

## Future Themes in the Sharing Economy

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One of our goals in this volume has been to demonstrate that interdisciplinary, convergent research and analysis are indispensable to the ideal of optimizing for a more equitable, democratic, sustainable, and just sharing economy of the future. The contributions to this volume are thus central to our demonstration because they epitomize this ideal by drawing scholars from different disciplines into conversations about the most fundamental questions and challenges related to reengineering the sharing economy. But these contributions have also provided important information about some of the answers to key questions that must be addressed as we move forward. In this concluding chapter, we draw from the rich analyses undertaken by our contributors to outline important substantive lessons that can contribute to a framework for reengineering the sharing economy.

In particular, we focus on five core dimensions that are central to optimizing for a just sharing economy: understanding socioeconomic externalities; pursuing resilience; charting more just and systems-oriented business directions; defining the future of work; and prioritizing access and equity. Our effort in this chapter is more modest than to provide detailed conclusions about the relevance of any of these dimensions. Rather, it is to highlight the multiple ways in which the analyses throughout this volume intersect with these dimensions. As we describe, we believe that the centrality of each of these dimensions is itself an important lesson about the future of the sharing economy. Additionally, these dimensions convey significant information about the values that must be prioritized in the next generation of sharing economy platforms. Finally, and crucially, they help to highlight key questions that remain for future research and exploration.

### 13.1 SOCIOECONOMIC EXTERNALITIES

Digital platforms are becoming more integrated into our daily lives, collectively adding tens of millions of new users every year. As multiple chapters in this volume have discussed, however, the effects of these platforms go far beyond their users. Most platforms indirectly impact the socioeconomic wellbeing of people in many ways.

These indirect effects are often referred to as externalities, and given their broad scale and scope, it has been a major research effort to understand, measure, and regulate them. Such externalities have also fueled public debate since the early days of sharing economy platforms. In important respects, the analyses in this volume push beyond the current frontiers of research about socioeconomic externalities.

For example, the two chapters on urban mobility companies investigate the socioeconomic externalities of sharing platforms in urban contexts, and in doing so, they provide important clues to solving complicated puzzles about the hidden effects of the shared mobility industry. As Behroozi's chapter shows, despite initial promises that ride-sharing services could reduce urban traffic congestion, this is not always the case. In practice, ridesharing can even increase congestion for a number of reasons, including by substituting for public transportation in some cities. Evidence suggests that some of these concerns can be addressed if the industry moves from car-hailing to ride-pooling. However, moving to ride-pooling often requires an array of incentive mechanisms and technical design considerations that have heretofore been less well-charted, as Koutsopoulos, Ma, and Zahedi discuss in Chapter 9.

Chapter 10, by O'Brien, Heydari, and Ke, is similarly illuminating in discussing lodging, where debates over the consequences of short-term rental platforms on the quality of urban neighborhood life are especially vociferous. As the authors argue, strong penetration of short-term rentals enabled by platforms such as Airbnb can have an array of socioeconomic consequences at neighborhood levels, since such penetration increases the influx of nonlocal people to the neighborhoods and results in different – positive and negative – social and economic consequences. Such consequences could mean higher local rents due to decreased real estate supply or higher quality of local services caused by increased local competition. At the same time these platforms can have longer-term effects, because a high level of short-term rental penetration can poke holes in the social fabric of a neighborhood and disrupt its social organization over time.

The analyses in these and other chapters contribute to two broader insights about socioeconomic externalities in the sharing economy. While discussion of externalities has always been integrated into the literature on sharing economy platforms and multisided markets, most of the focus has been on network externalities and on some economic externalities such as the effect of these platforms on employment and traditional businesses. One of the insights gained from the analyses in this book is that we must define externalities more broadly and integrate this broader definition into designing the technical and regulatory elements of these systems. Indeed, this is part of the agenda for reengineering the sharing economy. As Heydari argues in Chapter 2, the broader definition of externalities expands the range of stakeholders who are affected by sharing platforms to include local residents and businesses, potential second- and third-tier businesses that could emerge in the ecosystem created by a sharing platform, and even other sharing platforms, given the possibility of interplatform interaction across different platforms that provide similar or complementary services.

In addition, much of the debate about socioeconomic externalities has been shaped by anecdotes and opinions that are often rooted in too much optimism or pessimism towards sharing platforms. While there are cases where a particular positive or negative externality of a platform outweighs the rest of the consequences, the reality about most types of socioeconomic externalities is more complex than what these anecdote-based debates suggest. This book highlights that assessing the overall impact of sharing platforms on a given socioeconomic factor (such as traffic congestion, the environment and carbon emissions, and neighborhood economic and criminal activities) depends on understanding the tradeoffs among competing factors through which platforms can either benefit or harm that factor. The relative weight of these competing factors depends on certain design and regulatory parameters on the one hand and the time horizon of the analysis (short-term versus long-term) on the other. Further, evaluating trade-offs requires us to learn the causal mechanisms by which platform parameters are associated with socioeconomic externalities.

As Heydari's chapter discusses, such a methodology requires steps such as quantifying the effects of these platforms in the short term and long term, determining different stakeholders and soliciting direct or indirect inputs from them, and establishing methods to aggregate inputs from different stakeholders. Moreover, given the importance of identifying different causal mechanisms, the methodology can benefit from combining empirical studies with analytical modeling. Ultimately, outputs of these models can contribute to designing externally imposed regulations, as described by Dyal-Chand in Chapter 7, as well as internal governance mechanisms designed by platform companies.

The chapters in this volume inspire future research in socioeconomic externalities on three vital areas. An initial step in identifying the impacts and mechanisms of socioeconomic externalities will be to improve sociotechnical modeling methodologies, which will allow empirical identification to be integrated with system-level simulation. Second, even when we can model and quantify various types of externalities, design and policy decisions are influenced by how we weigh and rank them. Considering platforms' algorithmic nature, this can be challenging, especially since rankings and weights must be updated dynamically. Last but not least, these models need to identify lever points that platform designers and regulators can utilize in order to govern socioeconomic externalities.

### 13.2 RESILIENCE

As several chapters have observed, some digital platforms serve the function of modern critical infrastructure in many parts of the developed world. This fact, laid bare by the COVID-19 pandemic, is a startling indication of the extent to which the sharing economy has transformed modern living for many of us. It is a fact that requires us to comprehensively reevaluate the forms, functions, and values that inhere in the

sharing economy today. This reality also means that it is necessary to examine the resilience of sharing platforms, just as we do with other critical infrastructures. The resilience considerations of sharing platforms require us to ask two overarching questions. As is standard practice in considering the resilience of traditional infrastructures, we must examine how resilient sharing platforms are in response to unexpected disruptions. In addition and moving beyond standard practice for other forms of critical infrastructure, we must consider how these platforms can affect the resilience of other socioeconomic activities.

The COVID-19 pandemic served as a giant stress test for the resilience of many industries, social and economic institutions, and sociotechnical systems. Digital platforms can be credited for contributing positively to the resilience of pandemic life in much of the developed world by facilitating quick transitions to working at home, online shopping, and virtual socializing. Such quick transitions were enabled by a number of factors, such as preestablished logistics infrastructures for companies such as Amazon and Wayfair. Another enabler was the quick repurposing of platform capacities. For example, Uber quickly moved resources from Uber Ride Sharing, for which demand was plummeting, to Uber Eat for which demand was skyrocketing.

As the pandemic revealed, several inherent characteristics of sharing economy platforms make it possible for such platforms to respond quickly to sharp changes in demand level, thus contributing to the overall resilience of the broader ecosystem for the type of services they provide. Consider the mobility industry as an example. First, because mobility platforms do not own the underlying assets (namely cars), they are nimbler in changing the supply level by updating the participation rate on the supply side of the platform. These changes are possible within a feasible range, determined in the short term by the existing pool of agents on the supply side (namely, active drivers), but can grow or shrink in the longer term depending on the overall conditions of the platform ecosystem. Second and as a mechanism to reap the benefits of the first factor, sharing platforms can use dynamic incentives, often in the form of dynamic pricing, to close possible gaps that emerge between the supply and demand levels. Finally, the digital and on-demand nature of many of these platforms means that these platforms can quickly estimate sudden changes on their different sides and buy more time to react to those changes. In Chapter 12 Duman, Ergun, and Behroozi discuss some of these factors in the context of the last mile delivery problem, which is considered a major logistical bottleneck in implementing resilient and sustainable e-commerce systems.

Despite the positive contributions of sharing economy platforms to the overall resilience of essential services, several chapters in this volume raise important concerns about the potential negative impacts of these platforms on infrastructure resilience, especially in the future as we become more dependent on them. As the chapters on mobility discuss, mobility platforms can shift some of the demands from public transportation systems to ride-sharing services, resulting in further reductions

of available investment budgets in public infrastructures. From a resilience perspective, this is not necessarily concerning as long as the platform-based systems can provide a continuation of widespread affordable service, especially in the aftermath of a major disruption. However, such access is not guaranteed, given the asset-free nature of many sharing platforms on the one hand, and on the other hand their relationship with their workers, as Schor and Vallas discuss in Chapter 6. Both these factors put much of the supply-side management at the mercy of short-term incentives offered by the platforms, which might fail under extreme circumstances.

Relatedly, it is important to understand that, like most resilient systems, the mechanisms that help these platforms to be adaptive to sudden changes can only contribute to resilience up to certain levels. These same mechanisms can become ineffective, and even counterproductive, once the changes in supply and demand go above a certain level. For example, dynamic pricing can result in unacceptable surge prices in the face of a sudden rise in demand. Importantly, too much decrease in the level of supply, in the case of a drop in demand, means that the platform reduces its geospatial coverage and consequently its on-demand nature. For ride-sharing platforms, this means that the average wait time for each passenger will increase because of the low number of drivers, resulting in dissatisfaction on the passenger side. Such dissatisfaction can lead passengers to pursue other options and lower the demand, which in turn lowers the supply, as discussed by Koutsopoulos, Ma, and Zahedi in Chapter 9). This downward spiral, similar to what is often known as the Wild Goose Chase phenomenon, can make platform systems nonresilient. By contrast, public transportation demonstrates a more linear resilience behavior – at least in the short and medium term – in response to demand changes. As Heydari argues in Chapter 2, public–private partnerships between sharing platforms and public infrastructures can address some of these concerns by including resilience considerations in their agreements governing the provision of services to passengers. These resilience-oriented partnerships can go beyond transportation infrastructure and extend to energy systems, as Kane, Allen, Si, and Stephens show in Chapter 11, focused on future energy systems.

Finally, any discussion about resilience and economic externalities is not complete without considering environmental sustainability considerations. As Eckelman and Kalmykova discuss in Chapter 3, despite initial promises about the positive role of sharing platforms on the environment, it is quite challenging to evaluate the actual sustainability orientation of sharing economy platforms. Sharing companies are highly heterogeneous in this regard and can create a wide range of unintended consequences for the environment. The authors describe a number of these unintended consequences and enumerate several back-end and front-end design opportunities for incentivizing beneficial environmental outcomes. However, research about environmental costs and benefits of peer-to-peer sharing platforms has been limited, and more studies are needed to further guide and prioritize such design opportunities.

Resilience of complex sociotechnical systems has been a topic that has attracted increasing interest from several academic communities. Resilience in these system types is the result of a combination of top-down and bottom-up responses at different levels and by various actors, including the synergistic role of policy design on the side of the regulators, behavioral change on the side of human agents, and repurposing of existing capacity and technological adaptation on the side of businesses. Studying resilience in sharing economy platforms can not only prepare us for future disruptions but can also teach us important lessons about multilevel, synergistic responses at the system level that are useful for the broader context of complex sociotechnical systems. We hope the chapters in this book will inspire new thinking about a range of crucial questions regarding system resilience, especially in the wake of the COVID-19 experience. For example, how can we identify and characterize existing capacities in sharing platforms that can be quickly and efficiently repurposed and reallocated in the face of major disruptions? How might we create more synergy between top-down responses (including policy and business decisions) and the behavioral changes that often act as bottom-up adaptation mechanisms in the face of a disruption? How can we create scenario-study models that incorporate these levels of system responses and that can be used both to identify the trade-offs of resilience decisions and to communicate them to the key stakeholders? And finally, how can we better integrate the adaptability aspects of platform-based systems with the objectives of public decisions – such as through public–private partnerships – to better steer the direction of a system’s response towards the public good?

### 13.3 FUTURE BUSINESS DIRECTIONS

The focus of this volume has been both to provide a systemic perspective on sharing economy platforms and to discuss design and governance issues at the intersection of engineering, regulation, and operations. This is in contrast and complementary to recent books that look at the sharing economy from the perspective of the firm making key business decisions. The recent focus on the firm’s perspective is not surprising, since the trends that gave rise to the modern sharing economy (which are examined in the Introduction to this book) have been associated with substantial new value creation over the last decade. Hundreds of market-based platforms continue to take advantage of growing algorithmic and data capabilities coupled with rapidly advancing technologies to allocate access to goods and expertise in such a way as to keep transaction costs to a minimum while in many cases utilizing available capacities of physical assets as fully as possible. Collectively, these features make sharing economy platforms unique from a business perspective. Although this volume’s focus has been elsewhere, a number of chapters in this volume have raised important business implications that may serve as catalysts for future research in this field.

First, this book makes a case for the possibility of bringing greater shareability to a range of platform services. For example, Chapter 9 observes that on-demand mobility services currently provide very few shared rides, and the authors present models and recommendations designed to improve sharing in these services. Sharing economy models are discussed in Chapter 12 as a way to solve the challenging problem of last-mile deliveries in e-commerce. Similarly, Chapter 11 discusses the possibility of using sharing economy models in energy systems.

Second, several chapters emphasize that establishing and maintaining trust is essential for the operation of sharing economy businesses. Tadelis, in Chapter 5, argues this could be accomplished by designing appropriate feedback mechanisms. Additionally, privacy is becoming a top concern for users of platform-based businesses, and as discussed in Chapter 4, it is important to understand the privacy calculus of platform users in order to identify potential trade-offs associated with privacy protection measures and other business metrics.

Third, several chapters in this volume highlight ongoing concerns about business competition in the sharing economy. For example, looking back at how this sector grew over the past decade, there seems to be a wide gap between the multibillion-dollar valuations of platform companies like Uber and their lackluster profitability. This gap is often attributed to the power of strong network effects, as discussed in Chapter 2, which create entry barriers and effectively lock in users once the platform company succeeds in attracting many of them during the initial growth spurt. The lock-in problem has been typically discussed in the context of competition among online social networks, where it arises due to embedded positive direct network effect (for example, the more of your friends use a social network site, the higher your value of using it). Leading online social networks, such as Facebook and LinkedIn, have pursued this strategy to establish a sustainable competitive advantage. Thus, it is important to gain a better understanding of how various components of switching costs may reduce competition among sharing economy platforms. Reduced competition may result from several factors, including the cross-side network effects, possible multihoming (users joining multiple platforms at the same time), and myopic decisions on the part of users. A great deal more analytical and empirical research about these nuanced factors is needed to better understand concerns about sharing platform competition.

Fourth, on the operational side, the on-demand service delivery promise of sharing economy platforms, together with a less predictable crowd-sourced contractor resource structure for performing the services, can lead firms to maintain excessive capacities. Perhaps surprisingly, such high (and costly) capacities often correspond to low utilization of resources, contrary to common claims made by sharing economy platforms. An example of this can be seen in ride-sharing platforms: They encourage many drivers to join and be active on the platform app but impose on those drivers to spend a significant amount of time waiting for fares. Another example can be seen in the last-mile delivery context, as discussed in Chapter 12. More

research is required to understand these unexpected phenomena on the operational side of platforms.

More broadly, over a decade has passed since most sharing economy leaders started their businesses, and major industry changes have followed the COVID-19 pandemic, thereby raising the possibility that it is time to reassess some of the business assumptions that have been widely and, for the most part, silently accepted in the sharing economy industry. For instance, it has been suggested that one of the factors driving sharing economy growth is the shift from ownership to use among millennials. However, we have seen much evidence of the opposite trend during the COVID-19 pandemic. In response to rising demand, the average price of used cars increased by more than 40 percent in less than two years from the start of the pandemic.<sup>1</sup> Meanwhile, millennials significantly contributed to the real estate market boom in 2020–2021.<sup>2</sup> It remains to be seen whether these recent trends are temporary and could be fully explained by supply chain disruptions or whether these are harbingers of long-term structural changes that present a serious challenge for sharing economy platforms.

Finally, we emphasized in the Introduction to this book that most business decisions cannot be divorced from platform governance decisions for sharing economy companies. While this is true for all businesses, governance decisions are crucial for the business success of sharing economy companies for many reasons. These reasons include regulatory compliance, safety imperatives, and resilience and environmental concerns. Therefore, we expect more research to be conducted on integrated modeling and analysis of business and governance decisions in different platform types, allowing public policy stakeholders to better assess regulatory environments and possible trade-offs.

#### 13.4 THE FUTURE OF WORK

The workplace has undergone dramatic changes in recent decades as a result of numerous disruptive forces including globalization and automation. As multiple chapters in this volume discuss, sharing economy platforms are the most recent and rapidly accelerating disruptive force on the structure of work, with both intended and unintended consequences. For example, while digital platforms have made remote work possible during the COVID-19 pandemic, gig-workers employed by many sharing economy platforms have precarious working conditions, as described by Schor and Vallas in Chapter 6. These circumstances have fueled a fierce debate on the employment status of platform economy workers and on the future of work in general. Although some sharing economy platforms have existed for over a decade

<sup>1</sup> Preston, B. (2020). How to buy a used car in this tough market. *Consumer Reports*, [www.consumerreports.org/buying-a-car/when-to-buy-a-used-car-a6584238157/](http://www.consumerreports.org/buying-a-car/when-to-buy-a-used-car-a6584238157/).

<sup>2</sup> Peterson, D. M. (2021). Millennials will drive home prices up for years to come. *Barron's*, [www.barrons.com/articles/housing-boom-millennials-home-prices-51635498001](http://www.barrons.com/articles/housing-boom-millennials-home-prices-51635498001).



and research on platform-based work has grown rapidly<sup>3,4,5</sup> it remains unclear how platform jobs affect the quality of employment, whether workers are exposed to risk with potentially adverse effects, and how platform workers view their position as independent contractors. The future of work is thus a key dimension that must be prioritized in any serious effort to reengineer the sharing economy.

Almost all sharing economy platforms have two core characteristics. First, they use Internet-based digital technology and algorithms to mediate transactions between buyers and sellers of goods and services. Second, they define themselves not as employers, but simply as providers of information systems that “match” independent contractors with potential customers or clients – an important economic and legal shift that redefines the nature of employment and that externalizes many financial and legal risks. In turn, many of these risks have been imposed on the workers themselves. As Chapter 12 on last-mile delivery and Chapters 8 and 9 on mobility discuss, crowdsourced independent-contractors help platforms to achieve greater operational flexibility to provide on-demand services, agilely matching supply to demand with minimal risk to the firm. While many on the platform side argue that this flexibility provides the necessary competitive advantage to firms and flexible working hours to workers, it also introduces a significant level of uncertainty for all actors involved in the operational environment.

The challenges of the platform economy impose unforeseen costs on platform firms themselves, which often struggle to scale up their business models in sustainable fashion. As the chapters on labor, urban mobility and last-mile delivery discuss, one major challenge that businesses face flows directly from their use of the independent contractor model. Firms cannot simply impose work schedules on workers, since freedom over working hours constitutes an important selling point for the recruitment of workers. As a direct consequence, firms encounter heightened levels of uncertainty about staffing levels, which are often vital to their business success. Moreover, since platform workers must assume responsibility for many operational costs and risks, they exhibit extremely high levels of turnover, which imposes substantial costs on platform firms in the forms of bonuses, marketing campaigns, and promises of minimum levels of earnings. Dynamics such as these mean that gig-workers can be less reliable (for example, by not showing up on time) and less experienced at the task at hand (for example, by not knowing the details of doing a delivery at a customer location), thereby forcing firms to increase their supply buffers in order to ensure a given service level in their operations. These problems

<sup>3</sup> Rosenblat, A. & Stark, L. (2016). Algorithmic labor and information asymmetries: A case study of Uber’s drivers. *International Journal of Communication*, 10, 27. <https://ijoc.org/index.php/ijoc/article/view/4892>

<sup>4</sup> Frenken, K. & Schor, J. (2017). Putting the sharing economy into perspective. *Environmental Innovation and Societal Transitions*, 23, 3–10. <https://doi.org/10.1016/j.eist.2017.01.003>

<sup>5</sup> Schor, J. B. & Attwood-Charles, W. (2017). The “sharing” economy: Labor, inequality, and social connection on for-profit platforms. *Sociology Compass*, 11(8), e12493. <https://doi.org/10.1111/soc4.12493>

can jeopardize firm viability. They reveal that firms have yet to develop sustainable models for the governance and control of the workforce on whose labor they rely.

Workers participating in the sharing platform economy also face distinctive challenges that differ from those of “traditional” paid employees (as described in Chapter 6). Many workers are attracted to platform work by the possibility of more autonomy over work schedules and greater freedom from supervision. However, the terms of their employment may be obscure. For example, transportation workers must “accept” jobs without knowledge of the destinations. From the perspective of the gig-worker, on top of not having the benefits granted to an employee, this type of work arrangement generates significant anxiety from not knowing the actual income that an intended number of work hours will generate. In addition, gig-workers must satisfy the conditions of reputational management systems in order to avoid “de-activation,” even though such conditions often are unknown to them (as described in Chapter 5).

Another clear danger for workers is that the expansion of platform-based work may open up significant gaps in the social safety net, since platforms seldom provide access to health or retirement insurance and platform workers are ineligible for protections under labor standards and minimum wage laws. Collective action is the traditional approach to balancing these information, economic, and social asymmetries, either through formal labor unions or through informal information sharing. Because platform workers typically are contractors, and not employees, however, they are limited in their ability to unionize. In addition, in traditional workplaces, informal worker collectives result from conversations “around the water cooler.” However, in the sharing economy, which lacks a physical workplace, these conversations come at a greater cost and often are relegated to online forums. Thus, one of the main questions for comprehensive reengineering of the sharing economy is the question of how to determine the optimal conditions of work and the regulatory actions and protection that need to be taken to ensure those conditions, as discussed in Chapter 7 on regulation and Chapter 6 on labor and work.

Urban and state governments, too, face unforeseen challenges from the platform revolution. Since platforms represent new forms of business for which decades-old regulations were not designed,<sup>6</sup> platforms can often operate in an unregulated space, free of the dictates that constrain their more traditional competitors. Typically, city governments lack the most basic information about platform firm operations, even though the latter have major consequences for the transportation, housing, and employment systems on which the public relies.

More generally, the sharing economy has generated important gaps in the flow of information that is vital to the interests of workers, governments, and firms. For example, large-scale proprietary information generated by ride-hailing platforms

<sup>6</sup> Robinson, H. C. (2017). Making a digital working class – Uber drivers in Boston. 2016–2017. <https://dspace.mit.edu/handle/1721.1/113946>

such as Lyft is valuable. As a result, firms rarely share such information with regulators, who could use it to better understand the effect of the firm on the public. Nor do firms share such information with workers, who could use it to make career and daily employment decisions. Ironically, firms themselves suffer from information gaps, since they typically lack access to information about the long-term well-being of the workers who provide the lion's share of their service. As some of our contributors have discussed, new research methodologies can help produce, disseminate, analyze, and share information previously unavailable about the sharing economy, which in turn should help improve market efficiencies, reduce labor market uncertainty, and support proactive regulatory structures, thereby strengthening the entire sharing economy ecosystem.

The multiple observations in this volume about the nature of work in the sharing economy teach us a crucial lesson: Comprehensive optimization of work conditions by platform owners, workers, and regulators should be one of the core concerns of reengineering the sharing economy. Currently, platform owners optimize for efficiency, growth, and profit through the design of their matching and pricing algorithms. Government regulators optimize for the public good through regulations. Workers, as suggested by Hall and Krueger (2018)<sup>7</sup> and Schor et al. (2020),<sup>8</sup> currently optimize for both income and flexibility. However, it is not clear if each stakeholder optimizing myopically without a systems perspective of the entire ecosystem can possibly achieve the desired outcomes (see Chapter 2).

Looking ahead to the prospect of reengineering the sharing economy, there remain important open questions for all stakeholders related to the future of work. From the perspective of the firm, many sharing economy platform companies struggle to be profitable even after operating for years with significant market shares, raising questions about the sustainability of the business model as it concerns firms' relationship with their workforce. This relationship impacts several aspects of a firm's profitability including how it recruits, maintains, and pays its workforce and how the firm's operational efficiency is affected by issues such as workers' hours, dependability, and professionalism. In turn, workers are low-paid and lack meaningful control over working conditions and data (see Chapters 5 and 6). Finally, regulatory authorities have thus far had little success at regulating the underlying business activity and service delivery that sharing platforms make possible, in turn limiting their ability to constrain negative effects on the public good, including the future of work (see Chapter 7). While this limited regulatory success is partially due to the strong lobbying efforts of sharing economy firms, such as in the case of the

<sup>7</sup> Hall, J. V. & Krueger, A. B. (2018). An analysis of the labor market for Uber's driver-partners in the United States. *ILR Review*, 71(3), 705–732. <https://doi.org/10.1177/0019793917717222>

<sup>8</sup> Schor, J. B., Attwood-Charles, W., Cansoy, M., Ladegaard, I., & Wengronowitz, R. (2020). Dependence and precarity in the platform economy. *Theory and Society*, 49(5–6), 833–861. <https://doi.org/10.1007/s1186-020-09408-y>

ballot defeat of Proposition 22 in California (discussed in Chapter 6), in other cases it is due to the challenge of anticipating the externalities that will be caused by the regulation itself. In this complex ecosystem, regulatory and other actions targeting part of the system may broadly impact consumer behavior or workforce dynamics in unintended ways, potentially causing more harm than good, as discussed in Chapter 4. This observation emphasizes the point by Duman, Ergun, and Behroozi (Chapter 12) as well as Heydari (Chapter 2) that a comprehensive analysis of the nature of work in sharing ecosystems is crucial.

### 13.5 EQUITY AND ACCESS

Although this volume is by no means the first to emphasize the significance of equity considerations in the sharing economy, it does resoundingly affirm equity's centrality. Indeed, equity is a core theme in many of the analyses contributed by our authors, though regularly only implicitly so. These analyses provide rich detail about the range of equity-related harms and benefits that have occurred in sharing economy markets. They also provide significant information and inspiration for creating a more equitable sharing economy. Before reviewing the lessons learned from this volume about equity, it is important to consider how equity is defined – and how it manifests – in the sharing economy.

Plainly, one crucial vein of concern and analysis that invokes equity considerations relates to race and racial relations. Because the focus of this book is the American sharing economy, analysis of racial equity in the sharing economy could not be a more pressing matter. As Dyal-Chand observes in Chapter 7, the COVID-19 pandemic is not the only pandemic that has plagued the United States for many months now. Racial violence has also reemerged as a crisis that demands cross-disciplinary analysis and response. Not surprisingly then, concerns about racial equity surface throughout this volume. Schor and Vallas describe the emergence of a “third, implicitly racialized employment status,” between independent contractor and employee – a status that is both unequal and “substandard” in the level of protections and value that it affords workers who have it. Dyal-Chand discusses the dawning recognition among those who study the sharing economy that at least some proprietors of sharing platforms seem to be developing their businesses in a direction that capitalizes on the racist results produced by their algorithms. More implicitly, both Chapters 10 and 11 raise troubling questions about the racialized effects of sharing innovations intended for (often commendable) purposes such as providing greater access to goods and services within neighborhoods and the democratization of energy production and control.

Issues of equity and equality also arise with respect to gender, disability, and other identity categories. Research on whether sharing economy platforms discriminate on the basis of gender has only scratched the surface, and this is reflected in the contributions to this volume. Yet it is also apparent that many of the questions raised

by the research on disparate racial impact also necessitate a robust research agenda concerning other disparate effects. These effects will no doubt be different from the effects of racism within the sharing economy, but the research on race in the sharing economy can provide helpful clues to guide additional research.

This volume also overwhelmingly makes the case that equity within the sharing economy is defined by level of income and wealth. For example, Heydari's proposal of a sociotechnical examination of the many positive and negative externalities produced by sharing platforms provides an analytical perspective that reveals the hidden burdens and benefits that depend partly on the wealth of sharing economy participants. Focusing their analytical lens on the increasingly ubiquitous mobility industry, Koutsopoulos, Ma, and Zahedi provide nuanced information about the differential impact of ride-sharing innovations in the first generation of mobility platforms. While their attention is on reducing congestion, increasing sustainability, and improving the profitability of mobility companies, the detailed innovations they propose also provide a template for achieving more equitable access to mobility platforms by consumers with lower incomes and less access to traditional goods and services such as privately owned cars and taxis.

The contributions in this volume additionally make clear that equity concerns exist on both the demand and supply sides of sharing platforms. On the demand side, the analyses by Koutsopoulos, Ma, and Zahedi as well as O'Brien, Heydari, and Ke provide deep empirical insights into how access to first-generation sharing platforms can vary for consumers by neighborhood, income, and other demographics. Dyal-Chand describes the proliferating literature on the genderized and racialized consumer harms wrought by first-generation sharing platforms. Kane, Allen, Si, and Stephens raise similar concerns in the new frontier of energy sharing. As the discussion by Lambillotte and Bart suggests, such fundamental concerns as privacy may intersect in significant ways with the axis of equity.

On the supply side, Schor and Vallas raise deeply troubling questions about the future of equitable work, especially for the sharing economy workers who rely on platform jobs as their primary source of income. Such concerns are amplified when considered in contexts such as last mile delivery (see Chapter 12) and the development of clean energy systems (see Chapter 11). These chapters provide the detailed examples for the conclusion reached by Heydari and Dyal-Chand in their chapters that sharing platforms have been able to develop in a regulatory environment that does not constrain platform proprietors in their treatment of those who provide goods and services through those platforms.

The analyses in this book thus present a vexing puzzle: On the one hand, sharing economy platforms maximize opportunities for maintaining anonymity and for sharing the value of expensive goods and services. Through technology, such platforms reduce the costs of market entry and exit by making it easy and cheap to provide – and also to access – goods and services. They significantly increase access to information at a very low cost. In short, the sharing economy should be a means

of equalizing access to an enormous range of markets. Yet, on the other hand, many of these very platforms have innovated in ways that allow proprietors and suppliers to differentiate – and outright discriminate – on the basis of race, gender, disability, income, and other characteristics. In so doing, these platforms have *limited* access to sharing economy participation on the basis of criteria that should have been rendered invisible and irrelevant by platform technology. They have regularly contributed to inequity rather than increasing equity.

While this volume has contributed to the conversation about equity by providing important empirical and interdisciplinary evidence of this puzzling phenomenon, it has also contributed to a basic diagnosis. As the scholars in this volume have described from a range of disciplinary perspectives, the proprietors of sharing economy platforms innovate in directions that optimize for their priorities. The first generation of sharing economy platforms have overwhelmingly optimized for fast growth, and more broadly, profit. In the course of doing so, they have produced a range of positive and negative externalities, some of them startling. These externalities teach us important lessons about the multiple impacts of the sharing economy – and its *potential* for achieving equity among other things. Yet, realizing this potential requires more deliberate and concerted action. In short, the current state of the sharing economy demands a rebalancing in the direction of greater equity. Whether by choice, by mandate, or by some combination of the two, such a rebalancing can only occur if platform proprietors optimize for equity in addition to growth and profit.

Moreover, the diagnosis that emerges from this volume makes clear that the problem of inequity in the sharing economy is deeply systemic in nature. Currently, market design, industry practices, and law all provide ample space for sharing platform proprietors to make their own choices about goals, priorities, and innovations, including those that increase inequity. For example, the design of sharing platforms provides ample opportunities to innovate new forms of business transactions that capitalize on reputation and trust. As Tadelis describes, such innovations are exciting and disruptive, allowing a broad range of participants in the sharing economy to rely on new forms of information and new business methods. Transparent rating systems allow suppliers of services on sharing platforms to develop good will rapidly and efficaciously, as compared to traditional businesses. Yet, as other contributors point out, these very forms of market design also can reduce equity by eliminating anonymity and thereby reinstating the ability to discriminate on the basis of race, geography, wealth, and other criteria. Industry practices can exacerbate such effects. By leveraging just such design mechanisms, sharing platforms can use surge pricing and other methods to take advantage of unequal access by consumers. As Schor and Vallas discuss, they can also increase the precarity of low-wage workers who depend on sharing platforms for meaningful income.

Currently also, as the chapters by Heydari, Dyal-Chand, and others discuss, law creates ample space for innovation in market design and industry behavior without systemic analysis of the connection between such behavior and equity

considerations. Powerful intellectual property rights, contracts of adhesion, weak labor and employment laws, piecemeal and reactive regulations, and lack of political will or even direction in protecting widespread access to sharing platforms at times combine to nurture and even valorize disruption at the expense of necessary protections.

Crucially, the contributions in this volume have supplemented these diagnostic insights by enhancing our understanding of a range of possible solutions to the problem of rising inequity in the sharing economy. One of the most important messages from the volume as a whole is that, because of the multiple sources for inequitable development and operation within the sharing economy, the solutions must also be cross-disciplinary. To examine the potential of cross-disciplinary solutions to address inequity in the sharing economy, consider one set of solutions that has come to the fore in this volume, and indeed that invokes the title of this volume. Specifically, consider the potential that some of the necessary *regulations* of the sharing economy may be best imposed by means of the *engineering* of the platforms. In other words, the concept of “regulation by design,” which has been the subject of much scholarship in the privacy domain, may also be a valuable form of regulation for the purpose of prioritizing equity.<sup>9</sup>

As the analyses in this volume suggest, the incorporation of regulation into the design of sharing platforms would require at least two indispensable ingredients. First, a certain level of what has been described as “self-regulation” would be required. Self-regulation might originate in the design choices made by businesses within a sector that choose to maximize value for different stakeholders, beyond profit, growth, or efficiency. For example, recognizing its role as a necessary component of the transportation infrastructure (especially during crises or other periods when public transportation is disrupted), a ride-sharing company could choose a more socially responsible pricing structure that would reduce or at least stabilize prices during times of crises, instead compensating for this lost opportunity by charging higher prices in business districts or other geographic regions where riders could expect to be subsidized by their employers or would have incomes high enough to support paying higher prices. Just as some platforms have already marketed their products and services on the basis of their greater contributions to environmental sustainability (see Chapter 3), or consumer safety,<sup>10</sup> such a business could distinguish itself in the market on such grounds.

In addition, government would have an important role in developing and maintaining this kind of self-regulation. In the ride-sharing pricing example just provided, it is possible that the hypothetical company could achieve market success by means

<sup>9</sup> For an authoritative treatment of this subject in the privacy domain, see Woodrow Hartzog’s recent book, *Privacy’s Blueprint*. Harvard University Press.

<sup>10</sup> RideAustin, [www.rideaustin.com](http://www.rideaustin.com), and Safr, [www.gosafr.com](http://www.gosafr.com), are two examples in the mobility platform context.

of this combination of social responsibility and pricing differentiation, and it is even possible that it could begin a “race to the top,” rousing other companies to explore the benefits (and costs) of fulfilling their function as a necessary part of an urban transportation infrastructure. However, given the many apparent incentives toward monopolization, it is likely that such moves would need to be encouraged by governmental involvement. Fortunately, there already exist numerous regulatory models from which regulators could draw. One interesting model is the development of “certificates of trust,” which could originate either within an industry or with a governmental agency.<sup>11</sup> Another example could be for regulators to lead the development of an industry-wide code of conduct for platform design. Another would be to provide design guidelines such as those issued by regulatory agencies to ensure compliance with the Americans with Disability Act and similar federal and state laws.<sup>12</sup> Certainly, also, it may be appropriate for regulators to at times require the incorporation of certain design standards that would optimize for one or more of these principles.

As Chapter 2 makes clear, this kind of coordination between platform design and regulatory design would require a sociotechnical approach that could account for a broad range of positive and negative externalities, design characteristics, and individual and group behaviors on both the supply and demand sides of sharing platforms. The analyses in the chapters on sharing in the neighborhood, sharing and sustainability, sharing and last-mile delivery, and sharing energy all provide vivid examples of the need for system-wide analysis in engineering self-regulatory approaches.

This, however, would be just the beginning. While such an approach to reengineering a more equitable sharing economy holds much promise, crucial questions will arise and will require interdisciplinary research and analysis. Three sets of questions seem particularly salient on the equity front. None can be answered on the basis of the research presented in this volume, though much of this research certainly lays the foundation for an ambitious forward-looking research agenda.

First, how could platforms be inspired to *choose* to self-regulate in the direction of greater equity? Given the extraordinary impetus to optimize for immediate fast growth – and the reality that many platforms have yet to achieve any meaningful profit while taking in vast amounts of venture and other private capital – how could platforms be motivated to race to the top in designing equitable industry practices?

<sup>11</sup> Early regulation of platforms in Europe already contemplated such a model as a means of developing acceptable minimum safety and quality standards to protect consumers in such markets. Such certificates can take the form of partial self-regulation as an alternative to established permitting and licensing requirements. But they also contemplate a role for government either to substitute for an industry-led process or to facilitate it, thereby ensuring that standards would be sufficiently protective of consumers. Kristina Derojeda et al., Accessibility based business models for peer-to-peer markets (European Commission Business Innovation Observatory, Contract No 190/PP/ENT/CIP/l2/C/No3C01, 2013), [https://single-market-economy.ec.europa.eu/publications/accessibility-based-business-models-peer-peer-markets\\_en](https://single-market-economy.ec.europa.eu/publications/accessibility-based-business-models-peer-peer-markets_en)

<sup>12</sup> For an example, see Information and Technical Assistance on the Americans with Disabilities Act, United States Department of Justice Civil Rights Division, [www.ada.gov/2010\\_regs.htm](http://www.ada.gov/2010_regs.htm)



This question seems particularly salient in light of the extraordinary level of social and political polarization in US society (and many other societies) today. Indeed, it is reasonable at least to wonder whether the type of “regulatory entrepreneurship” described by Pollman et al. is possible partly because of such polarization.<sup>13</sup> If so, then the challenge of solving the contemporary polarization in wealth depends partly on solving these other forms of polarization as well – a daunting task.

Second, while the benefits of governmental regulation to promote reengineering of a more equitable sharing economy may be apparent, it is also important to consider the costs of such regulatory interventions. One such cost could be social and political backlash, thereby leading to even greater polarization. Such a counterproductive result would be to no one’s advantage. A second cost could be the potentially high level of investment required to achieve a regulatory approach that is responsive, thoughtful, and sophisticated enough to nurture industry-led design that could successfully achieve equity over the long-term. Unfortunately, our regulatory history has produced too many examples of analogous regulatory failures, despite the good intentions behind them. A third obvious cost is that regulation could delay and stunt positive industry innovations as well as profits, thereby harming the very individuals and groups, such as low-wage workers and consumers of color, that the regulations would be intended to help. These are serious concerns, and they demand careful attention going forward.

Finally, it will be important for future research and analyses of equity – and the possibility of engineering for equity – to consider the implications for sharing economy governance more broadly. All of the complicating factors just described and many others, including political and other forms of polarization and the globalized nature of the sharing economy, also complicate the prospects of stable governance. The multiple and varied examples of sharing economy platforms provide fertile ground for further research about governance. For example, as the chapters on sharing delivery systems, energy, and mobility discuss, genuinely peer-to-peer platforms have addressed a range of access and even equity issues. Heydari and Dyal-Chand both raise questions about whether these and other examples could point us toward deeper examinations of the emerging democratic principles in some sharing economy contexts.<sup>14</sup> Here again, the contributors to this volume have raised significant questions that deserve further research attention.

### 13.6 REENGINEERING SHARING: WHAT LIES AHEAD?

In addition to these core dimensions that define the challenge of reengineering a more just sharing economy, the contributions in this volume have raised a set of

<sup>13</sup> Pollman, E., Barry, J. M., Barney, B., Coan, A., Fox, D., Gadinis, S., ... Yadav, Y. (n.d.). Regulatory entrepreneurship. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2741987](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2741987)

<sup>14</sup> This is an area in which important research has already begun, led by scholars such as Yochai Benkler.

questions that might best be described as more philosophical, epistemic, or even existential in nature. These questions present some of the most difficult and complex challenges of all. Yet we believe that it is only wise for those involved actively in reengineering the sharing economy to reflect on these questions, and in so doing, to make their best efforts to proactively address them. While we make no pretense to answer these questions, we conclude this chapter by raising two salient areas of necessary exploration.

### 13.6.1 *How Have Platforms Contributed to Globalization?*

The relationship between platforms and globalization is deep and diffuse. Indeed, at this stage, we can only raise more specific questions about this relationship in an effort to define its contours. On the labor side, for example, how has platform work affected patterns of migration and immigration? In what ways has platform access replicated patterns of discrimination, colonialist behavior, and nationalisms, and in what ways has it disrupted those patterns?

Some of these questions are relevant on the consumer side as well. Additional questions also arise: How have consumers benefited from accessing platforms across borders? On the other hand, in what ways have they assumed greater risk?

Finally, a number of crucial questions arise for businesses and those who govern them. For example, how have platform-based businesses responded to taxation, and more generally to other laws that depend in meaningful measure on physical location within a territory? These are just some of the many, many questions inspired by the connection between platforms and globalization.

### 13.6.2 *Who has the Right to Govern the Sharing Economy?*

Finally, and relatedly, one of the most vexing set of questions moving forward will no doubt concern platform governance. The diffuse, indeed globalized, nature of platforms deeply impacts the question of governance for the obvious reason that it raises foundational questions about who has the right to govern the platform economy, or any given piece of it. While this question at times feels rhetorical, especially in light of claims that the Internet is too diffuse a phenomenon to be governable, it remains imperative to search for a more substantive answer in response to such claims.

On this question, the editors of this volume have a clear normative position: As we, and many of our contributors, have expressed, we believe it is imperative to develop processes, structures, and norms that move the sharing economy in the direction of genuinely democratic governance. While such a statement is rhetorically powerful, it is also rhetorically straightforward. It will of course be much more difficult to operationalize this statement. Doing so will require serious attention to the current power imbalance between platform owners on the one hand and

consumers, workers, and even regulators on the other. It will require reconsideration of intellectual property rights and other legal and market structures that perpetuate this power imbalance. Moreover, just as is the case with any political democracy, it will require vigilance and nurturing over the long term.

Yet we believe that it will be imperative to engage in just such an effort as we seek to optimize for a more just sharing economy. We hope that the analyses in this volume have provided both information and inspiration for future work in this direction.