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"Make our communities better through data": The moral economy of smart city labor

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Abstract

Smart cities are now an established context in which data and digital technologies shape urban politics. Despite increased scholarly focus on algorithmic governance, smart cities and their data production still heavily rely on human labor, raising questions about how that labor is recruited and the implications of different recruitment strategies. In this paper, we illuminate the relations and practices mobilized to recruit the labor required to produce, analyze, and enact data that (re) produce smart cities. We argue that smart cities recruit such digital labor by producing and circulating moral values and sentiments to claim that such participation is a social good. In this article we draw on a 6-year ongoing project in Calgary, Canada to explore how these "moral economies" underwrite smart city ecosystems. We explore three projects related to data and digital labor in the Calgary smart city: a wearable technology collaborative project, a civic hacking group, and the community social media platform Nextdoor. We suggest that moral economies of smart cities signal a new juncture between urban planning and profiting from data, with the potential for creating new socio-political risks. These moral economies signal a shift toward a "new spirit of capitalism" in which labor is managed through indirect persuasion rather than direct compulsion and mandate.

Keywords

Smart cities, open data, hackathons, moral economy, political economy, digital labor

Introduction

Longstanding debates about how digital technology and data shape urban politics have recently begun to empirically focus on "smart cities." Smart cities serve a dual function; the term implies both the imperative to embed digital technologies into the urban fabric for purposes of planning and administration (Kitchin et al., 2015), and a rationality and logic that produces and orders urban space toward "smartness" (Cugurullo, 2018; Marvin and Luque-Ayala, 2017; Powell, 2021). The concept of "smartness" itself remains a subject of debate, with research demonstrating how it underpins new forms of power and control (Gabrys, 2014; Krivỳ, 2018; Vanolo, 2014) and new forms of private capital accumulation (Hollands, 2015; Sadowski, 2020).

Within smart cities, *data* figure prominently in complex and often contradictory ways. To critics, the valorization of everyday life through datafication practices entails oppressive new forms of data and digital (neo)colonialism (Couldry and Mejias, 2019; Mouton and Burns, 2021; Thatcher et al., 2016). Ever-pervasive data extraction, production, analysis, and circulation constitute new forms of surveillance (Zuboff, 2019) and subject-production (Burns and Andrucki, 2021), and provide only limited and uneven ways that individuals and communities can "participate" in the smart city (Sadowski, 2019). To smart city supporters, opening municipal government data holdings is often heralded as increasing accountability, transparency, and citizen engagement (Beer, 2018; Sieber and Johnson, 2015). Indeed, cities increasingly frame open data platforms as a means of achieving "smartness" and therefore remain a key dimension of smart cities (Barns, 2016).

As the critical research agenda on smart cities continues to develop, pressing questions have emerged about the

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labor required to produce and reproduce smart cities and their attendant flows of data. Within this broad inquiry there is a specific need to understand how institutions *recruit* particular subjects to labor on data production, analysis, and enactment—the labor that translates "smart" visions into "actually-existing smart cities" (Shelton and Lodato, 2019). Smart cities anticipate a person or community who will download, process, analyze, visualize, and ultimately act upon data flows within the smart city (Burns and Andrucki, 2021). In most cases, this work is unpaid, cast as a "labor of love" that resembles what Terranova (2000) called "free labor" and Kücklich (2005) called "playbour" (see also Fuchs, 2014). Acknowledging this work as labor allows us to think through frameworks that foreground the production and circulation of economic value, as well as structural injustice in the exploitation of workers. Many have grappled with the ways in which the longstanding analytic category of *labor* is expanded and reformulated in the context of the digital, with most acknowledging that "digital labor" entrenches exploitation of those who work with digital technologies while expanding the spaces through which such exploitation occurs (Fuchs and Sevignani, 2013; Gregg, 2011; Jarrett, 2020). Smart cities research and practice tend to overlook these new labor relations, instead envisioning (open) data that is simply "there" to be analyzed without a specified person doing it. In other words, smart cities constitute a political economy that unites data, labor, and visions of urban "smartness."

This article advances these conversations by arguing that institutions central to smart cities deploy "moral economies" in which moral values and sentiments recruit its requisite free labor. It is largely through this moral economy that smart cities are produced and reproduced. The moral economy articulates a common "good" to which participants in the smart city contribute, assuring those who perform their free labor that they are making their city "a better place." The idea of the moral economy is not new (Scott, 1976; Thompson, 1971), and has been leveraged to understand socio-technical systems (Dourish and Satchell, 2011; Scott, 2015). Indeed, given that moral sentiments always underwrite economic activity, all economic activities could be seen as enrolling moral economies (Cockayne, 2016; Sayer, 2007). However, we argue here that the moral economy of smart cities has become a more prominent strategy in recent years, and signals a new juncture between urban planning and profiting from data. Rather than a purely neoliberal agenda, these moral economies transform systems of labor into new relations of urban power. Below, after reviewing research related to laboring at the nexus of smart and "good," we explore three empirical contexts that broadly reflect the sequence of data production, analysis, and enactment. The first of these—a wearable technology project—provides a general sense of what moral economies look like and how they get adopted within city planning; the second—a civic hacking group—ties moral economies to broader political-economic restructuring; the third—community social media platforms—illuminates the stakes of moral economies within smart cities.

New labor junctures of smart and good

Research on the political economy of smart cities has tended to focus on the production, extraction, and profitability of exchange value in this new socio-technical context. Early research argued that smart cities are a new space for private capital accumulation (Greenfield, 2013; Hollands, 2015) facilitated by techno-utopian visions of the city (March, 2018; Söderström et al., 2014). While utopianism is certainly still a core concern for smart cities research (see Grossi and Pianezzi, 2017; and Sadowski, 2020), more recent research has illuminated how the prioritization of private capital interests has permeated the discursive structures of contemporary cities through the way in which administrators and planners articulate the value and utility of new digital technologies to recruit collaborators. For instance, Powell (2021) details how smartness frames the city as a system of parameters and metrics that function well when "optimized." Such technicism renders urban problems as fixable by the "right" technology that ought to be procured from private, for-profit businesses. Indeed, smartness as discourse has generated tremendous value for companies producing the smart city, which sell everything from smart appliances to surveillance systems to urban operating systems (Luque-Ayala and Marvin, 2020; Mosco, 2019; Sadowski, 2020; Zuboff, 2019). These smart technologies have become pervasive, usually justified in terms of advances in efficiency, resilience, participation, and livability (Joss et al., 2019).

This new terrain of capital accumulation shapes how urban residents perceive their own roles in and responsibilities to the state. To account for this emergent phenomenon, scholars have begun exploring new ways in which "smart citizenship" is produced and its meaning established (Calzada, 2021; Joss et al., 2017; Vanolo, 2016). "Smart citizenship" can be understood within the broader historical lineage of citizenship being tied to data production and analysis in ways that are contingent on social, geopolitical, and economic imperatives and anxieties (Isin and Ruppert, 2020; Lievrouw, 2020). Scholars in this area note that discursive shifts from "smart cities" to "smart citizens" largely reoriented scholarly attention to individuals as makers of and participants in the smart city, but these individuals are only enrolled into the smart city under uneven conditions (Cardullo and Kitchin, 2019a; Shelton and Lodato, 2019). For example, Cardullo and Kitchin (2019b) argue that the individualistic, rational, instrumental, and privatized vision of smart citizenship fundamentally represents deepening neoliberal reform. Datta (2015) extends this

argument by looking at how these values underwrite smartness through "entrepreneurial urbanism" discourses. For Shelton and Lodato (2019: 36), however, while smart citizenship "is most often seen as *a kind of foil* for those more stereotypically top-down, neoliberal and repressive visions of the smart city," empirical observations show that smart citizens are more than just passive receivers. They are ambivalent producers of political-economic processes in the smart city. In short, participation in (re)producing the smart city is intimately interwoven with broader political-economic processes. It is through this framing that others have thought through the ways in which individuals learn how to be "good" residents of, and participants in, smart cities.

Laboring with smart urban data

With few exceptions, recent debates around urban data have largely overlooked the need to attract labor to produce and interpret those data. Burns and Andrucki (2021) argue that municipal open data platforms, as part of smart cities, anticipate the laborer who is to download, analyze, visualize, and ultimately act upon those data. This anticipated subject is raced and gendered in complex ways that signal new forms of oppressive power relations. Echoing Datta's claims above, Irani (2015) argues that data hackathons—organized real-time events where people interactively analyze data to produce diverse insights—produce "entrepreneurial citizens." In their search for value, Irani notes that participants are encouraged to mobilize aspects of themselves such as professional networks and personal ideas. Importantly, these spaces disrupt any supposed dichotomy between data producers and data users, an increasing marker of political economic developments since at least the 1970s (Bruns, 2013; Ritzer and Jurgenson, 2010; Toffler, 1980). Taken as a whole, these perspectives situate "inclusion" and motivations to "participate" within digital capitalist logics (Birch, 2020; Hoffmann, 2020), both individually and collectively.

Many have heralded new data activism communities that have emerged around the newfound availability of data and analytics tools. For example, Schrock (2016) sees participation in what he calls "civic hacking" as mobilizing versions of politics, transparency, and publicity that promise more equitable cities. Similarly, while Perng (2019: 147) recognizes "the agonistic relations and ongoing negotiations arising from the struggle for the right to participate in the smart city" that manifest in data laboring communities, she ultimately concludes that hackathons contain the condition of possibility for what Milan and Van der Velden (2016) call "data activism," toward just futures. For these scholars and the collectives they research, the data flows that characterize smart cities enable a form of potentially progressive participation that may directly shift urban politics, particularly through hackathons.

These data practices *may* as yet lead to improved outcomes, but they *certainly* enroll the digital labor of urban residents in smart city projects (Fuchs and Sevignani, 2013; Richardson, 2018). A desire for digital labor is partly driven by the profit motive (Tavmen, 2019). Burns and Andrucki (2021) argue that this digital labor is presupposed in the production and promotion of smart city data platforms. In Isin and Ruppert's (2020: 88) words, they "call forth an imaginary of citizens as data analysts equipped with the skills necessary to analyze their commercial transactions and thus make better decisions or to analyze the transactions of governments and thus hold them to account." Not surprisingly, the digital labor required of smart cities—most clearly illustrated in hackathons, datathons, and maker spaces—has been shown to enroll a complex mesh of activist intentions, neoliberal constraints, and civic participatory relations (Baack, 2015; Irani, 2015; Schrock, 2016). Zukin (2020) illustrates that the political-economic imperatives driving the need for hackathons and datathons are co-articulated with broader economic transformations that profoundly impact urban geographies. Taken together, smart cities and flows of data frame the roles, responsibilities, and subjectivities that urban residents are encouraged to assume, in order to work toward the "better city" that smart cities discourses promise. The question, then, is how these laborers are recruited, and the implications of particular recruitment strategies.

Moral economies

Despite the widely acknowledged deployment of moral values like transparency (Bates, 2013) and accountability (Barns, 2016; Civil Beat, 2013) to justify practices like opening data and organizing hackathons, research in this area has yet to contend with the systematic ways these values are ordered and strategized to recruit the labor that makes them "work." To understand this phenomenon, we mobilize the notion of "moral economy." Recent research has shown that the deployment of moral sentiments performs important social and political functions. Fassin (2012: 1) argued that "[m]oral sentiments have become an essential force in contemporary politics" to draw attention to the ways values and norms advance particular social and political agendas. Burns (2019) has shown that consumers' altruistic feelings of aid and assistance compel many private businesses' accumulation strategies, particularly in the context of technology development, and Taylor (2016) shows that this imperative can drive datathon themes and selection of data sources. Together, in this article we suggest that these efforts comprise what Thompson (1971) called a "moral economy"—the production, circulation, defense, and contestation of norms, values, and sentiments.

In his early formulation, Thompson argued that publics leverage moral values to secure economic well-being that

is regularly lost in the marketplace move from "fair price" to "free markets." Thompson argued that political mobilization, including popular uprisings over market good prices, emerged from and oriented around what those publics considered to be just, fair, and "good" societal values. That is to say, when capitalism and markets transgress those values, publics mobilize to contest the "immoral" practices. While looking at similar entanglements of political economy and society, Scott (1976: 3) more narrowly conceives of moral economies as encompassing a "notion of economic justice and [a] working definition of exploitation" that drives social groups to provide a range of economic support—such as goods and services redistribution or a minimum income—to its members. In both of these early conceptions, the idea of a moral economy draws our attention to how moral values underwrite economic activity such as labor and participation in political-economic deliberations. In Hesmondhalgh's (2017: 206) words, "a moral economy approach … consider[s] the moral values informing particular economic arrangements and institutions and providing reasoned evaluation of them." Thompson and Scott theorize moral economies not to show that they are "bad" but rather that they are *productive* of social bonds, political-economic reforms, and normative political judgements. In these important senses, moral economies have historically been commonly deployed to instigate, coordinate, and direct the public life of citizenship, political-economy, and activism; it is neither new in the digital age nor unique to smart cities.[1]

Recent decades have seen a minor revitalization of the idea of moral economies. Kear (2021) follows Thompson and Scott by showing how the "algorithmic crowd" intervenes in digital market exchanges to align them more closely with moral expectations. Dourish and Satchell (2011) analytically focused on the production and circulation of moral values that influence, frame, and reproduce social relations in social media technologies. For Dourish and Satchell, participation on social media platforms is largely driven by principles of reciprocality, responsiveness, responsibility, and rejection. When producing content, responding to others' content, approving connections, and following accounts, users are compelled by these values. Looking at Web 2.0 media, Jenkins and Green (2009: 214) propose a conception of moral economy that we closely follow in this manuscript: "the social expectations, emotional investments, and cultural transactions which create a shared understanding between all participants within an economic exchange." Drawing on this conception, Scott (2015) notes that participation within moral economies does not necessarily need to be intentional; the free labor producing and circulating digital data may be enclosed upon by the private sector in the interest of generating value and accumulating capital. In turn, communities may deploy moral values and sentiments to contest how their labor has been co-opted in such cases that Scott examines. Across this literature, scholars follow Hesmondhalgh's (2017: 207) suggestion to "incorporate analysis of questions such as exploitation, inequality and domination." Indeed, while not using the term "moral economy," Payne (2021) shows that community ties and promises of altruism help generate unpaid reviews of places and institutions in Yelp and Google Maps. In short, whereas most research on the political economy of smart cities has tended to focus on material exchanges of value and profit, in this article we are more interested in the immaterial moral economies that subtend these broader political economies, and how participants are enrolled in the profit-generating ecosystems of smart cities.

Methodology

In this paper, we draw on our five-year ongoing qualitative research in Calgary, a city in Western Canada. Our methodological framework primarily leveraged Burawoy's (1998) extended case method. The extended case method takes an abductive approach to support theory development. Within this framework we were particularly attentive to the politics and actants that influence the design and production of smart city data ecosystems.

Our methods involved both in-person and digitally mediated participant observation, semi-structured interviews, and archival analysis of social media content. As participant-observers we attended over 30 events related to data and technology ranging from city council meetings to hackathons and working groups organized by special interest communities. Our observation enabled us to identify important actors coordinating, developing, and implementing the local smart cities data ecosystem for conducting our 31 semi-structured interviews typically lasting between 40 and 90 min (Rubin and Rubin, 2005). Throughout the project, we practiced ethnographic note taking (Emerson et al., 2011) as a reflexivity practice and to triangulate our findings. While all names have pseudonymized, our third section draws from nearly 100 social media posts, where understandings of "public" and "private" may be contextually evolving or varied in interpretation. Accordingly, and although user posts may be widely shared, we adopt Markham's (2012) appeal for internet researchers to employ *ethical fabrication*, to protect the identities of people who post to online publics. In this paper, when the social media posts of individuals are referenced, we have changed minor words or images to make the original post unsearchable but still retain the original message and sentiment. In this way, ethical fabrication protects the privacy of posters and their intellectual property while still building rigor in qualitative research.

We coded our data to isolate themes related to altruism, feelings or claims of responsibility, normative urban visions, and political economic relationships. We were

particularly attuned to the objects of these claims. For example, we watched for claims that particular people are responsible for conducting certain digital practices to produce a "better" smart city. Our goal was to understand the strategies that actors use to recruit free labor, and the relations that those strategies (re)produce.

Moral economies for digital labor in smart cities

In this section, we explore three contexts in which various actors deploy moral values and sentiments in order to attract and promote free, volunteered labor that (re)produces and legitimizes the smart city. While we identify particular values, our goal is not to create a typology, but rather to understand the practices, relations, and geographies that comprise moral economies. In organizing this empirical data, we are broadly following the sequence of data production, data analysis, and data actioning, with "actioning" referring to how people modify their behavior and thinking based on data—how people *act* on data. To achieve this narrative arc, we draw on evidence related to a limited number of actors, evidence that is illustrative of the broader moral economies at work across our corpus of data. We first interrogate a wearable technology research project that brought together academic researchers and City of Calgary staff to bring data closer to the user during the urban planning process. We then look at a local civic hacking group to illuminate how ideas of "empowerment" and "value" circulate there. Finally, we turn to city platforms such as Nextdoor to think through the ways platforms rely upon and strategically deploy community ties to recruit labor; this case also starkly illustrates the ways such moral economies may negatively implicate marginalized communities. We have selected the empirical cases below from a much broader collection of potential examples, because the first demonstrates particularly strong examples, the second connects moral economy with political economy, and the third illustrates stark socio-political consequences.

Wearable technology and data production

In Calgary, the Wearable Technology Citizen Science Program (which we will refer to as the "Wearables Program") is a recent and ongoing collaborative project between the City of Calgary and the University of Calgary. "Wearables" encompass a wide variety of apparatuses worn on the human body—popularly advertised as health and fitness trackers—to digitize biometrics, a part of what Kaye et al. (2021) call "everyday data cultures," where quotidian activities are datafied to create new relationships with those activities. They collect data on the number of steps taken, temperature, heart rate, or blood pressure, which they usually combine with geographic information.[2] The Wearables Program integrates intimate, individual-level data into the urban planning process by linking these data with the digital-material production of open data platforms and the smart city. The purpose of the project is twofold: to produce scientific knowledge production about health and mobility, and to acquire movement data to inform planning decisions. To get these data, the Wearables Program mobilizes moral sentiments, in order to convince citizens and politicians that by volunteering personal data to the program, they will advance scientific knowledge, increase economic growth, and improve urban design. These data representing everyday urban experiences is understood by program staff to be a highly valuable commodity, yet administrators maintain that compensation for participating should be only a feeling of altruism and feeling that one is improving the future smart city.

Wearables Program administrators have employed a number of discursive strategies to entice over 10,000 Calgarians to voluntarily contribute their personal information. As the program's enrollment webpage describes, "Our main goal is to use your data, and the data of your fellow citizen scientists, to help *improve your health and your community,*" and a sign-up button states, "Become a Citizen Scientist" (We-TRAC, 2020, n.p., emphasis ours). While this language reflects how technology companies market wearables as conduits of individual improvement, the Wearables Program connects these individual benefits to broader community benefits. As framed by the program, by becoming a "citizen scientist," an individual is not just a research participant; they are enrolled as a collaborator who can shape collective behaviors and health, as well as municipal services and urban spaces.

Potential participants, which the program construes as the entire population of the city, are responsibilized to undertake practices that will purportedly help move toward more ideal smart cities. The Wearable Program's recruitment website states, "With the help of our citizens … [we] will use wearable technology to create a data set to help Calgary become a leading smart city, helping improve the planning and engineering of the pathways in our communities" (see Figure 1). This call to action not only tells individuals that they *can* participate, it sets the expectation that they are *needed* to achieve the collective goal of becoming a competitive smart city that will help improve communities, their mobility, and health.

In our research, we observed the moral pressures underlying municipal approval of the program foreshadowing a number of expectations that became embedded in its initial implementation. At the municipal approval meeting, the project leader described the main deliverable of the program: an open dataset representing how Calgarians experience the city would be used in urban planning and decision making. At one critical moment in the

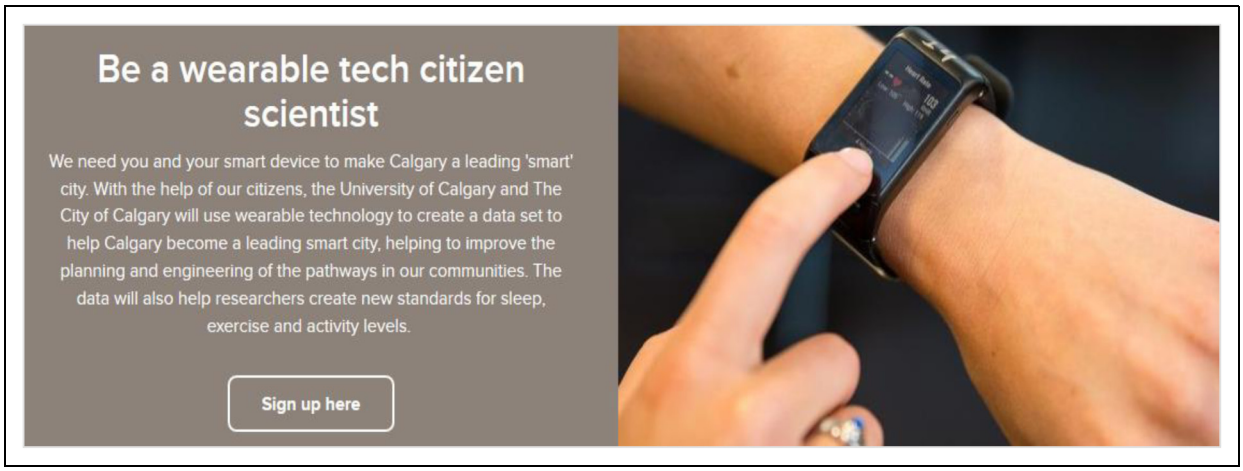

Figure 1. The Wearables Program website responsibilizes Calgarians to participate in the research project.

same meeting, the administrator pointed Council directly to Calgary's open data portal, saying, "The city and the public will have access to the exact same dataset, which increases government transparency and allows community groups like CivicTechYYC to use the data and improve the local community. … Using these data, researchers can work with the city to answer critical questions helping Calgary to become a world leading smart city." Here, the project leader invoked the idea of free exchange through a dataset, framing it as delivering knowledge that will empower communities to improve *themselves* in tandem with the municipality's efforts. Thus, the project's intended data are valued in relation to its outcomes and the general well-being of the city, but should be provided for free to the public; the private interests who stand to benefit from Calgary becoming a "world leading smart city" are explicitly omitted, but clearly implied. With this and similarly moralistic argumentation, the project leader successfully convinced City Council of their responsibility to approve the program and thereby legitimize the extraction, storage, analysis, and limited distribution of urban residents' data. Their success relied on their mobilization of moral values such as efficient use of already-existing data, the normative desirability of "smartness," and the idea of citizen empowerment.

The Wearables Project demonstrates remnants of what Scheper-Hughes and Lock (1987) described as the "three bodies" involved in scalar labor of care: the individual body, the social body, and the body politic. For them, these three bodies are deeply intertwined, but a useful heuristic for thinking about social and political relations. As it pertains to our empirical case, the individual body can be understood as the research participant who datafies their phenomenological experiences in the city. The social body is prefigured in invocations to public health and "smartness" as the collective symbolic manifestation of relationships between "nature, society, and culture" (1987: 7). That is, project leaders imply the notion of a collective body to which individuals are responsibilized to contribute with culturally specific invocations of smartness. Third, the body politic emerges in the responsibilization of City Council to exert its control over public funds and public resources, and allow "citizen scientists" to participate in the joint research project. This understanding of the body politic scales the individual's body to larger systems of governance. These three perspectives on bodies work in tandem to produce a coherent moral economy that will enroll unpaid labor of participants in the smart city. To be clear, it is not our objective to argue about the ethics of this project,[3] but to understand how smart city moral economies manifest and how they overlap with existing theoretical frameworks.

Civic hacking and data analysis

As mentioned above, civic hacking groups are an important way the smart city is reproduced. The term "civic hacking group" manifests broadly across geographies, socio-political imperatives, and historical setting, and each such group has a unique mandate. Here, we generally understand them to be organizations that "employ or modify the communication artifacts, practices, and social arrangements of new information and communication technologies to challenge or alter dominant, expected, or accepted ways of doing society, culture, and politics" (Lievrouw, 2011: 19; cited in Schrock, 2016). Additionally, for our purposes, we are thinking specifically about more "horizontalist" organizations with low numbers in management and leadership positions, that convene ad hoc volunteers for interacting with data. To be clear, while we use "civic hacking" as an umbrella term in this paper, our goal is not to speak substantively about them as organizations. Instead, they help us think through how to deepen our theorization of moral economies in smart cities. We look specifically at Data

for Good and one of its local chapters. The national group self-describes as "a collective of do gooders, who want to use their powers for good, and not evil, to help make our communities better through data."[4] In practice, these groups organize hackathons—multiple-day events mobilizing large numbers of volunteers, DataCorps—smaller projects requiring volunteered data analysis work, and Meetups—formal presentations by civic organizations and researchers working with data.[5] In all their activities, the Data for Good chapters intervene in what a prominent leader in a local chapter described to us as the "Data LifeCycle,"—from data processing, to analysis, to visualization.

The local Data for Good leadership frequently foregrounds moral sentiments while legitimizing, publicizing, and envisioning their work. In a personal interview with us, Alex, who has been in a leadership role, described the role of his chapter as, "to help this [non-profit] sector which needs [data science] but does not have the capacity —does not have the resources, both—either financial or human or capacity-wise, right? They don't have teams of data analysists and scientists. They're too busy working in the shelters to do that. But they still need that help." This justification establishes a relation between Data for Good and the non-profit sector (what Alex elsewhere called the "social sector"). He positioned the sector as "in need" and ad hoc volunteered labor coordinated by the organization as able to address that need. In fact, such labor enables non-profit sector's workers to remain "in the shelters" rather than processing, analyzing, and visualizing new flows of data.

Such thinking delivers three insights pertinent to our analysis. First, it sidesteps the structural causes of the need for non-profit organizations—the locally articulated global capitalist drivers of inequality, poverty, homelessness, and hunger. This elision is particularly apropos the context of smart cities, in which many of the political-economic transformations have been oriented toward strengthening the role of the private sector. Instead, it observes an absence of data analysts and scientists within the non-profit sector and frames this absence as a need that the local Data for Good chapter can address. Second, it frames new flows of data and digital artifacts in the smart city as inherently useful and generative for the non-profit sector. The need for data analysts and scientists only exists if one accepts that derivatives of the smart city would in some ways contribute to the missions and operations of individual non-profit organizations. This constitutes a paradox: to accept Alex's justification requires understanding both that smart city data flows would be inherently useful prior to their actual generation, and yet that those data also create *new* needs.

Third, this framing usefully implies that labor volunteered to the local Data for Good chapter will advance the wellbeing of the city itself. If one can perform data management, then participating in a civic hacking group will make various communities better off. The moral argument here is that civic hacking improves the virtue of a smart city by addressing a shortcoming of the non-profit sector. This moral sentiment is reflected as well in the national organization's description of its members' activities quoted above: "to use their powers for *good* … to help make our communities *better* through data" (emphasis ours). These moral economies perform more "optimized" (Powell, 2021) work within a digital milieu that prioritizes circulating data between institutions. Alex continued by describing a continuum:

> Open data on one side. Closed data on the other side. But in the middle is this shared data. So to me, this whole thing is about shared data. It's about that continuum … [and] moving data that's at [a relatively closed] "level 3" or "2" and maybe it eventually reaches [the completely open] "level 1," but it doesn't have to. You can create a lot of value by having two or three organizations get together and share their data.

Here, Alex ties the moral economy from before to broader political economies. In this quote he does not mean "value" to merely mean economic exchange, but instead intangible improvements to operations, efficiency, and efficacy. Data for Good thus works within a depoliticized context in which the data flows of smart cities present an opportunity for the non-profit sector to improve its standing and impacts, so long as the sector recruits the outside labor to leverage those data flows. At this point, the moral arguments from above—common good, better communities, and satisfying needs—can be used to recruit the labor needed to pursue these promises, without directly compensating people for their labor.

Zukin (2020) rightly points out that hackathons, datathons, and related activities of civic hacking groups capture what Boltanski and Chiapello (2018) term "the new spirit of capitalism." The new spirit of capitalism is comprised of horizontal, relatively autonomous working arrangements that are driven by persuasion and compulsion rather than direct coercion (Zukin, 2020). Accordingly, new forms and organizations of labor must be "a source of enthusiasm" and "justified in terms of the common good" (Boltanski and Chiapello, 2018: 16). As Zukin points out, drawing on this framework, laboring in hackathons and datathons—and the smart city more generally—is not required for technology-sector employment, but is such an advantageous step in that direction that most with such career ambitions do indeed participate. Boltanski and Chiapello's new spirit of capitalism was developed to explain management technique transformations occurring in the 1990s, and thus it coincided with urban planning paradigms predating smart cities proper; however, we argue that the framework is of increased importance for

understanding the particular labor regime required under "smartness," because of its invocation of "the good" that persuades urban residents to volunteer their labor. For Zukin, the relation between civic hacking groups and capitalist reform is not a necessary one: under different junctures of socio-technical practice and political-economic structures, civic hacking groups could quite easily subtend a wide range of imperatives and beneficiaries. The relation is also complex, as not only do many civic hacking groups perceive their own activities as purely beneficial for society, but some organizations do in fact cultivate the development of non-capitalist political-economies (see, for example, Foth et al., 2021; Kuznetsov et al., 2011). Still, the new spirit of capitalism that contextualizes civic hacking groups as a broad socio-technical phenomenon is in lockstep with the moral economies of smart cities, as evidenced by looking at civic hacking groups like the local Data for Good chapter. In other words, civic hacking groups leveraging moral sentiments are unavoidably enrolled in broader political-economic imperatives and processes, and can in some contexts—as the one we present—pave the way for new capitalist relations and configurations.

Community social media and data actioning

Finally, we turn our attention to what we generally refer to as "community social media" (Masden et al., 2014) to refer to social media platforms that focus on place-based and community-based data. Specifically, we are interested in expanding our analysis through the popular platform Nextdoor, both to explore how groups of unorganized and unpaid individuals mobilize moral economies in the service of digital capitalism in the smart city, and to point to the stakes involved in our argument. Our goal here, again, is not to theorize community social media, but moral economies. While smart city research often overlooks platforms such as Nextdoor, we bring it into our analytical lens as part of the broader platform economy that elicits flows of data and digital participation subtending the smart city (Mosco, 2019; Srnicek, 2017).

Nextdoor can be understood as an "online community bulletin board and neighborhood watch, with membership restricted to residents in particular physical locations" (Payne, 2017, n.p.). To subscribe, users must confirm their email and physical address by demonstrating receipt

Figure 2. Nextdoor advertisements can invoke feelings of responsibility toward vulnerable populations, to recruit new users and elicit platform activity.[6]

of messages being sent to both. As well, the device on which a new user registers must have geo-location enabled and be within a few hundred feet of the registration address. In this sense, Nextdoor's data flows are best described as "closed," in contrast with the relatively open datasets in the other two sections above. On the front page of their company website, Nextdoor self-describes as "where communities come together to *greet newcomers*, *exchange recommendations*, and read the latest local news. Where neighbours *support local businesses* and get updates from public services. Where neighbours *borrow tools and sell couches*" (emphasis ours). Members have been known to post requests for help and reports of community issues; likewise, members often respond to those reports either digitally or in person. The "success" of a community social media platform like Nextdoor depends on an active user base to produce data and connect those data to an urban experience. Information shifts practices, frames community imperatives, compels intervention, and polices community spaces.

Regarding shifting practices, Nextdoor can often be seen as evoking a sense of responsibility to vulnerable members of communities. In Figure 2, an elderly lady is seen holding a smart phone and wearing a face mask, implying the use of Nextdoor during COVID-19. The text "so that we can all help each other" implies both that this person will help others using Nextdoor and that others will help her through the same platform. This image is meant to represent those who will benefit if a user registers and actively participates. The privately owned consumer goods company Clorox—the new announced partner of Nextdoor in this image—produced powerful disinfectants of particular utility during the COVID-19 pandemic. One may surmise that the company expects stronger brand reputation from representing their Nextdoor partnership with this particular imagery.

Thus, community social media platforms such as Nextdoor leverage moral economies to recruit unpaid users and promote more free contributions to their platform. These moral underpinnings legitimate a range of practices that unevenly distribute the risks and harms of such media. Since its launch in 2011, Nextdoor has repeatedly entered mass media for instances of abuse; wrongful community policing; breaches of privacy and right to anonymity; and its role in displacing populations (Payne, 2017). In our investigation of various Nextdoor communities in Calgary, we noted multiple instances in which a pedestrian was observed performing some sort of act perceived as illegal, immoral, or suspicious, and photos of those in question were circulated on the platform. In the particular instance seen in Figure 3, two individuals offering gardening services for pay were described in great detail by someone who perceived their solicitation as suspicious. Another user in the same community circulated a photograph of them taken by a home security camera, with a

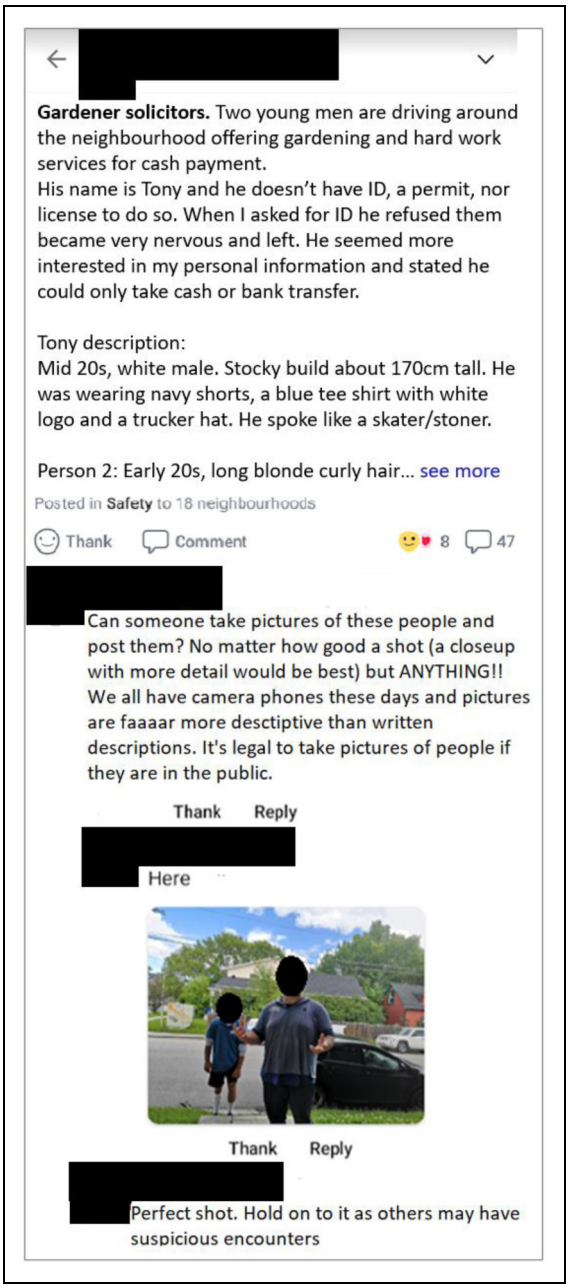

Figure 3. Photographs of people perceived as "suspicious" often circulate in Nextdoor communities.

third person describing their activities as "suspicious encounters." While the available information related to this particular case does not suggest the people in the image suffered direct harm from this image's circulation, our point is that the moral economies underwriting smart cities encourage shifted behaviors emerging from new forms of data production and circulation, and that these shifted behaviors can have socially undesirable consequences. As Browne (2015) notes, the kinds of technologies that produce the data populating Nextdoor's pages have

always served the interests of power, in this particular case, a hyper-digitalized "smart" city that mobilizes unpaid individuals to crowdsource labor required to act on privatized smart city data. The popularity of platforms such as Nextdoor is possible only because of this unpaid labor of uploading images, commenting on others' posts, and ultimately acting on data one sees on the platform.

Here, Nextdoor deploys moral sentiments such as "help each other" and "support local businesses" to promote a shallow form of civic participation that risks leading to local protectionism and extralegal criminal justice. Recruitment strategies grounded in a fundamentally *moral* discourse that presuppose a link between digital platform participation and community wellbeing create particularly fertile conditions for uneven, unintended consequences such as these (see Gilliard, 2021, for richer contextualization of these processes). Here, we hope to draw attention to the ease and speed with which community social media platforms allow volunteer laborers to act on the moral economies that solicited their participation. These risks are not endemic nor inherent to such platforms, nor are they inevitable, but take on a particular signification and significance in the context of smart city moral economies. The impact they have is that, as for platforms writ large, unpaid individuals produce data that private data companies such as Nextdoor profit from in the smart city.

Conclusion

In this paper, we have argued that moral economies constitute a vital means by which volunteer labor is recruited to produce and reproduce smart cities. We have drawn on three empirical situations in which moral sentiments underwrite broader political-economic processes: a wearable tech project, a civic hacking organization, and community social media. We cautiously remind ourselves and readers that we have sampled a narrow range of actors within these broader phenomena, but a sample that we believe can be productively "read" through broader considerations related to moral economies. These three particular contexts, we think, are especially illustrative of the processes, relations, and transformations that more broadly characterize labor regimes under smartness. Following the central role of data in smart cities, these empirical cases broadly can be understood as the sequence of data production, data analysis, and data actioning, respectively (by "actioning" we mean the ways in which people modify their behavior and thinking based on data). Whereas most research into political economy of smart cities focuses on material exchange value and profit, we have turned our attention here to the immaterial forms of persuasion and compulsion that lead individuals and groups to voluntarily commit their time and energies to make their cities "smarter."

Altogether, we contend that these new moral economies signal a new juncture between urban planning and profiting from data. What we have demonstrated is not a purely neoliberal agenda, as the important transformation is not necessarily the privatization of public assets and responsibilities. Instead, the transformation requires moral economies to transform systems of labor into new relations of urban power. Those who effectively mobilize moral economies make more profound impacts on urban geographies, and these moral economies are not restricted to private capital-seeking firms. Academic researchers, non-profit organizations, and even well-intentioned individuals all deploy and circulate moral sentiments that shape the smart city. Insofar as the smart city underwrites capitalist expansion, as many have suggested, these moral economies need not necessarily be deployed by those seeking surplus and exchange value, if broader "smart" urban political-economies are as a whole buttressing private enclosure on urban data. In other words, if private actors in the new spirit of capitalism disproportionately benefit from smartness, then the moral economies we theorize here shift urban power toward those private actors. As Tavmen (2020) reminds us, data infrastructures of smart cities, which should include systems of labor, are a nexus of urban power.

The significance of our argument also stretches beyond the particular smart cities context we discuss here. Moral economies are continuing to become an important mechanism for urban organizations writ large to attract free labor, and this process is especially important when applied toward shaping urban geographies. Here we have tried to demonstrate the range of forms and contexts that moral economies may take, highlighting their attendant relationalities and social processes. By thinking more deeply about the role of moral arguments in political negotiations and advocacy, we might be better equipped to support or contest them for their uneven implications. As contemporary politics increasingly use moral arguments to shape social relations and social space, as Fassin (2012) suggests, it is more imperative than ever to investigate such urban moral economies. Lastly, as scholarly attention continues to turn toward automated decision-making as seen in research on algorithms and autonomous systems, we show here the persistent role that human labor plays in the (re)production of smart cities, and the political-economic implications of different strategies to enroll that human labor. Overall, we encourage greater attention to the moral economies that circulate through data ecosystems, and which underwrite new capitalist processes.

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Notes

1. This framework bears some resemblance to Foucault's various writings on subject formation (see, for example, Foucault, 1982, 1995). The clearest overlap is in the recognition that power relations subtending exploitation are likewise socially and politically productive, and that ideas of normal behavior are formed within broad discursive fields. In fact, some who have used the idea of moral economy have done so from a clear Foucauldian standpoint (see, for example, Rodgers, 2015). We are informed by these complementarities. However, we draw less heavily on Foucault here because the language and intellectual heritage Thompson and Scott give us focus more closely on moral values: not just the "normal" but the "good and virtuous." Moreover, the latter's use of structural political economic analysis is particularly apropos the transformations motivating this article.
2. Spiel et al. (2018) have argued that wearables always contain normative elements regarding "proper" human bodies, conceptualizations of exercise, and neurological ability. While these do not on their own comprise moral economies as we have conceptualized them, it is important to understand that moral economies are also always normative, both by envisioning and working toward "better" conditions, and by saying circumstances *should be* different than they are now.
3. It is also beyond the scope of this article to grapple with the ethics of research in human–computer interaction or research design more broadly—for those interested in such engagements, we recommend Waycott et al. (2016).
4. From https://dataforgood.ca/.
5. From https://calgary.dataforgood.ca/.
6. Source: screenshot from video at this URL https://www.facebook.com/watch/?v=2841629535934281.

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