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The Universal Factory: Data Production and Platforms

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Abstract

Critical data studies have made great strides in bringing together data analysts and urban design, providing an extensible concept which is useful in visualizing the role of local and planetary data networks. But in the light of the experience of Sidewalk Labs, critical data studies need a further push. As smart cities, algorithmic urbanisms, and sensorial regimes inch closer and closer to reality, critical data studies remain woefully blind to economic and political issues. Data remains undertheorized for its economic content as a commodity, and the political ramifications of the data assemblages remain locked in a proto-political schema of *good* and *bad* uses of this vast network of data collection, analysis, research, and organization. This paper attempts to subject critical data studies to a rigorous critique by deepening its relationship to the history thus far of Sidewalk Labs' project in Quayside, Toronto. It is broken into sections. The first section discusses the material reality of Kitchin and Lauriault's (2014) data assemblages and data landscapes. The second section investigates data itself and what its 'inherent' value means in an economic sense. The third section looks at the way the understanding of data promoted by the data assemblage effects smart city design. The fourth section examines the role of the designer in shepherding this vision, and moreover the data assemblage, into existence.

Keywords: technological urbanism, data assemblages, commodity production, Sidewalk Labs, maintenance, labor, urban design

POLITICIZING CRITICAL DATA STUDIES

'Urban knowledge' is not a result of technological intensification but as an economic and historically contingent phenomenon that is slowly coming into shape. Urbanists, designers, and architects are in a historically weird position, forced into a position in which "urbanists can add value to technologists", according to Sidewalk Labs' Head of Urban Systems, Rohit T. Aggarwala. As the disciplines usually responsible for urban futures slowly shuffle to the sidelines, the technologists' utopian dreams are becoming realized in fits and starts in Toronto, New York, and across India, China, and the European Union. Going by a panoply of names (provided by both the technologists and the urbanist-academics), these projects all seek to mine the supposedly fruitful intersection between technology (often explicitly 'digital' or 'algorithmic') and urbanity itself. These projects are very much still an unknown quantity, either stuck in interminable beta phases or as local pilots. But some threshold has been crossed and now urban realities are being molded in the image of a

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new digi-technocrat directorate. With a sensorial system here and a few blocks of redevelopment there, a digitally interconnected city is falling out of the corporate boardroom presentations and underlying technologist fever dreams, appearing in real space. Behind competing services, differing corporate actors, and despite the disparities between the locations, intentions, and cultural conditions of these projects, there lies a general intentionality which may be "unconscious" even to its foremost proponents. The drive towards a technological, digital, algorithmic, or smart city is an ideological tendency in the heads of the technologists, and from here it finds its expression in corporate whitepapers, public-private partnerships, proposals, and pilot projects.

At the risk of adding another unhelpful phrase into the mix, I will use the term "technological urbanism" in this paper to cover the myriad of tendencies towards urban smartness, algorithmic and computational design and logistics. Technological urbanism allows for an escape from the commonly used term 'smart city', which "is basically an evocative slogan lacking a well-defined conceptual core" (Vanolo 2014, 884), and is rapidly becoming outdated even as the projects it circumscribes continue apace. The usage of this term also alludes to developmentalism as a teleological growth process achieved through, among other things, a technological apparatus, of which "smart-washing" (Wylie 2019a) is only the latest example.

Technological urbanism ties in closely the general market-ideological drives behind Rob Kitchin and Tracey Lauriault's "urban data assemblages"(Kitchin and Lauriault 2018). These assemblages "evolve and mutate as new ideas and knowledges emerge, technologies are invented, organizations change, business models are created, the political economy alters, regulations and laws introduced and repealed, skill sets develop, debates take place, and markets grow or shrink"(Kitchin and Lauriault 2018). The concept of the data assemblage forces the rarified and ethereal idea of data or the platform to be reckoned with materially, by analyzing the slow, laborious, and contingent process by which technological urbanism is enacted. Further grounding the concept of data, Thatcher et. al's concept of "data colonialism" is essential to achieve an understanding of data as an invasive, extractive "accumulation-by-dispossession" (Thatcher, O'Sullivan, and Mahmoudi 2016).

This critical framework makes the technological city uncertain in history and space, instead of a foreclosed and fully completed artifact (the kind which are rote in the dreams and images city plans and technological development). It is realistic, and more importantly, it is political. Through this lens, technological urbanism is not really about technology as a cascade of artifacts or systems but the *technocratic ideological tendency to create the means to quantify and commodify everyday life*. When Kitchin and Lauriault write that the data assemblage is a "play of power" which issues and is conditioned by knowledge, I interpret this as the assemblage's role as a political lodestar which finds its ultimate realization in technological and sensorial artifice.

One further note: within this paper, and more broadly, I ignore 'knowledge', 'intelligence', 'smartness' (as they apply to urban space and life) and instead substitute the word 'data'. Thus a 'smart' system, so-named, is one which extracts data. Naming *data* grounds the ambiguity and possibility of transcendentalism (a misstep Kitchin and Lauriault thankfully avoid) of knowledge in the material form of the commodity: unlike knowledge, data is produced (in a process of production), it can be bought and sold as if it has value, and there is an inexhaustible appetite for it, as evidenced by the existence of data trading corporations like Acxiom (which reported $917 million in revenue in fiscal year 2018) (BusinessWire 2018). What's more, concepts of knowledge and intelligence are often borrowed from and by technologists and corporations with an interest in touting utopian future cities as profit generators (Vanolo 2014). This isn't a hair-splitting epistemological distinction but one that is, in my opinion, very important to retain when thinking about technological urbanism.

Carl Schmitt wrote in *The Concept of the Political* that the core of the current political economic system hinges on the alchemic transference of economic into political wealth, which he formatted as a Hegelian question of quantity becoming quality: "*propriété* turns into *pouvoir*" (Schmitt and Strauss 1996). The technological city, far from representing a *new* activity on the part of the economically and politically powerful, simply extends the boundary of the economic by incorporating data itself in a practice of rent-seeking, or discovering "blue oceans" (Kim and Mauborgne 2015).

Put another way, the rise of what Sidewalk Labs calls "civic" or "urban data" (Wylie 2019b) is a worlds-colliding event in which the logic of the technologist (who thinks in commodities, market saturation, and exchange value) overlays the city and, what's more, urban life. Civic data is discretely consumed by data assemblages and output as an abstract pool of atomized data which is taken as a city's vital signs, much as surveillance carves up an individual into separate data streams (Leszczynski 2016). The data assemblage is "mutually constituted" by and with the data it takes in, and kicks off a cascade of effects: for example, "the data assemblage of a census consists of a large amalgam of apparatuses and elements that shape how it is formulated, administered, processed, communicated, and how its findings are employed" (Kitchin and Lauriault 2018, 6). The data assemblage begets the creation of a governmentality which can administer it (Vanolo 2014).

The figure of the data assemblage is of crucial importance in understanding the complex and often emergent way in which technological urbanism works. However, I want to introduce a line of critique on Kitchin and Lauriault's framing that I will pick up later in this essay: that of its supposed autocatalyic *organic* quality. Writing in passive verse, they tell us that assemblages "evolve and mutate" (Kitchin and Lauriault 2018). An assemblage may 'grow', seemingly by itself, as new areas, populations, and sensorial capabilities are wired in. But a data assemblage is not autopoetic; it is not an organic becoming but is *instituted* and cultivated, through great upfront cost—less Eden than Versailles. It is a product of a social organization and more importantly *labor*. Kitchin and Lauriault, in asserting that the data assemblage is "always in a state of becoming" (Kitchin and Lauriault 2018), approach this rhetorical trap, falling for what Cornelius Castoriadis identifies as an economic tautology which claims "growth is an auto-catalytic process" which asserts "lack of growth is due to lack of growth" (Castoriadis and Murphy 1985, 21) and the failure of a particular data assemblage is analogous to a person's character flaw (Vanolo 2014).

This aside, the data assemblage is an essential heuristic for understanding data as knowledge in what the authors refer to in a Foucauldian sense, using the concept of the *depositif*: data and their concomitant assemblages "are never neutral, essential, objective; their data never raw but always cooked to some recipe by chefs embedded within institutions that have certain aspirations and goals and operate within wider frameworks" (Kitchin and Lauriault 2018). Put another way, "facts can only become facts within the framework of a system" (Lukács 1967, 18). Kitchin and Lauriault focus primarily on the clerical side of this systemic framework: the aggregation, analysis, research, and organization procedures that occur at the output end of the assemblage. Yet at another (political level), this treatment of data is further inscribed by *political* considerations, explicitly reproducing and anticipating the continuation of historical inequalities (Leszczynski 2016; Thatcher, O'Sullivan, and Mahmoudi 2016; Sadowski 2019).

They admit that "data are being employed to produce pernicious social and economic relations"(Kitchin and Lauriault 2018) but this is both an understatement and ignores that this perniciousness is by no means new. For example, consider the recent proposal to outfit the rent-stabilized Atlantic Plaza Towers in Brooklyn with facial recognition technology (Misra 2019) or the way that Ring doorbells promote racism and neighborhood segregation (Haskins 2019). There are countless examples; the takeaway is that since long before the rise of technological urbanism or the appearance of sophisticated data assemblages (Thompson 2014), marginal populations have been the focus and victim of data extraction in the first instance—an example of the primitive accumulation which makes capitalism tick.

Discussing data as something which is soberly 'dealt with' in great masses misses asking *why* this data is extracted in the first place—thus for Kitchin and Lauriault, "in their answers but also in their questions there was a mystification" (Marx 1968, 5). *Who oversees the oversight of data?* The same overseers remain enthroned, despite whatever bizarre public-private chimeras may result to enact the technological city. These overseers—be they corporations or governments—persist in their planetary schemes of quantification in order to expand and deepen their power. The *why* of technological urbanism is a vastly different question than Kitchin and Lauriault's *how*.

Strangely, the *why* doesn't seem to be something even the technologists want to touch too much—at least not in the specifics. Bianca Wylie notes that, in the case of Sidewalk Labs in Toronto, the introduction of a type of "city data", which will be handled by an undefined "civic data trust", may sound like solutions, but only really serve to exclude residents of

Sidewalk's project from the process of defining their relationship to data and urban space in general (Wylie 2019b). As Vanolo notes, the 'smart' citizen assumes a certain entrepreneurial responsibility (Vanolo 2014) to perform as expected: docile "neurolivestock" which enthusiastically fulfills the imperative to act 'intelligently' (Châtelet 2018).

Instead of having a conversation about why technological urbanism is becoming a reality, the same old arguments continue to be trotted out: *its progress, stupid*! Designers and urbanists, eager to have a place in the capital-F Future (and receive the commissions entailed), eagerly offer their services in softening the edges of the data assemblage. Design-entrepreneurs step in to skin the assemblage in bright colors, in ideas of community, in ecological window dressing, you name it. Based on these images, plans, and concepts, the technologists can proudly redirect focus from their data extraction schemes and towards the supposed lifestyle benefits of becoming a concatenation of data inputs. This corresponds to the historical idea of progress more generally. 'Standard of living' figures are usually thrown around here, in order to lend some weight to these arguments: *of course* life is easier, and people generally more well-off, than they were a century ago! The overwhelming proclamations of technological progress and 'post-scarcity' are dependent on what Arundhati Roy calls the "gush-up gospel", a social doctrine that claims wealth, property, and 'knowledge' lift all boats actually depends on the extraction of wealth from the lower classes and its crystallization in the 'elites' (Roy 2014). Roy's work, particularly *Capitalism: A Ghost Story*, makes it perfectly clear that wealth flows along the old canals it always has, obliged to keep power in power.

When Kitchin and Lauriault turn their attention to the "darker side" of data work, this critique accepts states, law, and capitalism as eternal conditions. That is, it falls into the same trap of extrapolating the present that data relies on as a precondition (Leszczynski 2016). As I have said, data simply allows power to do more of what it was already doing, and it continues along *as it always has*. Data and its administration, point blank, shores up the conditions, attitudes, and perpetuation of power as such, even as there is a supposed shift into "post-politics" which assumes the creation of data regimes to be strictly technological issues (Vanolo 2014).

Law and other supposedly 'impartial' institutions are not exempt. Soviet legal theorist Evgeny Pashukanis explains in his *The General Theory of Law and Marxism* that law in capitalist society adopts a 'commodity-form' theory in which "the legal subject of juridical theories is very closely related to the commodity owner"(Pashukanis and Milovanovic 2001). Looping back around to Roy, she identifies that all there is left for power to do is take the growing restlessness of those left out of the gospel and manage it. The question, then, is "[h]ow do you domesticate it? How do you turn protesters into pets? How do you vacuum up people's fury and redirect it into blind alleys?" (Roy 2014, 55). The answer is through, and with, data. The very product of the data assemblage is also used to pacify anger against it. The existence of data assemblages presuppose a new political organization of society having reached a level of sufficient development (due to their global reach, assemblages only become thinkable as assemblages when they are fully planetary in nature)—they strictly "do work in the world" (Kitchin and Lauriault 2018, 10), worming into the cracks of the existing system.

EXPENDITURES AND CATALYSTS

Given its reach, it becomes clear that the data assemblage concept, despite being socially and technologically invaluable, does not make the political or economic existence of data apparent enough. Instead of viewing the assemblage as something which comes into being at the confluence of data extraction and urban space, it is instead more useful to discuss it as being inflicted on cities. It 'happens' by proposing an idea of a *technological city in which the city is a factory*. I mean this quite literally: the city is imagined as 'factory' in the sense that it is a site of production, in which labor is organized and value is extracted by the owners of the means of that production. Technological urbanism is not an urbanism which "becomes" or develops ontologically—rather it involves staggering and prohibitive up-front costs which will 'pay for themselves' over operational lifetimes.

This is flatly stated in insider "gray" literature on technological urbanism. Markets and Markets' *Smart Cities Market* report states that "[t]he project funding and Capital Expenditures (CAPEX) required for such large-scale deployment of technology are expected to hinder the growing smart cities market" (Markets and Markets 2019). The use of the phrase "Capital

Expenditures" or CAPEX is illuminating: as an economic category, CAPEX refers to new investment in "fixed capital", also known as "property, plant, and equipment" assets. These appear on balance sheets as an investment instead of expenditure. This is due to fixed capital's usage over its lifetime to deliver further value—it is the machinery which aids in the production process.

Sidewalk head Dan Doctoroff has often referred to his organization's role in their project as an "essential catalyst" (Doctoroff 2018a). Underneath the technologist rhetoric, this catalytic effect is found in the installation of fixed capital, or the technological artifacts which will form the lowest rung of the data assemblage and make higher-level effects possible. In Doctoroff's own words, this means Sidewalk's role is to "develop and deliver the infrastructure on which this place…will run" (Doctoroff 2018b), along with other technologies (to Sidewalk's exact specifications, much like a factory is organized towards the production of a particular commodity). "[W]e can help deliver that investment", Doctoroff elaborates (Doctoroff 2018b), in an effort to "catalyze and area of development that has basically been underperforming" (Paikin 2019). In some sense they already have: Sidewalk has already provided Toronto with $50 million in investment before the project even begins. Instead of a kickback, or a "pot sweetener" (Lorinc 2019), what if this $50 million represents a buy-in, signaling a municipal partnership that can mobilize the capital required for a CAPEX investment?

This terminology is admittedly unusual when describing urban space or facilities, but Sidewalk itself gives us cues that this is perhaps how they themselves think of their activities in Toronto. In the February 14th, 2019 Project Update, Sidewalk warns that their technological city project "has a different return profile and objectives than both traditional real estate and traditional venture investing" (Sidewalk Labs 2019a). One may speculate this is because they understand the project is not *just* real estate and not *just* venture investiture but is the installation of fixed capital—the implication being that *the city is something which produces value*. Kitchin and Lauriant illustrate this point deftly throughout their work. What I am asking is *how* that data is valuable, or put another way, where does the value come from? The concept of value is obviously an economic one and is deployed freely by technologists as a general positive quality bereft of its reality and instantiation. So: if we are going to talk about value, let's talk about value.

The Economist (with barely contained glee) has remarked that the data oligarchs (Alphabet, Amazon, Apple, Facebook, and Microsoft) are analogous to the oil barons of the 20th century (Staff 2017). They are, in fact, eclipsing oil in terms of market worth, investing $77.6 billion to the top 4 oil companies' $71.5 billion (Wylie 2019c). Imbricated in the rise of data are services and enterprise infrastructure which allow that data to be worked with (treating it similarly to banking infrastructure's treatment of financial capital), such as Amazon Web Services and a bevy of enterprise "cloud" systems. Even a critical piece from Forbes on the 'data is the new oil' trope accepts as fact that data is "inherently valuable", it just "needs processing, just as oil needs refining before its true value can be unlocked" (Marr 2018). This little remark on data's "true value" is a clue: where does that value come from?

Data can be "monetized" by its "owners" and even sold on "data marketplaces" like Dawex (Dawex 2019). Kitchin and Lauriault make this point as well: "data often constitute an economic resource…they are tradable commodities to which additional value can be added and extracted…data are a key component of the emerging knowledge economy"(Kitchin and Lauriault 2018, 5). For Thatcher et. al, "individuals and their individual data points become analyzed and linked together as commodities"—a 'big data' practice where buckets of stable population data become tradeable. But, again, the word 'commodity' implies value. And this monetization does not occur out of thin air; nothing merely gets assigned a market price for no reason. As such, this view of data really can't be accepted at just face value. Nevertheless, data really does exist as a commodity, as Kitchin and Lauriault make perfectly clear. So we have to go one level deeper: to discuss value we must make clear what a *commodity* is—again, by situating it as an economic concept.

Let us return to the idea of CAPEX. Though thought of as a specific economic category, CAPEX when taken 'in total' are really specific commodities. Anything which can be bought and sold (that is, which has value) are commodities by definition. According to Marx capitalist society "appears as a 'gigantic collection of commodities'" and "the singular commodity appears as the elementary form of wealth" (Marx 1996, 158). Lukács says more or less

the same thing, finding within the commodity is "the central, structural problem of capitalist society in all its aspects" (Lukács 1967, 68).

Beyond having value, a commodity is a product of labor, or, quite literally an "external object…which satisfies through its qualities human needs of one kind or another" (Marx 1996, 158). Lukács, in the third volume of his *Social Ontology*, repeatedly refers to this labor process—the visualization of a goal and the manipulation of materials and tools to achieve it—as a "teleological positing" which, for him, contains a social dimension. It's not phenomenological directness which defines concrete labor, but when things are made *intentionally* in order to *directly fill a social need*. As such, the only source of value is *human labor*. Artifacts do not themselves produce value. A sensor does not 'pay for itself' over its lifetime if it never records any data. "If machines are capable of adding value is a way analogous to human labor, then there is never, at any point, a difference between a proletarian, and, say, an auger"(Berger 2018). Within the context of this argument, we may replace the auger for a smart parking space, a transit network of autonomous vehicles, a camera, a sensor. To put it simply, value does not spring out of the CAPEX-catalyst of the city itself. It cannot, to speak in strictly economic terms.

To recap: if data is a commodity it has value, and if it has value, it is necessarily the product of labor. But who is performing this labor which makes data a commodity? It comes from formerly *non-productive activity within and through the data assemblage*, a process which we may think of as colonization of the lifeworld (Thatcher, O'Sullivan, and Mahmoudi 2016). The coup of the data assemblage is that it remakes non-productive activities such as walking, congregating outside, talking with neighbors—exactly the activities which create a sense of urban community—actions of oblivious production. In exchange for "notional advantages" citizens find that "aspects of their lives are algorithmically sorted and produced for them based on their quantified markers, for example, the offering of nearby restaurants and bars based on previous inputs" (Thatcher, O'Sullivan, and Mahmoudi 2016). The dream of technological urbanism is thus to extend *productive labor* into every single moment and facet of everyday life.

Thus, everyday life is itself remade, surreptitiously organized as labor activity. The 'algorithm' is, in fact, a new word for the organization of labor. If it is sensed, then every step I take, the minutes I sit on a park bench, the time I spend sleeping—these all become data and my unwitting labor provides that data with its inherent value. In this framework, I, and any other citizens, are not so much as incorporated into the data assemblage as much as we work and are worked by it. In producing data, I am in fact *working upon the machinery which is the city*.

Whether commodity data results from uninformed or informed persons, or whether it is anonymized or not, is economically irrelevant beyond a personal anxiety or desire for privacy and control (Leszczynski 2015), "corkscrewing into the body as well as the mind" (Thatcher, O'Sullivan, and Mahmoudi 2016). Like in a census, demographic 'meaning' emerges through agglomeration of the data profiles of vast numbers of individuals. This is the site of power—not an individualistic autonomy over one's biometrics or location data, but the emergent tendencies which appear when these are taken as population-aggregates (Thatcher, O'Sullivan, and Mahmoudi 2016) or developed into economic 'audiences' for content (Acxiom 2019).

Sidewalk's novel 'civic data' category introduces a meaningless distinction intended to obfuscate the metabolism between individual data production and large-scale data administration. Civic data is not the city 'taking its pulse' but rather information derived from the tracking of persons within its sensorium, or "cocoon of connectivity that engulfs us" (Sadowski and Pasquale 2015). The goal is that nearly every activity that takes place is turned into data, sucked into the Digital Layer. The sum total of this data, and its ability to be exchanged to third parties, collated as second-party data, and god-knows-what-else, is altogether a different question than what social-economic activity makes that exchange and operationalization possible. Each individual, as they work upon the machinery of the city and produce data, finds their specific concrete labor-activities alienated from themselves (Thatcher, O'Sullivan, and Mahmoudi 2016; Lukács 1967; 1978b) and subsumed into the overall presence of *total activity which is represented in urban data*. Life is reduced to life which makes sense to capital (Thatcher, O'Sullivan, and Mahmoudi 2016), that is, alienated and atomized life in which politics is replaced by 'consumer choice' (Sadowski and Pasquale 2015). The good citizen then happily bends themselves to this new organization of labor (Châtelet 2018; Vanolo 2014).

LABOR

The appearance of value production within everyday life occurs concomitantly with the minimization of traditional urban labor—not merely in the tired sense of a supposed de-industrialization but insofar as Sidewalk's technological urbanism proposes a city without maintenance and work as traditionally understood.

Sidewalk has embodied a technophilic and anti-labor stance from the beginning. Several of the core urban technologies that it proposes to build into Quayside are presented as developments to solve diverse urban problems when in fact they are predominantly solving *labor* as a 'problem'. What's more, these are not ancillary technologies but represent the constitutive core of Sidewalk's proposal, smuggling in the removal of labor via promises of seamless convenience. This utopia by a thousand cuts begins by stripping away and 'disappearing' the role of labor and maintenance in the city until nothing is left, and the city can stand seemingly alone as a "machine in the garden" or fluid automaton.

The first of these technologies is so innocuous so as to seem ridiculous: pavers. In 2018, Sidewalk Labs announced a design partnership with esteemed Italian architect Carlo Ratti to develop what the 'Dynamic Street' paving system to breathless acclaim from design and architecture publications (Aouf 2018). These pavers are interlocking hexagons with connections for bollards, streetlights, and other public furniture and feature lights. Later, the pavers also gained heating coils and the ability to melt snow and ice (Gibson 2018b). "Imagine a city street", reads Carlo Ratti Associati's website, "…[d]uring the morning and evening hours, there might be a steady stream of commuters heading to work. In the middle of the day and the evening, families might use the street as a play space. And on the weekend, the street could be cleared for a block party or a basketball game" (Carlo Ratti Associati 2018). Coverage of the design focuses on how the pavers make the idea of an adaptive street possible and engender "urban transformation", as if a hex-patterned paver would be more receptive of a block party than a standard asphalt road would be (Gibson 2018a). Sidewalk claims that lights in the pavers' center will change color to indicate usage, allowing sidewalks and curbs to be flattened into the same level as the roadbed and parking spaces to appear and disappear. For Sidewalk, these innovations are bundled as a novel reconsideration of urban public space (Sidewalk Labs 2019b). This vaguely organic, transcendental reactivity is praised as an end in itself, nonsensical as it may be. Nevermind! The shape-shifting "street of the future" is here (Marshall 2018). This same individualistic-ontological urbanism appears throughout Sidewalk's project (such as in the spatial system called *Stoa*) predicated on the maximalization of fluidity and spatial mutations in the shortest amount of time (Sidewalk Labs 2019b)—an "elegant capitulation…an unavoidable rendezvous with modernity…liberatory utopia finally coming of age" (Châtelet 2018, 19)—at precisely the same time core functions of the city are destabilized: "getting smart is a handy panacea for overcoming austerity" (Sadowski and Pasquale 2015).

The pavers are designed with one more feature in mind, one which the architect mentions in passing: each paver "is designed to be easily picked up and moved around 'within hours or even minutes'" (Aouf 2018). This sounds pretty good! No more potholes, no more melting asphalt, no more long and expensive road refinishing projects. The paver's easy replacement makes maintenance a breeze, automatic even—an expression of, yet again, a technological ideology of seamlessness, fluidity, of emergent order. If broken pavers may be picked up and replaced within minutes, then the actual worker which is doing that labor nevertheless is forced to work not at a reasonable speed but at the *speed of the autonomous urban fluid*. Maintenance-work gets swallowed up into 'intensifying' urbanity into seamless space for capital and substrate of the data assemblage, pulses along with the market. Just as pavers are interchangeable, so is their maintenance, which is not undertaken as an improvement project but as the orchestration of machine parts. Maintenance is presented not as a social act but the automatic reproduction of a von Neumann machine. Curiously, at this stage, "disruption", the favorite word of the technocrats, becomes a nemesis to be avoided at all costs.

The second major techno-infrastructural proposal is a vast productive catacomb underneath Quayside. John Lorinc describes the system "an extensive subterranean network of utility tunnels than not only serve as conduits for cables, pipes and pneumatic waste tubes, but doubles as an internal robot delivery system for cargo and all the quotidian stuff (groceries, the enormously heavy IKEA shelving unit) that's too cumbersome for people to schlep from the car-share

drop-off to their front door" (Lorinc 2019, para. 19). It's hard to get more literal here: freight, waste, and delivery labor is deemed unsightly, buried underground in a "pilot" for "an internal robot delivery system via its utility channels" (Sidewalk Labs 2017). Of course, this has a precedent in common sewage and water delivery systems, and on the face of it is not too earth-shaking of a proposal. However, the apparent reliance on autonomous systems—in a rapturous article, Fast Company gushes "[i]ts subterranean level is run by robots!" (Wilson 2019). The extrinsic idea is to create a "people-first public realm" by removing urban logistics from the public eye (Plautz 2018). This, of course, meshes well with increasingly louder (and necessary) calls to remove cars from cities and to reignite public transit, among other things. But Sidewalk has no short-term plan to remove private cars in Quayside, instead kicking the can down the road with an abstract goal of pivoting toward public transit (Sidewalk Labs 2017). The technological city requires, as a first step, the removal of messiness—from this blank slate, the "virtuous cycle" can begin (Doctoroff 2018b). Designers, appealing to a breathless ideal of futurity, lend their services to the technologists in order to realize their goals.

When technologists like Sidewalk rhetorically center "people" or "community" within the neighborhood, they are performing a complex operation. First, it implicitly establishes the logic of a (non-political) community on the basis of public participation (Vanolo 2014); secondly, it imbricates participation within the urban realm as "non-productive" leisure activity. This community doesn't live in the city so much as is hosted by it—they have no interaction with their surroundings outside of being subjects of its movement. There is no truly social relationship, no working *with* (rather than *on*) it—no labor. Labor is first dehumanized in the "lifeworld" as a prelude to its dehumanization in practice. Maintenance is non-existent in Sidewalk's plans, positing a post-maintenance future beyond the "need to study is how the world gets put back together" (Mattern 2018). Nevermind that the capacities of the automatic infrastructure Sidewalk wants remain relatively undefined, despite the Master Innovation and Development Plans' pretense to being a sober, actionable proposal. At the scale proposed, Quayside would likely require more than just a subterranean network but a complete infrastructure buildout ('ugly' as that may be).

A quick look at Canadian waste disposal statistics makes perfectly clear the issues with burying and obscuring maintenance and other vital tasks, such as waste disposal. Ontario residents per capita generate an average of about 700 kilograms of waste a year in 2010 (Giroux 2014). This number has only increased, jumping 4% between 2014 and 2016 (Cruickshank 2018). At full buildout and residency for Quayside (5,000 residents), this works out to an average of about 3.5 million kg of individual waste a year, (disregarding waste generated by businesses or other sources). Packages and mail represent another headache (one wonders if traditional mail service would even be allowed to enter Quayside), though Canada Post delivered 8.4 billion pieces of mail in 2018, to say nothing of corporate delivery services, deliveries from Amazon packages, or courier services (all of which will purportedly be handled through 'last-mile' subterranean delivery robots) (Statista 2017). Those subterranean utility channels are likely to get crowded.

It remains to be seen what the final form basic infrastructures like this takes in Toronto will be, but the intention is clear even in this early stage: Sidewalk's city is for people—but only a particular type: the service worker in leisurely repose, or shopping, or walking home from work, producing commodity-data as the mostly-automated heartbeat of the city pulses out of sight, beneath their feet. Designers and technologists alike are conjuring this new world—a world caught totally up in planetary data assemblages, in which even living has become work.

DESIGN

Some final notes on the role of the designer at this stage in the process, still many years out from any innovative pavements, autonomous disposal and delivery interred in tunnels, "real time insights from streets" (Numina 2018), or whatever else may come (as in "control creep") (Kitchin and Lauriault 2018), are necessary. Architectural designers have happily lent their assistance to Sidewalk since the initial 'Vision Document' released to kick off the project, which was festooned with "cutesy" (Champagne 2019) drawings and renderings, lightening up what otherwise may have been a soulless corporate presentation. Later images, produced by architecture firms Snøhetta and Heatherwick Studio, are intended to show off not just a design's achievability or an imagined phenomenological atmosphere, but to

function as a "proof of concept", possibly to secure further funding and/or whip up excitement among the public. In the case of these images, the clear focus is on the machined organicism of "tall timber" construction of the towers and the "building raincoats" which Sidewalk proudly announces will make the public realm comfortable for more days out of the year. What these images also do is banish the reality of the construction process which lies ahead—that is, propound the idea that the technological city and its data assemblages 'grow', and further relegate labor to the background. In images like these, a world is depicted in which the financing is secured, the land is cleared, the plans are finalized, construction undertaken and finished. The presentation is inexorable: as Michéle Champagne writes, Sidewalk has presented "[a] commission. A selection. A suite of contributors. A body of work. The collection gathers players and pieces to help pitch Sidewalk's private power. Enabled by an enthusiastic press in Canada and elsewhere, the Sidewalk collection first sprinkles, then floods the media landscape" (Champagne 2019).

All in all, these images serve to re-orient the project—away from a look to a nostalgic-romantic past of community and vital activity (embodied in the initial Vision Document images), and forward to a utopia of seamless, highly cinematic technological capacity. Wrapping the 19th century's imagined community and low-fi living in the raiment of planetary technologization (as described by one commentator: "what's not to love about a mix of 19th century planning and building mixed with 21st century technology?"), presents Quayside as not just on the cusp of the urban revolution, but a distillation of all revolutions, and all cities, prior to it, unified under the star of a fully developed technological schematic (Alter 2017). The two historical sublimes—external, universal nature (Smith 2010) and magic tech are twinned at last.

The extensive use of what then was *exceedingly* preliminary perspective renderings and images made sure Sidewalk's Vision was ready for dissemination in countless art and design blogs, almost all of whom uncritically took up Sidewalk's talking points along with their media kit. Any criticism offered is light: an Architect's Newspaper article published two weeks after the release of the Vision Document notes that Sidewalk's efforts "may provoke unease among urban planners or socially-minded architects" (Rollings 2017) but only after running the usual gamut of "neighbourhood from the internet up" (Sidewalk Labs 2017, 18) rhetoric, straight from the source. Mounting critique of Sidewalk has, however, become more commonplace — coming especially from critics in Toronto which are finally getting press just as the October 31st, 2019 deadline for the official go ahead on the project looms (next week, at the time of this writing). Whether future readers see Sidewalk's Quayside or don't is immaterial—the project's having gotten this far is a critical failure on the part of designers who have contorted themselves into aestheticians and conduits for technocratic narratives.

Design also aids and abets technological urbanism's historical claims; that is, it makes palatable the aesthetic and rhetorical considerations of the *platform*, which seemingly relegates the data-producing technology of the data assemblage to a discrete, cloistered 'strata' of the urban makeup. The platform makes the disjunction of pastoral garden city and technological urbanism disappear—life can be walkable, community-centric, and ecologically friendly while somewhere out of sight or in the ether a 'platform' works silently. Urban administration is made to seem so distant, a mute philosopher king with the brain of an autodidact. Promoting this phenomenological reality of life in the society of control is crucial and can only be done with the help of design "futuring".

The technologists are building an epochal shift, a revolutionary city, which must steer clear of a "knowledge of a universal historicity moving in contradictions" (Lukács 1978a, 1:22), instead "telling its own version of urban history"(Mattern 2016). Sidewalk restyles human history as urban history, and urban history as design history (presented as the history of technology): "the world sits on the cusp of a revolution in urban life every bit as transformative as the arrival of the steam engine or electricity, powered by a new set of digital and design breakthroughs" (which of course, Sidewalk will nobly be shepherding into being) (Sidewalk Labs 2017). The entirety of Sidewalk's self-understanding is to be found in the design-mediated undertaking of "exercises through which the political persists" (Robinson and Edwards 2016, 3), which is to say the status quo is recompounded and furthered, not abolished and made anew. John Lorinc identifies that Sidewalk shares in a long history of what may be called 'urbanism as prescription'—an attempt to articulate and solve for "the social or economic failings of the city at particular moments in time"

(Lorinc 2017). He mentions specifically "Ebenezer Howard's late 19th century Garden City suburbs; the Levittown subdivisions of the post-war era; the New Urbanist enclaves of the 1990s, including Celebration [Florida]" (Lorinc 2017).

Technological urbanism, as Sidewalk Labs would tell it, stands as the culmination of a "stagic" (Wood 2017) 'architectural' history of successive moments, which sees time as an aesthetic slideshow of realized events which, once they end, only hang around as specters. Sidewalk's RFP document compares itself to a strawman representation of the typical city which it says is "straining against its aging infrastructure and the traditionally sluggish pace of urban change" (Sidewalk Labs 2017). "The world's great cities are all hubs of growth and innovation because they leveraged platforms put in place by visionary leaders," the RFP document notes (Sidewalk Labs 2017). This sentence is quite ideologically complex; first, there is the wholesale identification of cities as endogenic laboratories of market forces, as a "platform", taking in resources and labor and outputting technology and production. Secondly, despite the technochauvinism implied within the internet city, it returns the figure of the visionary, but no less Oedipal, leader. This recapitulates the agreed-upon limits of the political: it's always about Order, which is about Authority, which is dependent on a *strong leader* (Robinson and Edwards 2016). Sidewalk makes its point with a selective tour of urban platforms: "Rome had aqueducts, London the Underground, Manhattan the street grid. The creators of these physical platforms, along with digital ones like the web or Linux, spurred innovations by a diverse group of entrepreneurs and urban planners" (Sidewalk Labs 2017). At the same time, Sidewalk carefully slots these developments into a libertarian ideology which crowns the 'freedom to innovate' as foremost. It carefully makes sure no one would confuse its idea of urban leaders for the authoritarians of modernity—they don't think of themselves as Robert Moses, but constantly reference Jane Jacobs, grinding that tired Manichean dyad into dust. Sidewalk's leaders are the geniuses and entrepreneurs who had leadership thrust upon them, and their sole imperative is change *qua* progress. At this point, Sidewalk humbly insert themselves into the urban pantheon through the back door, by way of Alphabet's Android: "an Android phone changes with every new downloaded app; the original street grid of Toronto changed with every streetcar track placed on top" (Sidewalk Labs 2017, 17). This is the cleverest they get: it's not really that cities are platforms, but platforms are, apparently, *modeled on cities*.

These platforms are the final space in which the designer's assistance to the technologist is invaluable. Designers produce a smokescreen that allow us to focus on the experience of the apparent community and aesthetic aspects of technological urbanism. At another level, academic discourse around technological urbanism cuts deeper, highlighting that this is first and foremost a technological project. But it is necessary to cut through this as well, beyond highlighting the potentially dark uses of data assemblages instead of calling into question if there is any such thing as a *benign* use. Simply highlighting the immiserating possibilities of algorithmic control or the actions of computers (seeing computers, thinking computers) or the intensification of a computer-digital sensorium is missing the forest for the trees. As Bianca Wylie tirelessly points out, what is actually happening here represents a landslide shift in the relationship between an individual and other individuals, that individual to the city 'framework' (mediated by platforms), and the way that platform comes to swallow and abstract whole populations, proffering legible translation of the minutae of urban life for consumption by the machine and the extraction of data.

Here, it is necessary to depart from ideas of data assemblages which can appear as lacking in political content. If design has a place within the technological city to come, it must develop its posture separate from merely being a tool in the technologist's arsenal. Compare, for example, the ambiguity of the data assemblage *depositif* and its abstract view of transcendental power with the definition of the platform as elaborated in Ellen P. Goldman and Julia Powles' "Urbanism Under Google":

"But platforms are not neutral. Online platforms "intervene in and reshape value regimes and economies." They advance a substantive vision of the good—whether that is "engagement" on social media or cheap rides on Uber—and enforce that vision through data flows. Similarly, smart city technologies might be "portrayed and positioned as technical, pragmatic, common-sensical, and non-ideological," but in reality, they "are inherently politically and ideologically loaded in vision and application, reshaping in particular ways how cities are managed

and regulated." To be sure, Sidewalk's vision aims to hit ambitious targets for affordable housing, sustainability, inclusion, and other public goods. These are values imposed from outside the platform, congruent with Sidewalk's ambitions to build in Toronto an idealized prototype, uninhibited by revenue demands and supported by patient capital. But the values structurally embedded in the platform are not these. The city as platform privileges efficiency. In Sidewalk's vision, living, working, and moving—and, as discussed in the previous section, governing—are all modules on a platform connecting users to services through data" (Goodman and Powles 2019).

To discuss the platform or the data assemblage without this consideration—or worse, to discuss discrete technological-urban systems as they stand alone—is to absolutely defer any 'criticism' to the existing activity of the technological powers. Platforms and data assemblages (that is to say, the technological city), are *institutions*. A platform such as WhatsApp may host an emancipatory tendency or allow for movements to organize; but it must never be forgotten that participation in the platform conditions that participation towards the platform's own ends. Platforms are, at the end of it all, institutions plain and simple – able and even amenable to allowing a certain amount of operational leeway. But the velvet glove conceals a mailed fist of total, exclusionary control. And the TOS of these platforms is not up for debate or put to a vote.

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