatives pose a threat to their own position or to established structures and procedures in organised work life, as explained by informants 1, 2 (both NGG), and 13 (Ver.di). Seeing these misconceptions and this mutual distrust through the prism of Schaupp's (2021) various arenas and spheres of technopolitics can help both established and grassroots unions to better understand their own leverage for action and to more clearly see potentials for cooperation rather than the need for competition.

Furthermore, our findings show that there seems to be growing competition between established unions attempting to organise the same sector of the economy. All of our informants from NGG and Ver.di, for instance, recount difficulties of clearly determining if Ver.di (service) or NGG (food) should represent riders in the food-delivery sector. This competition limits unions' abilities to effectively campaign on behalf of groups of workers facing similar problems and challenges. Our informants' statements point to the possible solution of establishing a cross-sectoral digital labour union that fully concentrates on organising all platform and gig workers currently distributed between different unions. This would also make it easier to establish union membership as a factor of continuity connecting a single worker's various short-term precarious employments.

Both activists and traditional union representatives agree that there are large un-tapped potentials for cooperation. According to our informants, these include possible combinations of traditional and innovative forms of struggle (informants 1, 2, 6, 11, and 13), improved adaptation of established organisations to the new demands of the digital economy (informants 2 and 13), increased democratisation of established unions (informants 6 and 13), and extension of established unions' legal protection and institutional support to grassroots organisations (informants 1 and 6). Informant 6 (GEW) explains the potentials that lay dormant in differences between established and grassroots unions as follows:

> I would find it essential that employees chase DGB unions [Confederation of German Trade Unions] so that the union apparatus later does not prescribe everything for them. This should be prevented by means of a strong grassroots structure. This is one perspective: that a core of worker collective activists retains a grassroots structure to control activities in the workers' councils and around collective bargaining from below.

One possibility of facilitating a realisation of such goals in practice might be found in the idea of "decentralised vanguardism" introduced by Rasit and Kolokotronis (2020, 2) with reference to attempts by revolutionary organisations to manoeuvre tensions between democratic mobilisation and participation on the one hand and needs for efficient decision-making structures enabling quick reactions of organisations operating under hostile conditions on the other (see also the rank-and-file versus full-time functionaries debate in Darlington and Upchurch 2011). In this line of thought, the ad hoc collectives of platform workers spawning spontaneous acts of democratic resistance could acquire the function of what Rasit and Kolokotronis call a "middle stratum", which can reduce the tendencies of large organisations to centralise, hierarchise, bureaucratise, and monopolise, while at the same time offering sustainable democratic structures on the ground that facilitate inclusive engagement and sustained commitments from the side of precariously employed workers. Thus, this middle stratum could become the centre of "an emancipatory struggle […] waged without falling victim to new forms of domination" (Rasit and Kolokotronis 2020, 13).

The very high turnover rate among employees in the platform economy, with contracts usually lasting not more than a couple of months, if they exist at all, has been identified as a major challenge to long-term union engagements in the sector from both grassroots and traditional unions (informants 1, 2, 6, 10, 11, and 13). As mentioned earlier, a possible solution to this challenge could be a new digital labour union as a cross-sector element of continuity connecting various consecutive short-term employments (informants 1 and 2). This, of course, would imply the need for a close cooperation between relevant established unions (e.g. between NGG and Ver.di organising

food-delivery workers) when forming a joint digital alternative, and between this digital union and its syndicalist counterparts (informant 13, Ver.di). This solution could also help address perhaps the most severe power imbalance between unions and their digital capitalist counterparts – the national or even regional limits of union operations as opposed to the global reach of major platform companies and their owners.

Most of our informants agree that the current limitation of union activities and responsibilities to certain regions and countries is a decisive disadvantage when faced with employers and capital owners organising globally distributed value-creation chains. As informants 4 and 5 (both Ver.di) explain, when striking against Amazon, Ver.di needed to adjust established forms of struggle and devise new instruments to create a viable counterweight to a capitalist actor with global reach. Informant 4 tells us that

> we quickly understood that the longer a strike [at Amazon] lasts, the more it loses its effect. In contrast to strikes at normal logistics companies […] at Amazon […] they have the data from every distribution centre, meaning they know which goods are where all the time […] and then they use an algorithm to simply reroute all orders to different locations.

As a result, Ver.di devised new forms of struggle and adapted strategies and tactics to the new conditions. To avoid hampering future union activities, we do not explain these advances in detail here but limit ourselves to the conclusion of informant 4: "Sometimes not to strike caused more confusion and economic costs than going on strike".

In new forms of labour struggle with globally operating companies, an international cooperation and coordination between unions is essential (for reports on ad hoc solidarity actions across national borders, see e.g. Apicella 2021, 93). Informant 5 offered several examples of how Ver.di began to coordinate their actions with organised workers in other countries and listed a series of challenges ranging from different degrees of organisation, different cultures of worker mobilisation, language barriers, and attempts by multinational companies to play workers in different countries, regions, and companies against one another. According to informant 5, the building of permanent organisations in other countries is crucial so that "unions are already there when Amazon enters the scene". Furthermore, he identified careful planning of strikes as an essential component that must include meticulous timing and sustained coordination across national and regional borders so that "at a particular time slot, workers [in different countries] can get going together". Finally, informant 5 continues, the dissemination of knowledge concerning value-creation chains, working conditions, and power relations under global digital capitalism is an important precondition for the success of labour organisations at a global scale. Such struggles, he concludes, require well-organised, well-funded and strong unions that can engage in sustained campaigns against global actors that can "last for years, if not decades". As we would like to suggest at this point, these powerful organisations' tendency to hierarchise and bureaucratise needs to be balanced by a strong "middle stratum" (Rasit and Kolokotronis 2020) that can serve as a democratic counterweight and ensure sustained grassroots participation in all dimensions of globalised labour struggles. Digital workerism (Englert et al. 2020) can serve as an important activist-focused and tech-savvy element in such developments.

5. Conclusion

In this article, we have investigated implications of digital capitalism for unions and workers in Germany. Conducting interviews with 12 union representatives from four different sectors and 1 tech expert, we identified a series of issues labour organisations should

be attentive to when organising struggles under the economic and political conditions of digital capitalism.

Responding to our research questions, we found that German unions have a significant awareness of the challenges and opportunities posed by digital capitalism, but that at the same time they perceive their ability to adjust organisational structures, strategies, and tactics as limited and riddled with contingencies. Our findings confirmed that unions are aware that the increasingly widespread use of digital technologies enhances the powers of employers to determine workflows, surveil, audit and control workers in an unprecedently detailed fashion, pass on costs to employees, reduce their benefits, and undermine strikes and attempts to unionise. This leads to increased precarisation and enhanced competition, threatening the security, health and well-being of workers. All informants confirmed that such tendencies have been exacerbated by the COVID-19 pandemic and that unions need to actively engage in these developments along all dimensions of current technopolitics.

On the positive side, our findings suggest that unions use available digital tools to improve their practices regarding mobilisation, organisation, and active struggles. New opportunities being exploited range from connecting to a previously passive workforce and to workers distributed across different sectors or regions, the possibility to quickly mobilise public attention and support, more efficient organisation of ad hoc actions, improved international coordination, and new strike weapons that, for instance, target company apps or algorithmic processes as Achilles' heels of employers and capital owners. To benefit from these potentials, increased in-house technological expertise and increased cooperation with civil-society organisations are important aspects of updated union strategies and tactics.

We registered awareness among our informants that globalised digital capitalism requires new ways of conducting union work and determined concrete steps towards meeting the identified challenges. In highly globalised sectors with weak or no unionisation, cooperation between established unions and grassroots movements is important. Increased coordination and mutual support can facilitate mobilisation, improve the legal protection of unorganised workers, and enhance the capacity to act against platform businesses that, so far, have received little attention from established unions in Germany.

Our data also shows that, if taken seriously, bottom-up movements can help retain democratic structures at all levels of union work and leave control with those organised, thus increasing the legitimacy of labour organisations. Activating this "middle stratum" (Rasit and Kolokotronis 2021) in a constructive manner could help to avoid classical contradictions between 'rank-and-file workers' on the one hand and 'full-time union bureaucracy' on the other, as identified by Hyman (1989) and actualised by Darlington and Upchurch (2011), among others.

Our findings also suggest that increased coordination and mutual support between workers' organisations in different countries, regions, and sectors is crucial in order to balance the power of globally operating companies. International, interregional, and cross-sectoral coordination between unions can, for instance, help to outmanoeuvre the current capacity of managers to undermine strikes or other actions by relocating activities or re-routing traffic to areas with weaker or no unionisation. An institutionalised globalisation of union activities will reduce the ability of capital owners to pit workers against one another in global or regional competitions that currently imply a race to the bottom in terms of wages, workers' rights, social benefits, and more. A potential new union for digital labour that crosses the sectorial boundaries of the German union system and

links various short-term engagements in, for example, platform companies could be one potential initiative emerging from the conversations with our informants.

Lastly, we found that increased cooperation with tech-savvy civil society organisations can improve the prospect of labour struggles under current conditions of digital capitalism. Such liaisons can, for instance, help unions devise efficient new tools for struggle or support the lobbying for changes in laws and regulations to plug loopholes created by digitisation in the regulatory arena of institutionalised technopolitics (Schaupp 2021).

In sum, unions and other labour organisations take the current and future changes enabled by digital technologies very seriously, dedicating significant resources to developing strategic expertise in this field. Such expertise, we believe, will be crucial for their ability to retain the capacity to successfully engage in long-term struggles under conditions currently systemically biased towards the interests of management and capital owners.

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