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Thinking through digital mediations and spatialities of platform based work

A roundtable reflection

Natasha A. Webster & Qian Zhang (eds.)

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Preface

This paper is part of a Formas funded project “Integration Delivered? Unveiling immigrant experiences in the growing Swedish gig economy” (Diarie nummer: 2019-00445) run by Natasha A. Webster and Qian Zhang at the Department of Human Geography at Stockholm University. It brings together researchers’ reflections based upon the session “Beyond numbers and algorithms – deep-diving into the platform-mediated gig economy” which took place at the Nordic Geographer’s Meeting in Joensuu, Finland at the University of Eastern Finland on June 19-22, 2022.

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Natasha A. Webster and Qian Zhang

Authors

Natasha A. Webster, Stockholm University and Örebro University, Sweden
Qian Zhang, Stockholm University, Sweden
Olivia Butler, Uppsala University, Sweden
Mathilde Dissing Christensen, Cardiff University, Wales, United Kingdom
Katrine Duus, Aarhus University, Denmark
Konstantinos Floros, IT University of Copenhagen, Denmark
Kalle Kusk, Aarhus University, Denmark
Maartje Roelofsen, Universitat Oberta de Catalunya, Spain

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Sammanfattning (Svenska)

Denna rapport är en unik rundabordsdiskussion mellan geografer för att utforska, kontextualisera och problematisera geografins roll i gigekonomin. Detta samlar åtta forskare från olika kontexter i Europa som alla arbetar med kvalitativa metoder och forskar om gigekonomin. Baserat på reflektioner och kommentarer om rumsligheten och temporaliteterna i och av gigekonomin erbjuder vi ett innovativt tillvägagångssätt för att undersöka komplicerade faktorer i ett fält som växer och förändras snabbt. Vi lyfter fram flera aspekter av geografi i fysiska och digitala rum och platser och de, ibland luddiga, interaktionerna mellan dessa aspekter. Vi visar också hur temporaliteter formar gigekonomin geografer. Denna rapport bidrar till att utveckla, fördjupa och främja teoretiska utmaningar för att förstå gigekonomin. Det för också dessa utmaningar till en tillgänglig men ändå grundlig publikation som kan användas i undervisningen om gigekonomin och digital geografi. Vi inkluderar ett pedagogiskt verktyg för att stödja universitetslärare att använda detta dokument i sina kurser.

Summary (English)

This paper is a unique roundtable discussion between geographers to explore, contextualize and problematize the role of geography in the gig economy. It brings together eight researchers from across Europe all working with qualitative methods and studying the gig economy. Based on reflections and commentaries regarding the spatialities and temporalities in and of the gig economy, we offer an innovative approach to exploring complicated factors in an emerging and rapidly growing field. We highlight the multiple layers of geography in physical and digital spaces and the, sometimes blurry, interactions between these. We also show how temporalities shape the geographies of the gig economy. This paper contributes to developing, deepening and advancing theoretical challenges in understanding the gig economy. It also brings these challenges into an accessible, yet thorough publication that can be used in teaching about the gig economy and digital geography. We provide a pedagogical tool to support university teachers in using this document in their courses.

Cover Illustration: Artist Statement

How to make the invisible visible in our urban environments. Analogue versus digital. Shifting, changing, moving and fluctuating labour. These were all elements that I wanted to represent in my cover illustration on the gig economy. I would be lying if I didn't admit that I spent several hours of head-scratching and long walks trying to get to the essential of how to best represent the theme. It is important to me that my ideas are original but at the same time clear and easy to understand. I found the topic truly interesting, and an important one to study. How is this changing our societies today? Our behaviours? I hope that the cover illustration will be inspiring and arouse your curiosity to want to learn more by reading the report.

Michèle Harland

Graphic Designer, Illustrator

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Introduction

The gig economy has grown rapidly over the last decade and is increasingly an important source of employment in cities around the world. Consisting primarily of short-term, temporary forms of work arrangements mediated through digital platforms, the gig economy takes many forms. Until recently, much of the research focusing on the gig economy has been empirically emphasizing ambiguous labour relations, dangers of gig work, and the social inequalities produced within this emerging work form. Much of the empirical focus of the gig economy has been on the visible parts of labour such as delivery or taxi services and has tended to be concentrated upon large and visible companies, such as Uber, Foodora, or Airbnb, to name a few. This work highlighted important changes to working relations as well as to shifting urban landscapes. More recently, the reach of social and economic change emerging from this shift goes well beyond a set of businesses or sectors to illuminating wider social and economic transformations.

At the outset, the gig economy initially was hailed as enabling forms of flexible work, both in terms of working times and commitments from workers, emphasizing entrepreneurialism, as well as generating innovative solutions and connections to challenges found in urban spaces. Yet it is increasingly clear that the gig economy relies namely on the replication of capitalist inequalities (Webster & Zhang, 2021). Migrant and precarious labour has become nearly synonymous with the gig economy. Migrant workers make up a significant portion of gig workers in Europe – while it is difficult to gather firm numbers due to various definitions, estimates range from 2% to 20% of work force and in 2021, it was estimated that 28 million workers in Europe engaged in some form of gig and platform-based work (European Commission, 2021) – and these workers experience poor working conditions, lack of regulatory and legal supports, low security, fluctuating wage and welfare supports, and dislocation from or marginalization in the mainstream labour market.

What we do know is that the gig economy is not simply a shifting or a re-appearing labour form for a set few economic sectors but a social-technical reordering of work in the broader contemporary capitalism based on systems of exploitation and social inequalities. As the field matures, there is a clear need to build theoretical bases to better understand these complex social-economic-digital processes and relations. This is not an easy task given the range and scope of the gig economy as well as the important role of geographic contexts in shaping social-technical-spatial relations. One of the challenges facing researchers of the gig economy is balancing the heterogeneous and multiform digital-spatial-temporal relations embedded within the gig economy. Within each platform, sector and worker cohort are several layers of processes shaping these emerging forms of production and consumption. Spatialities and temporalities at various scales remain generally undertheorized in research about the gig economy.

The aim of this working paper is two-fold: 1) to develop, deepen and advance theoretical challenges in understanding the gig economy and 2) to bring these challenges into an accessible yet thorough publication that can be used in teaching about the gig economy and digital geography. This collection of scholarly reflections and commentaries by eight gig economy researchers, from across Europe, assembles discussions from a range of perspectives in conjunction with various sectors within the gig economy. All eight researchers use qualitative methods, which provides unique insights into complications of understanding issues ranging from the worker to social values to the role of the state.

This collection of reflections and commentaries is steered by two overarching questions:

- 1) What are the different forms and roles of digital mediation in platform-based work(s)?
- 2) What are the different forms and roles of spatialities in platform-based work(s)?

The answers to these questions are multiple and different explorations address these questions in each section. As a collection, we show: 1) The gig economy is a complex set of social and economic relations; 2) Geography is central to understanding the relationalities of digital and physical practices; 3) Technology is not neutral nor is our understanding of these processes; and 4) The reach and breadth of the gig economy is transformative in changing day-to-day social and economic relations.

How to approach this text

First, this working paper serves as a stage for gathering reflections and insights garnered through collective research knowledge and experience. Our aim was to provide a form of academic discussion based on reflection, curiosity and reciprocal knowledge building between researchers. This paper thus brings together these researchers' work, insights and knowledge in parallel yet separate projects on the gig economy. We also see the need of creating a different kind of text and means of communication as a means to stimulate new ways of interaction in academic writing spaces and the praxis of research. Thus, this text creates space for reflection and discussion and acknowledges the relational community of scholars doing complementary research.

Second, as a teaching resource we wanted to create a report that would be accessible and wide reaching to students at all university levels. The gig economy is an emerging and rapidly changing field. It is a challenge to find a systematic entry point into the gig economy, particularly from a geographic perspective. To support this end, we have also provided a pedagogical tool, which can be applied in teaching contexts.

The text is divided into four thematically organized sections, each consisting of two authors' reflections and commentaries. Readers are encouraged to read the sections as a compilation; however, each section can also be read as a unique set.

Section 1. Work, Power and Inequalities: Webster and Roelofsen complicate the role of work and the division of labour materially and symbolically. They discuss how work under capitalist systems is assigned meanings and values reflecting social ordering of power. They take up how social relations are inscribed into spatial practices and meanings.

Section 2. Digital Design and Human Relations: Duus and Dissing Christensen take on questions of space and place in platform relations. They discuss the ways platforms link, connect and node digital and physical spaces and places. They explore how these processes create opportunities and challenges in different uses and practices. They also raise the importance of human relations in creating and embedding these sometimes double and sometimes not double or hybrid geographies.

Section 3. Labour Organization and Economic Systems: Butler and Floros explore labour regimes in economic and governmental structures. They discuss the range of scales from the embodied worker to the shifting welfare state. They complicate how institutional, structural and corporate power creates forms of mechanization, alienation, and forms of identification. The relations between worker, company, and states are highlighted as important and plural questions to understanding the future of worker's rights and experiences in the Nordic context.

Section 4. Temporalities and Spatialization of Digital Materialities: Kusk and Zhang unpack the digital materialities of everyday temporalities and spatialization. They explore the tensions between flexibility and fluctuations and how work is ordered by and in a platform and creates specific temporal and spatial geographies. The unique configuration of algorithmic control and worker (so-called) freedom highlights the ways in which different spatial boundaries of work/life are encroached, spatialized and shifted. They highlight challenges of doing research in these complex shifting contradictions.

Section 1: Webster and Roelofsen on Work, Power and Inequalities

1A: Making the role(s) of work messy – *Natasha A. Webster*

Platforms offer a range of opportunities for emerging forms of work and new ways of doing work. Platform-mediated work includes a spectrum of skills and activities that vary from deliveries to childcare to food production. Significant attention has been paid to the injection of digital technologies and practices into these sectors and less so on how bringing the digital into working forms may shift wider conceptualizations of work. Consequently, the question remains, does platform-mediated work change the meaning and role of work in wider social relations? Work has always been imbued with broader social meanings than the task-at-hand and work has been tied to shifting power relations and social hierarchies (Scharff, 2014). Further, over the course of the last century, work through standard working arrangements/forms became predicated as binary – a site or activity separated from the home and leisure activities (Betti, 2018; Churchill et al., 2019; Sundararajan, 2017). Thus, the sites of labour, for example going to an office or a factory, created spatialities parallel to the social-economic relations where some activities are considered work and others not. Privileging some actions and/or spaces as sites and practices of work resulted in sectors and professions, which did not conform to these normative structures, as well as other forms of labour, such as care work, to be largely unrecognized as important or even as work. Much of the understanding of standard working arrangements/forms are founded on these divided normative relations; meaning of work is done 'in place'. Moreover, these sites and activities are often shaped hierarchically through relations between employers, companies, corporations and states.

However, more recently, developments, including the rise of neoliberal work arrangements and technological innovation (and the COVID-19 pandemic), have challenged these binaries blurring the boundaries between social and economic activities, and between places and activities of work. These changes present challenges to the logistics of work and have contributed to significant inequalities both in who does gig work (Shaw et al., 2022; van Doorn, 2022) and regulatory environments (Woodcock & Graham, 2020). There is also other evidence that the platform economy is part of workers' long-term strategies or may have different meaning for workers outside of earning incomes (Newlands, 2022; Straughan & Bissell, 2022; Webster & Zhang, 2020). Furthermore, consumers have ambiguous concerns towards inequalities when consuming and using platform services and goods (Belanche et al., 2021; Healy et al., 2020). Consequently, we know that norms and relations of work (performed and consumed) are changing through digital mediation yet much of the focus remains centred on shifting the binary to a spectrum of where and how the work is done – virtually, physically, materially or as hybrid.

Maintaining work fixed along this spectrum presents several challenges to understanding the range of activities and the role of digitally mediated work in capitalist work relations. First, the shift from standard to non-standard labour forms still maintains the binary of work-leisure even as these parallel debates from sited-work to more spatially ambiguous and digitally placed

work. Secondly, it continues the hierarchal power relation between workers and companies/corporations (and yes, to the state). Finally, it does not account well for the messiness of digital spaces and the multiplicity of layered relations or the individual/collective relations to and with digital spaces. It is interesting to think of work not necessarily as a shift on the spectrum from physical to virtual but rather, as Kitchin (2021) argues, to explore the interlocking forms of infrastructure and knowledge forms. In other words, how do the symbolic and intangible meanings of work remake the interlocks between infrastructure and knowledge forms?

Straughan & Bissell (2022) argue that the strong emphasis on political economic perspectives to understand the platform economy means that many social processes may be missed. I agree this is an important challenge and that we run the risk of replicating and privileging specific notions of work's role in the social lives of platform-mediated spaces and places. This gap certainly runs parallel to the ways previous thinking in binaries of work excluded the labour of many, for example women and migrants' care and household labour, although there is growing acknowledgment that migrants are overrepresented in the gig/platform economy (van Doorn et al., 2023). Maintaining these blind spots may mask the complex social relations surrounding the platform economy and thus may hinder understanding of what is being reshaped, and replicated (Webster & Zhang, 2021). Russell (2020) argues that digital spaces are heterogeneous and experienced and used differently by actors situated in varying contexts. For example, Popan (2021) shows how platform workers weave together multiple sites of digital engagement to resist corporate surveillance, in this case a private WhatsApp group, outside of their workplace platform. In our session, at the Nordic Geographers Meeting 2022 (NGM), the multiple ways social-economic activities interact in, through and alongside digital geographies were apparent (Appendix 1). In the session, Braunschweig showed how digital interventions are changing how and even where music is produced; Christensen looked at how online reviews created social ties; Roelofsen highlighted the hidden gendered assumptions in Airbnb back-of-house activities; Butler emphasized the bodily scale between hand and device; Floros and Kusk raised how temporalities shape digital work activities; and Zhang and Webster demonstrated the need to think through different geographies such as the rural. As a collection, what emerged from the NGM is the deep heterogeneous character of platform-mediated work and the webs of meaning created through these varied activities.

The spaces of platform work occur within the hierarchal relationships of worker-employer-state but also more messily between friends, family and other companies, such as parents helping with the cleaning of Airbnb or whether delivery workers are students or full-time, as exemplified in the session. Thus, the places of work, those involved in the work and the social meaning of the work are not linear nor clear-cut; indeed the position of platform-mediated work is complicated. The very many ways to engage in platform work were apparent and digital spaces show that platform-mediated work is not homogenous; even individuals within the same platforms or sectors had vastly different experiences, roles and uses of digital spaces. This heterogeneity indicates that digital geographies are multi-layered and complex, and like an office or factory, there are spaces of practices, and thus social relations, which are often overlooked. In fact, it may be by approaching platform-mediated work as more ambiguous and

messy than previous binary conceptions of work allowed, that we might reach a deeper understanding of the shifting forms and roles of work. To delve into messy social relations, and the changing meaning of work in those relations, requires us to think with and beyond the specifics of the pragmatics of a particular platform or sector, and to become entangled in the messy web of social meaning and the many layers of digital relations.

Commentary on Webster by Roelofsen

It is a daunting task to provide a short commentary on Natasha Webster's excellent reflection on the "messiness" of platform-mediated work and how this type of work has challenged commonly held beliefs about work in all its socio-spatial articulations. For the sake of brevity, I would like to zoom in to Webster's point about the implications of platform-mediated work for social relations, and social hierarchies in particular. Webster's reflection highlights several recent studies on these topics but as mentioned, there is still ample scope for scholars to engage with the relationalities that are (per)formed through platform economies, and to question how these relationalities are choreographed and *selectively* made visible and meaningful, not in the least by platform companies themselves. Take the example of pink-collar work that traverses both home-service platforms and short-term rental platforms. Domestic workers who use home-service platforms to seek cleaning work may find that their "back-of-house" work produces different encounters than the work of their customers (e.g., homeowners) who rent out those cleaned homes and rooms to guests through a platform like Airbnb. Delivery platform riders who transport meals to different addresses may have limited prospect to form lasting relations with their customers due to time pressures inherent to their work, while restaurant owners who rely on riders' work may still have opportunities to develop emphatic relations with those same customers when they dine in.

In the mentioned examples, the temporalities of work and ownership of a fixed workspace (material conditions) play an important role in making social relations durable, visible or even "enchanted". The work that the mentioned domestic workers, homeowners, riders, and restaurant owners engage in collaboratively is clearly based *on* and productive *of* social relations, but the (ephemeral) nature of those relations and the supposed values that each of these relations generate are quite different. To understand hierarchical configurations of platform-enabled social relations also requires being attentive to the emancipatory or affirmative potential of the work at hand. Thus, beyond questioning how platform-mediation reproduces hierarchies and asymmetries at work one can also ask if and how such hierarchies and asymmetries are being challenged. Context-based and historical accounts of social hierarchies and power asymmetries at work may be a good starting point, especially since many types of work that are now suddenly mediated by digital platforms have always already existed. Webster's reflection certainly provides platform scholars with a welcome framework and multitude perspectives to approach and dive into that messiness of platform-mediated work.

1B: Uneven divisions, spaces, and temporalities of Airbnb work – *Maartje Roelofsen*

Taking paying lodgers into one's home on a regular or episodic basis is an economic activity that has existed for many centuries (Goyette, 2021; Timothy & Teye, 2009). Over the last decade the emergence of 'digital platforms' have arguably made it easier for people to start their own accommodation rental business, relying on these platforms' networking capacities and relative ease of operability. Platforms like Airbnb and VRBO, which digitally mediate and control short-term rental markets across the globe, have altered understandings of "home". Not just for those who usually live in these homes, but also their neighbours who similarly find their everyday lives and intimate spaces commodified for touristic consumption (Roelofsen, 2018; Spangler, 2020). Through short-term rental platforms, homes are (temporarily) turned into a workplace and everyday practices seemingly come to have value. The labour that is needed to accommodate guests in these homes is added to the already existing social reproductive work that is needed to 'make home'. As such, housework and other forms of care are often intensified or supplemented by (extra) rounds of decluttering and dusting, vacuuming, mopping, making beds, writing emails, managing finances, receiving guests, "entertaining" and engaging in emotional labour needed to sustain amiable atmospheres.

All these tasks differ significantly in terms of bodily and emotional demands, longevity, and intensity, but also in terms of *where* they take place. Like in more formal types of tourism accommodation such as hotels and motels, some tasks take place 'out-of-sight' or when guests are away. They usually concern the more 'dirty' and physically demanding manual work such as cleaning toilets or mopping floors. Other tasks that are associated with 'front-desk' work often require social engagement and take place in plain sight (Zampoukos, 2021). These can include administrative tasks that require computing knowledge or interpersonal skills such as speaking to guests in different languages, or provoking feelings of homeliness and a sense of comfort.

For a recent study, Kiley Goyette and I examined how Airbnb hosts manage the demands of hosting while balancing this labour with the other duties in their lives such as housework, childcare, and paid employment (Roelofsen & Goyette, 2022). We found that there were gendered, classed, racialized, and generational differences in how this labour is divided among household members. Women, men, parents, children, hired helpers and domestic workers, they all tend to take on different tasks involved in the business of hosting based on existing values that are attached to that specific work. Divisions of labour often reflect historical ideologies in relation to housework, namely that housework – and particularly the component of 'dirty' work – is devalued compared to the paid labour that is carried out by those working outside the home.

In short-term rental households, the extra cleaning tasks are habitually "taken for granted" or not considered to be "real" labour despite being an indispensable part of the income generating activity of short-term renting. This extra manual work is largely done by women in Airbnb households consisting of both men and women. This also accounts for households that can afford to outsource cleaning tasks to others, as these hired helpers are usually women. With notable exceptions, men often tend to oversee the 'front desk' work, taking responsibility

for administrative tasks and online communication with guests. Interestingly, single-men households and households that could afford to outsource the cleaning labour to others, would still commonly take care of the admin and check-in process themselves. Some would ascribe this to the fact that their computing knowledge or language skills were better than those who cleaned their homes. This was also the case for Airbnb households consisting of parents and children, where children would handle Airbnb's booking software and communication with guests in a foreign language. Their parents – usually (retired) mothers – would take care of the cleaning tasks.

Who takes care of cleaning duties and who takes care of welcoming guests also depends on the work schedules that hosts have besides their Airbnb-related work. A guest's check-in might take place at a time when one or several household members are out at work or have other time-specific duties, whereas cleaning can arguably be done during a broader span of time. This partially explains why retired parents would be tasked with the manual work while their working children would take care of the check-in at other times of the day. However, cleaning will usually take much longer and more physical effort than welcoming and showing around a guest. The spaces and temporalities of work in the short-term rental economy are thus dispersed and require different degrees of flexibility, availability and physical effort depending on the task at hand.

Households with multiple members may distribute the labour of hosting in ways most convenient for each of them. Whether the type of work and the workload is evenly divided and valued is debatable. What emerged from our study, is that disagreement and discontent exist among multi-person households about each member's contribution. Additionally, households that outsource the dirty work will still retain the prestige of 'front desk' work while the actual work of a hired help remains mostly anonymous. With notable exceptions, uneven divisions of housework in relation to gender, class, race, and age continue to persist in Airbnb households. Considering the platform's insistent promotion of the liberatory and economic potential of short-term renting, critical inquiries into the actual distribution, valuation and profits derived from platform-mediated work remain crucial.

[Commentary on Roelofsen by Webster](#)

Maartje Roelofsen reflects with nuance on the parallel processes of digital-mediated tasks to rental platforms and where these tasks take place in social and spatial orders. She highlights the ways tasks take place visibly and invisibly and how these relate to specific historical ideologies, such as gendered division of labour. The links between 'ways of doing' manifest complex social practices in order to create rental businesses and services, which are mediated digitally and within households and business structures. What strikes me when thinking about Roelofsen's work is the physicality of digital tasks outside of the platforms themselves and the consequential spatial affirmation of ideologies. Moreover, we see how the implementation of these practices is not a singular thread between the individual and platform. Instead, the

relationship between the platform and the spatialities becomes a collective practice. In order for a rental service to function well, a combination of tasks must be completed – the direct digital links are only one of many jobs to be done! It is particularly interesting that actors are not only benefitting differently and unevenly, but their position in the configuration may be shaped by a range of power positions and motivations. It may be that one person is mediating directly through the platform, as Roelofsen points out in her study this is largely men, but the configuration of social practices shaped by the platform are collective. The delivery of the service promised through the platform is arguably better performed through many different actors and through the use of their different situations.

This collective practice approach is a very different perspective from the highly individualized approach often presented when discussing platform interactions where it is often viewed as individuals navigating a specific platform or a chain of processes, for example customer – to company – to service. Power in those perspectives is arguably more uni-directional. By unpacking the processes embedded in the chain, we are left to wonder how oversimplified, or at least too unidirectional - we may be treating these steps. However, Roelofsen shows us adeptly how each stage is itself a complicated set of relations. This work makes me wonder what would a more collective or relational approach to understanding platform mediated practices look like? Here in Roelofsen's reflection, we have an answer and a start of further exploration. What she unpacks is a web of power relations, which are needed to manifest the digital links in this chain(s). Her empirical work makes clear that digital processes are not neutral, and processes are dependent upon existing power relations in order create digital mediations. It would be interesting to explore further, how groups of workers, users or companies create collective digital practices and related spaces.

Section 2: Duus and Dissing Christensen on Digital Design and Human Relations

2A: Stuck in the space of flows: digital mediations and the food delivery economy of Brussels – *Katrine Duus*

‘It is closed, I tell you!’ Barthelemeus was on the phone with Deliveroo rider support. Five minutes earlier, he had parked his bike up against the glass front of Tiny Pho, a Thai restaurant in one of the numerous delivery zones in Brussels covered by the Deliveroo platform. When he arrived, the restaurant appeared closed, and in the five minutes leading up to the phone call, he had tried to get in. After attempting to open the locked door, he banged on the glass doors, yelling ‘Hello! Anyone there?’, after which he tried to find a backdoor leading to the kitchen. Eventually, he concluded that the restaurant was indeed closed. Then, he checked his smartphone again after thinking to himself that, perhaps, the map tool in the Deliveroo app had mistakenly led him to the wrong restaurant. In his experience, this happened at least once a day. He looked up the address on Google Maps to double check. But no, Tiny Pho was indeed listed on the address provided in the Deliveroo app. He checked the opening hours on the restaurant door: ‘Mercredi 17-23h’. It was 10:10 in the morning. Realising that he would not be able to collect the order of one ‘tom kha kai’ dish and three spring rolls, he placed his finger on the question mark in the Deliveroo interface on his smartphone. He was directed to the rider support and the Deliveroo employee he was now talking with on the phone.

The employee wanted him to check again if anyone was in the restaurant. After ensuring the Deliveroo employee that there was no way the order could be collected from the restaurant, the employee agreed to cancel the order. When the order was cancelled, Barthelemeus was available to take new orders via the app. Just before they ended their conversation, the Deliveroo employee and Barthelemeus agreed that the order must have stayed in the Deliveroo system from last night when the restaurant was still open¹.

This situation can be analysed as an example of the discrepancy between the *space of flows* and the *space of places* (Castells, 2020). Digital mediations take place in what Castells calls the *space of flows*, in which electronically separate locations, accessed through e.g., the riders’ and the customers’ smartphones, are linked in an interactive network, connecting activities and people in distinct geographical contexts. The *space of places* organises experience and activity around the confines of locality, e.g. Barthelemeus’ encounter with the closed restaurant in Brussels (Castells, 2020, p. 233). Aided by digital communication technologies like the smartphone, all interactions between the customers, restaurants and riders using the Deliveroo platform, are mediated via the internet in the space of flows. When Barthelemeus accepts an order, the restaurant is automatically notified through its Deliveroo app. As the vignette above

¹ This ethnographic account is based on ethnographic fieldwork on platform work in Brussels in the first half of 2018. Most of the interviewed riders were young men that worked in addition to their studies, just like Barthelemeus who was in his early twenties. Barthelemeus is a pseudonym.

shows, last night's order of one 'tom kha kai' dish and three spring rolls was stuck in the space of flows, while time went on in the space of places.

The communication between the users of the platform takes place in the space of flows, but the restaurant staff reads the notification in the space of places, i.e., in the physical restaurant on a tablet, just as Barthelemeus must cross the physical city on his bike to pick up the food. Through the mediations of the app, Barthelemeus navigates the space of places on behalf of the customer when he picks up, transports, and delivers the food. At the same time, he is constantly present in the space of flows through the GPS tracking on his smartphone accessed by the Deliveroo app. He is managed through the app in the space of flows while navigating the space of places. There is a general friction between the *space of flows* and the *space of places*. In the close to aspatial, real-time mediations of the app, the space of places is of little hindrance to communication. However, in the space of places, where the work of delivering food is carried out, many heterogeneous elements make demands on Barthelemeus' time, e.g., traffic conditions, university classes he attends, family obligations, the weather – and, as in this case, the opening hours of physical restaurants.

The app does not take into consideration obstacles on Barthelemeus' route that do not exist as digital data available to the app, i.e., most obstacles in the space of places do not exist in the space of flows. It then becomes Barthelemeus' job to resolve the frictions between the two. The food delivery service offered through the Deliveroo platform is highly dependent on maintaining the connection in the space of flows between riders, restaurants, customers and, not least, the food order. A big but rather invisible part of Barthelemeus' work consists in maintaining this connection by transforming the parts of the space of places connected to the food order into data in the space of flows (Kusk et al., 2022). Through his use of the app, Barthelemeus provides data concerning the pickup of the food order, the delivery process, and the delivery to the customer. In this way, Barthelemeus transforms the space of places into data that can be acted upon in the space of flows. Furthermore, as we see in the example, Barthelemeus helps uphold the services when the time of the app is out of sync with the spatiotemporal food delivery economy of Brussels. Riders like Barthelemeus are left to resolve the discrepancies between the space of flows and the space of places.

Commentary on Duus by Dissing Christensen

On flows, coordination and disruption

In the reflection 'Stuck in The Space of Flows: Digital Mediations and the Food Delivery Economy of Brussels', Katrine Duus explores the folding together of what Castell calls the space of flow and the space of places, between the virtual information flow and the situated life experiences. In a vignette focusing on the delivery worker Barthelemeus, Duus shows how a glitch in the online interface sends Barthelemeus to pick up an order at a closed restaurant. As such, the work contributes to 'the analysis of networked spatial mobility', identified by Castells

as a current frontier for new theory of urbanism (2020, p. 235), and addresses the role of the delivery driver in the coordination between the virtual and the physical.

This reflection builds empirical evidence for Castells' (2020) insights when he argues that cities are transformed through the interface of electronic communication and physical interaction. He describes the city as a hybrid made up by a double system of communication that facilitates the intertwining of flows and places. As such, the platform-facilitated delivery work can be understood as a just-in-time supply chain (at least to the extent that no disruptions occur) across different modes of space. As such, the work illustrates the notion of form as a product of the interaction and conflict between the physical and online dimensions of space.

In extension, the reflection piece invites contemplation on the role of the delivery worker and their position in the relationship between flow and place. Delivery workers serve an essential role in synchronising the hybrid of flows, both the virtual and the physically situated flows (whether those be the flows of traffic or the opening hours of specific restaurants). In this sense, the drivers function as embodied flows that do as much to link spaces of places as the digital technologies. Their role in upholding connection(s) between the virtual and the physical, between place and flow, is significant and could perhaps be expanded even further. In saying that delivery workers are aided by digital communication technologies, I wonder if we underplay the active role of such technologies in shaping practices. Barthelemeus' experience may in fact express a critique of Castells' distinction between the spaces of flow and the spaces of places, and could instead be understood to emphasise the intimate and co-constitutive connection between the two.

Whilst the original vignette is quite rich, it invites further reflection beyond the scope of the present work. Most notably, it leaves me wondering about the role of disruption more broadly. Flows are often associated with the idea of operating in a relatively seamless manner, but this work clearly illustrates one (of many) potential glitches in the spaces of flow. Perhaps pursuing the notion of glitches further would prove helpful, both within the virtual as demonstrated in this work, but perhaps equally so by leaning on Leszczynski who utilizes the 'glitchiness' of platforms to show how such configurations are open to various 'negotiations, reconfigurations, and diffractions through tactical manoeuvres rooted in everyday digital practices' (2020b, p. 1).

2B: Algorithmic awareness; navigating the affordances of the Airbnb platform- *Mathilde Dissing Christensen*

Currently, we are witnessing a multitude of platforms emerging as dominant players across various fields, scholars even naming our time 'the age of the platform' (Barns, 2019), while others argue that we live in a platform society (van Dijck et al., 2018). Digital platforms and the labour mediated by them might bring associations to either complicated IT design or debates about the challenges of legislating in the slippery digital spheres, which are sometimes as a separate reality (on such discussions see e.g. Graham et al., 2017). However, the digital realm is not an alternate reality; it is intimately entangled with local spaces and embodied practices. In

fact, it is the manner by which such platforms become embedded into our lives that they develop infrastructural qualities (Barns, 2018). Simultaneously, platform configurations are open to various ‘negotiations, reconfigurations, and diffractions through tactical manoeuvres rooted in everyday digital practices’ (Leszczynski, 2020b, p. 1). Consequently, we should attend to both the digital structures, how their design becomes integrated into our everyday lives, as well as to the specific geographies that are entangled and produced through this design.

Digital design influences the performance of workers in many ways. In the context of peer-to-peer hospitality, existing research has explored the role of review systems in developing online trust between strangers through ‘collaborative surveillance’ (Germann Molz, 2014) or, in connection with the Airbnb Superhost status, in disciplining hosts who operate without direct terms of employment with the company (Roelofsen & Minca, 2018). Another Airbnb feature, which has caused tension between the agenda of the corporate organisation and the interests of hosts, is the affordance of the Instant Book feature. Instant Book is illustrative of a corporate way to control the cultural embeddedness of the market. To counter inclinations toward homophily and exclusion of certain strangers (see e.g. Edelman et al., 2017 on racial discrimination on Airbnb), Airbnb introduced a tool allowing for immediate bookings in order to increase inclusion and eliminate bias at the expense of hosts’ opportunity to screen guests prior to accepting their booking request. However, the extent to which hosts embrace the tool not only relies on desires to manage guest access but equally so on questions of convenience, the ability to keep calendars updated and the desire to interact with guests and align expectations before booking.

“Airbnb every day try to make me change to have instant book, but I will never do that, I’m quite particular about who I want in my home, and you know, I want to evaluate each and every guest.” (Greg, Airbnb host)

“I feel that Airbnb started pushing the Instant Book when there was stuff going on and studies about how certain travellers were being rejected based on what they looked like and that kind of thing. So, I think there was a huge thing about that and Airbnb’s solution was, let’s really try and promote the Instant Book so we can get away from that.” (Matt, Airbnb host)

The Airbnb platform has been promoting this feature by letting hosts know that they will feature more prominently in the search algorithm if Instant Book is activated. In taking this step, Airbnb can be understood to create incentives for certain types of hosting behaviour, trying to influence host performances and the cultural rationalities embedded in these performances. However, despite incentives, several hosts prioritise control over access and refuse to activate Instant Book.

Such reflections point towards the role of algorithms in organising and disciplining digitally mediated labour. While algorithms are sometimes described as a type of invisible hand, exerting massive influence without being tangible and without users necessarily understanding their workings, they are neither independent nor impartial constructions. They are not separate from social life and value systems, they ‘always depend on inscribed assumptions about what

matters, and how what matters can be identified' (Gillespie, 2014, p. 177), and they express values as well as biases (see e.g. Noble, 2018 on racial bias on google).

In the context of digitally mediated work, algorithms have tremendous influence on the public visibility, and consequently the economic success, of the individual worker. As a result, a key aspect of digitally mediated work concerns positioning oneself as algorithmically recognisable based on various clues on the workings of specific algorithms. Gillespie (2014) argues that both the design of algorithms and the clues provided about their workings can be used to influence behaviours, meaning that descriptions of algorithmic design can be understood as a 'performed backstage'. Such descriptions are carefully crafted to shape behaviours of users focused on improving algorithmic placements, more so than providing a clear insight into the algorithmic design and the various criteria included into the algorithm, or how different parameters are weighed against each other. Such attempts to promote specific digital design by linking them to algorithmic placement serves as a strong type of disciplining device, as placement in search algorithms are imperative for success.

The workings of algorithms are becoming increasingly relevant in multiple forms of digitally mediated contexts and legislative agendas. This has perhaps most clearly been problematized by whistle-blower accounts into social media algorithms designed to spread division and damage the mental health of users in order to develop more digital engagement. Algorithms are sometimes regarded as black boxes. Perhaps, because of their classification as business secrets, or as their design is perceived as too complicated to understand. However, just as we do not need to know how planes manage to lift from the ground to understand how they connect places, we do not need to understand the technical design of algorithms to study their effects on the people in whose lives in which they are designed to be embedded.

[Commentary on Dissing Christensen by Duus](#)

Digital mediation of human relations: the case of Airbnb's Instant Book feature

Christensen turns our attention to human responses to changes in the design of the digital platform Airbnb. In the specific case of the Instant Book feature, we see the effects of synchronous and asynchronous digital mediation. We learn from the Airbnb hosts Matt and Gregg that Instant Book implies a radically new way of relating to their future guests, and that they do not feel comfortable with its terms. The new way of relating to guests can be understood as a change in the temporal logic of bookings on Airbnb. Before Instant Book, the host and the guest communicated asynchronously regarding the booking. When a guest sent a request for a booking, it was sent in real time to the host, but the host was not obliged to respond straight away. This would give the host time to evaluate the guest, check their calendars and, in some instances, make arrangements for leaving the house in the requested booking period. Hence, the asynchronous booking system provided the host with scheduling flexibility as well as time to get further acquainted with the potential guest. With Instant Book, Airbnb enabled synchronous booking, in which the platform handles all scheduling in the space of flows, consequently not allowing room for the uncertainty of planning that relates to the

space of places, in which an indication of availability made two weeks ago might not still be accurate. This friction between time in the space of places and time in the space of flows resonates with my own reflection piece.

However, in Christensen's example, we are also introduced to a larger question of how the digital mediation by platforms affects the way we relate to each other. To answer this, I draw on Peter Verbeek's work on design ethics, by which he understands technological mediation as a translation of actions that have the structure of invitations and inhibitions (2006, p. 368). Going from technological mediation more generally to digital mediation by platforms, we need to remember that platforms are networked technologies. In this respect, I argue that the invitational and inhibitory structure in the translation of actions is amplified by virtue of platforms' affordances of interlinking their users. The design of the Airbnb platform ensures that all users are in the same delimited space of flows. Leaving the platform means leaving all the potential guests of the platform behind, which makes radical design changes difficult to decline. When Airbnb invites their hosts to relate to their guests differently, hosts are, for now at least, able to opt out of using Instant Book. However, not accepting Airbnb's invitation to use the feature means they lose their algorithmic placement in the search function, which affects their business negatively. In my own research, I found that the design of the Deliveroo app changed several times during my fieldwork in 2018. The changes in the design directly affected the way remuneration was calculated. Through digital mediation, platforms can insistently invite us to reconsider how we relate to each other. This means that the moment we allow technologies to mediate our relations, we not only allow a slight translation of them, but a complete reconfiguration.

Section 3: Butler and Floros on Labour Organization and Economic Systems

3A: An Appendage of the machine – Olivia Butler

The use of digital technologies has begun to mediate a variety of different forms of work and, when coupled with insecure employment relations and atomized tasks, has been dubbed the gig economy. This term has espoused fierce debate, with some arguing that the gig economy is ‘old wine in new bottles’ (de Ruyter & Brown, 2019) as it fails to grasp the historic continuity of non-standard work (for example, piecemeal or temporary labour). On the other hand, some have pointed to digitalisation—with particular reference to algorithmic management—as the primary feature differentiating the gig economy from previous forms of work; heralding ‘a new world of work’ (Keith et al., 2020). Workers’ experiences of digital mediation differ drastically and are tempered by different conditions. Employment status; the qualifications needed for the work or attained by the worker; the length of the gig itself (and associated remuneration) and the degree of choice in the decision to participate, can all effect how workers function within the gig economy. For those who are constrained by these conditions, participating in the gig economy can result in numerous negative outcomes, particularly for their wellbeing. This has lead Gallup to describe “a tale of two gig economies” (McFeely & Pendell, 2018, n.p.).

In *The Communist Manifesto*, Marx and Engels stated that workers had become “an appendage of the machine” whereby “only the most simple, monotonous, and most easily acquired knack [was] required of him [sic]” (Marx et al., 1998, p. 157). By describing workers as ‘appendages’, they were describing how both mechanisation and the division of labour had worked to simplify² labour, and thus increase competition and lower wages. Digital mediation, when considered as embedded in socio-technological revolutions, can be seen as a parallel but *intensified* variation of the mechanisation observed by Marx and Engels, creating *appendages* of the machine.

Marx (2007), then, theorised that mechanisation and the division of labour meant the worker was “estranged from the product of his labour, from his life activity [sic]” (p. 63), a process he called alienation. In the gig economy, this division of labour can be seen not only in the atomisation of tasks and subsequent deskilling, but also in the *spatial* division of labour. Indeed, Wells et al. (2021) explain that gig work creates not only a just-in-time labourer, but also a just-in-place labourer who must be “on-demand.” This describes the way in which capital uses the *mobility* of the labourer to overcome the geographic fixity of space-time for the circulation of goods and the performance of instantaneous tasks. As a result, the labourer becomes *immobile* in their ability to perform life activities, creating alienation.

² There is much evidence from our preliminary interviews that there is nothing ‘simple’ about gig work, particularly in navigating digital mediation and formulating coping strategies.

For example, the gig economy may replace traditional workplaces with surveillance. This makes the worker feel they lack autonomy in their decisions and thus feel alienated from the labour process. In addition, gig work is usually highly individuated, intensifying the division of labour and prohibiting the gig worker from the meaningful relationships usually formed between colleagues. Put differently, the gig economy alienates gig workers from the product of their labour, the process of labour, others and themselves, which are the four types of alienation Marx (2007) identified.

This ceaseless alienation is invariably embodied, as labourers understand their work through visceral acumen, exhaustion, uncertainty, loneliness, etc. As such, we must take seriously the production of both bodies and spaces under the labour regime of the gig economy, as Reecia Orzeck explains: “the division of space is incomprehensible without the division of labour” challenging us to think “what types of bodies, [of appendages] does the capitalist mode of production produce?” (2007, p. 105). The importance of considering gig work as both an embodied and spatial practice, as well as the importance of centring gig workers as experts in their own experience, is best demonstrated by the following quote from one of my research participants. Here, she explains the coalescence of physical and emotional pain and isolation, exacerbated in this case by her migration history.

*“When I have this pain, **it was a crying pain**. You know? Like, I didn’t decide to cry. It’s more like my body, and... It was... Yes, and **I felt very alone** and, I miss my, my country.”*

Commentary on Butler by Floros

Olivia Butler’s reflection draws on classic Marxist theory to present contemporary gig workers as “appendages to the machine”, who are alienated from the product of their labour, the labour process and their life activities. In introducing her contribution, she reflects on the heterogeneity of the gig-economy, which dictates diverse readings of continuity and disruption when it comes to assessing the multiple impacts of this business model on workers’ lives and non-standard employment relations. While Marx’s analysis focuses on the industrial worker who is present on the shop floor, a condition which historically has led to specific forms of organization and revolutionary attempts for social change, Butler refers to the gig worker as a modern appendage to the machine that is often invisible even to colleagues performing the same tasks and dispersed in the locations where these tasks take place. Invisibility, intensification of work, individualization, deskilling and surveillance are -among others- important factors for consolidating gig workers’ alienation according to Butler.

It is very challenging to provide a short commentary on the broad issues that Olivia Butler is discussing. I concur with her focus on the importance of considering gig work as both an embodied and spatial practice, as well as with her call to foreground workers’ experiences and self-perceptions formulated in their own words. The concluding quote in her reflection is very powerful and supportive of her argument. Simultaneously, it is revealing as to the migrant identities of the people who compose a large part of the labour force of localized gig work

platforms. Extending Butler's line of reasoning, I believe that when referring to the gig economy we should always consider it within the broader context of neoliberal capitalism; that is not to simply study it as a technological innovation of the labour process featuring specific affordances, but always discussing it in relation with other institutional and social phenomena which co-produce the gig economy, such as migration or state policies on welfare, taxation, labour market and migration. Moving beyond the useful analytical strength of theoretical tools such as 'alienation' and 'appendage to the machine', and given the fact that Marx is par excellence the theorist of the emancipatory potential of the working class, it is crucial to avoid portraying gig workers only in a victimizing way. My fieldwork among platform housecleaners in Denmark is telling of how migrant workers adapt to the realities created at the intersection of gig work and Danish welfare, migration and labour regulations, and forge their individual - and seldom collective - strategies to counter the uncertainties and shortcomings of this business model. Nevertheless, the imbalance of power between the gig platforms and the workers should not be underestimated, as Butler clearly demonstrates with her powerful argumentation.

3B: Platform housecleaning in Denmark: Describing a case of No(rdic) welfare – Konstantinos Floros

Research on digital labour platforms -just like platforms themselves- has proliferated in recent years, providing a growing literature on various aspects of the platform economy. The diversity of platforms' business models, the plurality of regulatory and institutional settings and the different characteristics of the labour market sectors undergoing platformization make the generalization of the findings on platform labour a challenging task, especially for platforms providing localized gig-work. Therefore, nuanced accounts of sector-specific, local or national particularities of platform labour provide valuable insight, especially for sectors relatively underrepresented in research, such as housecleaning and domestic work platforms. Here, I briefly reflect on the local factors, which shape housecleaning platform labour in Denmark, taking a qualitative approach, based on interviews with -mostly female and migrant- platform workers and various platform stakeholders. Platform housecleaners in Denmark express contradictory feelings regarding their experiences of working through such business models. The satisfaction coming from swift contracting of gigs and opportunities for flexible scheduling goes hand-in-hand with concerns on platforms' arbitrary behaviour, customers' misconduct and problems deriving from the self-employment status, such as lack of welfare benefits and baffling tax declarations.

My empirical fieldwork suggests that most workers - even some working through platforms for years - perceive platform work as temporary; a short transitional stage soon to expire and a much-needed lifeline. The contingent temporality of platform labour acts as a hindrance to any sort of collective organizing and only few workers individually confront the platforms' managers and support teams in relation to the concerns mentioned above. Consequently, the cleaners'

voices remain unheard and political decisions on platform regulation are a top-down procedure.

The Nordic countries have been portrayed as offering the best working lives in the world, mainly due to their collective bargaining model and the compromises deriving from a political culture promoting consensus (Hvid & Falkum, 2020). Even though Denmark was the first country in the world where a collective agreement was signed between a housecleaning platform (Hilfr) and a union (3F) in 2018, the Danish industrial relations system has not yet managed to incorporate platform work in its traditional framework for regulating employment relations. Concomitantly, platform labour did not grow rapidly as it did in other national contexts worldwide. In line with early research on the topic (Weber, 2020), I discern that platform housecleaners are predominantly workers excluded from the wide range of social and employment related benefits offered by the Danish welfare state. Migrant newcomers, foreign students and holiday-working visa holders³, most of whom share the inability to speak Danish and non-eligibility for welfare benefits form the biggest part of these platforms' labour force. Of course, there are also - both ethnic, but mainly non-ethnic - Danes who work part-time on platforms to secure additional income as well as Danish students who combine student benefits to limited working hours. Governmental policies and national regulatory frameworks do little to alleviate the uncertain livelihoods of platform housecleaners in Denmark. Indicatively, Covid19-related benefits were reserved for self-employed workers with high earnings, leaving almost all platform workers without help and early attempts from platform owners to set minimum hourly fees to avoid social dumping were annulled by decisions issued by the Danish Competition and Consumer Authority (2020). These policies, coupled with reluctance on behalf of public agencies and institutions to openly acknowledge that housecleaning platform labour in Denmark is predominantly migrant labour, are an instance of institutionalization of migrant precarity in Denmark (Floros & Bak Jørgensen, 2020).

The fact that migrant labour is the sine qua non of localized platform gig work such as housecleaning and food delivery in urban settings has been already highlighted in recent literature (e.g. Altenried, 2021; Floros & Bak Jørgensen, 2023; van Doorn & Vijay, 2021). When I interviewed a manager of one of Denmark's biggest housecleaning platforms in 2020, he suggested that migrant women -which form the core of the platform's labour force - are a border group with no voting rights and therefore their issues are disregarded by politicians and lobbyists. This statement can be interpreted in various ways; nevertheless, it emphasizes how domestic-work platforms are premised on existing social inequalities and reproduce existing and intersecting power relations (Webster & Zhang, 2022). The highly gendered and racialized composition of the workforce on these platforms is an outcome of local particularities such as the exclusion of specific groups from the welfare safety net, the inability to include platforms in the Danish industrial system, the institutional framework created by diverse labour and migration regulations and the local characteristics of Danish urban labour markets. This new

³ Recently, the Danish government first reduced the number of such visa holders coming from Argentina and Chile and then prohibited all such visa holders from working as self-employed (= platform work).

business model challenges perceptions of equality relating to the Nordic welfare states and calls for further research on the origins and objectives of related policymaking.

Commentary on Floros by Butler

I thoroughly enjoyed reading Konstantinos Floros' reflection. His short piece on platform labour in Denmark, looking specifically at domestic labour, helps enrich pluralisation in the understanding of the platform economy. The Danish case study, much like my own research in the Swedish context, is conjuncturally interesting as it raises questions about the challenges that the flexibilization and uncertainty of the platform economy raise within the Nordic model of labour market organisation. Moreover, Floros theorises that the inverse is also true – that public agencies and labour market actors work to institutionalise migrant precarity by refusing to regulate platform labour. This has also been recognised in the Swedish context, where there are conflicting views over the role of government intervention into the Nordic model of collective bargaining between employers and unions. On the one hand, it is argued that the Nordic model is dependent upon state non-interventionism. On the other hand, it is argued that the weakening position of labourers has created an imbalance in collective bargaining that the state could work to improve by increasing regulation. Floros successfully explores the implications of platform labour upon the contemporary efficacy and (in)equality of the Nordic model, which fits well into his theoretical framework, which revolves around time. Indeed, what Floros' describes is a situation where platform workers are effectively held in limbo, as 'swift' contracting and 'flexible' scheduling engenders uncertainty for workers – about when, how much and for how long they will work – and also inhibits organisation. He finds that workers themselves also perceive of platforms as temporary solutions as opposed to viable long-term careers. For migrant workers, found to be the 'sine qua non' of localised platform gig work, this is compounded by delayed access to voting and delayed language learning that prevents civic participation and representation, and access to employment related securities. All of these temporal factors shape the precarious lives for gig workers, but also the Nordic model, which has been found to be either i) lethargic in its response to rapidly changing developments in the labour market or ii) actively pursued racist and exclusionary policies to limit access to social and employment related benefits.

Floros also hints at the spatialities of the platform economy, especially since migrants are inherently mobile. He begins to pull on these strings when describing 'localised' gig work but could further extend his discussion on the exclusion of gig workers in exploring how algorithmic management and individuated work may also inhibit, for example, opportunities for organisation or language learning. Nevertheless, this reflection invites us to pluralise our understanding of platform labour in different context and for different groups – particularly for already vulnerable groups like the migrant women who constitute the platform domestic labour workforce.

Section 4: Kusk and Zhang on the Temporalities and Spatialization of Digital Materialities

4A: Investigating contingent materialities of platform-mediated food delivery – Kalle Kusk

I study the different digital materialities of platform-mediated food delivery work through ethnographic inquiry. I have interviewed and observed workers in Aarhus, Denmark and Helsinki, Finland, and also worked myself as a courier in Aarhus (Kusk & Bossen, 2022). The core characteristic of work practice in platform-mediated food delivery that I will reflect on here is how the distribution of work hours on the platforms is subject to a type of “flexible scheduling (Kusk & Nouwens, 2022). The exact way that hours are scheduled and whether there is a reliance on human managers and ‘shifts’ changes between platforms and contexts (see e.g. Leonardi et al., 2019; Moncef & Monnet Dupuy, 2021). My ethnographic fieldwork in Helsinki identifies a particular “free login mode” where there are no human schedulers and no set shifts - just as there is no guaranteed pay. The workers merely swipe online on an app on their smartphones when they are available and ready to deliver food, and then remunerated on a pay-per-delivery basis. In the following, I present a few empirical examples to illustrate how this ability to swipe online impacts the workers’ relationship to their work. I then argue in favour of practice-based sociotechnical investigation of the diverse and contingent arrangements that emerge on the platforms.

At a face level, this free login model affords workers deciding, when they want to work. Thus, one worker stated the following when asked why he claimed food delivery work was a good match for him:

“I am personally a very lazy person [...] I don't have very specific schedules, so... Sometimes I get up 12- in the noon and sometimes 11 o'clock, so whenever I feel like going, I just go and take my bag do the target of completing deliveries... ”

Several of the workers I interviewed and observed outside of a centrally located McDonald’s shared this sentiment of their working hours being subject to daily fluctuations depending (in part) on their arrangements outside of the platform and their day-to-day motivation. The workers enjoy that they feel no hard pressure from a ‘boss’ who is telling them to work at a particular hour on a day-to-day basis. In tune with this, but on a monthly basis, other workers use the model to work more intensely some weeks, in order to take other weeks off:

RESPONDENT: *[...] I have a daughter in Italy, so... Money I make working every day, then I go to Spain for a few days, before going here. Take my holiday for travel.*

INTERVIEWER: *Okay... So how often you go to Spain?*

RESPONDENT: *Normally three of four times.*

INTERVIEWER: *Per year?*

RESPONDENT: *No, last year was, I think, 5 times, this year maybe more.*

INTERVIEWER: *Okay. So, then you change- do you tell them, or no?*

RESPONDENT: *About what?*

INTERVIEWER: *About going to Spain.*

RESPONDENT: *No, no...*

INTERVIEWER: *Just going*

We see how the model accommodates the worker's rather unique family arrangement as it allows him to take several holidays a year without notifying anyone from the platform, something he claimed would have been difficult to get at another job. Thus, being able to swipe online at will often works in the workers' favour and functions as a key attractor for workers on the platforms.

On the other hand, as has also been pointed out in previous work (e.g. Cano et al., 2021) this scheduling flexibility can also work against the workers' interest, as it makes it difficult for them to predict their day-to-day earnings. Further, similar to how the benefits are both present on a day-to-day basis and on a monthly term, seasonal fluctuations make it difficult for couriers to regard the job as a stable source of income. This is particularly the case in Helsinki, where the weather is much more accommodating in the summer, which both attracts more workers to the streets and lessens customer demand. This made some workers change to a different job, while others queued outside of the McDonalds where I was doing my observations.

I find it relevant to discuss the impact of this free login model, as it was not the only one present in Helsinki. For instance, another platform in the city required workers to book shifts a week in advance and apply for time off, if they were to go on holiday. Thus, I find that while grand discussions of flexibility, precarity and workers' classifications provide answers to one set of questions, there exists another set of questions more closely tied to the contingent materialities of the platforms that fundamentally, from a workers' perspective, changes the dynamics of how it is to work on a platform. The ability to "swipe online" provides one aspect, but there is a number of others such as the "pop-up" that are sent to workers when they are given an order to complete (Kusk & Bossen, 2022). These questions can only be asked (and answered) through meticulous investigation of the actual sociotechnical work practices where digital mediations provide conditions for how the work is conducted. This is, at least, the case platform-mediated food delivery, but I suspect it may be the case for other sectors of the platform economy as well.

[Commentary on Kusk by Zhang](#)

I fully enjoyed reading Kusk's reflection piece and felt the compelling power of ethnographical research in debating a core question of platform studies – contingent materiality – through unpacking the detailed interactions between platforms, workers, and their social lives. This reflection piece also shows the potential that platform studies and migration/mobility studies may cross-fertilize each other on the theorization of temporality and the questions of social reproduction.

I cannot agree more with Kusk, that *“while grand discussions of flexibility, precarity and workers’ classifications provide answers to one set of questions, there exists another set of questions more closely tied to the contingent materialities of the platforms that fundamentally, from a workers’ perspective, changes the dynamics of how it is to work on a platform”* (Kusk’s reflection). Geographers’ theorizations of space, time and relationalities uniquely equip them to explore digital materialities (Ash et al., 2018). Kusk exemplified a way of capturing the contingent materialities of the platforms’ by focusing on a temporal perspective and a (migrant) worker’s perspective. The temporality is shown as plural, from the scheduling within a day, between days to between seasons, which is linked to personal preferences, family arrangements as much as place-specific contexts. Time perspective is still in general under-explored in research on the gig economy. Different from emerging studies mainly focusing on control of working time through and within platforms (Chen & Sun, 2020; Heiland, 2022), Kusk suggests the relevance of temporal considerations both within and beyond platforms, both within and across borders. This rich account of time would not have been achieved without ethnography. The findings enable Kusk to argue for the agential strategies of gig workers and show ‘flexible scheduling’ as heterogeneous experiences and practices of platform work rather than being solely about creating precarity. Thus, developing a plural temporal perspective goes in line with the call for questioning and moving beyond the analytical concept of precarity (Alberti et al., 2018), and instead look up to the larger picture of social reproduction and what digital materialities facilitate the time-space actualization of this.

On the one hand, I see a potential that Kusk’s further development of contingent materiality would benefit from temporal thoughts in mobility studies. For example, Kusk may consider the analogy between platform and airport where the materiality is always in a flux while being contingently configured by multiple kinds of time (Hannam et al., 2006). On the other hand, Kusk’s exploration of gig work through the lens of organizing life could exchange with migration studies. Since migrants as a major gig labour force are increasingly documented, contingent materiality may be explored in connection to migrants’ struggles to do and make things so as to maintain social reproduction, fit into norms and make meanings of life, as suggested in my work with Webster (Webster & Zhang, 2020). Above all, I would be very interested in following Kusk’s future work on the concept of ‘contingent materiality’ based on ethnographic investigations of interactions between platforms, workers, and their social lives.

4B: Gigification as spatialization – Qian Zhang

In recent years, rapidly growing literature are critically debating the platform/gig economy from the top and the bottom, as different forms of capitalism as much as lived experiences of precarious (migrant) workers. A geographical lens is implicit if not always explicit in this literature, including presentations at our recent Nordic Geographers Meeting’s session on the gig economy. This is because ‘new’ economies, which at the core insert and centralize digital technologies and platforms into economic life, rely on spatial organization and reconfigurations

to create and recreate different forms of business models and work. Mounting empirical investigations including our earlier study have convincingly documented that migrants, especially women, are particularly attractive and accessible to the gig economy due to their unsettled and unintegrated statuses in the societies and labour markets (Lam & Triandafyllidou, 2022; Webster & Zhang, 2020). Spatial perspectives are highly relevant to understanding the gendered and racialized 'platform fix' (van Doorn, 2022) across multiple scales. At the global scale, the racial and gender hierarchy is being reshaped by evolving platform models through varied spatial geographies (Gebrial, 2022). At the microscale, space and time is 'contingently calculated' (Richardson, 2020) in the everyday gig working life in order to meet customer needs (Butler 2022; Floros & Kusk, 2022 in Appendix 1). Rapid changes during the Covid-19 pandemic and now the post-Covid period have especially amplified the central configuring role of spatiality with the shifting requirements on social distancing and remote work, making the spatial unevenness of platform dynamics and inequalities of work more apparent (Webster & Zhang, 2022).

It is challenging to disentangle 'digital assemblages' and the associated power relations underneath but spatial perspectives from the emerging 'digital geography' are likely to fertilize this exploration and advance our interpretations of empirical findings (Ash et al., 2018). I argue that it would be fruitful in future research to further explore tensions, conflicts and tactics in platform mediated work and relations as *Spatialized* and *Spatializing* processes, significantly through 1) creating, colonizing and transforming spaces; and 2) blurring spatial boundaries. Digitally mediated work demands engagement and contribution to the constant construction of digital spaces, from taking task, creating contents to receiving payment, for maintaining production-consumption and labour relations. The efforts of workers to engage and navigate in every step and stage of gig work through digital platforms, despite accumulating knowledge and skills for them, involve extensive unpaid labour and embodied precarities (Webster & Zhang, 2020), which have few institutional nor employment relations to handle (Wood & Lehdonvirta, 2021). Simultaneously, platform companies have multiple tools on platforms to shape the construction of digital spaces by workers (Dissing Christensen, 2022). Yet, gig workers are not locked in the digital space controlled by platform companies, but rather they actively and creatively combine and move between different platforms for social and political reasons (Popan, 2021). Digitally mediated work also colonizes and transforms physical spaces in connection to the workers' engagement in digital spaces. In our study of a food app supplying homemade (ethnic) food to urban consumers (Webster & Zhang, 2020), the interviewed migrant women all addressed the negotiation and encroachment of home space by the gig work, from storage of food ingredients, keeping children away to professionalizing kitchen standards. How often and how much to offer on the app is an everyday calculation and negotiation of the home space with important implications for family relations. The changing gender and generational relations within a family through labour divisions have also been nicely shown in the Airbnb business by Roelofsen (2022 in Appendix 1).

Platformization depends on business models that minimize labour costs while coordinating a flexibilized workforce to move across space (Richardson, 2020). Urban scholarship has been attentive to what datafication and surveillance means for urban spatial planning and

platformization/gigification are taken as the newest forms which have significant implications for the meaning of city, production of urban spaces, and the related justice questions for citizens (Sadowski, 2020; Stehlin et al., 2020). However, I argue more studies need to be done focusing on smaller scales and micro-geographies within cities, to examine, for example, the emergence of particular gig spaces, where gig workers work, rest and socialize, which are likely to change the function, use and meaning of places. Importantly, place-making in physical spaces is tightly linked to the construction of digital spaces through constructing digital contents and creating imaginaries (Törnberg, 2022). It should also be pointed out that, compared to urban studies, we know so little about the co-production of platform economy and rural spaces (Zhang & Webster 2022 in Appendix 1; Zhang & Webster, 2023).

The bigger challenge of spatial understandings lies in the second point – blurring spatial boundaries. I agree with McMillan Cottom (McMillan Cottom, 2020) and argue that ‘digital obfuscation’ is a key tactic that platform companies play, which depends on blurring categories and spatial boundaries. The spatial boundaries between social and economic life, work and hobby, private and public, formal and informal are being extensively blurred and normalized by the sharing and gig economy to mobilize ‘idle capacity’ which is associated with labour and assets, tightly connected to, for example, the home space (Webster & Zhang, 2020). Moreover, it is always the digital-physical-social space nowadays. Every action in everyday life is ‘more or less digital’ as it is mundane and simultaneously involving or shifting between multiple spaces (Barns, 2019; Leszczynski, 2020a). For gig workers, it is difficult to be out of this work as the boundaries and categories are blurred. The whole meaning of work is changing as exploitations are being normalized thanks to the blurring of spatial boundaries.

Above all, platform mediated gig work and space co-produce each other. Spatial perspectives are key to unpacking the sources and processes of risks and harms to workers (Wood & Lehdonvirta, 2021), and more importantly I argue, they are important for seeing the broader picture that the platform economy drives to change, which is beyond certain industrial sectors, capital-labour relations and algorithm governance. Ethnographical and geographical studies of platform mediated work contribute to our critical thinking of the role of technology in changing our societies as technological fixes which give new forms of work are often imagined by the public as being neutral though mostly, they are not. Platformization/gigification processes make it more complicated for workers as well as researchers to navigate the space and time. Yet, it is crucial to understand spatialization as it has both knowledge and policymaking significance.

Commentary on Zhang by Kusk

Zhang points to the fruitfulness of exploring platform mediated work as spatial processes. In particular, she stresses how ‘gigification’ both creates, colonizes and transforms space while blurring spatial boundaries. To support and extend this contention, I attenuate a need for specificity in two regards: First, researchers must strive towards a deeper interactional understanding of the mediating technologies and the types of space-creation they afford. This, secondly, requires that researchers analytically separate particular types of work and remain

attentive towards how they are differently impacted by ‘a turn to the digital’. I’ll briefly expand on these two points below.

Following Zhang, spatial perspectives are useful for “unpacking the sources and processes of risk” as they emerge in the so-called platform/gig economy. Building on my first point, researchers can concretize these spatial perspectives with a focus on the particular interactions between the technical infrastructures and the workers. I will illustrate how with an example from my ethnographic analysis of platform-mediated food delivery. Here, I follow the interactions between the workers, the dispatching algorithm and the fleet of invisible human supporters (Kusk et al., 2022). My work shows how the dispatching algorithm automatically sends out orders to the workers based on their current position in the city. This ‘algorithmic dispatching’, however, only accounts a part of the order distribution. My ethnographic work shows that (some) workers only accept a fraction of the tasks provided to them. Taking into account their vehicles, local knowledge of the roads, parking opportunities, road slopes, and a number of other factors, the workers decide which orders are feasible to complete in a particular moment. In other words, the city space in which the delivery work is completed, emerges both directly from the dispatching algorithm, as well as from particular interactions between the worker, the surrounding environment and the mediating interface.

This example also illustrates my second extension of Zhang’s argument: that the entanglements between the space, human workers and technical infrastructure are not universal across different kinds of platform-mediated work. Spatiality means something different to Airbnb-hosts as to crowd workers on Amazon Mechanical Turk, and thus findings should only cautiously be generalized and transferred between these work practices. Further, filling in the gap of our limited understanding of rural areas compared to urban spaces that Zhang points to, is a matter of selecting the types of work that either thrive in the rural areas or point to spatial, temporal and technical conditions that inhibit the spread of the currently investigated platforms to rural areas.

I contend that these concretizations will support researchers, and in turn regulators, in understanding the ways recent technologies (in the plural) and human interactions with them create, colonize, transform and blur contemporary spatialities. In turn, and in tune with Zhang’s generative goal, this will combat the way in which these technologies are presented as ‘fixes’ and debunk the myth of ‘technological neutrality’.

Conclusion

Over the course of four sections, this compilation of reflections and commentaries covers significant territory of thinking about Europe's growing gig economy. Sections have moved from symbolic and material discussions of the role and meaning of work, to the process of producing and reproducing social-economic inequalities, to the presence of digital design and human-technical relations and to structural questions regarding the role of labour organization and the state and welfare systems. From these wide-reaching and rich discussions, we bring to the fore several ways to understand the different forms and roles of digital mediation and geographies in platform-based work.

First, we see that there are many different forms of digital mediation within the gig economy found in ways labour may be organized to embodied practices. We have highlighted the formal and central ways platforms and apps mediate and shape work, from getting the job itself to completing (or not completing) the job or contract and how embodied use of digital devices shapes the physicality of gig work. We have also shown how digital mediations blur from these in-app arrangements into wider practices, which can include households, family, friends and/or employees. The discussions here show us that relations within the gig economy are not just the interface between a digital device and an individual; we present the importance of understanding human relations as part of the social-technical-spatial relationship.

Second, it is also apparent that these meditations are temporally and spatially shaping lived lives on multiple scales, and they shift the meaning of urban spaces for both workers and consumers. Platforms may create opportunities as well as hindrances, but the role and reach of platforms are growing. We highlight the tensions between flexibility and precarity, between algorithmic control and independence, and between the grit of fixed spaces and fluid digitalities. Thus, the role of geography is complex and hotly debated. As geographers, we have unique insights into understanding the ramifications of digital practices in spaces – as an intimately entangled spectrum across digital and physical – and the relations in and between these spatialities.

From these explorations, it is apparent that the gig economy is a complex set of social and economic relations that go well beyond a single disciplinary silo. Geography, however, is essential to understanding these processes. We need to understand the gig economy as it reorders urban and rural spaces at various geographic scales and forms, from the street and household to how the state is constructed and implements policy. The interplay of digital and physical geographies is a theoretical and empirical challenge. These discussions show that technology is not a neutral vector in these processes. Our sections highlight the multiple ways platforms themselves are processes – shifting, changing, controlling and resisting – as are the people whose lives are mediated and shaped through their use.

Finally, this set of discussions demonstrates the reach and breadth of the gig economy by bringing together many sectors and countries. By bringing complementary works of eight

researchers from across Europe, it is apparent how transformative platform-based work is in modifying and changing day-to-day social and economic practices and relations. In conclusion, we call for further research that addresses the complexity of these issues from a wide range of perspectives. We expect the gig economy to continue to evolve given structural responses, shifting consumer preferences and changes in the local and global economies, nevertheless the role of platforms in work will surely continue to grow and mediate working spatialities and temporalities in the future.

Pedagogical Tool

This unique collection is ideal to be used for supporting lectures and seminar discussion at the undergraduate and graduate level courses in economic, social, political and urban geography as well as university courses addressing topics of work, labour, policy, planning and inequalities. We offer the following seminar activity as a suggestion for learning activities. University teachers are encouraged to adapt this plan to their individual course needs. Activities can be scaled to the level and/or adjusted to individual course themes.

Learning Activities: This is a 3 part seminar with multiple learning forms and approaches. Part 1 is based on presentations and reflections of the text. Part 2 applies learning from Part 1 in an external context. Part 1 and 2 could also be conducted as separate seminars.

Learning Outcomes:

- 1) to engage with and explain key issues within the gig economy
- 2) to develop different theoretical perspectives of digital geography in the gig economy using academic texts and applied knowledge
- 3) Other skills: presentation, critical thinking skills, source evaluation, critical discussion, reading and assessment of information, class participation, conducting research, developing knowledge to applied context, connecting theory to lived experience

Suggested Seminar Plan (based on 120 minutes, 20 students):

Pre-seminar: Students, in groups of 4-5 students, are assigned to read the Introduction, Conclusion, and 1 pre-assigned section of the text. Based on their respective sections, students prepare a short summary presentation of the arguments. Students should hand-in a short summary presentation as a PowerPoint and individually prepare 2-3 reflective/exploratory questions that they would like to discuss. These should be handed-in as well.

Seminar:

Part 1 (c 45 minutes): Presentation of the issues:

- a) Presentations: Each student group presents a short summary (max 5 minutes including their questions) of their pre-assigned section covering the central issues, questions and arguments raised in each section.
- b) *Buzz Talks* on their submitted questions. Students write their most urgent pre-prepared questions on paper. All questions are collected in a basket or bag. Students then gather in pairs and draw a question from the basket or bag. Students then discuss in pairs the questions for a short period. Recommend 2-3 minutes. After a round, questions are returned to the bag and a new question is drawn. Another round is commenced. It is recommended that this be done 2-4 times depending on time.

Part 2 (c 45 minutes): In the second half of the seminar, students deep dive into a platform by creating an initial case study/profile of a platform business. Students should apply the key questions from their section to the platform using online resources such as the company website etc. They have 30 minutes to do a preliminary case study and to explore the questions in an applied context. The aim is not to have definitive answers, rather to make linkages from the theoretical questions to an applied case/example. In the last 15 minutes, 2 groups are paired and they share what they have learned (or not!) and how questions from their section are (in)visible in their company profile. They can also discuss what questions remain.

Part 3 (c 10 min): Conclusion and wrap-up: Gather as a large group, a rapid circle-round of 1 key point/what was interesting serves as final exercise.

Alternative Discussion and Creative Activity: Learning with the Cover Illustration

Illustrator Michèle Harland designed the cover illustration and provides an artist statement for this text. Ask students to read the artist statement and to study the cover.

Discuss (c 10 minutes): Small group discussions

In pairs, discuss the following questions:

1. What does the cover say about digital spaces and places?
2. How does it represent movement, temporalities and mobilities?
3. In what ways does the image connect to discussions within the report?
4. What else do you note?

In a large group, report on a key point from the small group discussions. After this, ask the pairs to regroup for the next activity.

Activity (c 20-25 minutes): Drawing digital spaces as a conceptual process

In her artist statement, Harland describes the challenge of representing visible and invisible practices. How would you draw or represent the ideas discussed in the report?

In pairs, try to draw (on A4 paper or computer) and visibly represent a key theme you found interesting in the report. Symbols, lines, shapes, colors, and content are of students' choice. Remind the students, this is a process to work through concepts, not an artistic project.

When finished have students 'display' their images. Students can look at each

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Author Biographies

Olivia Butler is a PhD student at the University of Uppsala working within the project “Work Without Jobs: A Study of Gig workers’ Existence”. The purpose of this study is to contribute knowledge for the development of strategies and policies for a digitized and socially sustainable working life in Sweden. Olivia’s research interests revolve around the spatiotemporal realities of labourer’s, what constitutes labour and the multiple ways in which our intersectional positionalities effect our experiences of work.

Mathilde Dissing Christensen is a lecturer in Geography and Planning at Cardiff University. She holds a Ph.D. in Society, Space and Technology (Roskilde University) and a Ph.D. in Communication, Culture and Media (Drexel University). Mathilde’s research interests are centred on tensions between mobility and stillness, as well as renegotiations of public, commercial and private realms. Mathilde has published on the material cultures of biking, peer-to-peer hospitality, and cross-cultural encounters in public space as well as Airbnb hosting and tourism.

Katrine Duus is a PhD Candidate at the Department of Anthropology, Aarhus University, and co-founder of the Danish Research Network for Platform Work. She commenced her fieldwork on digital platform work in 2018, following both food delivery bicycle riders as well as the political discussions regarding freelance work and attempts at organizing among platform workers. She has had a continued contact to the field ever since. She is particularly interested in the interplay between technology, exchange, time and values.

Konstantinos Floros is a PhD student at IT University of Copenhagen, investigating platform housecleaning in Denmark from the workers’ perspective. He has a background in Political Science, Labor Sociology and STS and has previously conducted research on precarious labour conditions for migrants in the agricultural sector. He is a co-founder of the Danish Research Network for Platform Work.

Kalle Kusk is a PhD Candidate at the Department of Digital Design and Information Studies, Aarhus University, and co-founder of the Danish Research Network for Platform Work. He is currently undertaking a multi-sited ethnographic study of platform-mediated food delivery. His work focuses on the work practice as seen from the perspectives of the workers and investigates the various in-situ negotiations going on.

Maartje Roelofsen is a postdoctoral researcher in the Department of Economics and Business at the Universitat Oberta de Catalunya, Spain. She received her PhD in Sustainable Urban and Regional Development from the University of Graz in Austria. Her research examines digital transformations within the realm of tourism, urban space, and geography education; the impact of digitalization on hospitality- and tourism-work; and understandings of home and (un)homeliness within the context of tourism. Maartje is an Associate Editor of the journal *Tourism Geographies*.

Natasha A. Webster is a senior lecturer in Geography at Örebro University, Sweden and a researcher at Stockholm University. Natasha has a PhD in Human Geography from Stockholm University. She is interested in gender, migration and work(ing)-life practices. Natasha's current research focuses on feminist economic geography by exploring the role of gig work in migration and integration. Natasha is Associate Editor for *Emotion, Space and Society* and is part of the editorial board for *Digital Geography and Society*.

Qian Zhang is a researcher at the Department of Human Geography, Stockholm University. Qian holds a PhD in Human Geography (Stockholm University). She is interested in migration, digital geography, and environmental politics. These interests currently focus on exploring the connections between the platform/gig economy, migration and integration, and on investigating rural-digital relations and practices. Qian's research has mainly been done in Sweden and China.

Appendix 1

Paper presentations at the 9th Nordic Geographers Meeting 2022, Joensuu, Finland Session 45. "Beyond numbers and algorithms – deep-diving into the platform-mediated gig economy"

Chairs: Natasha A. Webster (Stockholm University & Örebro University) & Qian Zhang (Stockholm University)

Braunschweig, B. * (Friedrich-Schiller-University) (2022). Global platforms and regional intermediaries: Intersecting networks of the music and the finance industry.

Butler, O. (Uppsala University) (2022). An Appendage to the machine: Corporealising the gig economy.

Dissing Christensen, M. (Cardiff University) (2022). Digital Capital: Doing Digital Discipline.

Floros, K. (IT University Copenhagen), & Kusk, K., Duus, K. (Aarhus University) (2022). Going Local: Ethnographic investigation of spatio-temporal factors in the Danish context of digital platform labor.

Roelofsen, M. (Open University of Catalonia) (2022). Reflections on the divisions of social reproductive labour in Airbnb households.

Zhang, Q. (Stockholm University), & Webster, N. A. (Stockholm University & Örebro University) (2022). Platform Ruralism: A call for conceptualizing the platform economy in rural contexts.

*paper presentation only

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