BEYOND CATEGORIES: A FLOW-ORIENTED APPROACH TO SOCIAL JUSTICE ON ONLINE LABOUR PLATFORMS

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ABSTRACT

Online labour platforms (OLP) are transforming long-established employment relations, raising questions for researchers and policymakers alike as to the social justice implications of this increasingly pervasive, algorithmic, and platform-mediated form of work. In investigating this issue, this paper makes a case for complementing current *category-based* approaches to social justice, prevalent in literature and policy on OLPs, with a *flow-oriented* approach that recognises the diversity of gig-work trajectories when it comes to the situated enactment of social (in)justice. Inspired by the recent work of Tim Ingold and building upon seminal work on social justice by Rawls and Sen, we develop a synthetic framework for revealing the social justice implications of OLPs, in terms of the enactment of opportunities and/or barriers, from three perspectives: access to resources, capabilities to function, and correspondences with flows. The latter perspective temporally reinterprets the former two and offers a processual flow-oriented approach to social justice. We further substantiate and showcase the value-added of our approach through an empirical investigation of different gig-working stories on the Amazon MTurk platform and discuss how our flow-oriented approach leads to revealing social justice implications not foregrounded through other approaches. Finally, we derive remedial design and policy principles that can serve to reshape dialogue about social justice on OLPs, both theoretically and practically, in a manner that is more relevant and responsive to the fluid and evolving realities faced by gig-workers.

Keywords: *Online labour platforms, social justice, opportunity, fairness, capability, correspondence, flow, trajectory, MTurk*

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INTRODUCTION

A spectre of injustice is haunting the platform economy—its ghostly presence casting a shadow over prospects of autonomy and flexibility. We bear witness as online labour platforms (OLPs), such as Upwork, Fiverr, Uber, or MTurk, chip away at long-standing employment relations, instituting in their place new algorithmic mechanisms of economic participation, organisation, and governance for millions of workers worldwide (Constantinides et al., 2018; Vallas & Schor, 2020). At the same time, we observe mounting societal concerns around the social justice implications of this transformation of work. There grows an uneasy feeling in the *zeitgeist* that, despite their promises and potentials, OLPs may be mired in unfair distributions of the burdens and benefits of work (Gray & Suri, 2019). This raises the question as to *how can the social justice implications of OLPs be appropriately revealed and remedied?* This is the question that this paper seeks to address.

Extant research paints a varied picture when it comes to *revealing* the social justice implications of OLPs. Some studies show how OLPs' lax recruitment and flexible off-site working hours offer economic inclusion and autonomy, especially to disadvantaged groups (Heeks, 2017; Taylor & Joshi, 2018). Others show how OLPs' algorithmic management and lack of legal protections create precarious conditions, leading to exploitation (Newlands, 2021; Wood et al., 2019). These varied assessments of OLPs stems from different approaches to social justice. Some focus on (un)fair institutional arrangements (Ettlinger, 2016; Fieseler et al., 2019), whereas others focus on agentic (im)possibilities afforded to workers to shape their own ongoing development (Deng et al., 2016; Elbanna & Idowu, 2021). Some focus on economic outcomes, such as earnings per hour or holiday pay, others on broader social outcomes, such as recognition or dignity (Bucher et al., 2019; D. L. Chen & Horton, 2016).

Policy makers are also struggling to *remedy* the social justice implications of OLPs.

Many of the current regulations on employment rights, collective bargaining, and so on, do not readily apply to OLPs, leading to many seemingly unfair situations. In response, some governments are trying to regulate platforms as quasi employers. For example, since 2020, the Ontario Labour Relations Board has ruled that Foodora couriers are dependent contractors, a categorisation between independent contractor and employee (White, 2020); New York City has ruled that minimum wage be extended to Uber and Lyft drivers (Campbell, 2018); the Spanish government has introduced the "Riders' Law" that categorises all workers on food delivery platforms as employees (Eurofound, 2021); and a court in Switzerland has classified Uber as an "employer" (Swissinfo, 2022).

Despite their variation, OLP research and policy often adopt a *category-based* approach to social justice. They either take gig-work as a unified category to analyse its benefits and burdens vis-à-vis platforms and customers, or focus on demographic categories of gig-workers (e.g., based on gender, ethnicity, or sexuality) to assess their diverse empowerment and/or marginalisation (Chan & Wang, 2018; Milkman et al., 2021). We might thus uncover injustices amongst those recognised categories, or alternatively, celebrate OLPs for their 'category blindness.' While this approach has exposed many such entrenched injustices, it also distracts from emerging and fluid injustices *that do not map to pre-defined categories*. It also reduces diverse individual experiences of gig-work into mere category instances. This becomes more salient when such an approach underpins design and policies that assume similar conditions, grievances, and strivings across the entire category. Whilst beneficial to a subset of workers at the centre of the category, such policies often exacerbate the conditions on the periphery, as well as erect entry barriers for newcomers, as we shall see below.

We argue for an alternative approach that recognises the diversity of trajectories when it comes to the actual experience of social (in)justice. Inspired by the recent work of Tim Ingold (2015, 2017), we make a case for a *flow-oriented* approach to social justice on OLPs. This

approach foregrounds the *temporal unfolding* of different gig-working trajectories along and amidst myriad socio-technological flows (Mousavi Baygi et al., 2021). It recognises that unfolding lives cannot be defined in terms of categories but rather in terms of their diverse trajectories as well as their confluences with heterogenous flows along the way.

To elaborate this approach, we develop a synthetic framework that builds on the seminal works of John Rawls (1958, 1999) and Amartya Sen (1995, 2009) on social justice. The connective thread is the question of *actual opportunities* (and/or barriers). Rawls rests the question on *institutional arrangements* that guarantee or violate fair access to resources, while Sen emphasises *individuals' capabilities*, or their absence, to effectively benefit from resources. The flow approach takes a temporal view and foregrounds *correspondences with flows* through which we find ourselves on diverse trajectories of actualising certain opportunities to the exclusion of others.

We further substantiate these flow-oriented sensitivities by drawing on our qualitative investigation of diverse *Turking* stories—stories of gig-working on the MTurk platform. We show how our flow orientation leads to revealing overlooked social justice implications related to the enactment of opportunities and/or barriers. Finally, we derive a very different class of remedial design and policy principles. Unlike *membership-benefiting* policies focused on pre-defined category memberships, our flow approach advocates for *transition-facilitating* policies. These policies enshrine the diversity of trajectories in the OLP landscape and aim to foster flows, and facilitate correspondences, along which diverse gig-working careers can emerge, advance, and, if/when desired, transition away to other employment.

The contributions are twofold. First, we offer a synthetic framework that allows researchers to reveal the social justice implications of OLPs—or other digital phenomena— from three viewpoints: access to resources, capabilities to function, and correspondences with flows. Second, we offer design and policy principles to remedy those social justice concerns

by fostering and supporting diverse gig-working trajectories in their growth and transitions. These principles can serve to reshape the dialogue about social (in)justice of OLPs.

ONLINE LABOR PLATFORMS AND SOCIAL JUSTICE
Online Labor Platforms

As a type of digital platform, OLPs are defined as "online environments where digital services are sourced and delivered in exchange for compensation, with constituent tasks for the services determined, executed, and coordinated by human and AI agents" (Rai et al., 2019, p. iv). They are often characterised with a shift from *dyadic* (employer-employee) to *triadic* (employer-platform-employee) work relations (Curchod et al., 2020; Fieseler et al., 2019). OLPs are also distinguished from markets, hierarchies, and networks, for their distinct type of governance mechanism whereby they externalise control over some functions, such as work schedules and performance evaluation, but retain concentrated power over others (Vallas & Schor, 2020). That is, unlike the centralisation of power in hierarchies and its dispersion in markets, in OLPs power is exercised through the delegation of agency between humans and algorithms (Baird & Maruping, 2021; Kretschmer et al., 2022).

This intermediate position leads to many intended and unintended consequences (Faraj et al., 2018) that carry social justice implications. Whereas OLPs proponents view them as mere matchmakers in a dynamic marketplace for labour (Evans & Schmalensee, 2016), others point out how, as the third party in the triadic work relation, OLPs are implicated not only in shaping the distribution of benefits and burdens between all the stakeholders (Bucher et al., 2021), but also in transforming the very nature of work (Curchod et al., 2020; Zysman & Kenney, 2018). For instance, OLPs' algorithmic triadic work relation allows customers and platform providers to circumvent the laws and regulations that govern established employment relations in ways that are increasingly considered unfair (Fieseler et al., 2019; Pfeiffer & Kawalec, 2020). At the same time, OLPs offer work opportunities to those excluded, for a variety of reasons, from conventional regulated labour markets. Below, we

review studies that have explored the social justice implications of OLPs in different ways.

OLPs and Their Social Justice Implications

Our literature review reveals that OLP studies have variously examined questions related to social justice including exploitation, precarity, surveillance, empowerment, and autonomy—even though not always using the term social justice. Moreover, studies often do not specify their approach to social justice; they take for granted that injustices are obvious, and that no specific theory of social justice is necessary to account for how such injustices can be revealed and remedied. Nonetheless, we find it beneficial to organise these studies based on their primary *locus of exploration* of social justice implications: ranging from structural conditions to workers' agentic possibilities. This way of organizing the literature foreshadows Rawls' and Sen's loci of theorizing social justice, which we will turn to in the next section.

Starting with structural conditions as the locus of exploring social justice implications, several studies point out how OLP's triadic relationship has decoupled them from traditional legal obligations—such as employment contracts, sick-pay, etc., normally required in the dyadic employment relationship (Flanagan, 2019; Geissinger et al., 2021). Some argue that the triadic role of OLPs transforms their status from mere facilitators to quasi-employers (D. L. Chen & Horton, 2016; De Stefano, 2015; Gegenhuber et al., 2021). Bucher et al. (2021) deem the term 'shadow employer' appropriate for OLPs since their "(1) algorithmic decision-making mechanisms remain largely opaque with limited feedback or recourse options, and (2) platforms take on key roles of employers, such as hiring and performance management" (p. 60). De Stefano (2015) sees it as "disguised employment relationships" that "contribute to the informalisation of parts of the formal economy, by allowing a portion of the workforce to be unduly excluded from labor and social protection" (p. 481). Other studies also foreground how the lack of legal protections and algorithmic management of OLPs create precarious work conditions and lead to exploitation of workers (Ettlinger, 2016)—see Table 1.

This evaluation of structural injustices is, however, not a uniform view in the literature.

For example, some studies foreground how structural elements such as lax recruitment criteria and flexible off-site working hours redistribute economic opportunities to traditionally disadvantaged groups, such as stay-at-home parents (Taylor & Joshi, 2018), unemployed workers in the global south (Heeks, 2017), people with disabilities (Zyskowski et al., 2015), or people who need to build up their skills on the job (Gray & Suri, 2019).

Table 1. Summary of Literature on Social Justice Implications of OLPs

Locus of SJ Implications	Themes / Papers
Structural conditions (governing categories of workers) **[STRUCTURE]**	**Changing structure of the employment relationship** ○ Platforms' triadic employment relations leads to power asymmetry (Curchod et al., 2020) ○ Platforms "invisibilize" the management figure (Gandini, 2019) ○ Platforms play key employer roles with opaque algorithmic decision-making (Bucher et al., 2021) **Unfavourable working conditions** ○ Platforms' lack of legal protection leads to exploitation (Ettlinger, 2016) ○ Platforms offer low pay, isolation, working irregular hours, overwork (Wood et al., 2019) **Voice and participation** ○ Platforms give workers limited voice on pre-defined issues; preventing them from speaking up freely or co-determining platforms' decisions (Gegenhuber et al., 2021)
	Unfair algorithmic mechanisms ○ Algorithmic monitoring (Newlands, 2021) ○ Algorithmic control via restricting, recommending, recording, rating, replacing, and rewarding (Kellogg et al., 2020) ○ Power asymmetry in customer evaluations (Curchod et al., 2020) ○ Path dependency of (negative) customer ratings (Kuhn & Maleki, 2017)
Agentic possibilities (afforded to categories of workers) **[AGENCY]**	**Cultural and social capital** ○ Workers transform crowdwork into long-term employment by drawing on cultural heritage, social norms, and traditions (Elbanna & Idowu, 2021) ○ Workers make the precarity of gig-work more tolerable by developing connections to routines, people, places, and a purpose (Petriglieri et al, 2019) **Autonomy** ○ Workers with other income can exercise more autonomy over platform work and position themselves better in labour market (Schor et al., 2020) ○ Workers perceive algorithms differently and take advantage of them (Bellesia et al., 2023) **Professional identities and positions** ○ Sellers on eBay have different feelings of injustice based on referential identities, e.g., former or current jobs (Curchod et al., 2014) **Diversity of gig-working experiences** ○ Workers have different gig-working experiences based on individual and contextual factors, e.g. skills and qualifications, type of work, and source of gig work (Caza et al., 2021) ○ Workers craft dynamic & diverse work trajectories and career paths (Idowu & Elbanna, 2022) **Resisting the algorithms** ○ Workers game rating algorithms by forming alliances with clients (Rahman, 2021) ○ Workers "pacify" algorithms via (in)direct compliance practices (Bucher et al., 2021)

Other studies, towards the middle of the structure/agency spectrum, explore the social justice implications of the crowdsourced and algorithmic mechanisms that OLPs rely on in performing their intermediary role. In traditional workplaces monitoring occurs between the

employer and the employee whilst on OLPs, it is performed through new forms of algorithmic monitoring (Newlands, 2021). Through restricting, recommending, recording, rating, replacing, and rewarding, this form of algorithmic control can direct, evaluate, and discipline workers. It can lead workers to experience manipulation, disempowerment, surveillance, discrimination, precarity, and stress (Kellogg et al., 2020), *inter alia*, of falling into disfavour of the algorithm due a string of negative ratings (Kuhn & Maleki, 2017).

Edging closer to the agency end of the spectrum, other studies have explored the social justice implications surrounding varying action (im)possibilities afforded to OLP workers. While some argue that OLPs have disempowered workers by eroding their rights (Bates et al., 2020), choice, and control (MacDonald & Giazitzoglu, 2019), others shed light on sometimes successful tactics to resist algorithmic control (Bucher et al., 2021; Shapiro, 2018)—e.g., by gaming the rating algorithms via forming alliances with clients (Rahman, 2021), or using bots or multiple phones to subvert allocation algorithms (J. Y. Chen, 2018).

Scholars have also explored how different gig workers experience varying levels of injustice—showing that injustice is not simply a matter of structural characteristics or socio-economic context, but that it is also shaped by individual life circumstances (Caza et al., 2021). For instance, Elbanna & Idowu (2021) show how crowdwork functions as liminal work for Nigerian crowd-workers who draw on their cultural heritage and social traditions to eventually transform it into long-term employment. Similarly, Petriglieri et al. (2019) show how "independent workers" create personal environments through connections to routines, people, places, and some purpose to make the precariousness of their work more tolerable.

Overall, this literature review underscores that OLPs are significantly transforming employment relations resulting in profound structural, institutional, and relational implications for social justice (Young, 1990). The reviewed studies have greatly enriched our understanding of many these implications. However, save for some exceptions (e.g., Caza et

al., 2021; Idowu & Elbanna, 2022), this literature is predominantly category based: be that in attending to the structural conditions governing different worker categories, or in exploring the agentic (im)possibilities afforded to distinct worker categories. In the following section, we move towards a synthetic framework that foregrounds the temporal unfolding of gig-working trajectories when it comes to situated enactment of social (in)justice on OLPs.

UNPACKING SOCIAL JUSTICE: FROM RESOURCES, TO CAPABILITIES, TO CORRESPONDENCES

Social justice is a complex and contested concept (Collier et al., 2006), often because it becomes interpreted very differently depending on one's political philosophy. This does not make it irrelevant. Quite the contrary. Some even claim that social justice is *the* most fundamental question for society to deal with: "Justice is the first virtue of social institutions, as truth is of systems of thought", or so argued Rawls (1999). Given this contested nature, we argue that it is important to be explicit about the theoretical concepts being deployed as it has a strong bearing on what might be seen as social justice implications, and more importantly, how to go about remedying such implications.

In this section we present three approaches to social justice: Two classics, by Rawls and Sen, rooted in a paradigm of social justice as socioeconomic distribution (Fraser, 1999), and a third inspired by the work of Ingold. Rawls puts the focus on *fair access to resources* and rights, and he locates the remedies in *building fair institutional arrangements*. For Sen, the focus is on the realisation of *human functionings*, and he locates the remedies in *developing individual's capabilities*. These orientations yield distinct analyses of when and where issues of social justice are at stake and how they might be remedied. However, both lines of work, we argue, fail to incorporate temporality in any significant manner. We thus turn to Ingold to develop such a processual understanding of social justice issues and remedies, especially as it bears on how opportunities and/or barriers are enacted in the normal flow of everyday life. It is important to note that these are not necessarily incommensurable paradigms in their

proposed *social justice ends* (what is aimed for). However, they do differ markedly in what they see as the necessary conditions for actual opportunities to become enacted in everyday life. That is, they differ in their *social justice means* (what ought to be done).

Social Justice as *Fair Access to Resources* (Rawls)

Rawls' theory of social justice is directed at how one might design institutions that are *fair*—what he calls the 'basic structure' of society. His 'political conception' of justice is rooted in the fundamental values he identifies as implicit in most democratic societies. Rawls argues that neutral and objective rules for social justice can only be decided in the 'original position': a hypothetical situation in which the parties are deprived of all the information that is *morally irrelevant* in deciding the principles of justice that they would be willing to adopt. Behind such a 'veil of ignorance', they would have no knowledge about their place in society, no knowledge of their race, gender, economic status, etc., no knowledge of their natural abilities, and no knowledge of any conception of what the preferred values or relevant 'good' might be in that society. Rawls suggests that actors in the original position will be able to reach agreement on the principles of justice that will be fair to all, since morally irrelevant information will not influence the choice of principles they are willing to adopt—it will also eliminate bargaining typical of biased actors. He then proposes a set of principles of justice that he argues would be chosen as being fair by a group behind the veil of ignorance. Specifically, he suggests that there is a list of *primary social goods* (rights, resources, etc.,) that those in the original position would decide as being fair to have *equal access* to[1] (Rawls, 1958). This is, for him, the social justice *end* that fair institutional arrangements should attempt to secure. Furthemore, any inequalities that might occur in this distribution should be in favour of the *least advantaged* groups or categories—what he calls the *diffrence principle*.

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[1] Rawls lists: basic liberties and rights; freedom of movement and free choice of occupation against a background of diverse opportunities; powers and prerogatives of offices and positions of responsibility in the political and economic institutions of the basic structure; income and wealth; the social bases of self-respect.

Thus concieved, the notions of fair access and least advantaged assume some form of

commensurability (Espeland & Stevens, 1998) and boundary making (categorizing to identify

the least advantaged), which are very much contested. Hence, even if one agrees with the

principles and the list of primary goods *the situated enactment* of these will remain deeply

problematic—as Sen (1995) and others (e.g., Cohen, 2021; Nussbaum, 2006) have argued.

Moreover, equal distribution of resources is one thing, but outside the veil of ignorance there

are many differences that matter not in terms of the absolute fairness of distribution but in the

timely possibilities to effectively take advantage of resources one might have been allocated.

Rawls and Digital Technology

From a Rawlsian perspective, the social justice implications of digital technologies would be

revealed at the structural or institutional level. Remedies, from this perspective, would

involve designing fair institutions and systems that guarantee equal access to resources/rights.

For example, Introna (2000) employs the veil of ignorance to consider how privacy and

transparency rights can be distributed in workplace surveillance. Similarly, Douglas (2015)

identifies principles of fairness that the participants in the original position would determine

for computing devices, and how that might suggest fair Internet regulation. Franke (2021)

uses Rawls' original position to show how complex it is to determine the principles of

fairness in algorithmic decision-making. In a similar manner Leben (2017) does a thought

experiment to argue how one might design a Rawlsian algorithm for an autonomous vehicle

to make fair decisions in a collision scenario. It is notable that most of this work is

conceptual, which underlines the fact that significant translation is required to move from the

original position to actual real-life situations. How do we move the question of the

eanactment of (in)justice closer to the reality of everyday lives?

Social Justice as *Capabilities to Function* (Sen)

Sen (2009) acknowledges a huge debt to Rawls, but is also critical of him. Together with

Nussbaum (2003), he argues that justice is not primarily a matter of securing certain rights or

goods for all equally. Rather, justice is a matter of the development of *capabilities* to render

possible the realisation of various significant human *functionings*, such as being healthy,

literate, employed, in a community, and so forth. Human functionings are thus valuable states

of 'being' and 'doing', while capability denotes the ability to convert access to resources into

such functionings. For instance, having equal access to a smartphone, as a result of fair

institutional arrangements, is meaningless if I am technologically illiterate, i.e., I do not have

the capability to realise the functionings that access to a smartphone should afford (e.g.,

social connectedness). According to the capability approach, justice should be evaluated in

terms of the *capabilities to function* of individuals—individuals who are "deeply diverse" in

internal characteristics (such as, age, gender, abilities, health) and external circumstances

(such as, social background, ownership of assets, environmental constraints), what Sen calls

conversion factors. These effective states of beings and doings—or functionings—together

constitute that which makes a life valuable and meaningful to live. This is, for Sen, the social

justice *end* that development of capabilities ought to aim to realise.[2]

It is then clear that for Sen access to resources or rights is necessary but not sufficient.

What makes a resource or right significant is one's *effective access* to it and that hinges on

the differential abilities of individuals to convert access to resources into valuable

functionings. An individual might have twice as many resources as another but still be worse

off because they may require many times more (or different types of) resources to achieve the

same level of functioning—for example because they might have some form of disability.

Sen and Digital Technology

From a Senian perspective, the social justice implications of digital technologies would be

revealed at the level of individuals' digital capabilities. Remedies would then concern

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[2] Sen and Nussbaum disagree about fundamental human functionings. Sen argues these should be decided contextually whilst Nussbaum argues for a universal list: life; bodily health & integrity; senses, imagination and thought; emotions; practical reason; affiliation; play; and control over one's environment.

developing such capabilities wherever they are lacking. There is a significant body of work in ICT for Development that draws from Sen's approach to evaluate, design, or implement ICTs in pursuit of human or social development. For instance, Hatakka (2011) applies the capability model to evaluate the implementation of a 'virtual classroom' for interactive distance education using mobile phones and TV. He concludes that the project was too focused on the systems and overlooked individual conversion factors needed to convert these resources into functionings. A similar critique has been levied in the evaluation of Union Digital Centres in Bangladesh (Hoque, 2020), or of hospital information systems in an Indian state (Sahay & Walsham, 2017), or of e-society projects in China and South Africa, where researchers show different types of capability deprivation and argue that government policies should go beyond technological provision and carefully attend to socio-political, cultural and institutional conversion factors in ensuring actual functionings are realised (Zheng & Walsham, 2008). This argument for the shift from access to resources towards realisable functionings, we argue, is the key insight that forms the foundation for a temporal understanding of social justice. To build on this, we turn to the work of Tim Ingold.

Towards Social Justice as *Correspondences with Flows* (Ingold)

The question becomes: What would an Ingold-inspired flow approach to social justice take as the necessary *means* to secure what *ends*? To our knowledge, Ingold's work has not thus far been mobilised to bear upon social justice. However, we contend that it has an important contribution to make in this regard. The issue with Rawls' and Sen's approaches, we argue, is not their respective social justice *ends*—be it fair access to primary social goods or realisation of valuable human functioning. The problem rather lies in their proposed *means*: building fair institutional arrangements and developing individuals' capabilities, both of which are imperfectly atemporal and fail to sufficiently account for the situated enactment of social (in)justice in the flow of everyday life. We would happily debate the merits of particular ends to be achieved in the name of social justice, and it might be possible to develop a list of social

justice ends for any particular situation, or as Nussbaum does, a universal list of social justice ends. This seems to be the straightforward normative part of a theory of social justice. The more difficult part is the means, or the 'how'—i.e., the process. That is where Ingold's work becomes important, especially in our everchanging and overflowing digital world. We argue that his recent work, translated into IS as a flow approach to digital phenomena (Mousavi Baygi et al., 2021), offers a sensitizing framework to develop a processual understanding of how opportunities and/or barriers come about in the flow of, for instance, working on OLPs.

From Categories to Flows and Trajectories

Ingold argues that "the world we inhabit, far from having crystallised into fixed and final forms, is a world of becoming, of fluxes and flows." (2015, p. 80). The primary condition of being in such a world "is not to be *in* a place but to be *along* a path," not to be contained, say within categories, but rather to be always already *on the move* (Ingold, 2011, p. 12). He thus invites us to appreciate phenomena as being composed, not of things, but of flowing lines—of growth, movement, and transformation. Whenever and wherever we find ourselves, we are swept up and animated along some flows of action, as is true for everything we encounter.

While flow and trajectory both refer to such lines, we take them as conceptually distinct. When we talk about the trajectory of a line of action, a practice, a phenomenon, or a life, we refer to its overall path: where it's coming from and where it's heading, in the timeframe of our interest; whereas when we talk about its flow, we refer to its unceasing movement forward. Using the metaphor of a river, trajectory refers to the river's path, whereas flow refers to the qualities of the very movement of water. In studying a digital phenomenon, the concept of flow thus sensitises us to 1) the temporal qualities of the unfolding lines of action that go into performing that phenomenon—qualities such as rhythms, intensities, momentums, but also durations, build-ups, directions, and finally timely confluences—, and 2) how these temporal qualities continually condition and orient the unfolding trajectory of the focal phenomenon. For instance, below we will see how a flow approach to OLPs goes

beyond an entitative focus on platform features, requesters' behaviours, or workers' choices. It instead allows us to account for the temporal qualities of various socio-technological flows—such as those related to incoming tasks, community conversations, scripts' upkeep, or platform evolution—that go into enacting different platform-related opportunities and/or barriers. We will also see how diverse gig-working trajectories are swept along, conditioned, and given direction by the rhythms, intensities, and confluences of these flows.

This perspective specifically recognises that unfolding lives cannot be accounted for in terms of categories but rather in terms of their trajectories, or storylines—i.e., their contingent pasts, conditioned possibilities, and aspired futures that cut across pregiven categories, as they join into and go along myriad flows. When it comes to questions of social justice, to treat such trajectories as belonging to the same category—of, say, independent contractor—or to fit them into demographic sub-categories might indeed simplify the problem into a manageable comparison of categories against each other. However, there exactly lies the problem: reducing the plurality of human experience into mere category instances leads to design and policies that assume similar conditions, grievances, and strivings across the category. Indeed, even if we refine our categories, or consider their intersectionalities, we only throw the incommensurability problem further down the line. What then becomes of social justice (particularly of the enactment of opportunities and/or barriers) if we shift our focus away from categories towards trajectories as they unfold, grow, and transform—in short, as they flow? To answer this question, we need to briefly elaborate how actual opportunities and/or barriers come about along socio-technological flows.

Correspondences with Flows Create Opportunities and Barriers
Instead of dwelling in neat categories, the (story)lines of life flow forth. And as they flow they coalesce, coil around one another, and join into confluences, in what Ingold refers to as *correspondences* (Ingold, 2015, p. 11). Such co-responding of flows marks moments that offer transformational possibilities, or opportunities, differentially. That is, when different

flows join into a confluence of co-responding to one another, they give rise to specific *conditions of possibility*. Such emergent conditions of possibility function as implicit solicitations, making some actions/paths seem more obvious, more legitimate, more meaningful, but others less so; or, they might be more forceful, making certain actions/paths appear as unavoidable, or even obligatory, but others as immaterial, impossible, unthinkable. That is, in the ongoing flows of daily life certain paths come into being as concrete and relevant opportunities to act and to become, while others are foreclosed, forming barriers.

We can already see that to adopt a flow approach is to appreciate that opportunities and/or barriers depend on specific correspondences along heterogenous flows. However, to distinguish such a flow-oriented notion of opportunity from those of the resource-based and capability-based approaches, as well as from affordances-informed conception of action possibilities (Faik et al., 2020; Leonardi & Vaast, 2017), we must note that correspondence is not a relation *between things*—as in between workers and platform features, one here and the other there. Rather it refers to a relation *along flows*—as in a *joining into the forward movement of* and *going along with* heterogenous platform-related flows, as they flow. Importantly, correspondence entails timing, attentionality, and undergoing (Mousavi Baygi et al., 2021). That is, unlike actualising affordances, correspondence cannot take place at any arbitrary point in *time* as soon as one *intends* to *do* so (e.g., use a technological feature) to achieve a goal. It rather requires us joining in and waiting upon other socio-technological flows to present an opportune moment (*timing*), continually and skilfully *attuning* our actions and movements to the rhythms and intensities of those flows (*attentionality*), and in the process, finding ourselves swept up and animated along a path of actualising specific opportunities to the exclusion of others (*undergoing*). Indeed, unlike in an affordance view where the world of objects is static, waiting to be perceived by an agent to afford something, in an Ingoldian view, possibilities for action are temporal accomplishments based on how

'things come together' and co-respond at particular moments. We should thus note that correspondence is not an *actor-centred* act and that the onus of correspondence, and the ensuing opportunities, are not squarely on the individual. Correspondence is always a confluence where multiple flows are attuned to and undergo each other, as they flow.

Ingold and Digital Technology

From the perspective outlined above, the social justice implications of digital technologies would be revealed at the level of correspondences with socio-technological flows. Remedies would then concern fostering relevant flows wherever they are lacking and facilitating correspondences with them. This is what we aim to advance in this paper. To better illustrate the point, let us go back to the smartphone example. While the Rawlsian approach focuses on digital infrastructures that provide or violate fair access to smartphones, and while the Senian approach focuses on individuals' digital-literacy to make valuable use of smartphones, the Ingoldian approach focuses on ongoing *correspondences with smartphone-related flows* that animate us to actualise certain opportunities, but not others. That is, it focuses on whether, when, and how, as we go along our life stories, we get exposed to valuable smartphone-related flows, become attuned to them (e.g., bringing them into our daily rhythms), and in the process, find ourselves on diverse trajectories of actualising specific possibilities for action to the exclusion of others. Examples of such smartphone-related flows include: the different flows of activity by our friends, colleagues, and communities on different messaging apps (think WhatsApp vs. Slack), each unfolding with different rhythms and intensities of conversation that need joining in and keeping up with *to enact social connectedness*; or the different flows of content creation and consumption on different social media platforms (think Facebook vs. TikTok), with some of which we can and with others we cannot keep up, despite having access and the necessary capabilities, *to enact free expression*; or the varying flows of driver activity on ride-sharing platforms that allow us (or not) at different moments and places to hail a taxi *to enact urban mobility*; or the flows of payment and money transfer

that keep a local mobile payment app afloat, in turn *enacting financial inclusion* for the

unbanked; all the way to any socio-technological flows that enact our phones as useful and

valuable devices to have and to regularly use—lest we find ourselves left behind.

Bringing Things Together

Table 2 summarises the three approaches to the enactment of social (in)justice explored

above. Overall, we are not suggesting that Rawls and Sen are wrong in the social justice ends

that they propose; rather that their proposed means are insufficient in securing those ends.

Yes, we need access to resources to be distributed as fair as possible, and yes, we need to

make sure that necessary capabilities are developed; however, without timely correspondence

with relevant flows, resources and capabilities will not translate to actual opportunities. And

therefore, social justice will not be enacted for the individual in the unfolding trajectory of

their specific life, as it flows, grows, and develops (or not). As such, we propose

correspondences with flows as an additional *necessary* means for enacting, not just Rawls'

and Sen's, but any collectively agreed-upon social justice ends in different situated contexts.

Table 2. Resource, Capabilities, and Flow Approaches to Social Justice (SJ)

Approach	Ends of SJ	Means of SJ: Actualising Opportunity	Illustration of SJ remedies
SJ as *fair access to resources* [STRUCTURE]	Fair distribution of primary social goods	**Structural conditions:** Institutions and systems need to guarantee fair access to resources and rights to ensure equal distribution of opportunity.	Building *digital infrastructure* that guarantees fair access to smartphones, and the opportunities that they afford.
SJ as *capabilities to function* [AGENCY]	Realisation of meaningful human functionings	**Development conditions:** Access to resources and rights is not enough. Effective access to opportunities requires development of individual capabilities.	Developing *digital literacy* to enable individuals to effectively use smartphones, and the opportunities that they afford.
SJ as *correspondences with flows* [PROCESS]	*Agnostic*: Any collectively agreed upon ends in situated contexts	**Correspondence conditions:** Resources and capabilities are not enough. Actualizing opportunities at timely moments also requires being exposed to and keeping up with heterogenous flows.	Fostering *smartphone-related flows* and *facilitating correspondences* through which individuals find themselves actualising opportunities (for connectedness, expression, mobility) in timely moments.

The argument here somewhat mirrors the structure/agency debate (Giddens, 1986) in

that justice and its remedies are not located *in* the institutional arrangements (structure), nor

in the capabilities of the actors (agency), but rather *in the process* through which structures

and capabilities become enacted specifically and differently in timely moments to secure or violate social justice, individually and specifically. That is, as depicted in Figure 1, a 'structure' (such as a platform feature) and a 'capability' (such as a skill) become enacted differently in different moments along the flow of unfolding lives due to the conditionalities brought into those moments by specific confluences among heterogenous flows. They do not exist outside of these ongoing flows and their confluences—even though we sometimes are forced to talk as if they do. As such, to understand how social justice implications, particularly opportunities and/or barriers, become enacted in the lives of gig-workers, we need to understand the socio-technological flows, the confluences of which give rise to different moments of opportunities and/or barriers. In what follows, we showcase but also further substantiate these flow approach to social justice—and to the temporal enactment of opportunities and/or barriers—in an empirical investigation of platform working on MTurk.
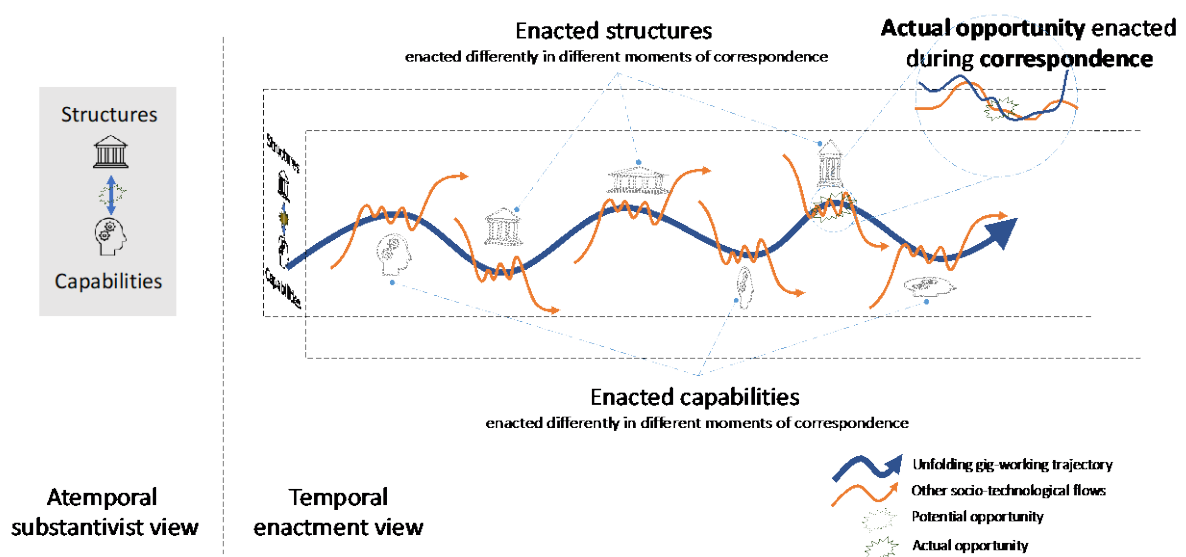

Figure 1. Atemporal vs. Temporal View of Opportunity Actualisation

EMPIRICAL INVESTIGATION: AMAZON MECHANICAL TURK

In 1770, Wolfgang von Kempelen astonished European royal courts when he unveiled his automaton chess player to Empress Maria Theresa of Austria. Over the next 84 years, *The Mechanical Turk* competed, and often won, against humans. The secret? Concealed within the machine was a human chess master moving magnetic pieces around. Though The Turk

eventually had to give up its claim as the first intelligent machine, it did become an imaginary for Amazon when it introduced a service for (manually or programmatically) enlisting distributed human labour into a computational system to perform "micro-tasks" that computers cannot do as well as humans—*not yet*.

MTurk is an extreme case of algorithmic employment relations in platform capitalism, offering 'humans as a service' (Prassl, 2018) with oft-decried social justice implications (Gray & Suri, 2019). It matches requesters (e.g., marketing firms, social media platforms, AI developers, academics) with workers for various 'human intelligence tasks' (HITs), ranging from surveys, image tagging for machine learning, to audio transcription, dataset cleaning, content moderation, and more. More of this operation will be provided below, where, after detailing our data collection and analysis, we attend to diverse stories of Turkers—humans *hidden-by-design* within Amazon's rendition of a modern Mechanical Turk.

Data Collection and Analysis

Our investigation started by one of the authors signing up to MTurk to experience both worker and requester roles. As a worker, they completed the few HITs available to them as a newcomer, until it became clear that continuing that path was unfeasible, as it required heavy investment in learning scripts and doing HITs regularly. It did nonetheless give that author a sense of what new Turkers navigate. Afterwards, two authors relied on the requester role to define HITs that asked workers to write about their experience of Turking, as well as to invite them for follow up interviews. In total, we conducted 5 rounds of open-ended surveys (92 respondents), as well as 23 follow-up interviews with 22 workers from the last two rounds. Our informants were mostly USA-based, which mirrors MTurk's workforce composition. This doesn't weaken our argument; it makes it even stronger by showcasing diversity of Turking trajectories within a specific context with more or less similar structural features.

Utilising MTurk for data collection in our study proved beneficial. It granted us access to relevant workers (though not ex-workers) and gave us first-hand experience of interacting

with workers as a 'requester'. However, we were mindful of the ethical dilemmas that could arise (Zimmer & Kinder-Kurlanda, 2017). One concern pertained to fair compensation (Bergvall-Kåreborn & Howcroft, 2014). We consistently offered rates multiple times above average for the time invested, resulting in positive independent reviews on Turkerview. Another issue centred on informed consent. We transparently shared our purpose for data collection, instructions for completing the HITs, details on compensation rules, and obtained participants' permission for recording their survey and interview data (Aguinis et al., 2021).

Our data collection and analysis followed an iterative approach. We started the first rounds of survey with general questions regarding a typical Turking day and experiences with requesters and other Turkers. Through these rounds we iteratively focused and fine-tuned our questions and their prompts in such a way as to collect increasingly more in-depth qualitative data in our surveys. This is reflected in the wordcounts reported in Table 2. Through these rounds we increasingly focused on emerging important themes such as community, scripts, ratings, imbalances. Finally, informed by flow sensitivities, in the later rounds, we asked Turkers about (trans)formative moments in the beginning, middle, and end of their stories. In the follow-up interviews, we delved more deeply into the storylines of Turkers based on their survey responses, trying to fill the gaps in their stories and getting more details on the critical moments along their journey. Tables 2 & 3 summarise the details of these rounds.

We have also actively followed MTurk subreddits on topics such as newbie questions, daily discussions (e.g., daily HITs, quals), sharing personal experience and emotions (e.g., burnout, feeling to lose sanity), bad requesters and unfair rejections, bad HITs (e.g., scams, surveys with no codes), as well as wiki guidelines for new Turkers. This data helped us better contextualise MTurk and advance our understanding of how MTurk and communities around it work. Moreover, in Reddit posts, we came across one of the most prolific and well-known requesters and were able to interview him as well as an ex-Turker employee of his.

Our theoretical sensitivities, specifically around the themes of timing, attunement to flows, and undergoing transition, guided the later stages of data collection and analysis. First, we focused on transformative moments in our informants' stories, trying to reconstruct the stories of human and non-human characters (e.g., scripts, community). Afterwards, we went back to Ingold's theorical ideas and reinterpreted them in light of our findings, especially pertaining to the temporal enactment of opportunities and/or barriers. In this diffractive reading (Barad, 2007) of data and theoretical sensitivities through each other, our aim was to develop and substantiate a flow-oriented approach to social justice on OLPs.

Table 3. Surveys

Round	Date	Count (accepted)	Gender	Age (avg.)	Location	Months on MTurk (avg.)	Hrs/Week on MTurk (avg.)	Wordcount (avg.)
1	May 2019	20	M: 13 F: 5 NB: 2	34.1	--	38.6	24.7	241
2	Jan 2020	16	M: 10 F: 6	41.5	--	39	24.6	1091
3	June 2020	20	M: 7 F: 13	36.7	NA:16	AS:3 SA:1	52.5	29.1	1552
4	Aug – Nov 2020	22	M: 12 F: 10	36.7	NA:10	EU:7 AS:4	SA:1	40.7	30.2	991
5	Feb – Apr 2022	14	M: 8 F: 6	40.0	NA:11	SA:2 EU:1	51.6	27.9	696

Table 4. Interviews

Role	Count	Gender	Age	Location	Months on MTurk	Hrs/Week on MTurk	Minutes of interview
Worker	22	M: 12 F: 10	[23, 62] avg: 39	NA: 14	EU: 5 SA: 2	AS: 1	[6, 120] avg: 51	[10, 70] avg: 24	[28, 72] avg: 43
Work. → Req.	1	M	--	US	--	--	57
Requester	1	M	--	US	--	--	72

In the next section, we present five Turker stories. This is in line with our flow approach which argues that it would be along specific Turking trajectories that the actual moments of (in)justice come about—and should therefore be investigated. The first story constitutes a composite reconstruction, based on similar patterns from various Turking accounts. As an *ideal typical case*, it is then the story of no one in particular, though most of our informants would see their experiences reflected therein. It serves to introduce and contextualise different aspects of work on MTurk, as well as to give an overview of the different socio-technological flows with which a typical Turking story might correspond, and the typical

opportunities and/or barriers that might come about as a result. The next four stories are written based on survey and interview responses of four participants. Their selection is motivated by 1) Their interview and survey data were relatively richer compared to others, 2) these stories are relatively different from each other in terms of how they come across MTurk-related opportunities and barriers, and 3) they do a better job of showcasing the role of timing, attentionality, and undergoing in the enactment of social justice implications of OLPs. In what follows we present these five stories, with some analytical commentary.

Opportune Moments Along Turking Trajectories

Joe The Turker's Story

Joe is put on a trial period when he joins MTurk. During this he can only complete a limited number of HITs whose payment is delayed until he will have completed at least one HIT per day for ten days in a row. As a newcomer, all he finds are "penny HITs." This is due to MTurk allowing requesters to restrict access to their HITs based on 'qualifications' such as *number of approved HITs* or *HITs approval rate*, and that it has long become normal practice for better-paying HITs to require stats in the orders of >10,000 & > 99%. To "get [his] numbers up", he thus finds himself in a bind: grow slowly by grinding as many "trash HITs" or do batch HITs, which if approved can boost his numbers quickly, but if rejected will "devastate [his] work history" and can end his "career on MTurk…before it began."

Two months in and Joe is "getting burned out." It is "grueling." He is working "seven hours a day" and "would just do everything that [he] could find" just "to reach this threshold [to] get more work." He almost quit after six weeks, telling himself "I'm not making almost any money and I'm working more than I was working before." During this, he has done all manner of HITs for compensations that often didn't match the required effort; has received his payments up to 30 days late; has had HITs rejected with no justification or recourse; and was even blocked by "unscrupulous or inexperienced requesters" who don't want to pay, or who, in the absence of a straightforward 'exclude' feature, misuse the block feature to

prevent their current workers from accessing their new surveys. His "work history," and thus opportunities are now marked by these interactions with requesters without having a reciprocal opportunity to impact their trajectories. He feels "requesters are basically protected by this invisible veil that they are the big thing on the platform and the workers don't matter."

This, until Joe comes across Turkopticon and Turkerview: community-run platforms to rate requesters on communication, generosity, promptness, and fairness (in approving /rejecting HITs). By integrating these ratings into his workflow, he can now signal, but also filter out, 'bad' requesters in terms of low-pay, high rejection rates, or propensity to block.

Besides, social media communities like r/MTurk or r/HITsWorthTurkingFor, which have partly emerged out of these rating platforms, allow Joe to find and communicate with fellow Turkers—something that is not possible on MTurk itself, where Turkers are represented but with an ID such as ZBY97K35SWQF2 without so much as a public profile, let alone work samples or client reviews. There, he comes across Turkers from different walks of life: Turkers who Turk out of a preference for working at home; "stay at home mommies" who cannot afford day-care but need "to make ends meet;" but also Turkers who cannot currently find other jobs due to an ex-felony. He finds Turkers for whom Turking is the main source of income and other Turkers who Turk as a 'side hustle' to pay for a personal project. No matter. If he manages to keep pace with these communities, he'll be able to "report [his] experiences with requesters, share worthwhile HITs, discuss technical aspects of effective Turking" and so on, though he sometimes wonders: "They're my competition…but at the same time, I rely on their reviews. That's a conundrum."

By tuning into community conversations, Joe also learns about the scripts: small programs that don't perform HIT work itself—that would be against terms of service—but sift through the influx of HITs and catch good ones. It will take Joe a while to get a handle of how best to leverage the scripts, but already his workflow is improved compared to when he

worked "8 to 10 hours daily just refreshing the screen and trying to grab a good paying HIT before others," which was "really hectic and just paid around 2$ - 3$ per day." He now runs the scripts to grab and queue better HITs. He isn't that successful though when he tries to onboard his friend Sara who has recently lost her job: "she was so frustrated before even getting the scripts installed, and everything was new to her." He is thinking "man, if she's getting frustrated with this, there's no way [she's] going to be able to" do this job.

Analytical commentary: We see in Joe's story how opportunities for worthwhile Turking depends on **correspondences** with several socio-technological flows. To foster a workflow that corresponds with the flow of high value HITs—that is, with the schedule, rhythm, and intensity with which such HITs are posted, grabbed, carried out, evaluated, and so forth—, Joe needs to traverse a "grueling" path wrought with "trash HITs," arbitrary rejections by untouchable requesters, and more. Even after the trial, his workflow does not effectively correspond with the flow of high-value HITs, as most HITs are snapped up by scripts. Only after his Turking trajectory undergoes three significant transitions, via correspondences with other MTurk-related flows, does he find himself on a path to actualise worthwhile Turking opportunities. These were correspondences with requester-rating flows (paving the way to working for 'better' requesters), with community-related flows (opening the door to best practices and tools), and with script-related flows (enhancing his HIT finding and queueing). We will see more about these correspondences in the following stories.

Nadia's Story

Nadia has received an email from Amazon, saying: "we're starting this new service, you can make extra cash in your spare time, have the opportunity to assist researchers, etc." It's around 2005, and Nadia, a teacher, and long-time Amazon customer from "back when it only sold books", is intrigued. She signs up to MTurk where she is met with a "huge list [of HITs] with tiny little monetary values next to them." But there are no instructions to be found to help her navigate the platform. Over the next days, she clicks on many HITs only to find that

they are no longer available or that she does not understand what they want:

> *The moment came when I spent 20 minutes on a survey that paid $0.75. I remember being so bored and frustrated by it that I had a hard time finishing it in a complete and focused way. And then I looked at my dashboard and realized I had made about $1.00 over those few days. [...] I remember... logging out and forgetting all about it. It was very nearly the end of my MTurk experience. It certainly made me lose all respect for and interest in MTurk - I thought it was a bit of a scam.*

Fast forward to 2017, skipping the years when Nadia only logged into MTurk any time her account was about to be deleted. Forced to switch jobs and earn less money, she gives MTurk "one more shot to make extra money for the holidays." After managing to only make $25-30 in a week in her spare time she quits again, realising she doesn't really have the time for it.

In 2019, Nadia's life takes a new turn as she transitions to yet another job with less hours, less wage, but more work from home. She thus tries MTurk once more. This time though she approaches it differently, thinking if "I want to make more money, I need to focus on this." She starts Googling "how to make it like an actual thing that made more than minimum wage," which leads her to the r/MTurk community. Here, she finds conversations about earnings and thinks: "if they can do it, there's got to be like, tools to get me there." By delving into the community, she learns about the scripts: "people would mention them, but they wouldn't really explain how to use them." She thus ends up learning how to integrate them in her workflow through YouTube videos. As a result, in the following week, she finds herself "able to get more smaller jobs. They're still 0.5 or $1 jobs. But [she is] able to get more of them to make it seem like it was worthwhile to go ahead and try these other things."

Animated by this momentum, she begins "experimenting with different settings, [...] extensions and scripts, figuring out what works best for [her]" in terms of "how much work [she's] getting." By staying more attuned with the community this time around, whenever her workload slows down, she would "double check on the forums to make sure other people were like, oh, it's a terrible day, there's no work." But if other workers report having a good day, she'd realise that she might be "doing something wrong" and would tweak her script

settings. Moreover, by learning about and attuning to Turkopticon, she also becomes able to identify requesters who regularly post good HITs or those she likes—finding it more effective to prioritise their HITs than looking for generic work. However, her engagement with community is still limited and only mediated through scripts and Turkopticon:

> *It was like 95% me just figuring things out. I wasn't asking people questions. I just felt like weird posting on forums, [...] vulnerable, like admitting what I needed. I wasn't sure if I could trust the people on forums [...] So, I would just try different things.*

This, until COVID hits and Nadia gets hospitalised, though for a different reason:

> *...when I got out, it was a weird psychological thing. I was like, stressed out about the whole COVID situation, I just gotten out of the hospital. And I was feeling like isolated and alone. So, I was just like, on the computer more.*

This is when she sees a post on Reddit saying "hey, if you're looking for more info about [...,] consider joining our Slack channel." Finding herself "feeling kind of lonely/isolated" and then "stumbling into this community" makes her "go ahead" and join this community—"the kind of thing [she] normally wouldn't do." She is pleasantly surprised to find this smaller community "super polite and helpful", so she gets more "comfortable with [it]." Here, Nadia gets into a conversation with someone who explains to her why her script settings are "pretty good but not optimum." Unlike other communities with "like 1000s and 1000s of members and where posts would happen every two minutes", she finds this small community with around 10 posts per day "easier to keep up with, and more relaxing." Through it she also learns how useful "closed quals"—custom qualifications granted by requesters to a limited pool of workers for exclusive access to their HITs—are for finding more stable work: "people would like suggest requesters to try to get qualifications from [...,] in other places people would keep things like that secret." In the process, she finds her income on MTurk tripling.

   Currently MTurk has become an essential part of Nadia's income. However, looking ahead, she prefers to "get more of a real-world job where [she] can spend more time on that [and] stop doing the stuff [she] doesn't like doing" on MTurk. She strives for a future where

she can work on MTurk for "like an hour or two a day just for like extra money, just for fun."

Analytical commentary: Nadia's story underscores the significance of **timing** when it comes to correspondences with flows. Nadia tried MTurk three times, and every time the encounter was very different, producing different opportunities and/or barriers, based on how Nadia's trajectory, the MTurk platform, and its broader ecosystem were each conditioned at that moment along their unfolding stories. It was only really the third time that she got to correspond in a generative way with certain MTurk-related flows (e.g., related to community and scripts) and thus began transitioning into a gig-working career. A similar effect of timing can be seen in how she came to correspond with the Slack community. Moreover, Nadia's story also starts to shed light on how, besides timing, actualizing opportunities along a Turking story requires **attunement** to the rhythms and intensities of several MTurk-related flows. We see here (as with Joe's story) how it is extremely impractical to try to manually attune to and sift through the influx of HITs. To make it worthwhile, Nadia learned to integrate some scripts into her workflow, thus delegating a major part of this attentional work to the scripts which allowed her to get a handle of the rhythm of incoming HITs. We also see how Nadia struggled to stay attuned to the rhythms of the Reddit community and how one of the most opportune moments in her trajectory came about after she became attuned with a Slack community that had a more comfortable rhythm for her.

Juliet's Story

After her entire department was laid off in a single day at her state job, Juliet transitioned to working online for a company. But this one has also started falling apart, which is doubly depressing to her. She doesn't want to go back to working in person: "Working at home had shown me how much less stressful it could be to work." It is one of her online colleagues who introduces her to this new platform called MTurk. With "no other choice" she "jump[s] in and start[s] doing some HITs for […the website of] a well-known company […for] something like 10 cents each." Since there is no recruitment process Juliet is nervous about

getting into trouble afterwards for not having worked well enough. When researching online

to learn more about Turking she finds her way to an early MTurk forum, where she learns "a

lot of things" and "gain[s] a confidence that doesn't come quite as easily when trying to

navigate MTurk alone," more so in those early days. Soon, she becomes one of the

moderators of this forum and makes friends with her peers. As an early adopter and active

community moderator, Juliet even witnesses the development of the scripts:

> *...over time, different people figured out how to make different scripts. So, we used a lot of different scripts. It was really piecemeal, and those scripts helped.*

In 2017, MTurk announces an upcoming upgrade to the website. Juliet and many other

Turkers are "really leery" about the "changeover" which is to take place in December: "a

hard month on MTurk" as "the academic researchers go on vacation, it's Christmas time,

[and] everybody's trying to earn last minute money to buy the kids presents:"

> *And then boom, changeover day came. [It] was horrible. We had people crying. We had people angry. We just couldn't work anything, it broke all of our scripts. [In a few days] a worker named 'Kadauchi' introduced a program that he coded to all of us. He released it for every worker to use [...] And he did all of this for us for free. And then he went from site to site to site, helping us learn how to use it [...] It transformed work for me and others overnight. I wanted to hug the guy, yet I'd never met him.*

Kadauchi's MTurk Suite—a browser extension that brings together many scripts—will go on

to become integral in many Turking workflows, providing "much better functionality." This,

however, will not be the last time a script stops working and sometimes "nobody step[s] up"

to repair it; the creator is probably no longer Turking. As for Juliet, despite now being content

with how the scripts compile her HIT queue, she is frustrated with "a lot of" requesters who

do not pad their HIT's time limit. This makes the rhythm of doing HITs even more frantic:

> *And you have to learn how to juggle [...] because you're desperate not to lose any HITs in your queue. So maybe I was going to go work on a $3 survey in my queue. I knew what time I needed to start it. But my program just caught a HIT that has a 10-minute timer, then yes, I do have to stop and go start the other one instead.*

Flash back to 2012. Juliet receives an email from Amazon saying that "MTurk [is] going to

start doing the Master Qualification" (MQ) that would allow workers "qualifying for work

that not everybody else [has] access to." But no explanation is given as to how the MQ will be awarded which leads to guesstimations and rumours about its criteria. Like many others, Juliet starts feeling disappointed for not getting the MQ despite having a good performance:

> *When you do not have a [MQ], they make you fill out one of those bot checks like every 20 HITs [...] Workers hate it, it slows you down [...] One day, I was working [...] and suddenly, those bot checks were not there anymore [...And when I] looked and it said, I had the [MQ] I was like, holy cow. Best day ever on MTurk. I'm a master worker!*

Although with the MQ "more work open[s] up" to her, Juliet now finds herself even more cautious, scared to lose her MQ: "even if you do good work, a requester can go rogue and ruin your account and keep you from working." One day, a friend of Juliet's who also has the MQ tells her about a batch HIT that pays very well but she's worried about getting rejected "because she'd never worked for the requester before, and he is known to reject." At the time Juliet is "struggling in a big way when it comes to caring for family and paying bills in the pandemic," so she feels she "needs to take the risk." Being well attuned to the community and their less mainstream scripts, Juliet installs one that allows "to see just how many rejections [her] account could take if [she] continue[s] doing the work." Fortunately, her work gets accepted, and she makes $770 in 2.5 days, "enough money to help to go visit [her] mother in an assisted living home in another state AND to buy her much needed things."

In the following years, Juliet eventually begins working a new offline job, but also sticks with MTurk "just in case things [go] south with the regular job." And things do go south, but not in the way she had thought. It will rather be COVID and her husband's work slowing down that will make her start "relying more on MTurk again [to] make ends meet."

Analytical commentary: Juliet's story shows how the opportunities and barriers that Turkers encounter also depend on **timely** correspondences they are not a direct party to. These might involve any socio-technological flows that perform the broader Turking ecosystem. Notably, the story shows how it's not just the Turking workflows that need to correspond with the scripts, but the scripts themselves must continually correspond with the MTurk platform's

evolution, since as unofficial scripts, they are fickle and might break with platform updates. We will provide a more in-depth analysis of the scripts in the discussion section. For now, let us focus on how Juliet's story further speaks to the theme of **attunement** to rhythms and intensities of MTurk-related flows. Unlike in Nadia's, where the scripts allowed her to get a handle of the rhythm of incoming HITs, in Juliet's story we see how she must become skilled at juggling back and forth between HITs that are ticking away in her queue. This makes it even more demanding to keep her workflow attuned to incoming HITs. Often Juliet finds herself unable to spare the time to follow up with requesters about HITs that have timed out just as she was about to complete them. Finally, this story highlights another correspondence related to the MQ—a coveted, but rarely granted, qualification (Juliet is our sole informant who has it). The MQ allows Juliet to become exposed to higher-value HITs with lower competition, but also alters her work rhythms by removing certain checks that slow down other Turkers. The MQ remains a source of frustration for the latter group, as its criteria and procedure remain obscure: Many experienced Turkers feel they should have received it.

Jonathan's Story

Jonathan grapples with epilepsy and cannot drive; and since he lives in a small town with no public transportation, his options for commuting to work are severely limited. His preference for working from home is also driven by his social anxiety; he "mentally could not take talking to frustrated people on the phone about tech support which is the job [he] had before starting MTurk." So, when he found MTurk he felt that was one of the rare options he had:

> *I don't know what would have happened to me if I didn't have MTurk, at the time, but I might have been homeless at the time. It was my only option.*

But now, after Turking for around three years, he is "pretty sick of it." "The constant notifications [of the scripts] interrupting [him] every few minutes or seconds has worn [him] down." At the same time, his MTurk journey has "kind of opened the doorways or got [him] interested in doing more online gig work." This leads him to discover Prolific, a platform

geared for recruiting research participants, which has given him a much better experience:

> *I've wrote them once [...] and they got back to me within an hour. So, there's a lot more quality control. You don't have to go to like, the scripts like MTurk Suite, the turkereview.com to check out the reviews of the requesters. You don't really have to do that on Prolific because 95% of the time, it seems like it's screened to be worth it.*

Moreover, Prolific requesters pay more; maybe because Prolific does not "take as much of a cut out of requesters like MTurk does?" The competition is also less intense. Workers do not use HIT catchers and unlike MTurk "you can't queue HITs [...] you have to finish one before you even reserve your spot" for another. This setup makes working on Prolific less stressful for Jonathan. He thus seizes this opportunity and sets his MTurk HIT filters to be "more picky." This "spreading [of his] work between the websites has made MTurk a lot more bearable," though doesn't afford him to completely transition to Prolific, as there's not enough work there. However, with Prolific and having "passed all the milestone HIT markers and hit[ting] 10,000 HITs approved" on MTurk, he can make enough money "without doing batch work, which [he] mentally cannot handle. [He] hate[s] repetition like that."

Later, after his mother's passing, Jonathan ends up fully taking over the rent. Feeling the need for a more stable work, he tries going back to Apple Support, his job before MTurk, but finds it even more stressful than he expected despite it being a remote job. And so, after experiencing extensive layoffs at Apple that spared him, Jonathan finds it "impossible to keep up with their metrics" especially as the stress is causing him health problems:

> *Breaks constantly monitored even though you're at home [...] you go to the bathroom for [...] a minute, you come back to your boss in a bubble window like where are you?*

So, he quits to focus back on MTurk and Prolific, which were meanwhile in the background. But the increased financial burdens and the unreliability of gig work, push him to continue searching for a stable job. He is "eager to find a remote job that [he] can work full-time," maybe "a managerial or supervisory level job." But "after much searching lately, [he has] been depressed [as he] cannot find work that [he] can pay the bills with." He is particularly struggling with "boosting [his] resumé" with MTurk and the other OLPs he works for:

It's kind of tough, [...] but pretty much I put on, you know: Handle many tasks online quickly and have worked with many requesters, or many professors around the world at universities, which is true, you know, we need to make it sound good on the resume.

Analytical commentary: Following on with the theme of **attunement** from Juliet's story, we can further see in Jonathan's story how demanding it can get to stay attuned to the rhythms and intensities of MTurk-related flows. The frantic pace of grabbing HITs, the constant notifications, the ticking timers, the juggling between HITs, the stress of rejection by rogue requesters, all these and more, have worn Jonathan out—Jonathan who was Turking to get away from the anxiety of his offline job. In Prolific the pace and rhythms are different. Work cannot be queued and there are no scripts competing to snatch the best work. Also, with customer support and quality control things feel less arbitrary on Prolific. Let us now consider how Jonathan's story further sheds light on significant transitions Turking trajectories **undergo** through corresponding with MTurk-related flows. We can see how as Jonathan becomes more skilfully attuned to online gig work, and especially to the nooks and crannies of micro-tasking, he can find more work opportunities along the same lines (e.g., on Prolific). However, this transition into a proficient micro-tasker is at the same time erecting barriers along his trajectories, limiting his possibilities to transition out of this line of work, despite gig working not being the permanent career that he wants to pursue. Notably, when trying to find other types of more stable work, Jonathan struggles with the non-transferability, or at least the non-recognition, of the skills he has gained on MTurk.

Tim's Story

Tim lost his regular job due to a drinking problem. Unemployed and in the process of getting sober, he began searching for opportunities to work from home. He signed up and tried out to work on different micro-tasking platforms, including MTurk. However, Tim does not use the scripts. Despite being tech savvy and learning about the scripts early on, he is afraid that they might violate Amazon's terms of service—though "everybody else is using them." Moreover, his straddling different platforms while also searching for a regular job prevents him from

dedicating the time to attune his workflow to the scripts. As such, he continues to manually catch HITs, which unsurprisingly leaves him unable to compete with other Turkers in grabbing better HITs. Instead, he opts to consistently work on batch HITs:

I'd check as soon as I wake up. There was a good run for like 3 or 4 months where I'd wake up, and there'll be some, like, five cent HITs, where there'll be like, 20,000 of them [...] So I'd do that for like 8 - 10 hours, just while watching Netflix or whatever.

Tim specially attunes his work schedule to the flow of non-competitive batch HITs posted by 'Matt HIT-a-lot' [pseudonym]. A former researcher turned professional market survey conductor, 'Matt HIT-a-lot' is a renowned mega requester on MTurk. His HITs, by their sheer number and frequency, often appear at the top of the list of available HITs and typically don't require much qualification. Almost any Turker with any approval rating can easily find his batch HITs and work on several surveys through them.

One day, with around 60K HITs completed, Tim contacts Matt about certain issues with some of his surveys. During their conversation, Matt appreciates how Tim "seem[s] to know a lot more about surveys than a lot of the other people that have messaged [him]":

I think he gave me like a 4.20$ bonus. And then he would just be nice. And I'd be nice back. And then he's like, 'you know what? I'm kind of looking for, like somebody to do customer support for me, because it's taken too much out of my day to deal with people, I can't build what I want to build'. I'm like, yeah, let's do it.

Tim thus decides to accept Matt's offer and join his team. He starts with minimal hours, only focusing on customer service to "see how things work." But Matt starts to "put [him] on different jobs" for him to gain more hours. After a while, he tries other tasks such as analysing stats and finding anomalies in surveys, which he believes he has "a good eye for." He feels "proud [...] catching some of the fraudsters on [his] own" and therefore, gradually expands his role to tasks such as data analytics and being part of the "fraud department."

Tim is happy with his work and finds Matt inspiring. Being employed by a start-up and finding in Matt an entrepreneur role model, he envisions a similar future for his own journey:

I'd like to have Matt help me build an app for fishing, really. And then I'd like to be able to run that app. And that would be something I would be totally invested in. But

yeah, I just, I'm taking on duties. And like I said, I don't know about coding. [...] I just want to keep climbing, you know, climbing, taking on more tasks.

Analytical commentary: Tim's story is in a sense the most different. His fear of using the scripts conditions his path to correspond with the actions of a selected number of requesters who do batch surveys. A serendipitous **timely** correspondence with Matt—a mega requester looking to expand his MTurk survey brokerage business—offers him an opportunity to transition into another job. Tim gets recognition for his survey-related skills, which he has developed through considerable exposure and attunement to many different MTurk surveys, because his new employer is himself intimately attuned to the MTurk ecosystem. Matt's company is evolving and offers many different opportunities: to do data analysis, detect fraud, and even the opportunity to learn to code. **Undergoing** these transitions, it becomes possible for Tim to imagine a different future, away from the gig economy.

DISCUSSION: REVEALING SOCIAL INJUSTICES

In this paper, we set out to address how the social justice implications of OLPs can be adequately revealed and remedied. To this end, we made a case for going beyond prevalent category-oriented approaches to social justice towards a flow-oriented approach that foregrounds the temporal enactment of work opportunities and/or barriers along different gig-working trajectories, as they unfold amidst and in relation to heterogenous platform-related flows. Moreover, through our empirical investigation of work on MTurk, we further explored such a flow approach to social justice along diverse Turking trajectories. As we saw, workers' trajectories corresponded to MTurk-related flows in diverse ways and under diverse conditionalities (skills, schedules, approaches, aspirations, etc.), creating quite different Turking trajectories: some try and stop (Sara, Joe's friend), some dip in and out (Nadia, Johnathan), some persist and become very capable Turkers (Juliet), others ultimately transition to other work (Tim), yet some struggle to have such a transition (Jonathan). Nonetheless, across these diverse stories, we could already see how the emergence and

actualisation of opportunities and/or barriers went beyond questions of access to resources and capabilities to function. Rather, the actual opportunities and/or barriers that Turkers came across with intimately depended on how their unfolding Turking trajectories and workflows corresponded with a whole host of MTurk-related flows—a process that, as we showed, is a matter of timing, attunement to flows, and undergoing transitions. In other words, the temporal enactment of actual opportunities or barriers along any Turking trajectory depended on the ways in which that trajectory became exposed to different MTurk-related flows, became attuned to the rhythms and intensities of those flows, and in the process, underwent specific transitions. Figure 2 shows some of these MTurk-related socio-technological flows.

Now to address the first part of our research question, as to revealing OLP's social justice implications, let us revisit more analytically, how MTurk-related opportunities and/or barriers become actualised. We will do so by evaluating work on MTurk from three vantage points: access to resources, capabilities to function, and correspondences with flows—with the latter perspective temporally reinterpreting and integrating the former two, as depicted in Figure 1. We will outline the revelatory social justice test(s) of each perspective and then apply the test(s) to our Turking stories. (It should be noted that the flow-oriented tests emerged by iteratively reading Ingold's ideas and our empirical investigation through each other.) To bring brevity and focus to this exercise, we limit its scope to the social justice implications of the Turking scripts. This focus is warranted as not only it better foregrounds how *socio-technological* flows matter in producing social justice implications on OLPs, but also, as was seen before, the scripts, even when not used, play pivotal roles in Turking stories. A discussion of the second part of the research question, as to how to remedy such OLP-related injustices, will wait until the next section on design and policy implications.
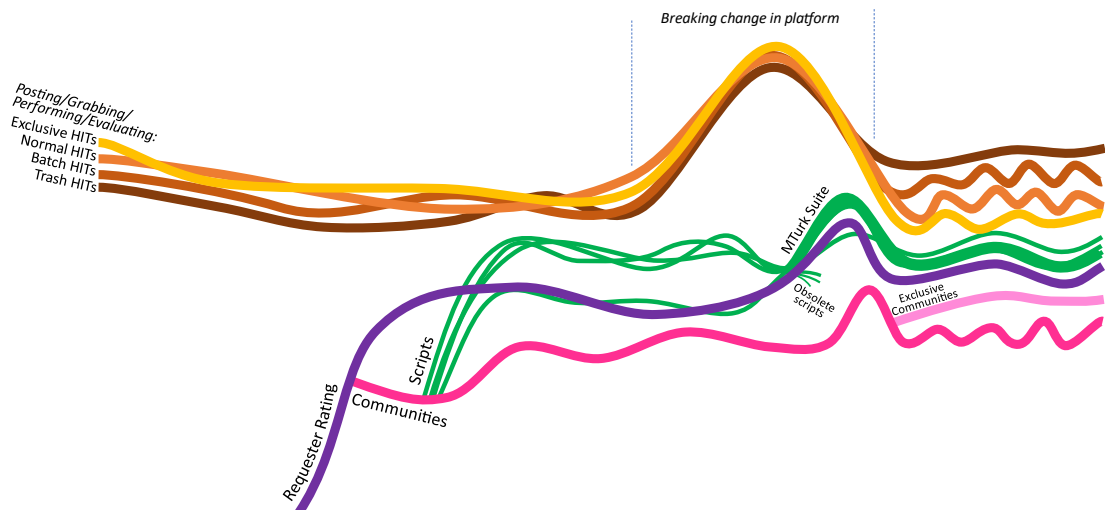
Figure 2. MTurk-related Flows from a Worker's Point of View

A Framework for Revealing Social Justice Implications of OLPs

Resource-based Social Justice on MTurk

We start with a Rawlsian concern about 'access to resources.' The revelatory social justice test here would concern: **t1**) *Whether the institutional arrangements and the structure of the platform guarantee fair access to resources*? This is since, according to Rawls, such a fair access to resources is a precondition for ensuring equal opportunity. Consider the Turking scripts. As we have seen, worthwhile Turking opportunities intimately depends on the quality of HITs Turkers are exposed to, and this exposure is heavily conditioned by whether a Turker uses scripts or not. Rawls would deem it unjust that the platform does not *guarantee* access to the scripts as critical resources. He would argue that impartial observers behind the veil of ignorance would require MTurk to design and/or integrate any tools and resources required to keep workers' workflow productive into the very architecture of the platform in a manner accessible to all workers. This argument resonates with OLP studies that focus on structural conditions, such as employment rules or algorithmic management (e.g., Curchod et al., 2020; Ettlinger, 2016; Kellogg et al., 2020; Newlands, 2021), in that it reveals injustices embedded by design in OLPs (Fieseler et al., 2019), and advocates for designing unbiased mechanisms on OLPs (Rai et al., 2019). However, guaranteeing unbiased access to the scripts is one thing, but what if many workers don't know how to effectively use them?

Capability-based Social Justice on MTurk

Next, we adopt a Senian orientation to 'capabilities to function.' Here, the revelatory social justice test would be: **t2)** *Whether different workers have the required capabilities to function as Turkers?* This is since, according to Sen/Nussbaum, without such capabilities access to resources will not translate to opportunity. Consider once more the Turking scripts. As we have seen, even if one learns about the free community scripts, it takes a certain technical savviness to even attempt to get things to work—a hurdle that discourages some people, such as Joe's friend, from Turking. However, Turkers who do have more technical capabilities get to disproportionately enjoy better opportunities on MTurk as they can further customise the scripts to their liking and can set up hotkeys and automations to streamline their workflow.

A Senian remedy would therefore focus on training the workforce and developing their capabilities to function as proficient Turkers. From this perspective, such a remedy could be ensured by MTurk or by any other actor. Indeed, in the absence of any intervention by MTurk, we can see how the Turker community itself is somewhat fulfilling this remedy by providing some ad-hoc training and tutorials for the scripts. For its part, MTurk should take a more proactive role in developing its workforce's capabilities. This could involve implementing training programs, or at the very least curating and supporting existing community-developed training and tutorials. This argument harkens back to OLP studies that foreground how individual characteristics, such as skills, qualifications (Caza et al., 2021) and prior work experiences (Curchod et al., 2014) can lead to different experiences of social justice on OLPs, as well as to studies that highlight how trainings offered by certain OLPs may be especially beneficial for 'new-collar jobs' in developing countries (Constantinides et al., 2018). However, as we have seen the scripts are not a 'thing' to learn about once and be done with; they are a moving target that require going along and keeping pace with. What if different Turking trajectories, for instance, cannot afford the time and attention required to continually upkeep and fine-tune the scripts and to stay abreast of their evolution?

Correspondence-based Social Justice on MTurk

Finally, we adopt our proposed Ingoldian orientation to 'correspondences with flows.' The social justice test here would concern: *Whether, when, and how different Turking trajectories can correspond with MTurk-related flows?* This is since, as we suggest, without corresponding with relevant flows, resources and capabilities will not translate to actualised opportunities. Notably, as correspondence is a matter of timing, attunement with flows, and undergoing transition, this test can be further broken down to: **T1)** *Whether, when, and how diverse trajectories become exposed to different MTurk-related flows in a timely manner?* **T2)** *Whether and how diverse trajectories can become and remain attuned to the rhythms and intensities of those flows?* And **T3)** *Whether and how, in the process, diverse trajectories find themselves with limited possibilities for transition along or away from the platform?* Let us apply these tests to the above-told Turking stories. Table 5 summarises this analysis.

In Nadia's story, we see how to actualise any opportunity of worthwhile Turking, workers trajectories and workflows need to be exposed to and correspond with a host of flows along which the scripts (are enacted and) function—e.g., they need to keep attuned to the scripts' continuous output, but also their latest updates, best practices, community insights about settings, and so on (T1). Nadia's Turking trajectory picked up momentum only on her third attempt at Turking, when she learned about the scripts on a community that she had become attuned to. However, getting the scripts to work properly, as she discovered, requires ongoing fine-tuning. After watching some YouTube tutorials, she began experimenting with different combinations of scripts and their settings while keeping up with the communities to determine if it was a 'slow day' or if it was her settings that were not working well. We also saw how she was could not engage with the r/MTurk community, finding its rhythm overwhelming, and how it was through attuning to a smaller and slower Slack channel that she found out her optimal script settings that currently work best for her (T2).

In Juliet's story, we see how those script-related flows must in turn be exposed to and

correspond with the MTurk platform's evolution (T1). Indeed, the scripts cannot be seen as self-contained tools or resources at Turkers' disposal. Rather, to be enacted as such, these unofficial scripts need to be constantly attuned to the platform's evolution—lest a useful resource, on which so much depends, turns useless, in a moment. Juliet's story further reveals how these correspondences have so far been one sided. For instance, the MTurk platform has so far failed to update their time keeping logic in response to the *de facto* reality of Turkers using scripts to grab and queue HITs *before* they are ready to work on them. That is, MTurk starts the timer on a HIT as soon as it is put in the queue—effectively confounding delivery deadlines and execution durations. This, combined with the widespread use of the scripts, and requesters oblivious to what their chosen time limits mean in practice, has wreaked havoc in the rhythms and intensities of many Turking workflows. This dynamic, among others, is denying many Turkers the opportunity to seek recourse come work disputes (T2).

Jonathan's story further reveals how script-assisted correspondences with the flows of incoming HITs, considerably changes the rhythms and intensity of Turking workflows (T2). With the scripts, Turkers delegate the work of attending to the influx of HITs, and grab HITs that match their pre-set criteria. This changes the rhythm of their Turking, allowing them the opportunity to either find better HITs or at least more HITs per hour to make it worthwhile. But it also intensifies work rhythms. We saw how Jonathan compares the rhythms of work on MTurk with Prolific, lamenting how the prevalent use of scripts to automatically queue good HITs has intensified the competition on MTurk. Different Turkers have a different appreciation of this rhythm, arguably based on where they're coming from and where they're going in their Turking trajectories: Whereas some more junior Turkers mentioned how the streamlined workflow is "quite quick that you really get into it" and experience a "dopamine hit," others like Jonathan, who initially appreciated the opportunity to work without the stressful human contact, has, after three years of fulltime Turking, found himself worn out by

the constant influx of notifications demanding his attention. Moreover, while this script-wrought path is taking more and more of his time and attention, it seems that he does not have any obvious way to transition out, as he is struggling to make his full-time Turking "sound good on the résumé" to find a more stable job (T3).

Table 5. Social Justice Implications of the Turking Scripts

Approach		Social Justice Implications (re. Work Opportunities and Barriers)	
		Reveal	**Remedy***
Resource		**t1**: Scripts are a game changer in accessing high-value HITs. Unequal access to scripts and therefore to high-value HITs is unfair.	Guaranteeing access to critical productivity tools and resources to all Turkers
Capability		**t2**: It takes technical savviness to get the scripts working. Turkers who do have such technical capabilities get to disproportionately enjoy more opportunities on MTurk.	Providing training on the effective use of critical resources to workers who need it
Correspondence	Nadia's story	**T1**: Came across the scripts after becoming attuned to Reddit. Discovered that scripts are not static tools but require ongoing fine-tuning.	Facilitating correspondences along workers' workflows and community-related flows, e.g., to streamline the discovery of old and new community tools (c.f. Principle 1)
		T2: Experimented with settings while comparing against signals from communities. Found her current optimal setting by becoming attuned to a Slack community whose slower rhythm she can keep pace with.	Facilitating workflow experimentation to allow workers to fine-tune settings and establish their own rhythms (c.f. Principle 2)
	Juliet's story	**T1**: Witnessed how the scripts can break at MTurk updates, and how they need to be continually updated to remain attuned to the platform's evolution.	Facilitating correspondences along community-related flows and the platform, e.g., by providing SDKs or backward compatibility (c.f. Principle 1)
		T2: Pushed to continually juggle between HITs, grabbed by the scripts, and which are ticking away in her queue, leaving her no time to follow up work disputes.	Regulating the rhythms and intensities of evolving Turking workflows (c.f. Principle 2)
	Jonathan's story	**T2**: Is worn-out by the increasingly frenetic tempo and intensity of competition over HITs due to the scripts.	Regulating the intensities of competition on different Turking paths (c.f. Principle 2)
		T3: Has found himself locked-in in gig-work, with no obvious way to transition out: struggling to get recognition for his full-time Turking career and skills when trying to find a more stable job.	Facilitating transition away from platform e.g., with certification of work history and skills acquired (c.f. Principle 3)
	Tim's story	**T1:** Opted not to use the scripts out of fear of ToS violation. Instead focused exclusively on a select group of batch-HIT-posting requesters.	Facilitating correspondences along requesters' and workers' workflows (c.f. Principle 1)
		T3: Transitioned away from Turking when one of these requesters ended up offering him a job for his survey-related skills.	Fostering the development of, and providing recognition for, transferable skills (c.f. Principle 3)

* The flow-oriented remedies will be elaborated further in the next section.

Finally, Tim's story is different to many others since his trajectory transitioned along a specific path, not through any correspondence with the scripts, but due to lack thereof. Tim never integrated the scripts into his workflow out of a fear and instead preferred to be attuned with a selected number of requesters who post batch survey HITs. Interestingly, it was the skills he built up by doing thousands of surveys that became recognised in a serendipitous

correspondence with a major requester that specialises in survey HITs and needed someone to do customer relations work for him (T1). This timely correspondence transformed a query into an opportunity and ultimately led Tim to transition away from MTurk and become an employee. This is a rather unusual story as skills developed whilst Turking are often not recognised, making it difficult for Turkers to correspond with conventional labour-market flows and to find opportunities to transition into other jobs, as Johnathan's story reveals (T3).

Overall, from the above flow-oriented analysis three main social justice implications of the Turking scripts are revealed. First, worthwhile Turking opportunities depend on timely exposure of different Turking trajectories to a host of platform-related flows, which in turn need to be exposed to each other (see Figure 2). As we have seen, beyond access to the scripts, it also matters when and how different Turking trajectories come across scripts-related flows. Therefore, *to the extent that diverse worker trajectories are not exposed to relevant platform-related flows in a timely manner, the T1 test fails*.

Second, beyond mere timely exposure, worthwhile Turking requires continual attunement to the increasingly more demanding rhythms and intensities of many MTurk-related flows—which, among others, defies the promises of flexibility and autonomy. In this frenetic 'race to the bottom', many Turkers find themselves swept away, spending "far too much time doing it"—to the point that for many Turking either becomes their "full-time job" or a full-blown "second job," even if it was meant to be but a side hustle. Therefore, *to the extent that attuning to platform-related flows becomes unreasonably difficult, time consuming, or unsustainable for diverse worker trajectories, the T2 test fails*.

Third, while worthwhile Turking increasingly demands close to full-time commitment, its lack of recognition as skilled work erects barriers in Turkers' lives especially when dealing with other lines that are not attuned to MTurk (e.g., when trying to rent an apartment, get a bank loan, or find another job). This even leads some workers to become trapped into

the platform despite striving to transition to other jobs—defying the choice argument for OLPs. Therefore, *to the extent that undergoing gig-work limits diverse worker trajectories' possibilities for transition along or away from the platform, the T3 test fails.*

Before we move on to elaborate flow-oriented design and policy principles that aim to remedy these injustices, it might be pertinent to highlight two aspects to be kept in mind. First, a question that our analysis might bring up is whether *flows* are not simply resources in the Rawlsian sense, and *correspondences* capabilities in the Senian sense? Yes, and no. Yes, in the sense that our theoretical and everyday language often forces us to turn temporally conditioned phenomena (such as 'scripts' or 'tech skills') into 'resources' or 'capabilities' that somehow seem to exist, in some general sense, outside of their specific situated enactments. But, also definitely no, in the Ingoldian sense; resources and capabilities are only enacted as such in the temporally conditioned co-responding of many lines of flow, as depicted in Figure 1. A script, to function exactly as a script, requires a situated problem for which it is currently a solution, streams of data to work with, a user's attention and actions to tune it, a compatible environment that supports its execution, regular updates, bug fixes, and maintenance, and much, much more; and all these flows (with different temporal qualities) must continue to go along each other for it to function as a script—to continue being the resource we take it to be. Thus, even though flows and correspondences can be read as 'resources' and 'capabilities,' the flow approach highlights what is rendered invisible by such 'taking': the fact that they do not just exist out there, they are made, produced, or enacted, differently, in specific moments when it is called upon through a whole host of appropriate co-responding flows. That is, the flow approach *discloses* (Spinosa et al., 1999) the nature of these assumed resources and capabilities in a very different way. Not as atemporal 'things', waiting to be used, but rather as open, dynamic, and contingent potentialities that become enacted differently in the different moments when different flows come together in different

ways. This temporally oriented disclosure also means that we need to understand the remedies of injustices, in very different terms, as we will demonstrate in the next section.

Second, our aim was never to argue that OLPs are fundamentally just or unjust. Indeed, we set out to go beyond such dichotomies that underly much OLP research. Most institutional arrangements can create varying degrees of injustice, and OLPs perhaps more so. The employment relations in the gig economy can produce precarity, power asymmetries, isolation, and just general exploitation, as has been shown in the literature. Yet, OLPs seem to clearly have a role to play in the labour market—especially for those excluded from the conventional arrangements. In this, we agree with Sen that the campaign for social justice is not about just utopias—created once and for all, from behind a veil of ignorance. Rather it is about making what is obviously unjust less so. Therefore, a more pressing social justice question is how to remedy the situation, through design and policy, to reduce potential and actual injustices to become embedded in systemic ways. This is what we will now turn to.

DESIGN AND POLICY IMPLICATIONS: REMEDYING SOCIAL INJUSTICES

In the previous section, we already touched upon some Rawlsian and Senian remedies—a full discussion of which is beyond the scope here. In this section, we show how the injustices revealed in our earlier analysis can be remedied with non-categorical design and policy principles that ensue from a flow approach to social justice on OLPs, as outlined above.

Category-based policies aim to remedy injustices by providing benefits to members of pre-defined categories. Such policies lump diverse trajectories together and are often decried for leading to rigid and inflexible regulations. Witness the 2021 Spain Rider Law that requires delivery platforms to hire their riders. In its wake, three Spanish rider associations signed a letter to the EU Commissioner of Employment and Social Rights, lamenting how the new law has resulted in "more than 8000 couriers" losing their jobs and a worsening situation for those remaining: "What the sector truly wanted and needed was a flexible model with additional protections and just the opposite happened. Most of us barely reach the minimum

salary after the Rider Law entered into force" (Sánchez Nicolás, 2021).

Policies that ensue from a flow approach are, on the other hand, trajectory aware. They would recognise the impossibility of defining sufficiently nuanced categories to contain all manner of unfolding gig-working trajectories. Instead, they aim to remedy social injustices by *fostering flows* and *facilitating correspondences* that can multiply the paths available to gig-workers to transition *along* diverse OLP careers and/or *away* to other employment.

Therefore, while the former class are *membership-benefiting* policies, the latter would be *transition-facilitating* policies. For instance, instead of mandating OLPs to hire all their workers, a transition-facilitating policy could require the OLPs to accommodate and foster different pathways for growth and transition through, and in due course away from, the platform. Such policies recognise that certain workers may prefer non-traditional employment, or that some workers, such as those with past convictions, individuals in recovery, students, undocumented immigrants, or even those straddling multiple platforms, might not meet conventional hiring criteria. They also avoid erecting entry barriers for newcomers, people seeking temporary earnings between jobs, or those pursuing seasonal side hustles. In other words, such policies honour gig-workers' multidirectional, dynamic, and fluid career paths (Baruch, 2004; Joseph et al., 2012) and occupational mobility (Greenhaus et al., 2008). They particularly resonate with OLP studies that foreground the diversity and crafting of gig-working career paths (Deng & Joshi, 2016; Idowu & Elbanna, 2022). However, instead of a sole focus on workers' agency, we argue that such path crafting should be facilitated, regulated, and achieved by the broader gig-economy ecosystem (c.f., Gray & Suri, 2019). Let us now elaborate how such transition-facilitating orientation could translate to design and policy principles for OLPs. (The principles start from 0 to ensure a one-to-one mapping from T1, T2, and T3 tests to Principle 1, 2, and 3.)

Principle 0: **No OLP design or policy shall enforce a singular trajectory to all**

workers. Gig-workers arrive at OLPs along diverse conditions and directions. In the case of MTurk, although we have traced a diverse collection of such trajectories, it should be noted that those were not designed into or supported by the platform. Indeed, they have often happened *despite* the platform design—with 'sweat and tears', as it were. As such, we argue that no OLP design or policy initiative should disenfranchise workers from pursuing different paths of growth and development through the platform. This not only concerns designing diverse pathways on the platform, but also allowing for workers to pave novel emergent paths. For starters, the MTurk platform could actively curate different career paths, drawing on emergent typical personas—such as, experimenters, dippers, part timers, 2nd jobbers, or full-timers—with possibilities for growth and development along these trajectories. However, to the extent that this undertaking involves a categorisation of career pathways, it is essential to safeguard against creation of walled-off categories with entry barriers, extreme path-dependence, or lock-in. Therefore, the next crucial step is to provide various 'on-ramps' and 'off-ramps' to transition between these *typical* pathways, so that workers can craft their own *actual* trajectories that foster their growth and development. More than any typical pathways, it is these transitions among them that will ultimately characterise actual trajectories.

Principle 1: **No OLP design or policy shall limit workers' possibilities for correspondences with different platform-related flows**. Different gig-working trajectories are paved with regular and serendipitous correspondences with different platform-related flows. Therefore, if, as per Principle 0, OLPs are to accommodate different trajectories, especially emergent ones, then they must allow correspondences with different platform-related flows to take place. MTurk by design prevents its workers from contacting each other, severely gate-keeps their transactions with the requesters, and does little to streamline its workers' evolving workflows on the platform. While such limitations are common strategy in digital platforms to prevent disintermediation—i.e., circumvention of the intermediary role of

the platform by users (Ladd, 2022), they become particularly problematic on OLPs where the issue at hand is *labour*. By limiting gig-workers' possibilities for regular or serendipitous correspondences with different platform-related flows—correspondences that, as we have seen, may lead to the most consequential moments along workers' trajectories—MTurk is indeed violating the oft-touted autonomy promise of gig-work. Importantly, OLP design and policy must safeguard against isolating workers from each other or from requesters (Deng et al., 2016), and against the creation of information asymmetries between them.

Principle 2: **No OLP design or policy shall lead to unchecked rhythms of work or intensities of competition for different trajectories.** Correspondences with different socio-technological flows entails skilfully attuning to and keeping pace with their rhythms and intensities. Therefore, if, as per Principle 1, OLPs are to foster correspondences along workers' workflows and other platform-related flows, then they must ensure that workers can keep up with the rhythms and intensities of those flows. MTurk, for example, is quite hands-off about the rhythms and intensities that govern work on its platform. It does little to streamline its workers' workflows, making sure they are not too clunky or vexing, or to facilitate their attunement with different platform-related flows. Neither does MTurk attempt to cap or taper the rhythms of work or the intensities of competition of Turking, for instance, by ensuring they do not get so overwhelming as to lead to burnouts or chronic fatigue. In contrast, design decisions such as the absence of work queuing, seem to allow Prolific to enact a more spaced-out rhythm. This is doubly important, since whenever keeping pace with relevant platform-related flows becomes hyper demanding, it denies workers the time to pursue other correspondences that could possibly transform their trajectories. This is again in contrast with the literature that associates OLPs with high levels of flexibility (e.g., Rani & Furrer, 2021). Moreover, if, as per Principle 0, OLPs are to accommodate different trajectories, then they must also refrain from enforcing a singular rhythm and intensity on all

trajectories. For example, workers on a part-timer or dipper trajectory should not have to keep pace with the same rhythms and intensities as those on a full-timer trajectory.

Principle 3: **No OLP design or policy shall result in worker lock-in to the platform**. As workers attune to different platform-related flows, their trajectories undergo various transitions. We have seen how these transitions often entail workers finding themselves spending more and more time working on the platform, even if originally was meant to be just a side gig for them (see also Deng & Joshi, 2016). Their trajectories thus become increasingly absorbed in and intertwined with the platform. Although, as a result they generally come across more work opportunities on the platform, they also find themselves increasingly locked-in and not able to transition to other jobs. This is mainly due to the lack of widespread recognition of their work as 'proper' work and the non-transferability, or at least limited transferability (Idowu & Elbanna, 2022) of their skills—both of which are important factors in career mobility (Sicherman & Galor, 1990). It is exactly this experience of finding oneself on an altered trajectory, one that was not originally intended, but that emerged by virtue of attuning to certain flows, that the concept of undergoing foregrounds. It specifically serves here to challenge the choice-defence of OLP proponents—that, it is the workers' choice to work under such conditions.[3] To be sure, this non-transferability of skills does not necessarily come from a skill mismatch (Neffke & Henning, 2013). For instance, skills gained while Turking, such as content moderation or dealing with surveys, are indeed useful in other occupations. However, what is lacking is the transferability of qualifications (Nedelkoska & Neffke, 2019)—e.g., official certifications for skills that could be recognised in other occupations. Again, while lock-in mechanisms and raising switching cost are the bread and butter of value creation in all manner of digital platforms, they become problematic on OLPs where what is locked in is *labour*. OLPs should therefore be required to foster a

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[3] Think of how we might very well choose to go on Instagram, TikTok, or LinkedIn. But is it also our *choice* to spend two hours on them? Or do we often find ourselves swept along the flow?

wider general recognition for work on their platforms and to facilitate the transferability of their workers' skills. For the former they could offer optional employment contracts to those on a full-time gig-working path after a set amount of time, while offering different forms of performance recognition, work certificates, and income histories to workers on different types of paths. As to skill transferability, beyond offering Senian upskilling programs to foster the development of more specialised skills (and not just platform-related skills), OLPs should be required to provide (micro) certificates that allow workers to get recognition for their different skills and work experiences both inside and outside the platform. OLPs can also work with platform complementors. See as a notable example the Dutch startup *GigCV.org* that is pioneering an open standard that allows gig-workers to download their reputation and transaction data as proof of work experience and skills on connected OLPs.

Principle 4: **All OLP design or policy must be contextual and considerate of time and place.** As platform, worker, and requester trajectories grow and multiply through diverse correspondences, new injustices will most certainly emerge. As stated before, our aim here was not to outline the design of a perfectly just platform or employment relation *once and for all*. In this we agree with Sen that such an exercise may never be possible. Differently stated, in our processual view, justice arises not from a categorical blueprint, but from an open and ongoing process whereby existing and new injustices can be revealed and actual and potential remedial design and policy interventions can be (re)considered and continually amended. This leads to a more general question. Where and how can such emerging social justice implications be considered, and how can the abovementioned principles and other emerging principles be enforced, given the global nature of these OLPs? Of course, as we have indicated above some governments have attempted to regulate these labour markets, often leading to contradictory social justice outcomes due to the atemporal and categorical nature of their policy interventions. Other initiatives, such as 'naming and shaming' have been tried.

See for example Fairwork, the Oxford University project that rates and ranks OLPs according to five fair work principles for gig work (*Fairwork*, live). Again, these principles are mostly categorical and atemporal. (Indeed, such rankings will benefit greatly from incorporating the transition-facilitating principles outlined above.) We would argue that voluntary *codes of conduct* and *certification schemes*—developed by international institutions such as the ILO in consultation with state actors, labour unions, gig-worker communities, OLP providers, and platform complementors—based on the principles outlined above would be more reasonable. This will allow for a mechanism where new and emerging social justice implications can be discussed, agreed, and incorporated into those schemes. It will also allow national and local labour unions involved in the consultation to campaign for gig-workers in a manner that is more appropriate for their specific culturally situated context. Moreover, such a collective opportunity for learning about ways to regulate gig-work in a less categorical manner might also help national and local labour unions to become more nuanced in their activism and regulatory work in manners that is more appreciative of diverse gig-working trajectories. Will this be easy, simple, and straightforward? Certainly not. Unfortunately, social justice always comes at a cost. The question remains whether governments, OLPs, requesters and other demand-side actors will be prepared to pay more towards social justice for gig-workers?

CONCLUSION

This paper is about digital technologies and social justice. It deals with how social justice implications of OLPs can be revealed and remedied through a flow approach to social justice. We argued that the current literature on OLPs and social justice is a diverse tapestry that nonetheless lacks an explicit engagement with theoretical work on social justice. Furthermore, the analysis and recommendations in this literature are mostly based on a categorical approach. We argued that this approach, while valuable, suffers from a commensurability problem, as if all in the category lead similar lives—making it insufficient to deal with the diversity of gig-workers' lives. We proposed to go beyond such an approach

by outlining a flow-oriented approach to social justice. We contrasted this to the work of Rawls and Sen to show that it reveals injustices in a very different way, which also then leads to different policy and design implications—implications that aim to foster and support diverse gig-working trajectories in their growth and transitions.

As such, we contribute to IS research concerned with the *development of ethical and responsible ICTs* (e.g. Ahuja et al., 2022; Leidner & Tona, 2021; Martin, 2019; Mason, 2021; Mikalef et al., 2022) by providing a framework to reveal social justice implications of OLPs and by offering a set of principles that can guide design and policy. We also contribute to the IS and organisation theory literatures that deal with ethical concerns such as exploitation, power asymmetries, fairness, surveillance, and control in the gig economy (reviewed before). In sympathy with the literature that has a more balanced and nuanced view towards OLPs and workers' experience of them (Deng et al., 2016; Wiener et al., 2021), we suggest that OLPs such as MTurk are *not monolithically just or unjust towards all workers*. We contribute to this literature by moving away from seeing workers as one homogenous category (e.g., exploited or entrepreneur) that monolithically experiences (in)justice and argued that such (in)justice is performed differently for different gig-workers in different moments of their path and therefore that (in)justice is temporally enacted in moments of (non)correspondences.

Moreover, our research advances our understanding of the *nature of work on OLPs*. Research on digital platforms has mostly focused on the shift from traditional dyadic to triadic relationships (Curchod et al., 2020; Fieseler et al., 2019) and explores the transformation of work due to such a shift. However, we go beyond such an *atemporal actor-centric* approach of the gig working relationship towards a *temporal flow-centric* approach of work on OLPs. This allows us not only to reveal the diversity of gig-working trajectories, but also to reveal many platform-related flows and correspondences that are transformative in the work lives of gig-workers. This enriches our understanding of how to make such work more

meaningful and valuable to different workers navigating different gig-working trajectories.

Our work also responds to the invitation of Mikalef et al. (2022) to study issues such as fairness and bias in IS as temporal phenomena. They give the example of AI bias in different points of one's career. For example, if a minority group is affected by such bias at a late stage of their career it might harm them less compared to a case when they are affected by such bias for promotion or job retention at the beginning of their career (Mikalef et al., 2022). In a similar vein, we propose that (in)justice is enacted in moments of (non)correspondences and that this matters differentially depending on where you are in your trajectory.

Finally, our study has focused on MTurk and gig work more generally. However, we would claim that the flow approach to social justice developed here offers a framework that can shed light on injustices and offer guidance on how to remedy them for many other socio-technical phenomena such as digital workplace monitoring, imbricated machine-human work processes, AI led recruitment processes, and so forth. Moreover, while here we primarily focused on social justice implications within the paradigm of socioeconomic *distribution* (Fraser, 1999), we would like to argue that the notion of correspondences with flows can also be used to explore social justice questions within a paradigm of legal or cultural *recognition* (*ibid*)—e.g., whose culture and/or identity get respect and representation, and when? Of course, we do not want to claim more than is reasonable. Sometimes categorical approaches offer quicker and more easily implementable solutions, but they may also perpetuate different forms of social injustices. We see our work as a first step away from such more or less crude approaches to a more diverse and fluid response to the social justice implications of digital technologies in contemporary processes of organizing.

REFERENCES

Aguinis, H., Villamor, I., & Ramani, R. S. (2021). MTurk Research: Review and Recommendations. *Journal of Management*, *47*(4), 823–837.

Ahuja, S., Chan, Y. E., & Krishnamurthy, R. (2022). Responsible innovation with digital platforms: Cases in India and Canada. *Information Systems Journal*, *n/a*(n/a).

Baird, A., & Maruping, L. M. (2021). The Next Generation of Research on IS Use: A

Theoretical Framework of Delegation to and from Agentic IS Artifacts. *MIS Quarterly*, *45*(1), 315–341.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.

Baruch, Y. (2004). Transforming careers: From linear to multidirectional career paths: Organizational and individual perspectives. *Career Development International*, *9*(1), 58–73.

Bates, O., Lord, C., Alter, H., & Kirman, B. (2020). Let's start talking the walk: Capturing and reflecting on our limits when working with gig economy workers. *Proceedings of the 7th International Conference on ICT for Sustainability*, 227–235.

Bellesia, F., Mattarelli, E., & Bertolotti, F. (2023). Algorithms and their affordances: how crowdworkers manage algorithmic scores in online labour markets. *Journal of Management Studies*, *60*(1), 1–37.

Bergvall-Kåreborn, B., & Howcroft, D. (2014). Amazon Mechanical Turk and the commodification of labour. *New Technology, Work and Employment*, *29*(3), 213–223.

Bucher, E. L., Fieseler, C., & Lutz, C. (2019). Mattering in digital labor. *Journal of Managerial Psychology*, *34*(4), 307–324.

Bucher, E. L., Schou, P. K., & Waldkirch, M. (2021). Pacifying the algorithm – Anticipatory compliance in the face of algorithmic management in the gig economy. *Organization*, *28*(1), 44–67.

Campbell, A. F. (2018, December 5). *New York City passes nation's first minimum pay rate for Uber and Lyft drivers*. Vox.

Caza, B. B., Reid, E. M., Ashford, S., & Granger, S. (2021). Working On My Own: Measuring the Challenges of Gig Work. *Human Relations*, 1–38.

Chan, J., & Wang, J. (2018). Hiring Preferences in Online Labor Markets: Evidence of a Female Hiring Bias. *Management Science*, *64*(7), 2973–2994.

Chen, D. L., & Horton, J. J. (2016). Research note—Are online labor markets spot markets for tasks? A field experiment on the behavioral response to wage cuts. *Information Systems Research*, *27*(2), 403–423.

Chen, J. Y. (2018). Thrown under the bus and outrunning it! The logic of Didi and taxi drivers' labour and activism in the on-demand economy. *New Media & Society*, *20*(8), 2691–2711.

Cohen, G. A. (2021). If you're an egalitarian, how come you're so rich? In *If You're an Egalitarian, How Come You're So Rich?* Harvard University Press.

Collier, D., Daniel Hidalgo, F., & Olivia Maciuceanu, A. (2006). Essentially contested concepts: Debates and applications. *Journal of Political Ideologies*, *11*(3), 211–246.

Constantinides, P., Henfridsson, O., & Parker, G. G. (2018). Introduction—Platforms and Infrastructures in the Digital Age. *Information Systems Research*, *29*(2), 381–400.

Curchod, C., Patriotta, G., Cohen, L., & Neysen, N. (2020). Working for an Algorithm: Power Asymmetries and Agency in Online Work Settings. *Administrative Science Quarterly*, *65*(3), 644–676.

Curchod, C., Patriotta, G., & Neysen, N. (2014). Categorization and identification: The identity work of 'business sellers' on eBay. *Human Relations*, *67*(11), 1293–1320.

De Stefano, V. (2015). The rise of the just-in-time workforce: On-demand work, crowdwork, and labor protection in the gig-economy. *Comp. Lab. L. & Pol'y J.*, *37*(3), 471–504.

Deng, X. N., & Joshi, K. D. (2016). Why individuals participate in micro-task crowdsourcing work environment: Revealing crowdworkers' perceptions. *Journal of the Association for Information Systems*, *17*(10), 3.

Deng, X. N., Joshi, K. D., & Galliers, R. D. (2016). The Duality of Empowerment and Marginalization in Microtask Crowdsourcing: Giving Voice to the Less Powerful Through Value Sensitive Design. *MIS Quarterly*, *40*(2), 279–302.

Douglas, D. M. (2015). Towards a just and fair Internet: applying Rawls' principles of justice

to Internet regulation. *Ethics and Information Technology*, *17*(1), 57–64.

Elbanna, A., & Idowu, A. (2021). Crowdwork, digital liminality and the enactment of culturally recognised alternatives to Western precarity: beyond epistemological terra nullius. *European Journal of Information Systems*, *31*(1), 1–17.

Espeland, W. N., & Stevens, M. L. (1998). Commensuration as a social process. *Annual Review of Sociology*, *24*(1), 313–343.

Ettlinger, N. (2016). The governance of crowdsourcing: Rationalities of the new exploitation. *Environment and Planning A: Economy and Space*, *48*(11), 2162–2180.

Eurofound. (2021). *Riders' law | Initiative | Eurofound Platform Economy Repository*.

Evans, D. S., & Schmalensee, R. (2016). *Matchmakers: The new economics of multisided platforms*. Harvard Business Review Press.

Faik, I., Barrett, M., & Oborn, E. (2020). How does information technology matter in societal change? An affordance-based institutional logics perspective. *MIS Quarterly*.

Fairwork. (live).

Faraj, S., Pachidi, S., & Sayegh, K. (2018). Working and organizing in the age of the learning algorithm. *Information and Organization*, *28*(1), 62–70.

Fieseler, C., Bucher, E. L., & Hoffmann, C. P. (2019). Unfairness by design? The perceived fairness of digital labor on crowdworking platforms. *Journal of Business Ethics*, *156*(4), 987–1005.

Flanagan, F. (2019). Theorising the gig economy and home-based service work. *Journal of Industrial Relations*, *61*(1), 57–78.

Franke, U. (2021). Rawls's Original Position and Algorithmic Fairness. *Philosophy & Technology*, *34*(4), 1803–1817.

Fraser, N. (1999). Social justice in the age of identity politics: Redistribution, recognition, and participation. *Culture and Economy after the Cultural Turn*, *1*, 25–52.

Gandini, A. (2019). Labour process theory and the gig economy. *Human Relations*, *72*(6), 1039–1056.

Gegenhuber, T., Ellmer, M., & Schüßler, E. (2021). Microphones, not megaphones: Functional crowdworker voice regimes on digital work platforms. *Human Relations*, *74*(9), 1473–1503.

Geissinger, A., Laurell, C., Öberg, C., Sandström, C., & Suseno, Y. (2021). The sharing economy and the transformation of work: evidence from Foodora. *Personnel Review*, *51*(2), 584–602.

Giddens, A. (1986). *The Constitution of Society: Outline of the Theory of Structuration* (New Ed edition). Polity Press.

Gray, M. L., & Suri, S. (2019). *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. Houghton Mifflin Harcourt.

Greenhaus, J. H., Callanan, G. A., & DiRenzo, M. (2008). A boundaryless perspective on careers. *Handbook of Organizational Behavior*, *1*, 277–299.

Hatakka, M. (2011). *Development, Capabilities and Technology – An Evaluative Framework*.

Heeks, R. (2017). Decent work and the digital gig economy: a developing country perspective on employment impacts and standards in online outsourcing, crowdwork, etc. *Development Informatics Working Paper*, *71*.

Hoque, Md. R. (2020). The impact of the ICT4D project on sustainable rural development using a capability approach: Evidence from Bangladesh. *Technology in Society*, *61*, 101254.

Idowu, A., & Elbanna, A. (2022). Digital Platforms of Work and the Crafting of Career Path: The Crowdworkers' Perspective. *Information Systems Frontiers*, *24*(2), 441–457.

Ingold, T. (2011). *Being alive: essays on movement, knowledge and description*. Routledge.

Ingold, T. (2015). *The life of lines*. Routledge.

Ingold, T. (2017). On human correspondence. *Journal of the Royal Anthropological Institute*, *23*(1), 9–27.

Introna, L. D. (2000). Workplace surveillance, privacy and distributive justice. *Acm Sigcas Computers and Society*, *30*(4), 33–39.

Joseph, D., Boh, W. F., Ang, S., & Slaughter, S. A. (2012). The career paths less (or more) traveled: A sequence analysis of IT career histories, mobility patterns, and career success. *Mis Quarterly*, 427–452.

Kellogg, K. C., Valentine, M. A., & Christin, A. (2020). Algorithms at Work: The New Contested Terrain of Control. *Academy of Management Annals*, *14*(1), 366–410.

Kretschmer, T., Leiponen, A., Schilling, M., & Vasudeva, G. (2022). Platform ecosystems as meta-organizations: Implications for platform strategies. *Strategic Management Journal*, *43*(3), 405–424.

Kuhn, K. M., & Maleki, A. (2017). Micro-entrepreneurs, dependent contractors, and instaserfs: Understanding online labor platform workforces. *Academy of Management Perspectives*, *31*(3), 183–200.

Ladd, T. (2022). The Achilles' heel of the platform business model: Disintermediation. *Business Horizons*, *65*(3), 277–289.

Leben, D. (2017). A Rawlsian algorithm for autonomous vehicles. *Ethics and Information Technology*, *19*(2), 107–115.

Leidner, D. E., & Tona, O. (2021). The CARE Theory of Dignity Amid Personal Data Digitalization. *MIS Quarterly*, *45*(1), 343–370.

Leonardi, P. M., & Vaast, E. (2017). Social Media and Their Affordances for Organizing: A Review and Agenda for Research. *Academy of Management Annals*, *11*(1), 150–188.

MacDonald, R., & Giazitzoglu, A. (2019). Youth, enterprise and precarity: or, what is, and what is wrong with, the 'gig economy'? *Journal of Sociology*, *55*(4), 724–740.

Martin, K. (2019). Designing Ethical Algorithms. *MIS Quarterly Executive*, 129–142.

Mason, R. O. (2021). Policy for Ethical Digital Services. *Journal of the Association for Information Systems*, *22*(3), 571–578.

Mikalef, P., Conboy, K., Lundström, J. E., & Popovič, A. (2022). Thinking responsibly about responsible AI and 'the dark side'of AI. *European Journal of Information Systems*, *31*(3), 257–268.

Milkman, R., Elliott-Negri, L., Griesbach, K., & Reich, A. (2021). Gender, Class, and the Gig Economy: The Case of Platform-Based Food Delivery. *Critical Sociology*, *47*(3), 357–372.

Mousavi Baygi, R., Introna, L. D., & Hultin, L. (2021). Everything Flows: Studying Continuous Socio-Technological Transformation in a Fluid and Dynamic Digital World22. *MIS Quarterly*, *45*(1), 423–452.

Nedelkoska, L., & Neffke, F. (2019). Skill mismatch and skill transferability: review of concepts and measurements. *Papers in Evolutionary Economic Geography*, 19–21.

Neffke, F., & Henning, M. (2013). Skill relatedness and firm diversification. *Strategic Management Journal*, *34*(3), 297–316.

Newlands, G. (2021). Algorithmic surveillance in the gig economy: The organization of work through Lefebvrian conceived space. *Organization Studies*, *42*(5), 719–737.

Nussbaum, M. (2003). Capabilities as Fundamental Entitlements: Sen and Social Justice. *Feminist Economics*, *9*(2–3), 33–59.

Nussbaum, M. (2006). *Frontiers of justice: disability, nationality, species membership*. The Belknap Press : Harvard University Press.

Petriglieri, G., Ashford, S. J., & Wrzesniewski, A. (2019). Agony and ecstasy in the gig economy: Cultivating holding environments for precarious and personalized work identities. *Administrative Science Quarterly*, *64*(1), 124–170.

Pfeiffer, S., & Kawalec, S. (2020). Justice expectations in crowd and platform-mediated work. *The Economic and Labour Relations Review*, *31*(4), 483–501.

Prassl, J. (2018). *Humans as a Service: The Promise and Perils of Work in the Gig Economy*. Oxford University Press.

Rahman, H. A. (2021). The Invisible Cage: Workers' Reactivity to Opaque Algorithmic Evaluations. *Administrative Science Quarterly*, *66*(4), 945–988.

Rai, A., Constantinides, P., & Sarker, S. (2019). Next Generation Digital Platforms: Toward Human-AI Hybrids. *Mis Quarterly*, *43*(1), iii–ix.

Rani, U., & Furrer, M. (2021). Digital labour platforms and new forms of flexible work in developing countries: Algorithmic management of work and workers. *Competition & Change*, *25*(2), 212–236.

Rawls, J. (1958). Justice as Fairness. *The Philosophical Review*, *67*(2), 164–194.

Rawls, J. (1999). *A Theory of Justice*. Oxford: Oxford University Press.

Sahay, S., & Walsham, G. (2017). Information Technology, Innovation and Human Development: Hospital Information Systems in an Indian State. *Journal of Human Development and Capabilities*, *18*(2), 275–292.

Sánchez Nicolás, E. (2021). *Brussels unveils rules for Uber, Deliveroo, and other gig workers*. EUobserver.

Schor, J. B., Attwood-Charles, W., Cansoy, M., Ladegaard, I., & Wengronowitz, R. (2020). Dependence and precarity in the platform economy. *Theory and Society*, *49*(5), 833–861.

Sen, A. (1995). *Inequality reexamined*. Harvard University Press.

Sen, A. (2009). *The idea of justice*. Belknap Press of Harvard University Press.

Shapiro, A. (2018). Between autonomy and control: Strategies of arbitrage in the "on-demand" economy. *New Media & Society*, *20*(8), 2954–2971.

Sicherman, N., & Galor, O. (1990). A Theory of Career Mobility. *Journal of Political Economy*, *98*(1), 169–192.

Spinosa, C., Flores, F., & Dreyfus, H. L. (1999). *Disclosing new worlds: Entrepreneurship, democratic action, and the cultivation of solidarity*. MIT press.

Swissinfo. (2022, January 7). *Zurich court rules Uber drivers are not 'independent workers.'* SWI Swissinfo.Ch.

Taylor, J., & Joshi, K. D. (2018). How IT Leaders Can Benefit from the Digital Crowdsourcing Workforce. *MIS Quarterly Executive*, *17*(4), 281–295.

Vallas, S., & Schor, J. B. (2020). What do platforms do? Understanding the gig economy. *Annual Review of Sociology*, *46*, 273–294.

White, R. (2020, March 5). *How the Ontario Labour Board Ruled Foodora Workers are "Employees" and Not Independent Contractors – The Law of Work*.

Wiener, M., Cram, W., & Benlian, A. (2021). Algorithmic control and gig workers: a legitimacy perspective of Uber drivers. *European Journal of Information Systems*, 1–23.

Wood, A. J., Graham, M., Lehdonvirta, V., & Hjorth, I. (2019). Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy. *Work, Employment and Society*, *33*(1), 56–75.

Young, I. M. (1990). *Justice and the Politics of Difference*. Princeton University Press.

Zheng, Y., & Walsham, G. (2008). Inequality of what? Social exclusion in the e-society as capability deprivation. *Information Technology & People*, *21*(3), 222–243.

Zimmer, M., & Kinder-Kurlanda, K. (Eds.). (2017). *Internet Research Ethics for the Social Age: New Challenges, Cases, and Contexts*. Peter Lang.

Zyskowski, K., Morris, M. R., Bigham, J. P., Gray, M. L., & Kane, S. K. (2015). Accessible Crowdwork?: Understanding the Value in and Challenge of Microtask Employment for People with Disabilities. *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 1682–1693.

Zysman, J., & Kenney, M. (2018). The next phase in the digital revolution: intelligent tools, platforms, growth, employment. *Communications of the ACM*, *61*(2), 54–63.