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Politics of on-demand food delivery: Policy design and the power of algorithms

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Abstract

In this article, we examine the politics of on-demand food delivery using insights from the theory of social construction and policy design. On-demand food delivery is a service built on algorithm-based technology known for its precarity and physical risks for couriers. We compare how the on-demand food delivery sector is regulated and its observable effects in two Asia-Pacific cities with contrasting food courier profiles: Melbourne, Australia (international students), and Singapore (citizens, permanent residents). We show how the social construction of food couriers in other policy subsystems (migration, higher education, citizenship) affects debates of their fair treatment in the on-demand food delivery sector. By interrogating the politics of digitally enabled versions of reality, we argue for embracing a design perspective to identify how reforms could be introduced in change-resistant sectors.

KEYWORDS
algorithms, artificial intelligence, food delivery, gig economy, policy design, power

INTRODUCTION

On-demand food delivery has become politically salient in recent years as policy makers and activists around the world demand greater labor protection for couriers (Cornwell, 2022;

Craig, 2022; Poh, 2022). We examine the politics of on-demand food delivery using insights from the theory of social construction and policy design. Our research question is: How does the social construction of food couriers in other policy sectors (e.g., migration, higher education) affect their fair treatment in the on-demand food delivery sector? By addressing this question, our study makes conceptual and empirical contributions to multiple research fields. For policy scientists, we show how the theory of social construction and policy design could help us make sense of how food couriers as a group are differentiated between those who are "deserving" and those who are "undeserving." This differentiation speaks to the importance of attending to how the social construction of food couriers in other policy subsystems affects their social construction in the on-demand food delivery sector. For geographers, sociologists, and urban studies scholars, we offer a policy design perspective on algorithms' power. We point to how policies adopted in the higher education and migration sectors and practices concerning citizenship could amplify or curtail the negative effects of algorithmic management of food couriers. For those interested in the on-demand food delivery sector, we provide less examined case studies from the Asia-Pacific—Melbourne and Singapore—for comparison.

At least three features distinguish on-demand food delivery today that make it an excellent case for those interested in the politics and policy of Artificial Intelligence (AI). First, it is a service built on algorithm-based technology where algorithms are explicitly designed to play a central role. For instance, algorithms determine which eateries are available based on users' geolocation and real-time demand. Algorithms also find potential customers for couriers using their previous performance and geolocation. Algorithms then rank courier performances based on customer feedback or other indicators (Huang, 2022a; van Doorn, 2020). The centrality of algorithms in these interactions allows us to interrogate the politics of digitally enabled versions of reality.

Second, it is also a service sector known for precarity and physical risks for couriers where most are considered "part-time" even though their working conditions have "full-time" features without the corresponding compensation and benefits (Huang, 2022b). These couriers also tend to be from an immigrant or minority background, which historically have possessed less power (cf. Cant, 2019; Galière, 2020; Sun, 2019). Standing (2012, p. 589) sees these couriers as belonging to the *precariats*, the "millions of people scattered around the world, living and working in insecure jobs and conditions of life." Understanding how algorithms contribute to empowering which actors while disempowering others should engage policy makers interested in good AI governance (cf. Giest & Samuels, 2022).

Finally, on-demand food delivery is growing in the economy, hiring highly skilled programmers to develop and fine-tune algorithms for better performance, and welcoming applications from couriers-to-be (Huang, 2022b). While food delivery has been a phenomenon before the COVID-19 pandemic, it was the pandemic that has driven the demand for this service in the platform economy (Mathews et al., 2022). At the heart of the platform economy is the question of power. Specifically, how algorithms configure and reconfigure the power relationships between different social groups. Examining developments in on-demand food delivery thus offers an opportunity to reflect on AI politics in the COVID-19 pandemic context, especially discussions concerning power.

We proceed as follows. We first review the academic studies on on-demand food delivery to parse out how power is discussed and examined. Scholars and activists agree on the need for policy intervention to address the negative effects of algorithms' power, but efforts have not yet led to widespread reforms. It is here we argue that policy sciences have much to offer. Specifically, we propose that exploring the role of policy design on power distribution is a good starting

point in developing policy interventions. Next, we introduce the theory of social construction and policy design to identify its insights before applying them to examine on-demand food delivery in Melbourne and Singapore. Our research is organized as exploratory case studies and has clear limitations. We are interested in unveiling how the social construction of food couriers in other policy subsystems (i.e., migration, higher education, citizenship) affects debates about their fair treatment in the on-demand food delivery sector. Our findings, which add to the literature on the (ideational) politics of platform capitalism, hint at the potential of sectoral politics outside of the platform economy effecting reforms in the on-demand food delivery sector. In so doing, our findings highlight the bidirectional relationship between policies and politics (see Béland et al., 2022). We conclude by discussing the implications of our findings for studies of AI politics and policy.

POWER OF ALGORITHMS IN ON-DEMAND FOOD DELIVERY

The power of algorithms has fascinated social scientists. According to Sun (2019, p. 311), there are two general approaches to studying algorithms. The first approach explores the social power of algorithms, which encourages scholars to think "about the powerful ways in which notions and ideas about the algorithm circulate through the social world" (Beer, 2017, p. 2). In order to understand algorithms' power, Beer (2017, p. 2) argues, we need to analyze the "broader rationalities, knowledge-making and norms" that algorithms project. The second approach attempts to understand algorithms' power "through the perspective of everyday life" (Sun, 2019, p. 311). Those who embrace this approach are more interested in developing "political-economic critiques," and exploring "how algorithms are experienced, imagined, and even reshaped through 'everyday lived experiences'" (Sun, 2019, p. 311). What unites these two groups is the consensus that algorithms have fundamentally contributed to changing human behavior (Bucher, 2018; Kitchin, 2017).

Research into modern food delivery has confirmed how delivery apps altered the ways people consume food in the developed West (Bissell, 2020; Dolibog, 2020; see commentary by Nunn, 2021), and in emerging economies (Ahmed & Ahmed, 2018; Chotigo & Kadono, 2022; Huang, 2022a; Lage & Rodrigues, 2021; Sun, 2019). But this research has also grown beyond the focus on consumer behavior. In this section, we review three prominent themes in existing research on on-demand food delivery and consider what they tell us about algorithms' power. These three themes are sites (where are deliveries made?), courier profiles (who delivers?), and observable effects of algorithms' power (what impact?).

Most studies on food delivery have examined these developments in urban and city settings (Marrone & Peterlongo, 2020). This is because these sites are where good digital infrastructures and robust transportation infrastructures essential for delivery are located (Cant, 2019). The comparatively denser infrastructural set-up found in cities thus presents urban settings as sites where platform owners, consumers, and couriers are empowered, the former two having greater access to sell and purchase food delivery services, and the latter work opportunities. At the same time, as Marrone and Peterlongo (2020) argue in their work, cities occupy an ambivalent and unique position: as sites where workers in the "platform capitalist" economy could be exploited, and where they could also rise against the exploitative conditions.

Courier profiles reflect the comparative ease in joining food delivery platforms as providers. In his first-hand account of working for Deliveroo UK, Cant (2019, pp. 96–97) identifies his fellow couriers as either new migrants or young students. Courier demographic data are limited,

but studies have pointed to young males dominating food delivery (Huang, 2022b, p. 358; Lage & Rodrigues, 2021, p. 437; Mathews et al., 2022; Sun, 2019, p. 313). Migrants and students have historically faced barriers in entering established and formal labor market that require demonstrable high linguistic skills, appropriate work authorization, and commitment to fixed work hours. van Doorn et al. (2020, p. 3) argued how the platform economy simultaneously enables easy access to work opportunities for migrants while exploiting their labor by giving them "a disproportionate amount of physical and economic risk" (cf. Huang, 2022b; Lee, 2018; Moore, 2018; Sun, 2019). In so doing, algorithm-based technology contributes to upholding existing socio-economic class hierarchies (Cant, 2019; Cant & Woodcock, 2020; Lage & Rodrigues, 2021; Lee, 2018; van Doorn et al., 2020).

Studies have consistently pointed to the exploitative working conditions as the most observable effects of algorithms' power. Terms such as "algorithmic management" (Galière, 2020; Huang, 2022a; Sun, 2019), "algorithmic control" (Huang, 2022a; Ivanova et al., 2018), "despotism" (Huang, 2022b), and "new sweatshops" (Schillebeeckx, 2021) have been used to describe the relationship between delivery apps and couriers. Ivanova et al. (2018, p. 34) explain how delivery apps control through "information asymmetries, performance-based pay and bonuses, internal competition for shifts, and automated notification systems." Huang (2022b, p. 357) notes that most couriers "face insecure job, instable income and racialized identity" (cf. Lee, 2018; Marrone & Peterlongo, 2020). Studying black couriers in Brazil, Lage and Rodrigues (2021, pp. 438–439) found that their pay has dropped during the COVID-19 pandemic despite working on average 9–12 h per day while "being perceived or identified as a criminal because of his appearance." What is unique about the platform economy, Stark and Pais (2021, p. 47) tell us, is how the platform owners "co-opt the behavior of providers and users, enrolling them in the practices of algorithmic management without managerial authority having been delegated to them."

Increased awareness of food couriers' exploitative working conditions has resulted in growing resistance movements and techniques. Strikes and solidarity movements have taken place in the United Kingdom (Cant & Woodcock, 2020; Tassinari & Maccarrone, 2020), in Italy (Cini & Goldmann, 2021; Marrone & Peterlongo, 2020), and in New York (Lee, 2018). Popan (2021) found how Deliveroo couriers in Manchester used WhatsApp to express solidarity and share tactics. Food couriers in China also use group chat platforms to fight against algorithmic control by, for instance, informally asking "colleagues or even friends to complete the delivery for them through their WeChat group, which is a virtual social media community of colleagues and fellow villagers" (Sun, 2019, p. 319). While these couriers could formally request the order transfer, Sun (2019, p. 319) noted that "When they met each other in restaurants, they talked about their orders and transferred them to save time and the battery on their e-bikes." The veteran couriers in Sun's (2019, p. 320) study "usually chose the route they trusted instead of the route recommended by the algorithm." In their study, Yu et al. (2022, pp. 117–119) identified multiple strategies couriers embraced, ranging from sharing real-time traffic news to algorithm literacy.

The growing awareness of food couriers' plight has not generated widespread consensus among policy makers around the world that on-demand food delivery needs to be regulated differently. This is because platform owners have successfully manipulated institutional politics through discourse and framing (cf. Coiquaud & Morissette, 2022; Seidl, 2022). Particularly relevant here is how depiction of freelancers, gig workers, and contractors who work for the platform economy as "non-employees" enable platform companies to disrupt status and penetrate the market (Coiquaud & Morissette, 2022; Seidl, 2022; Thelen, 2018). Prassl (2018) tells us that this discursive breakthrough rests on the success of the narrative that creates a false divide between employment status and flexible work, emphasizing the value of the latter in our "Fourth

Industrial Revolution" (Schwab, 2017). Rosenblat (2018, p. 34) points to the "myth of technological exceptionalism" that platform companies have used to circumvent regulatory control. Our study offers a different perspective to highlight how the discursive construction of food couriers as "non-employees" can be generally change-resistant, while ripe for reform when co-opted by other sectoral considerations. Specifically, we show how examining the "politics effects" of policy debates in other policy areas could point to which discursive strategies are likely to succeed or not succeed in platform politics. In the next section, we turn to the theory of social construction and policy design to begin this discussion.

ANALYTICAL FRAMEWORK: WHAT INSIGHTS DOES THE POLICY DESIGN APPROACH OFFER?

Policy design is a process through which "policymakers try to address the complexity of reality by deciding how best to solve problems that are perceived as collective, including recommending and putting into place those instruments which are best suited to tackle those problems" (Capano & Howlett, 2022, p. 73). A design perspective orientates researchers to the relationship between processes of instrument selection and the effects of implementation (Peters et al., 2018). It is thus an analytical perspective that focusses our attention on power: How power frames and defines the policy problem, promotes associated policy solutions, and excludes alternatives. One strand of the established policy design scholarship attends to the role of social construction in the design process (Ingram et al., 2007; Pierce et al., 2014; Schneider & Ingram, 1993; Schneider & Sidney, 2009). Specifically, it seeks to "illuminate how policy designs shape the social construction of a policy's targeted population, the role of power in this relationship, and how policy design 'feeds forward' to shape politics and democracy" (Pierce et al., 2014, p. 2).

The social construction of knowledge plays a central role in this approach through positive and negative connotations associated with "target populations," dividing them between those who get "benefits" ("deserving," positively constructed) and those who receive "burdens" ("undeserving," negatively constructed) (Ingram et al., 2007). In short, policy design matters because it determines politics. Insights from the theory of social construction and policy design thus enable us to interrogate AI politics from the perspective of "target populations," assessing who is empowered and disempowered, and how. This article is interested in the social construction of food couriers and their fair treatment in the on-demand food delivery sector.

Classified along two dimensions (i.e., deserving to undeserving, powerful to lacking power), the theory of social construction and policy design proposes four categories of "target populations" and their respective political powers: *advantaged*, *contenders*, *dependents*, and *deviants* (Ingram et al., 2007; Pierce et al., 2014; Schneider & Ingram, 1993; Schneider & Sidney, 2009). The *advantaged* are those perceived as deserving a "disproportionate share of benefits and few burdens" (Pierce et al., 2014, p. 5); politically, they are powerful. Examples of *advantaged* groups include "small businesses, homeowners, first-responder personnel, often scientists, and the idealized family composed of a married man and woman and a couple of children" (Ingram et al., 2007, p. 101); tax breaks or credits are examples of benefits in public policy this group receives. The *contenders* are those "negatively constructed," like the *advantaged* they are politically powerful and receive few burdens, but the benefits they received are in private or in secret (Pierce et al., 2014, p. 5). Classic examples of *contender* groups include "Polluting industries, gun manufacturers, 'big oil,' Washington lobbyists, and radical conservative activists" (Ingram et al., 2007, p. 102). As their name suggests, *contenders* strive to become the *advantaged*, and their mobilization and changing political contexts could allow them to achieve this status.

The *dependents* are those "positively constructed," but are "expected to receive rhetorical and underfunded benefits and few but often hidden burdens" (Pierce et al., 2014, p. 5). Examples of *dependents* include "Widows, orphans, the mentally handicapped, families in poverty, the homeless, most students, and many other categories of unfortunates" (Ingram et al., 2007, p. 103); federal student loans are examples of benefits in public policy for students from low-income families. *Dependents* have limited political power. The *deviants* are those "negatively constructed and are expected to receive limited to no benefits and a disproportionate share of burdens" (Pierce et al., 2014, p. 5). Examples of *deviants* "include suspected and actual terrorists, criminals, illegal immigrants, drug dealers and usually users, computer hackers, sex offenders, spies, leakers of official secrets, and many others" (Ingram et al., 2007, p. 103). *Deviants* lack political power. These categories should be seen as heuristic, guiding our understanding of how policy design constructs and divides groups according to those who receive benefits and burdens. Table 1 summarizes these insights.

A key proposition of the theory of social construction and policy design is that design "feeds forward" to shape politics and democratic participation of the respective "target populations." Here, "feeding forward" refers to positive returns that policy design generates to reinforce existing policy dynamics and treatments (Ingram et al., 2007; Pierce et al., 2014). In highlighting the significance of "feed forward effects," scholars working in this tradition aim to draw attention to the importance of design in the policy process and how design may perpetuate societal differences, elevating some while suppressing others/most. According to them, changes are less likely and take time, but changes do occur.

The literature has identified at least four ways in which "target populations" may be re-categorized: "(i) changes in perception of a target population from being deserving to undeserving or vice versa, (ii) external dramatic events, (iii) opportunities, and/or (iv) skillful manipulation by entrepreneurs" (Pierce et al., 2014, p. 17). For instance, studying how Japanese immigrants changed from being *contenders* before World War II to *deviants* during the war, and *advantaged* after the war, DiAlto (2005) attributes the strong and persistent efforts of Japanese Americans in highlighting their contributions to the US war efforts and their "Americanness" as responsible for shifting their "target population" status. Another example is how homosexual men changed from being categorized as *deviants* in the 1980s to *contenders* in the late 1990s

TABLE 1 Social construction of target populations (cf. Schneider & Sidney, 2009, p. 107).

	Policy target groups			
Category	**Advantaged**	**Contenders**	**Dependents**	**Deviants**
Social construction	Positive	Negative	Positive	Negative
Deserving versus undeserving	Deserving	Undeserving	Deserving	Undeserving
Power	Highest	Higher	Low	Lower
Policy benefits	Most/ disproportionate	Private, in secret	Rhetorical, underfunded	Limited/none
Policy burdens	Few	Few	Hidden	Most/ disproportionate
Examples	Experts, small businesses, homeowners, nuclear family	Big Oil, polluting industries, gun producers	Widows, the poor, homeless, students, orphans	Criminals, terrorists, illegal immigrants, drug dealers

and beyond by mobilizing and educating policy makers and the public about the ways in which AIDs are caused (Pierce et al., 2014, p. 17). These examples highlight the importance of framing and discourse in ushering in reforms that protect the disempowered in the skewed dynamics of AI-powered industries.

While scholars may be interested in accounting for change (i.e., change has already occurred), practitioners may be more preoccupied with how to effect change. What unites both groups are discussions concerning the conditions under which change occurs. By examining the institutional contexts, the actors involved in claims-making, and how claims are articulated and justified, we may identify the conditions under which change could occur. Here, we argue that attending to the different ways in which food couriers is socially constructed would help us identify these conditions. Specifically, a first step is to recognize how food couriers may have multiple social constructions as a social group. For instance, food couriers may be a main income provider for a nuclear family ("deserving"), an undocumented migrant-seeking access to the labor market ("undeserving"), or both ("deserving" and "undeserving"). We propose how the multiple constructions of food couriers are reconciled matters in whether the on-demand food delivery sector remains change resistant or could be receptive to reforms by, for instance, attracting potential policy entrepreneurs who strategize for change. Put simply, how platform workers are constructed in existing policy fields has effects on the "ideational power" (Carstensen & Schmidt, 2016) or influence of different discursive-political strategies. In the next section, we turn to our research design and methodology to outline how we may empirically examine this proposition.

RESEARCH DESIGN AND METHODOLOGY

In this article, we use the case of on-demand food delivery to examine AI politics and policies, especially how algorithms configure power relations between diverse social groups. Our study is interested in the most visible and affected social group in on-demand food delivery: food couriers. Like others who focus on this sector of the platform economy (see Section "Power of algorithms in on-demand food delivery"), we share concerns that food couriers constitute an overlooked social group outside of most labor protection. In order to address our research question—"How does the social construction of food couriers affect their fair treatment in the on-demand food delivery sector?"—we organized our research as exploratory comparative case studies. It is exploratory because reforms of the on-demand food delivery sector remain ongoing. It is comparative because, as Davis and Sinha (2021) point out in their study of Uber, domestic contexts filter ride-hailing innovations and technologies to generate "varieties of Uberization." Our unit of analysis is the social construction of food couriers in cities.

We focus on cities because they are the urban centers where on-demand food delivery thrives. This focus departs from a more state-centric focus in policy sciences and public administration where the natural unit of analysis has long been the state (cf. critique by Acuto, 2013; Ljungkvist, 2017; Sassen, 1991). Kangas (2017) conceptualizes global cities as possessing descriptive and prescriptive elements. Descriptively, the global city is "an *imago mundi*—a term that stands for the centralisation of the world economy's command and control functions" (Kangas, 2017, p. 532; cf. Sassen, 1991). Prescriptively, the global city is a *fabrica mundi*, which refers to its "prescriptive, world-making capacity" (Kangas, 2017, p. 532). By being able to make the world in its own image, the global city is extremely powerful in determining how the future is to be regulated. Our focus on city-level development is also an attempt to explore how the future of work could be regulated.

For our exploratory case studies, we chose Melbourne and Singapore for the following reasons. First, they are two less examined cities in studies of on-demand food delivery. Melbourne is the state capital of Victoria, Australia, and Singapore is a city-state, both are globally connected cities with world-class digital and transport infrastructures (City of Melbourne, 2022a; Smart Nation Singapore, 2022). Second, Melbourne and Singapore have a generally affluent population where the services of food delivery are widely consumed, especially during the COVID-19 pandemic. In Singapore, a 2020 survey found that 77% reported having used the top delivery app (Statista, 2021, p. 31), with 61% indicated they ordered more through food delivery apps during the COVID-19 pandemic, and only 1% reporting never using food delivery apps in this period (Müller, 2021). No city-level statistics exist for Melbourne, but it was reported that in 2020 more than 5.5 million Australians ages 14 and above have used food delivery services, an increase from 3.9 million in 2019 and 3.3 million in 2018 (Roy Morgan, 2021).

We selected Melbourne and Singapore also because food couriers in both cities are considered freelancers or independent contractors who receive "contract *for* service" rather than "contract *of* service" (Fair Work Act, 2009; Independent Contractors Act, 2006; Singapore Employment Act, 2009). As independent contractors or freelancers, food couriers are generally negatively constructed in the labor market. They are seen to be untethered by the rules and obligations of full-time work, and thus are not entitled to corresponding employment benefits and protections afforded to full-time employees. Studies of on-demand food delivery have criticized this assumption that couriers are less or not economically active by highlighting their exploitation (organizationally, through algorithms) as responsible for this perspective (see Sun, 2019; van Doorn et al., 2020; Yu et al., 2022). Other research on the platform economy supports this view (cf. Coiquaud & Morissette, 2022; Seidl, 2022; Thelen, 2018). We agree with their analyses; yet it is equally important to acknowledge that in labor markets where regulations define active economic contributions in certain terms, food couriers could be seen as deviating from societal expectations.

We decided on Melbourne and Singapore as our case studies because they differed in an important aspect: who can work as food couriers. In Melbourne's case, anyone who is authorized to work can become a food courier. By contrast, in Singapore, only citizens and permanent residents are allowed to be food couriers. This is an important distinction because it marks Melbourne as a typical case, and Singapore as an outlier case in terms of food courier profiles in the on-demand food delivery sector. Table 2 summarizes and provides an overview of the main features of Melbourne and Singapore as exploratory case studies of on-demand food delivery.

Comparing Melbourne and Singapore thus offers a good starting point to consider which social constructions of food couriers are present when discussing reforms of the on-demand food delivery sector. More importantly, we are able to assess how these different social constructions are reconciled (if at all), identify the actors calling for reforms, and how these actors articulate the need for reform. Our data include policy documents, media reports, and published academic and policy studies about food couriers in Melbourne and Singapore between 2012 and 2022. We concentrate on this period because this is when more and more on-demand food delivery apps entered the market, rapidly expanded to become the notable sector in the platform economy today, and experienced the COVID-19 pandemic transformation. We add to these data sources with our onsite observations in Melbourne and Singapore throughout the COVID-19 pandemic. What our analyses below show is how the social constructions of food couriers as international students in Melbourne, and citizens/residents in Singapore, predate the rapid expansion of on-demand food delivery. These social constructions have shaped who speaks for food couriers in these two cities, and the policy pathways forward for reforms.

TABLE 2 Comparative overview of Melbourne and Singapore's on-demand food delivery.

	Melbourne	Singapore
Food delivery platforms (Bold = top platforms)	**Menulog**, **UberEats**, **Door Dash**, Foodpanda, HungryPanda[a]	**Foodpanda, Deliveroo, GrabFood**, WhyQ, Oddle Eats, #SupportLocalSG, The Dine In Movement, Where Got Food?, Air Asia Food, Deliver.sg, Grain
Who can become couriers?	Anyone allowed to work (full or part-time)	Singaporeans, Permanent Residents
Courier demographics?	International students (majority), Australians	Singaporeans, Permanent Residents
Employees or contractors/ freelancers?	Contractors/freelancers	Contractors/freelancers
Additional requirements?	Australian Business Number, National Police Check	Driver kits, safety equipment, online training

Source: Authors' compilation from CBRE Research (2020), Vane (2021), and websites from Menulog, UberEats, DoorDash, Foodpanda, GrabFood. All couriers must be at least 18 years old, have a smartphone, a mode of transport, and a bank account.

[a]Deliveroo Australia has gone into voluntary administration and will cease operations at the end of 2022, but Deliveroo Singapore is still thriving.

ON-DEMAND FOOD DELIVERY IN MELBOURNE AND SINGAPORE: A POLICY DESIGN ANALYSIS

Melbourne: Social construction of international students as food couriers

Food couriers in Melbourne tend to be current or recently graduated international students. Australian post-study visa policy allows graduated international students to stay in the country for 18–48 months to work, purportedly to gain experience and to fill existing skill shortages. Two sets of conditions attract international students in Melbourne to food delivery: (a) flexibility of work hours and (b) self-employment opportunities or the lack of employers. Having flexible working hours allow students to work around their studies, and not having employers mean they can work almost immediately without going through the job application process. Furthermore, since food delivery apps, unlike ride-hailing apps, do not require courier users to register for goods and services tax (GST) (H&R Block Tax Accountants, 2020), international students are also able to work beyond the official restriction of 40 h per fortnight during the semester. Without GST registration, the Australian Tax Office is unable to track the number of hours food couriers work. In Melbourne, food couriers may download as many apps as their smartphones can accommodate; many couriers thus freelance across multiple apps to generate more bookings. During the COVID-19 pandemic, international students who have lost their jobs as waitstaff in food outlets have turned to food delivery as an income source (Riordan & Hoffstaedter, 2021). Food delivery is undertaken primarily for financial sustenance with no professional or future residency benefits.

There are two primary visual demographics of food couriers in Melbourne. First, HungryPanda, a more specialized delivery service focused on Asian communities, has a strong presence in the Central Business District (HungryPanda, n.d.). Partnering with Chinese restaurants to serve the Chinese community, HungryPanda also uses current and recently graduated Chinese international students as couriers. The HungryPanda branding is highly visible: the Chinese writing

("Panda Delivery") on the uniforms and food delivery bags are seen throughout Melbourne when couriers circulate the city in motorized bicycles. Among the food delivery platforms in Australia, HungryPanda has some of the worst complaints about courier treatments, including insurance issues and not reporting courier deaths to SafeWork NSW (Malone, 2021). The other large demographic of food couriers are South Asians who work primarily for the non-HungryPanda companies. South Asian international students and graduates, including those who have become permanent residents and Australians, have been part of the private transportation industry for the past 20–30 years as taxi drivers (Gothe-Snape & Cornish, 2013).

As temporary migrants, international students are excluded from the rights and obligations that Australians and permanent residents ordinarily access. They are thus negatively constructed in the migration policy sector. Interestingly, as full-fee paying students, international students are also negatively constructed in the higher education policy sector as undeserving of benefits. For instance, they are seen as people whose goal is permanent residency through education (Robertson, 2011), people who cheat in assignments and bring down the overall standard of English in classrooms (Tran & Gomes, 2015), contributors to overcrowding in Australian capital cities (Rizvi, 2019), and "cash cows" who fund the Australian tertiary education sector but who eventually take jobs away from Australians. These two distinctive negative social constructions of international students in the migration and higher education policy sectors ensured that their working conditions as food couriers did not attract policy makers' attention until diverse stakeholders argued for their fair treatment.

During the early months of the COVID-19 pandemic, there was sympathy toward international students as they experienced financial, housing, and food insecurities, and were unable to enter Australia due to travel restrictions (Gomes, 2022). This did not, however, shift the classic social construction of international students; indeed, there were also reported physical attacks on Asian students during the COVID-19 pandemic. International education stakeholders (universities, accommodation providers) and the hospitality sector have called on the Australian federal government to ease travel restrictions so that international students can enter the country: to prop up the economy as consumers (education, housing), and to supply unskilled or low-skilled labor (Australian Government Department of Education, Skills and Employment, 2021; Barraclough, 2021; City of Melbourne, 2022b; McKeown, 2021). The narrative around the benefit of having international students is largely and unashamedly about what they do for Australia rather than what Australia does for them.

The Victorian State Government, which oversees Melbourne's food delivery sector, has been largely reactive to economic and bottom-up pressures for reform from the broad stakeholder community with vested interests in international students. Here, the policy actors include those charged with student care (e.g., student services departments of tertiary education institutions, and non-profit organizations), and the Transport Workers Union (TWU). The policy problem underpinning calls for reform are two interlinking issues: road safety and food couriers' knowledge of their rights under Australian law. In 2020, 136 food couriers were involved in accidents in Australia, with 42 in Victorian State (Evlin, 2020). A fundamental problem international students confront is having a good understanding of their working rights and conditions. This is especially problematic for those in their first year of study in Australia, during which their basic knowledge of road rules and safety may be lacking. Accidents and deaths have pushed those charged with student care to call for policy intervention. In response, acknowledging the economic role that international students play as food couriers and overseas fee-paying students, the Victorian State Government funded a training package delivered by a Swinburne University consortium on road safety, courier well-being, and legal rights (Swinburne University of Technology, 2020). The

deservedness of food couriers as a policy "target group" is thus made on their economic contributions to Australia, but it remains unclear whether such arguments are sufficient to generate the needed regulatory reforms.

Looking at organized action, the TWU in Australia has championed the rights of those working in the delivery sector, which includes all food couriers. Much of their advocacy work revolved around collaboration with food delivery platforms to agree to a minimum set of enforceable rights and working conditions. To this end, TWU has been successful. For instance, in May 2022, it obtained a Memorandum of Understanding with DoorDash to recognize the need for industry-wide standards on pay and working conditions (TWU, 2022a). In June 2022, the TWU signed a charter with Uber for enforceable rights for gig economy workers (ride-hailing, food delivery) (TWU, 2022b). Rights, however, need to be enforced. It is here that we see courts playing a strong role in policy work (cf. Cini & Goldmann, 2021; Tassinari & Maccarrone, 2020; 2021 UK Uber ruling). The death of a Chinese national working for HungryPanda in 2020 came into the spotlight when the Personal Injury Commission ruled in 2022 that HungryPanda should compensate his death as if he was an employee rather than a freelancer and awarded his family 830,000 AUD (Roe & Nowroozi, 2022). This Personal Injury Commission's decision is unique because previous court rulings recognized gig economy workers as independent contractors.

Singapore: Social construction of citizens/permanent residents as food couriers

Singapore's food couriers are citizens and permanent residents. Unlike Melbourne, and most cities where on-demand food delivery is available, non-residents are not allowed to work as couriers in Singapore's food delivery sector. Their social construction thus charts a distinct policy pathway toward reform than the one we observed in Melbourne's case. Comprehensive demographic breakdowns of food couriers in Singapore are not publicly available. However, in their survey of more than 900 Gojek drivers and couriers (ride-hailing and food delivery), Mathews et al. (2022, p. 22) reported that "83 per cent were Chinese, 10 per cent were Malay, five per cent were Indians and three per cent were of other racial backgrounds." This demographic breakdown broadly reflects the official racial makeup of Singapore's citizen and permanent resident population: 74.2% Chinese, 13.7% Malays, 8.9% Indians, and 3.2% others (Department of Statistics Singapore, 2021, p. 4).

During the COVID pandemic, as Singaporeans and permanent residents food couriers were positively constructed as deserving of policy benefits. This is visible in the various COVID-19 support programs the Singaporean government rolled out for citizens and permanent residents. For instance, food couriers may apply for the "COVID-19 Recovery Grant (Temporary) scheme for self-employed persons" (up to 500 SGD one-off payment) (Ministry of Social and Family Development, 2021a), the "COVID-19 Recovery Grant" (up to 500 SGD per month for 3 months) (Ministry of Social and Family Development, 2021b), and the "Contribute-As-You-Earn Incentive of MediSave" (government-matched contributions for social security).

At least two perspectives are useful in unpacking the social construction of Singapore's food couriers: the media's and the government's. Looking at how the media have framed the reporting of food couriers before and during the COVID-19 pandemic, Teo (2022) found the prevalence of a threat frame. In the main, the media have highlighted the safety threat that food couriers posed when they use personal mobility devices beyond the speed limit, which have resulted in accidents and deaths. Other media reports have highlighted food couriers as "criminals," stealing the

food they were to deliver (Teo, 2022). The negative construction of food couriers expanded during the pandemic when they were discussed in terms of being potential vectors for COVID-19 transmission simply because they clustered around eateries, waiting for delivery bookings, and were the few workers circulating in the community during lockdowns. The media's social construction of Singapore's food couriers thus reflected the typical social construction of food couriers seen elsewhere (cf. Huang, 2022b; Lage & Rodrigues, 2021). At the height of the pandemic, however, the media shifted their reporting toward a heroic frame, promoting the government's narrative and positive construction of food couriers. Here, reporting on the Prime Minister's National Day Rally activities, the media depicted food couriers as those who brave the pandemic to ensure their families' financial well-being (Choo et al., 2021).

To understand the social construction of Singapore's food couriers, we also need to turn to the differentiated approach the government has introduced to elevate Singaporeans (cf. Cerna & Chou, 2023; Zhan et al., 2022). Like Australia, Singapore has an immigration policy that welcomes foreign talents and low-skilled workers alike to contribute to its domestic economy and competitiveness (Singh, 2014). Experiencing what they perceived as strong competition, Singaporeans have questioned the government's "open door policy" electorally and on social media (Nasir & Turner, 2014; Singh, 2014). To address citizens' concerns, the Singapore government has introduced a series of measures since the early 2010s to clearly differentiate the rights and benefits between Singaporeans and permanent residents (most vs. more), between permanent residents and foreigners (more vs. less), and between foreign talents and foreign workers (less vs. least). This differentiated approach is important in understanding the tension in socially constructing food couriers in Singapore: as freelancers who undermine public safety, they are negatively constructed in the labor market; as Singaporeans and permanent residents, they are positively constructed as deserving of most/more policy benefits above all high-, medium-, and low-skilled migrant laborers. As we discuss below, the social construction of food couriers as citizens and permanent residents is very powerful in rallying political supporters.

The justified statements seeking to reform the food couriers' working conditions and their vulnerability as freelancers have sought to reconcile these two social constructions in favor of a positive construction. The policy actors arguing for food couriers' fair treatment are Singapore's Members of Parliament (MPs). In a unitary, centralized, city-state system, this is significant. The push has been to include food couriers under the Singapore Employment Act (Cheng, 2018). According to Walter Theseira, Nominated MP, "Many contracting parties want to have all the benefits of control over the self-employed, but none of the statutory responsibilities under the Employment Act" (quoted in Cheng, 2018). He highlighted that the Employment Act gives "rights to workers because their bargaining power is weak ... there would be too much pressure on workers to willingly sign away their rights" (quoted in Cheng, 2018).

Unlike food couriers in Melbourne, Singapore's food couriers have an electoral claim on the government. A shared national identity compels the political representatives to advance these claims, which are made on moral, as well as political, grounds. Denise Phua, MP for Jalan Besar Group Representation Constituency (GRC), pointed out that Singapore's Employment laws are generally "silent" about how freelancers would receive fair compensation: "In instances of a medical emergency or a fatal accident, would employees with multiple employers be protected and provided for, or would this duty be pushed among different employers?" (quoted in Cheng, 2018). Foo Mee Har, MP for West Coast GRC, argued that Singapore could consider following the footsteps of the UK Supreme Court, which ruled that Uber drivers are employees and not independent contractors. The claims for reforms are thus distinct from those observed in Melbourne.

Two features about Singapore's case are worth emphasizing because they point to potential policy reforms. First, food—in particular hawker food—is integral to how the Singaporean identity is constructed (Reddy & van Dam, 2020; Tarulevicz, 2018). This means that those involved in food preparation and dissemination are contributors to the making of the Singaporean identity. Second, in the recent decade, Singaporeans continue to vocalize concerns about their livelihood being threatened by foreigners working and studying in the City State (Gomes, 2015). The Prime Minister, Lee Hsien Loong, sought to address these concerns during the 2021 National Day speech by acknowledging the "anxieties and problems" that Singaporeans have toward foreigners in terms of job competition and their social integration (Cheng, 2021). Singaporeans reacted strongly to the National Day speech, noting that job opportunities for Singaporeans are only in "driving ... delivering" (Rajah, 2021). A survey carried out in March 2022 found that 60% of food couriers joined the profession during the pandemic, with 29% relying on food delivery as their main income source (Kok, 2022). Support for food couriers from political actors could thus be seen as part of the broader movement to ensure that Singaporeans are prioritized in national policies and institutional practices.

Discussion: What do the cases tell us?

Applying insights from the theory of social construction and policy design, we found that food couriers are socially constructed very differently in the cases of Melbourne and Singapore. Our findings highlight how examining the ways in which platform workers are constructed across policy fields reveal the effects of "ideational power" (Carstensen & Schmidt, 2016) of different discursive-political strategies. In Melbourne, food couriers are negatively constructed: as independent contractors seen as less/not active economic contributors "undeserving" of benefits, and as temporary migrants in the higher education sector who purportedly seek to reap socio-economic benefits while lowering overall educational standards. In Singapore, we find two different, and competing, social constructions of food couriers: as non-economically contributing freelancers also "undeserving" of benefits, and as citizens/permanent residents with electoral claims on the government to ensure their good working conditions, especially in comparison to skilled and non-skilled migrant workers in the City State.

Focusing on the multiple social constructions of food couriers, we can then begin to see how reforms toward their fair treatment could be initiated. In Singapore's case, we see political actors reconciling the contrasting social construction of food couriers in favor of a positive construction. Not only are MPs calling for reforms, but the current government is also promoting a "heroic" framing of food couriers as those serving the nation throughout the pandemic and hence deserving of benefits inclusion. Most importantly, those who speak on behalf of Singapore's food couriers are those in positions to decisively shift the categorization of food couriers to one that is "deserving" of benefits through policy change. In Melbourne's case, we find that policy actors calling for reforms are different sets of stakeholders: Transport Workers Union in Australia championing the rights of all those who work in delivery services (employees, independent contractors), and the education and accommodation providers who need international students (as consumers).

From a governance dynamics perspective, the pressures for change in Singapore is top-down while bottom-up in Melbourne. Certainly, it remains to be seen whether the on-demand food delivery sector in these two cities would be reformed and to what extent, but how pressures are exerted matters. Top-down pressures for reforms in a centralized city-state system are more likely to lead to new policies and measures. Bottom-up pressures require coherence to attract policy

makers' attention; here, courts may play a stronger role in ensuring fair treatment of food couriers that may ultimately lead to policy change. Until then, in the historical institutionalist tradition, adopted measures and practices seeking to bring about the fair treatment of food couriers could be seen as "layers" added to existing ones (Mahoney & Thelen, 2010). Indeed, the training package on road rules and legal rights administered by Swinburne University consortium may be a pilot program for the Victorian State Government to develop a widescale policy intervention targeting international students. TWU's recent agreements with DoorDash and Uber may be the initial soft laws needed in this sector. The Personal Injury Commission's 2022 HungryPanda ruling may be the start of continual court recognition that gig economy workers are indeed employees.

Our comparison of Melbourne and Singapore adds to existing studies on on-demand food delivery, but there are clear limitations. For instance, we are unable to address the longstanding question concerning whether new policies lead to new politics, or the reverse, but our study revealed that the dynamics for reforms in the on-demand food delivery sector may be the result of politicization in other policy domains. We are also unable to provide more than the social constructions of food couriers in Melbourne and Singapore even though we identified the social construction they have in common (food couriers: negative, undeserving of benefits), and those in which they differed (negative construction of international students in Melbourne's case, and positive construction of citizens/permanent residents in Singapore's case).

Future research could focus on cities where minorities or new migrants (not international students) dominate the on-demand food delivery sector to compare whether their social construction generates similar or distinct governance dynamics than the ones we observed. Against this context, food couriers in China's major cities could be illuminating cases as they are both simultaneously Chinese citizens and "new migrants" in these cities. How their social constructions are reconciled and the dynamics generated could potentially offer another configuration for conceptualization. To sum up, applying the theory of social construction and policy design to unpacking the social construction of food couriers in the on-demand food delivery sector has been insightful, but it is clear that more research is needed. In the next section, we reflect on our findings' implications for studies of AI politics and policy.

CONCLUSION

A defining feature of modern life today is the presence of algorithms organizing the many facets of our daily lives, including how we receive information, socialize, communicate, and the ways we work. Common characteristics attributed to machine-learning algorithm-based technology are its economic efficiency and ability to enhance the overall quality of life for its users. It is thus hardly surprising that algorithm-based technology has been adopted in various social, economic, and policy domains. Recent debates, however, have pointed to real and potential undesirable risks that algorithm-based technology poses. Even though trained to "mimic or rival human intelligence in complex problem-solving," algorithm-based technology has been shown to exhibit biases and "yield discriminatory and unethical outcomes for different individuals in various domains" (Taeihagh, 2021, pp. 137–138). Examining the case of on-demand food delivery, we see that by determining *where* (destination) and *when* (expected arrival time), algorithms push couriers to be creative with *how*, often at great physical risks, economic costs, and emotional toll.

There are several implications of our findings for studies of AI politics and policy. To start, our study highlights the great distance between expectations and realities. Focusing on the role

that algorithms play in the platform economy, our findings demonstrate how algorithms simultaneously empower and disempower those engaged in platform work (cf. empowerment in Giest & Samuels, 2022). It empowers through the illusion of opportunity and control (creating expectations and hinting at how they could be met), and disempowers through labor exploitation. How the platform economy has so far been regulated directly enables the exploitation of food couriers' labor. Indeed, we see that algorithms are used to *undermine* the overall quality of life for its users—food couriers. This growing distance between expectations and realities is clearly seen in Melbourne's case: when education expectations (Australia markets itself as a world-class education provider for those wanting to work in the knowledge economy) are met with employment realities (international graduates obtaining only gig work unrelated to their studies in Australia). Our study finds that algorithm-based technology has failed to narrow the gap between expectations and realities and has, in fact, widen it.

Our findings raise very important questions about the policy future of work. The Melbourne model of food couriers being mainly from migrant backgrounds is familiar, but the Singapore approach of banning migrants and reserving access to flexible, yet low-skilled, occupation only for citizens and permanent residents is highly distinctive. In a 2022 survey of food couriers in Singapore, 57.6% of the 1002 respondents indicated that the platform economy is the future of work, with 60% stating that food delivery paid more than their previous employment (Mathews et al., 2022, pp. 13, 117). More interestingly, 74% of respondents had no post-secondary education (Mathews et al., 2022, p. 20). These observations invite us to ask: does the Singapore approach portend the policy future of work, where platform work becomes a protected form of employment for the citizenry due to shifts in job opportunities and migration patterns? Or could we expect a policy leveling-up of rights and good working conditions for migrants engaged in precarious platform work? These two questions offer two distinct scenarios of the future of work. How AI is governed will determine which scenario becomes our future reality.

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