Platform urbanism in a pandemic: Dark stores, ghost kitchens, and the logistical-urban frontier

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Abstract
As demand for e-commerce surged during the COVID-19 pandemic, investors began pouring billions into start-ups promising to accelerate digitization and automation in small-margin, winner-take-all sectors, such as retail, grocery, and dining. I examine two business models that feature prominently in this swell of financial optimism: dark stores and ghost kitchens. Both sacrifice consumer-facing real estate to create logistical spaces for online order fulfillment, and both are predicted to become permanent fixtures of the post-pandemic economic landscape. However, few have commented on the consequences of this future-in-the-making or who is likely to suffer them. The essay therefore anticipates how “going dark” may impact consumers, workers, and urban geographies. I argue that going dark represents a new threshold in the spatial materialities and financial imaginary of platform urbanism, what I call the logistical-urban frontier. I theorize how this frontier threatens historically disenfranchised urban communities, and I conclude the essay with a reflection on the conflicted temporalities of logistical speculation.

Keywords
Dark stores, e-commerce, ghost kitchens, logistics, platform urbanism, political economy of technology, supply chain capitalism

Going dark
On 1 September 2020, Whole Foods opened a new location in Brooklyn. Normally the occasion would not merit national coverage, but this was not a typical Whole Foods—nor were the circumstances normal. COVID-19 had already claimed some 200,000 lives in the United States. Stay-at-home orders and social distancing requirements forced...
hundreds of thousands of businesses to close, many permanently (Sundaram, 2020). Not all business suffered, though. Online orders for retail and groceries were surging. In fact, Whole Foods had already shuttered several of its premier locations temporarily, dedicating the floor space to online order fulfillment. The Brooklyn location is different though. This “store” will never welcome customers through its doors. In place of the salad bars, coffee counters, and prepared foods that patrons appreciate from the high-end grocer—are just more aisles of inventory. Modular, unadorned shelving units stock cans, bottles, and other dry goods. Austere walk-in refrigerators hold dairy and produce. No effort will be given to seasonal decoration or promotions, nor will the layout of the space conform to the flow that supermarkets honed over decades as “gardens of consumer choice” (Cochoy, 2007). No, this new Whole Foods is organized according to an entirely different logic—as a warehouse, a distribution center, a logistical facility (Melendez, 2020).

The Brooklyn Whole Foods is the first in a series of “dark stores” that the Amazon-owned grocer plans to launch in urban markets across the United States. Dark stores are micro-fulfillment centers for online purchases, typically converted retail properties (Rudra, 2020). “Going dark” appeals to retailers seeking to ramp up their e-commerce capacity quickly and without heavy expenditures. If the “shop front” can now be relegated to online platforms, then brick-and-mortar properties can be converted for back-of-house operations, the spaces optimized for picking, preparing, and fulfilling delivery orders. The proximity of retail space to consumers’ homes also mitigates the heaviest costs of “last-mile” delivery, widely considered to be the most expensive and difficult leg of supply chain logistics (Alimohamed-Wilson, 2020; Altenried, 2019). But while industry analysts and investors are optimistic about the advantages, few have commented on the quality of the new “dark” jobs. Commercial real estate shareholders may have been pleased when department store Macy’s went dark at outlets in Colorado and Delaware, for example, but erstwhile staff faced daunting employment prospects: transfer to another storefront (possibly hundreds of miles away), hope for severance eligibility, or become a “picker” fulfilling online orders—a notoriously tedious and grinding job (cf. Delfanti, 2021; Loewen, 2018).

“Ghost kitchens” work similarly. If dark stores convert retail space for online order fulfillment, ghost kitchens are fulfillment centers for delivered meals—commissaries for delivery-only “virtual” restaurants. “Picture a large warehouse with numerous stations (mini-restaurants) of stainless-steel prep tables, hood vents, stoves, ovens, and sinks, each with its own orders coming in direct from customers” (Colpaart, 2019). Like dark stores, ghost kitchens are closed to consumers. In some cases, an individual operator might manage multiple “mini-restaurants” out of a single kitchen, with consumers presumably none the wiser. The model gained traction in recent years as platforms like Deliveroo, DoorDash, and UberEats propelled meal delivery to the fastest growing segment in the restaurant industry (Singh, 2019) forcing restauranteurs to compete not only on the price or quality of their foods but for “last-mile delivery supremacy” (Kelso, 2020). Ghost kitchens respond to these pressures by scaling and streamlining delivery operations, with batch-prepped ingredients, expedited hand-off to couriers, and flexible staffing...
arrangements. Many are windowless, crowded, and hot, their stalls operated by low-wage line-cooks and delivery-runners working in a constant “panic mode” (Loizos, 2019).

Dark stores and ghost kitchens both predate COVID-19, and many observers saw their rise as a foregone conclusion even before stay-at-home orders and social distancing guidelines drove up online demand (e.g., Bromwich, 2019). But the pandemic has clearly fast-tracked their ascendency. Industry analysts predict that both models will become permanent fixtures of the post-pandemic economic landscape. Consulting firm Accenture, for example, forecasts that by 2023 up to 70% of online transactions will be fulfilled at a local dark store or other micro-fulfillment facility (Rudra, 2020). Yet little attention has been given to the consequences of this “future-in-the-making” (Adam, 2009) or who is most likely to suffer them. As the recent histories of disaster capitalism and austerity urbanism attest, a crisis on the magnitude of the pandemic represents an opportunity for economic “disruption” that neither Wall Street nor Silicon Valley are likely to waste (Klein, 2007; Peck, 2012; Savage, 2020). My goal in this essay is therefore twofold: first, to examine how dark stores and ghost kitchens figure as a frontier in the spatial materialities and financial imaginary of platform urbanism (Leszczynski, 2020; Pollio, 2021; Sadowski, 2020a), and second, to anticipate how “going dark” will impact consumers, workers, and urban communities. I elaborate on the situation in the next two sections, arguing that dark stores and ghost kitchens represent a novel convergence in the urbanization of Amazon-style logistics and the platformization of urban space—what I call the logistical-urban frontier. I then theorize how going dark threatens the publicness of urban markets as infrastructures for the provision of basic resources. The paper concludes with a reflection on the conflicted temporalities of logistical speculation.

To compete with the market hegemon...

Few industries have benefited from the COVID-19 pandemic, but for those that have, the getting is good. E-commerce, grocery, and meal-delivery platforms have all enjoyed soaring revenues thanks to stay-at-home orders and social distancing requirements (Perez, 2020; Rivas, 2020; Sumagaysay, 2020). Amazon, in particular, saw record-breaking profits as public health measures forced consumers to stay home and demand for online goods and services exploded (Harris, 2020; Merchant, 2020). Some of the figures from this windfall are truly astonishing, but Amazon’s willingness and ability to exploit pandemic conditions should hardly be surprising given the mega-company’s reputation for harsh labor practices and its dominance across sectors as diverse as e-commerce, cloud computing, grocery, streaming video, artificial intelligence, and home security (Alimohamed-Wilson et al., 2020). So, while this essay is not about Amazon per se, it does offer an important “paradigm case” for how the principles of supply chain capitalism and platform logistics are “coming to dominate more and more sectors of American society” (Ritzer, 2013; cf. Ritzer & Miles, 2019).

Once an online book seller, Amazon is currently the third largest company in the world by market capitalisation (Ventura, 2021). Its unparalleled growth owes to a host of pioneering anti-competitive practices that are now commonplace across the media, tech,
retail, and logistics sectors (Khan, 2016), including: tax avoidance and regulatory arbitrage (Neate, 2019; Pollman, 2019); platform intermediation (Langley and Leyshon, 2017; Sadowski, 2020b); surveillant “one-click” consumerism (Hill, 2020; West, 2019); workplace automation (Delfanti, 2021; Struna and Reese, 2020); and a cunning mixture of vertical and horizontal integration on the one hand and exploitative subcontracting and outsourcing on the other (Alimohamed-Wilson et al., 2020). The company’s influence on the economy is so extensive that economists worry its anti-competitive practices could push down the price of the US dollar (Edwards, 2017); its reach is such that in 2018, nearly half of online purchases in the US went through Amazon’s platform (Lunden, 2018).

Amazon was thus uniquely poised to capitalize on the pandemic-driven surge in online commerce. Within months of the first lockdowns, Amazon was ramping up operations across major urban markets. In some cities, the company doubled its footprint of warehouse and distribution centers (Blumgart and Hetrick, 2021). As brick-and-mortar retail stores furloughed workers, Amazon expanded its global workforce of warehouse “associates,” delivery drivers, and pickers by 50%, absorbing tens of thousands of recently laid-off workers into its precarious and hazardous logistical machinery (Merchant, 2020). These jobs are notoriously unforgiving. Fulfillment center pickers, for example, experience stress injuries at rates far higher than industry average (Evans, 2019), feel compelled to skip bathroom breaks to meet quotas (Liao, 2018), and were forced to work in crowded conditions during the pandemic (Harris, 2020). According to Amazon’s own estimates, some 20,000 of its workers contracted COVID-19 by October 2020 (Lerman, 2020). Meanwhile, journalists and legal observers continue to document illegal retaliations against workers for whistleblowing and organizing (Merchant, 2020). Despite these and other alarming facts, Amazon’s market share only increased as the pandemic’s devastation progressed, tripling profits through the first 9 months of 2020 and bumping its fourth-quarter year-over-year revenues by US$87 billion (Helmore, 2020; McCormick, 2021). As Amazon’s CEO, Jeff Bezos’ personal fortune grew by US$90.1 billion between March and October 2020—enough that he could pay every Amazon employee a six-digit bonus and remain as wealthy as before the pandemic (Reich, 2020).

This background sets the stage for dark stores and ghost kitchens, not merely because Amazon is a pioneer of the former or an investor in the latter (although it is both of those things; cf. Bell, 2019; Melendez, 2020), but because, as market hegemon, it sets the terms of intra-capitalist competition as a struggle for logistical supremacy (Neilson, 2012; Nitzan, 1998).1 This is precisely the premise of supply chain capitalism, a political economy in which firms “compete on the basis of the distribution of goods and services rather than merely the products themselves” (Chua et al., 2018: 619; Bonacich and Wilson, 2008; Cowen, 2014; Tsing, 2009). And although Amazon is certainly not alone in its logistical ambitions, the mega-company’s pioneering “one-click,” next-day—even same-day—delivery service took the commodification of fulfillment to new heights. “Fulfillment” has a specific meaning in logistical worlds. Whereas distribution involves the movement and storage of bulk items in cases or crates, fulfillment requires of warehouse workers the intricacies of tasks previously performed by back-of-house retail employees—unloading, storing, picking, packaging, and labeling items at the individual
level (Loewen, 2018: 702). This introduces new opportunities for neo-Taylorist “optimization” of warehouse work through algorithmic task allocations, personalized quotas, and elaborate worker tracking and surveillance systems (Altenried, 2019; Delfanti, 2021; Kanngieser, 2013). Coupled with vast fleets of subcontracted long-distance and last-mile delivery workers (Alimohamed-Wilson, 2020; Altenried, 2019), Amazon’s distinctive configuration of logistical labor and logistical spaces functions like an in-house microcosm of the global supply chain paradigm.

Crucially, competing on fulfillment not only means “condition[ing] the responses of both capital and labor to the problems of cutting labor costs and disciplining the workforce,” as Tsing (2009: 150) argues of supply chain capitalism in general. It also means conditioning consumers’ relationship to the platform vis-à-vis logistics. According to Hill (2020), this is a core feature of Amazon’s paradigm-setting business model. E-commerce remains Amazon’s most lucrative division. Despite high-yield growth sectors like cloud computing, more than half of Amazon’s revenues still come from the online marketplace (Ang, 2020). It also accounts for the majority of Amazon’s pandemic revenue boom (Dastin and Rana, 2020). All those millions of daily transactions that Amazon brokers require “things of heft and substance to be shifted through space, and that means people doing the shifting in logistical spaces” (Hill, 2020: 522)—places, like fulfillment centers, which are designed “for purposes and practices that in the eyes of the majority of consumer groups would be condemned as unethical… and are thus placed beyond the consumers’ view and consciousness” (Ibert et al., 2019: 57; cf. Mitchell & LeVecchia, 2016). This “engineered obscurity,” as Hill calls it, is not ancillary to platform logistics, in the same way that harsh sweat shop conditions are not ancillary to manufacturing profits (Mezzadri, 2016). The effect is to soothe platform users into “a mode of unconscious consumption that dislocates buying online from the geography of fulfillment” (Hill, 2020: 522). And like commodity fetishism in Marx’s analysis of capital (1976: 163–177), that dislocation nurtures a “pollution of the sensible” (Hill, 2020: 522)—a logistical fetishism—that makes it difficult for consumers to apprehend the labor involved in and environmental costs of fulfillment as the quintessential platform-commodity.

It is by this same normalizing production of ignorance—the same “agnogenesis” of logistical spaces and logistical labor (Proctor, 2008)—that dark stores and ghost kitchens intensify and expand the “Amazonification of logistics” into new sectors and new spaces (Alimohamed-Wilson, 2020). Evidence of this impulse can be detected in the pandemic-driven surge of financial interest and investment in last-mile operations (of which ghost kitchens and dark stores are perhaps only the most conspicuous). More venture capital than ever is being pumped into e-commerce, robotics, and supply chain and logistics tech (Hausmann et al., 2020; Smith, 2020). To these investors, dark stores and ghost kitchens provide useful test cases—prototypes—for a future in which any business, given the right technology and expertise, can “compete against the Amazon(s) of the world” (Investable Universe, 2019). With all the speculation, some analysts detect worrying similarities between the current investment frenzy and the bloated days leading up to the “dotcom crash” of 2000 (Philips, 2020). Today, however, it is business-to-business (B2B) start-ups driving optimism, not consumer-facing enterprises, and especially companies whose products or services promise to accelerate digitization and automation in small-margin,
winner-take-all sectors—namely, retail, grocery, and dining (Lee, 2020). According to industry consultant Publicis Group, “you can kind of think of COVID as accelerating digital grocery shopping five or 10 years into the future overnight” (In Visible Capital, 2020). Big Four consulting firm McKinsey sees the trend across sectors. “Businesses that once mapped digital strategy in one- to three-year phases must now scale their initiatives in a matter of days or weeks” (McKinsey, 2020). With the future arriving so quickly, money is flowing to those who would erect the requisite infrastructure.

So despite hundreds of thousands of pandemic-related deaths in the US, record-breaking first-time unemployment filings in the US, mounting household debt (Ho, 2020), and a looming eviction crisis (Attiah, 2020), 2020 actually saw a 23% increase in venture capital over the same period the previous year (Thorne, 2020), with logistics and supply chain tech a leading target of investment (PYMNTS, 2020).

### Urbanizing logistical space

As localized variations on the theme of Amazon-style micro-fulfillment, dark stores and ghost kitchens are protagonists in this swell of financial optimism (e.g., In Pitchbook, 2021; Visible Capital, 2020). Industry observers forecast that both will become permanent fixtures of the economic landscape long after the most acute of COVID-19’s damage and disruption have passed. Forbes declared dark stores “the future of post-pandemic retail” (Morgan, 2020), while the online trade journal Restaurant Dive calls ghost kitchens the “post-pandemic restaurant future” (Beckett, 2020). Investors are simply bullish on the prospect that the pandemic will “have the lasting effect of pushing more economic activity online” (Lee, 2020). All that online economic activity requires infrastructure and, above all, new logistical spaces to sustain it. This is what makes dark stores and ghost kitchens such an attractive investment—not the buzzy technologies that they claim to leverage (data analytics, search-engine optimization, remote payments, platform delivery, artificial intelligence, etc.), but their potential to wrest logistical value from urban places whose utility in the global supply chain has been “made redundant” by online platforms (e.g., Butler, 2018).

The production of “dark” space involves two considerations—the first internal, the second locational. First, as retailers shift the traditional functions of commercial space to online platforms (where personalized recommendations, modular displays, and discriminatory pricing induce consumer attachment to products with as little friction as possible), the storefront can be reconfigured to prioritize neo-Taylorist efficiency in back-of-house operations:

> Dark stores entail full store conversions to [a] fulfillment hub, recalibrating the physical layout and logical workflows to accommodate optimal picking routes and capacity. Turning a retail location into a dark store facilitates the fulfillment of online orders more efficiently. A converted location’s layout and picking processes are reworked to optimize order-handling capacity and improve fulfillment performance (Tecsys, 2020).
A new crop of B2B start-ups (like Tecsys, quoted here) has emerged to proselytize dark-store conversion while collecting fees as consultants and expert intermediaries. Although the particularities of each site’s layout and fulfillment capacity will differ, the underlying conversion principle is straightforward: to leverage a retailer’s existing physical assets to secure some future logistical advantage (Investable Universe, 2019).

Whether dark-store conversion benefits all retailers equally is a different question. On the one hand, advocates claim that going dark can help struggling independent retailers gain a footing in the increasingly crowded and competitive e-commerce sector. On the other, industry discourse indicates that conversion is most cost effective for major retailers, national grocery chains, department stores, and so on. “[T]here is an economy of scale, and the larger operations can see huge efficiency gains with a dedicated dark store” (Rudra, 2020). Bed Bath and Beyond, for example, recently announced plans to convert a quarter of its storefronts into “regional fulfillment centers” (Stych, 2020). The ideal business not only has the funds available to hire an outside firm like Tecsys to consult on conversion, but also enjoys an online customer base large enough to justify the sacrifice in physical space—even in markets like Brooklyn, where rent for converted retail properties far exceeds the national average. Retail’s locational virtues of consumer accessibility, density of social flows and interactions, and spatial differentiation (cf. Brown, 1993) become secondary to the ultimate criterion of last-mile efficiency: decreasing “the time between the act of buying and receiving the goods” (Altenried, 2019: 117). Determining which spaces a retailer should dedicate to fulfillment is a matter of “location intelligence,” explains a representative from geospatial analytics giant Esri—examining drive-time analyzes, historical patterns in consumer shopping, real estate comps, and so on, to “incorporate dark stores into market plans” and turn “disruption into advantage” (Sankary, 2020).

Like dark stores, ghost kitchens forego the qualities traditionally desired of restaurants (ambience, service quality, social conductivity, and so on) to capitalize instead on economies of scale and speed in meal delivery. Internally, this means organizing the kitchen like a distribution center, “optimized for generating orders online and handing them to delivery drivers” (Jeffries, 2020):

Using custom-built spaces and optimizing their processes specifically for delivery, ghost kitchens can run very efficiently. If you are operating several brands from one kitchen, you can batch prep ingredients for several different menus and design the kitchen to prioritize the speed of preparation and the process of handing over meals to delivery drivers (Colpaart, 2019).

Running multiple “brands” out of the same kitchen is ghost kitchens’ primary appeal: it expands restaurants’ market share by diversifying delivery offerings while scaling and streamlining operations in an industry known for its razor-thin margins. And while several restaurant chains have experimented with converting their own kitchens (cf. Wiener, 2020), the more common model appears to be independent kitchens renting out space to “virtual” vendors. In fact, nearly every large third-party delivery platform (Deliveroo, UberEats, Doordash) has opened its own ghost kitchen, leasing out industrial kitchen
space to restaurant “partners,” consulting on branding and digital marketing (Friedlander, 2021), and sweetening the deal with exclusive analytics (e.g., Bell, 2019; Romeo, 2019).

For these and other commissaries, determining the optimal location follows from the pragmatics of scale and efficiency. “The economics of a ghost kitchen relies on the speed at which food can be cooked and handed off to a delivery person, which means that the flow of the traffic in the building, and in the parking lot outside of it, is paramount” (Nicoll, 2020). The ideal location must be close enough to customers to minimize delivery time but removed enough to accommodate high volumes of flow, and few downtown or neighborhood restaurants meet these criteria. The proposition is therefore to play a smart real estate game. Indeed, leading ghost kitchen operators are fast becoming infamous for their dizzying buying sprees, acquiring portfolios of “distressed properties in close proximity to neighborhoods where delivery marketplaces like Uber Eats and Postmates are increasingly setting the table” (HNGRY, 2019)—warehouses, empty strip-malls, and other conveniently located storefronts forced out of business, either by the pandemic or by e-commerce competition (cf. Snyder, 2020). Since 2018, for example, CloudKitchens—a secretive subsidiary of City Storage Systems run by former Uber CEO Travis Kalanick—has quietly spent hundreds of millions in investments from the Saudi sovereign wealth fund and Goldman Sachs to purchase over 40 buildings in or near distressed downtown neighborhoods across dozens of US cities (Nicoll, 2020), often taking advantage of “opportunity zone” designations, where federal tax benefits purport to incentivize local investment (Jeffries, 2020). Each location will house up to 120 “virtual” restaurants across 30 kitchens, many operated by CloudKitchens itself under “clickbait-y” aliases such as “F*CKING GOOD PIZZA” and “Excuse My French Toast” (Friedlander, 2021). And although the industry rhetoric touts advantages for independent restaurants as a lifeline for surviving the COVID pandemic, in the US it is national chains, like Chili’s, WingStop, Chick-fil-A, and Panda Express, taking advantage of the perks (Newberg, 2021; Romeo, 2020).

**Life on the logistical-urban frontier**

Dark stores and ghost kitchens share a fundamental logic—to create value by rendering the built environment “platform-ready” (Helmond, 2015). I mean this both in the sense that the spaces are configured according to the infrastructural demands of fulfillment as the platform-commodity, and that the business models cognize space through the discourse of software and platform economics. Like software, dark stores and ghost kitchens are “re-configurable” (Wiener, 2020). They can be “programmed” according to transaction data collected by the online platform (Helmond, 2015; McKelvey, 2011)—dark stores stock inventory according to purchase histories and spatial analytics, for example, while “virtual” restaurants rebrand to fit local trends or open and close seasonally to fill “cuisine gaps” spotted in the data (Blatherwick, 2020; Jeffries, 2020; Wiener, 2020). To a certain extent, such flexibility harkens to the esthetic logics of “pop-up urbanism.” Going dark “valorises places which are quick to construct, relocate and remove, organis space-time in a way that assures plasticity in
the future (Harris, 2015: 593). But the flexibility of dark space is equally reminiscent of the logistical logics of Amazon’s patented warehouse management and personalized recommendation systems, and before that, the flexible logics of just-in-time production (Sayer, 1986). Integrated into the neighborhood fabric, dark stores and ghost kitchens signal a new alignment between the platformization of urban transactions (Barns, 2019) and the urbanization of supply chain capitalism—a “dark” convergence of “cyberspace and cityscapes” (Sadowski, 2020a) taking shape beyond consumers’ awareness.

On this “last great frontier” of capitalism (Florida, 2018), erecting the infrastructure for fulfillment becomes a seemingly limitless opportunity for the creation of value. “[W]hile you may look at the city and see skyscrapers and randomly dispersed piles of trash, venture capitalists see a realm of monetary potential, where efficient systems like those created by food delivery apps could be shuffled: more players added, more capital derived” (Bromwich, 2019). Consider REEF Technology, one of the many start-ups that benefitted from the 2020 venture capital boom (Shieber, 2020). A self-styled “neighborhood logistics” provider steeped in Silicon Valley rhetoric, REEF’s executives liken their product to Apple. “Apple uses connectivity as a platform; we use proximity as a platform. We allow third-party applications to stand on this proximity platform and get closer to consumers” (Wiener, 2020). What they mean by “proximity platform,” however, is a parking lot, of which REEF controls more than 10,000 after having acquired the two largest parking operators in North America with capital from Softbank’s Vision Fund and Dubai’s sovereign-wealth fund (Shieber, 2020). The company’s ambitions to create “the next phase of a neighborhood” match its potentially vast physical footprint of empty blacktop. Through a partnership with Bond, a “last-mile logistics start-up” that manufactures “nano-warehouses,” REEF is currently building out a network of ghost kitchens and “local logistics and mobility hubs” on hundreds of parking lots across dozens of US cities. In fact, REEF’s services are being rolled out so fast that the company has been forced to shutter several of its locations for failure to acquire the requisite permits (Luna, 2021).

While the structures housing REEF’s “logistics hubs” and “micro-kitchens” may today look like ordinary trailers, executives insist that they are only prototypes, “a proof of concept for other sorts of ‘applications’ that might make sense in some later, future time” (Wiener, 2020). What those future applications will be is unclear, but promotional imagery for REEF’s future mobile kitchens invokes the flexible esthetics of pop-up culture and “tactical urbanism” (Mould, 2014). This gives the hubs the imprimatur of do-it-yourself authenticity and creative re-appropriation (Harris, 2015), but to date, such imagery is entirely speculative. REEF’s investment efforts remain targeted at the generally anesthetised worlds of logistics, micro-warehousing, and “super-fast delivery” (Cosgrove, 2021). In other words, beyond aspirational branding, there is little attention to consumer experience. Urban space is reconfigured not for consumption but as a “raw material” from which future logistical value can be extracted (Mezzadra and Neilson, 2017).

The evolving relationship between space, labor, and capital on this logistical-urban frontier raises two immediate concerns. First, not only does the “darkening” of
commercial operations nurture the engineering of obscurity in platform logistics; it also
serves to reduce qualitatively diverse work forms to “de-skilled” labor, no less sus-
cceptible to “the technological extension of governance onto the registers of bodily
movement and expression” than a warehouse picker (Kanngieser, 2013: 595). By
“streamlining” the number of jobs previously supported in target industries—in some
estimations, by up to 80% (Newberg, 2020)—going dark increases employers’ leverage
over already-precarious workforces. As Altenried (2019: 114) argues, logistics work is
“characterised by intense time pressure, standardization, algorithmic management and dig-
itally enabled surveillance on the one hand, and platform-driven precarisation and flexibi-
lisation on the other” (Altenried, 2019: 114). That these conditions will be hidden behind
closed doors will only reinforce the racialized, classed, and gendered profile of platform labor
as low-income service work, while subjecting those who perform “dark” logistical jobs to
a disciplining sense of disposability (Loewen, 2018; Van Doorn, 2017).

Second, if the trends hold, we can expect technology companies to continue their
expansion into the real estate business. As Sadowski (2020b) argues, online platforms are
already rentiers: they collect fees for access to some platform-asset—digital infra-
structure, a marketplace for goods or services, an audience for advertising (cf.
McGuigan and Manzerolle, 2014; Plantin et al., 2018; Srnicek, 2017). But as going dark
goes mainstream, the landlords of the internet are turning their rentier’s gaze back to
physical world. This reverses the longstanding imperative for platforms to “stay lean” by
owning as few tangible assets as possible (Srnicek, 2017). But it may also be an indication
of platform capital’s maturation, its growing appetite for infrastructure (Langlois and
Elmer, 2019; Plantin and Punathambekar, 2019), and investors’ desire to hedge future
risk. If the food delivery boom shows signs of slowing, for example, the re-configurability
of CloudKitchens’ owned locations will allow for a quick pivot to other logistical
functions, such as warehousing, now the fastest growing asset class for private equity
investment (McGrath, 2020; Nicoll, 2020). So as investors continue to pursue high-return
investment yields through the capitalization of digital spaces (Greene and Joseph, 2015),
COVID-19 may be catalyzing a new “logistical fix” through the acquisition, conversion
and (re)capitalization of distressed urban properties (Danyluk, 2018; Harvey, 1982).

We might think of these first two concerns as the effects of “logistical overexposure.” As
with monoculture crops, the financial gamble on Amazon-style fulfillment drains the urban
economic ecology of diversity—as one journalist puts it, like “shrink[ing] a city block into
as i n g l e  w a r e h o u s e” (Newberg, 2020). How will that logistical monoculture interact with
already uneven geographies of consumer access and exclusion, and to what effect?

Although the consequences of going dark for urban communities cannot be predicted
with any certainty, we can begin to anticipate its effects on urban consumer culture by
drawing on theoretical and historical insights into the relationship between platforms,
infrastructures, and urban markets. As Richardson (2018) argues, platform urbanization is
more than simply the introduction of new technologies to urban transactions. Rather, it
signals the acceleration of a more fundamental condition, in which consumer access to
resources, services, infrastructure, or utilities is being re-marketized via technological
networks and intermediaries. In Richardson’s view, this re-marketization is not inherently
inequitable or exclusionary, for urban markets can and have historically served public
utility as sites of exchange, interaction, and collectivization. If publicness denotes, as she puts it, “a quality of accessibility for collective use” (Richardson, 2018), then it is easy to imagine even relatively high-end supermarkets like Whole Foods satisfying a criterion of publicness when its doors are open to all. But implicit in Richardson’s provocation is also a sense of markets as physical spaces—places where social interactions and economic dramas are no less integral to commodity exchange than the price and quality of goods. As retailers go dark, it is precisely this co-presence, sociability, and interaction that is disposed with. To what extent then is accessibility also reconfigured in the process?

Given platforms’ empirically demonstrable penchant for information asymmetries and discriminatory pricing (cf. Hannak et al., 2014), it is not difficult to foresee the dark market’s figurative “doors” not being equally open to all. Whole Foods waives grocery delivery costs for Amazon Prime subscribers, for example, but non-members are subject to steep fees—US$14.99 on top of the grocery bill, perhaps more depending on distance. For those living in physically, racially, and economically isolated neighborhoods, will going dark lead to new forms of “predatory inclusion,” with excessive fees tacked on for those who cannot afford subscriptions (Charron-Chénier, 2020)? Or will “efficiency-maximising” site-selection decisions reproduce historical patterns of exclusion for low-income, racial-minority urban communities?

Deener’s (2017) historical sociology of food deserts in US cities is informative here. Like Richardson, Deener appreciates the contingent publicness of markets, especially when they are enrolled in the provision of vital resources, such as groceries. But we also see in Deener’s account how complex interactions between new transportation and communication technologies and market pressures can develop into “a semi-autonomous and path-dependent force” that excludes large segments of the urban population—specifically, poorer, predominantly African American communities—from access to a basic resource (1287–1288). “Infrastructural exclusion” names the relationship between “everyday experiences of deprivation” and structural patterns of disinvestment and economic exclusion (1286). Deener’s insight, however, is that those patterns gain momentum as “an incremental, highly competitive, and economically contingent process” (1288) that both responds to and accelerates market pressures to divest from communities deemed “unprofitable.” This was the case for the reorganization of the grocery industry throughout the 20th century. And like e-commerce today, that reorganization created new incentives and disincentives that effectively compelled businesses to compete on distributive channels, logistical efficiencies, and ever smaller margins. Far from promoting “accessibility for collective use,” the emerging model for grocery upended established notions of viability, dislocating vital resources for communities already subject to both de facto and de jure segregations. The result was a lopsided infrastructuralization, with the inner city deprived of quality food sources and newly developed suburban areas inundated with shopping centers anchored by supermarkets.

Of course, we cannot know how permanent or pervasive the “dark” reorganization of commerce will be until the gravest of the pandemic’s crises have passed. But if it is possible to read from this history of infrastructural exclusion what the logistical-urban frontier portends for disenfranchised urban communities, then we should be deeply concerned about platforms’ potential to divorce logistics from the infrastructures urban communities need most—systems that ensure collective access to resources.
Conclusion: The conflicted horizons of logistical speculation

At the height of the COVID-19 crisis, dark stores and ghost kitchens opened onto conflicted horizons. On the one hand, as a business strategy, going dark promised retailers and business owners a much-needed logistical advantage. Converting commercial spaces would bring fulfillment closer to the consumer’s doorstep, minimizing the gap between online purchase and delivery. As one strategist puts it, “Delivery from dark, urban stores can prove faster than fulfillment from suburban warehouses. That’s why, as mid-market chains close, more [retailers] will move into abandoned urban locations to accelerate fulfillment.”

That speed, that acceleration, is what investors in companies like CloudKitchens and REEF seemed to be buying into—a claim on future revenues generated from the efficient production of the platform-commodity: fulfillment.

On the other hand, as I have argued here, going dark is as much an object of financial speculation as it is a business strategy, and as a financial vehicle, going dark cannot only be about speed or acceleration. According to Mitchell (2020), financial investment “acquires its value not from the speed that brings things closer together, but from the delay that pushes things into the future” (emphasis added). That delay, that passage of time between the act of investiture and its maturation, is a precondition of finance. And in order to control the delay, investments must attach to material things—assets (Leyshon and Thrift, 2007)—whose physical properties of durability and scale create a gap, a “time machine” of sorts, “out of which the present extracts wealth from the future” (Mitchell, 2020). How else to explain the 2020 investment boom if not as a way to capture value from a future no longer mired in the overlapping crises of the COVID-19 pandemic?

As both a business model and an investment vehicle, dark commerce navigates temporal contradictions. Whereas the logistics of fulfillment operates at the “just-in-time” speeds of efficiency—just enough supply and labor to meet demand (Sayer, 1986)—investment vehicles operate on more pronounced intervals. The lifespan of the ideal financial asset should be measured in years and decades, not daily quotas. Its mandate is not, like logistics, “the monetization of time and space” (Hepworth, 2014: 1121), but the creation of a durable, reliable stream of future revenues anchored in durable, reliable infrastructures. “The more reliable the apparatus for promising and capturing future revenue, and the further the mechanism can be extended into the future, the greater the opportunity for the creation of credit money” (Mitchell, 2020). The trouble is: when the investment vehicle is expensive but not necessarily reliable or durable—for instance, trailers in parking lots—the financial instrument tends to dis-embed from the underlying asset, taking on a life of its own, and exacerbating the crisis tendencies of finance capital (Christophers, 2009). This may be the case for the hasty logistical configurations of dark stores and ghost kitchens. Aside from the parking lots themselves (most of which REEF does not own but merely operates), REEF’s “infrastructure” exists as much in its promotional imagery and rhetoric as it does in the physical world. CloudKitchens’ future revenues are calculated against pandemic-level demand, which is certainly not guaranteed to remain high when in-person business resumes. And workers, for their part, are growing wise to dark store plans as corporate strategies for loss-cutting, not long-term viability. As an anonymous worker at Macy’s posted after the department store announced plans to go dark, “all a ‘dark store’ is [is] a liquidation of the store without getting [an] outside company to come and do it” (Anonymous, 2020).
That dark stores and ghost kitchens inspired so much financial optimism in 2020 speaks to the logistical urgencies and stresses of an economy racked by a pandemic, but it tells us very little of what the long-term, infrastructural priorities of the post-pandemic future should be. In one scenario, the conflicted temporalities of logistical speculation catch up to dark commerce and become its undoing: the speed, flexibility, and configurability that platforms require of logistical space today undermine the durability and reliability that investments need from their vehicles in the long run. Going dark could therefore wind up as little more than a COVID investment fad, a blip before the next crisis, and perhaps this will spare urban communities from the excesses of a logistical monoculture.

The more likely scenario, however, is that the “pop-up logistics” of dark stores and ghost kitchens are a first glimpse into a future built by capital investors in the image of Amazon. In this scenario, the immediate gains of logistical efficiency inspire more substantial investment in dark operations in grocery, retail, and dining, possibly other sectors as well. The likelihood of this outcome depends on the performative inertia of dark commerce, its ability to construct a façade not just of durability but of inevitability around the short-term fixes and logistical hacks which render urban space platform-ready. If this is the case, then the “compensatory” consumer culture of pop-up urbanism (Harris, 2020) may well be eclipsed by the “compensatory convenience” of fulfillment on the logistical-urban frontier. And like the lopsided infrastructuralization of grocery throughout the 20th century, the convenience economy will be far from universally accessible. Until we start investing in and protecting the publicness of urban markets as collective infrastructures, workers and consumers will remain vulnerable to new and yet unimagined predatory formations (Sassen, 2017).

Acknowledgements
This paper benefitted from Lee McGuigan’s thoughtful comments as well as input from anonymous reviewers.

Declaration of conflicting interests
The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author received no financial support for the research, authorship, and/or publication of this article.

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Notes
1. As Mitchell and LeVecchia (2016: 5) put it in their comprehensive report on Amazon’s monopoly practices, “By controlling (the market’s) critical infrastructure, Amazon both competes with other companies and sets the terms by which these same rivals can reach the market.”
2. Goller, commenting on (Blatherwick, 2020).
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