This article delves into the social and urban implications arising from the “ghostly architecture” of kitchens and supermarkets within Montevideo’s largest food distribution platform. Behind inconspicuous façades, the city’s daily life and its traditional food industry are physically and politically removed from the spatial demands of this emergent digital infrastructure.

Keywords: Applications, delivery, data, city, infrastructural turns

Ghosts Behind a House For Rent

A house for rent in Montevideo featured in a real estate website and a commercial kitchen without a restaurant seem to be unrelated scenes with little to do with the imaginary of digital entrepreneurship [Fig. 01]. However, these two occurrences are part of the same spatiality associated with PedidosYa, the main food delivery platform in Latin America. Nobody imagines that, crossing the façade of this house for rent, sharing the same plot and connected through a guarded access through what used to be a garage, there is a “ghost supermarket” and, behind it, a cluster of numerous “ghost kitchens.” In commercial or journalistic contexts, the term “ghost kitchens” refers to gastronomic facilities solely focused on the production of food for delivery. This kind of “non-kitchens” hide their location and deny the possibility of entering or consuming inside them, renouncing qualities traditionally associated with restaurants to reduce costs and increase the consumption of food as a service (Shapiro, 2022). Its volumes are organized in serial groups that share the same enclosure, either an industrial warehouse or a converted parking lot, and its interiors are generically designed to be leasable, adaptable, and efficient, giving way to repeated “stations of stainless steel prep tables, hood vents, stoves, ovens, and sinks” (Colpaart, 2019) [Fig. 02]. They are mostly windowless, crowded with people and products, and operated by rotating cooks who work on temporary contracts in constant “panic mode.” (Loizos, 2019, cited in Shapiro, 2022)

For the business model to be successful, a single ghost kitchen must host several brands of virtual restaurants (Lacort, 2018), because “the business’ profitability lies in the grouping.” (Bromwich, 2019) By sharing space, they also share ingredients, equipment, and staff, which in practice means that a customer can order Indian or Arabic food in different restaurants of their digital application, but receive, without knowing it, dishes that come from the same kitchen. In addition, the immense amounts of data processed by companies—from customers, restaurants, and delivery people—collaborate in the selection of the kitchens’ urban locations, while quickly guiding their delivery people and determining what types of food should be produced for specific neighborhoods, users, and schedules in real time (Colpaart, 2019). This also links the urban dynamics of food production and distribution with the domestic desires and rituals of its users.

By carefully observing this unique architectural sequence, we will no longer be able to understand its spatiotemporal logics dissociated from their digital dimension. Faced with this, we should start by resorting to the notion of “software as urban infrastructure” (Easterling, 2016; 2021; Axel & Hirsch, 2020) to pay attention to an “infrastructure space” that has become an information medium of invisible and powerful activities that determine how objects and content are organized and circulated (Easterling, 2016). By making decisions in cities that prioritize their obsessions with acceleration and temporal efficiency—since delivery companies define themselves and compete with each other based on the minutes promised for a delivery—the assemblies around these kitchens and their digital platforms, in conjunction with other restaurants, suppliers, and users, promote a very specific urbanism and architectures.

In infrastructures based on digital technologies, as Wolfgang Ernst (2017) explains, there is no present at all but differential temporealties. In them, technologically induced time suspends the traditional categories of past, present, and future, in favor of other “ecstatic temporalities in real time” (Ernst, 2017). The datafication of everyday life produces the transfer from a synchronous model to an asynchronous one since the asynchroneous principle has moved from the microchip to the server, from the server to the data center, from the data center to the workplace, and from the workplace to the city (Pepi, 2016).

02 Fachadas internas de una cocina fantasma genérica en su estado inicial. Gráfico generado por el autor en base a material disponible en internet. / Internal façades of a generic ghost kitchen in its initial state. Graphics made by the author based on material available on the internet.

04 Cartografías del despliegue urbano de PedidosYa en Montevideo. Ver en notas al pie 15 y 16 una descripción de los parámetros de realización. Generada por el autor. / Cartographies of the urban deployment of PedidosYa in Montevideo. See in footnotes 15 and 16 a description of production parameters. Made by the author.
Thus, the “semantic gap” (Ernst, 2017), due to the radical difference between the “chronopolitical” controversies of various scales in the urban environment. In this handover, the process of logistic infrastructureization also plays an important role, in which the clock time of industrial production—running on discrete and uniform units of time—has been replaced by real-time key performance indicators. Hence, the resulting logistics geographies are based on a constant acceleration described in terms of productivity improvement that ends up enacting geographies of rationalization and optimization (Heworth, 2014).

This situation presents a shortage of specific scholarship (see, for example, Shapiro, 2022)—especially in Latin America—that address the spatial implications of delivery companies beyond the precarious labor conditions of their delivery people. In this context, asking what kind of city these digital infrastructures are producing, would offer new arguments to enable a disciplinary debate that expands, in a situated manner, its field of study. In particular, a cartographic analysis of the Montevideo case’s trans-scalar assemblages would show that the role of platforms as private—and scarcely regulated—urban infrastructures is consciously designed and protected through active strategies of “ghostification” to ensure their rapid economic and territorial growth.

We will rely on the “haunting” formulated by Jacques Derrida and expanded by Mark Fisher (2018), who proposes to think of it “as the agency of the virtual.” Here, the ghostly will transcend the mere way of naming the kitchens to enunciate what “is something that […] it is not precisely known if it is […] that non-object, that present not present […] that is known if it is alive or dead” (Derrida, 1998), but that equally affects us and, in turn, is affected by us. Thus, in “a world governed by financial abstractions in which virtualities are clearly effective” (Fisher, 2018), it will be especially interesting to look at their “transforming potential” (Derrida, 1998) by going beyond “the boring and routine aspects of infrastructure to uncover settled practices, looking at the role of invisible labor, […] and explain the world-making role of infrastructures.” (Bowker & Star, cit. in Plantin & Punathambekar, 2018).

**Ghastly Heterogeneity as a Means for Non-Literal Global Extractivism**

PedidosYa defines itself as a “digital platform […] [that operates] under the premises of speed and simplicity” (PedidosYa, 2022). Founded in Montevideo in 2009, it is the leader in Latin American food delivery market: it operates with 156,000 restaurants and over 60,000 delivery drivers (Cámara de Comercio de Chile, 2022), in more than 500 cities in 15 countries, of which Uruguay is the most mature market (Lafuente, 2021). In the beginning, it based its business model on the intermediation between customers and restaurants through its website and, later, its application. In 2016, it entered the logistics segment with the ambition of “intervening, shortening times and being capable to ensure delivery in less than 30 minutes” (Lafuente, 2019). However, as it is usual with startups, the company has not yet reached profitability (Aldaya, 2022). According to its CEO, it will obtain it when it meets the goal of receiving an order per inhabitant per month in the countries where it operates, to multiply its reach tenfold, since 70% of delivery users still buy directly from the restaurant (Lafuente, 2021).

In 2014, PedidosYa was mostly acquired by the German company Delivery Hero, which has since established itself as its parent company. This company is a pioneer in quick-commerce and one of the world’s leading groups in the food delivery market, since it has a fleet of more than 1.4 million delivery persons and its average delivery time is 28 minutes for food delivery and 15 minutes for its ghost supermarkets (Delivery Hero, 2022). Focused on emerging markets, Delivery Hero defines itself as a real-time logistics company, that is, it offers a logistics service that allows the real-time tracking of an item from the point of origin to its destination (Grob, 2021). In this way, PedidosYa became part of a huge global business scheme that directly includes twelve other companies in the delivery sector deployed in seventy-five countries. To avoid duplicating companies within the same location, these have retained their pre-acquisition brand names, however, they are listed together on the Frankfurt Stock Exchange (as Delivery Hero se), indirectly joining seven other companies in thirty-two countries owned by Napster/Prosus, one of the world’s largest technology investors and the largest shareholder of Delivery Hero.

Intelligently, PedidosYa has managed to maintain its carefully curated image as a “local” company, a prideful emblem of Latin American entrepreneurship, which, at the same time, globally exchanges information and resources with its “first cousin” delivery specialists to optimize technologies or business models. This collaboration even contemplates the transfer of urban expansion strategies and architectural designs. Thus, what is tested in one city or market is replicated or adapted for another, endowing this practice with a certain condition of transnational “laboratory.”

Likewise, at the data storage level, the conglomerate deploys a shared temporal geography based on the material support of Amazon Web Services servers through a flexible management model. In this way, the services of each company are implemented separately for legal reasons and, as each country has different peak hours of lunch and dinner, servers can scale differentially to enhance their use (Amazon Web Services, 2022).

This corporate assembly, of meticulous design and great capacity for geographical adaptation, approaches the formations that Saskia Sassen (2017) called “complex predators.” These predators, operating with complex types of knowledge and technologies—algorithmic mathematics, law, accounting, or high-level logistics—present a systemic nature that makes them opaque or ghostly. Thus, they camouflage their predatory character behind a complicated network of imaginaries associated with trademarks, legal provisions, or territorial deployments.

Similarly, although there is a clear trend towards standardization in the production and technological processes associated with delivery consumption, the disposition achieved also ensures its “functional heterogeneity.” Brett Neilson (2012) understands that “logistical systems are unable fully to discipline the diversity that inhabits global production and distribution processes,” they are also involved in promoting and negotiating the heterogeneity of global space and time in a desired way, since their networks span multiple cultural contexts and different territorial regimes, authority, and rights (Sassen, 2006, cit. in Neilson, 2012). Thus, dynamic systems of space, information, and power generate de facto forms of politics faster than formal forms of government can legislate them (Easterling, 2016).

The Delivery Hero/PedidosYa business network is supported, in turn, by a group of investment and venture capital groups common in global entrepreneurship, located in the main financial headquarters of the east and west coasts of the United States, Hong Kong, or the United Kingdom. The final direction that the flows of capital and data end up taking, starting from “emerging countries”—the main focus declared by Delivery Hero—towards central nodes, in short, ends up configuring a geopolitical distribution that resembles historical extractivisms usually related to other types of resources and material infrastructures. Following this idea, Sandro Mezzadra and Brett Neilson (2017) invite us to observe “beyond literal extraction” to glimpse a “non-literal” one, that implies not only the expropriation of natural resources but...
Cartografía global de la geopolítica corporativa del ensamblaje de PedidosYa y Delivery Hero realizada por el autor. / Global mapping of the corporate geopolitics of the PedidosYa and Delivery Hero assembly, made by the author.
also, and increasingly, processes that cross patterns of human cooperation and social activity, such as the simple action of ordering food online on a Friday night.

The Ghostly Formula as a Replicable Urban Expansion Strategy

In the last five years, the urban vision of PedidosYa has been invested to strategically boost its growth. Although at first its interest was in achieving recognition and commercial positioning in the central neighborhoods of the cities in which it operates, currently, its territorial concern lies in the conquest of areas that were not previously target markets. These areas would signify, then, a new promise of expansion and possible differential against competing businesses.

In this regard, the CEO of the company, Esteban Gutiérrez, stated that the main urban challenge in the region is that there is “a lot of social dispersion and [a] gap between rich, middle class, and poor people,” so when designing their current business models they must

[... leave the position of the Palermo consumer [a high-income neighborhood of Buenos Aires] and acknowledge that the one living in the third ring of the Conurbano [periphery of Buenos Aires] sees delivery as a luxury service [...] we aim at that consumer (Lafuente, 2021).

For this, the company invests “a lot to develop places in which even today, considering their volume, it is not a justified move but we’re aiming to keep acquiring users,” (Lafuente, 2021) which translates into an aggressive commitment to urban development. In this context, spectral devices —whether ghost kitchens and supermarkets or hybrid combinations of the two— are strategic allies in territorial conquest, as Delivery Hero (2020a) explicitly seeks to resolve the “gap between supply and demand by building their own kitchens [and stores] optimized for delivery.” Their locations are defined based on data previously collected by the company and subject to transfer if proven unsuccessful or if the expansion strategy changes. Thus, they remain under a “beta”
version condition, kept under constant performance evaluation, that is, “they are quick to build, relocate, and remove, and they organize space-time in a way that ensures plasticity in the future” (Harris, 2015, cited in Shapiro, 2022).

This capacity for trial and error in delivery platforms, made possible by venture capital financing, is associated with urban and commercial practices of the winner-take-all type—common in companies such as Amazon or Starbucks—that promote a rapid and excessive initial growth capable of “crushing” competitors: both “traditional” restaurants that cannot adapt to changes as well as any other competing platforms. And, after winning the game, they keep the entire market. In this sense, the cartography10 of the territorial deployment of PedidosYa in Montevideo [Fig. 04] shows how the cluster of ghost kitchens stands out as the emitting node with the greatest weight of the establishments’ network currently using the application. Located in the Reus neighborhood, a residential area of the “middle belt” of the city, its presence allows its environment to reach the same levels of shipping options as downtown areas.

Likewise, the study on the type of establishments that operate with PedidosYa in Montevideo detected that ghostly practices are not only centrally organized by the company. There are many other ghosts or pseudo-ghosts in the city—such as traditional restaurants that create new digital brands while shipping their orders from the original establishment or new hidden restaurants that offer several digital brands under the same address—that reproduce in an adequate ecosystem for them to thrive.18 The infrastructural condition of this “repeatable formula,” (Easterling, 2016) expansive of the ghostly—since it seems easier and less risky to open a new digital restaurant than a traditional one,—spreads without depending on the mother company beyond imitating it with local actors.

**Ghostly Architecture as a Form of Corporate Dissociation and Infrastructural Blackboxing**

The reconstruction of a three-dimensional model of the case study” [Fig. 05] allows us to carefully observe the spatial sequence that takes place behind the house for rent as an “ideal income for deposit or company”—as stated in an advertisement of a real estate website. The house, now painted gray, has only a small red sign giving indications of what happens behind its façade. What was originally the garage is now access to the rear facilities, serving as parking space for motorcycles and bicycles, and as a security room for the guards who control the entrance. Then, taking advantage of two existing warehouses, they installed a ghost supermarket under the brand PedidosYa Market and a set of ghost kitchens with their respective storage areas. The food production space is organized by a narrow side corridor that runs longitudinally through the warehouse, giving access to the twelve kitchens. These have a space of 7.5 x 2.4 m and, in their initial stage, offer washable floor and wall coverings, electrical, water, and gas installations, a stainless steel industrial table with washing station and an extraction hood with its corresponding ventilation.18

The architectural strategy of actively hiding these productive spaces behind a façade that tries to go unnoticed, recalls urban infiltration tactics used by the narco or the guerrillas as described in the context of “gore capitalism” by the Mexican feminist philosopher and theorist Sayak Valencia (2010). Though completely different cases, it is interesting how the author recognizes “spectralization” as one of the fundamental characteristics for the development and expansion of violent economic practices that “take force because, in principle, they have been propagating as something imperceptible […] and they have been underestimated, as something that floats in the atmosphere but lacks effective force to develop.” (Valencia, 2010) Thus, for Valencia, spectralization would be a category of “dissociation” fundamental to hide governments and companies while also letting them go free of any wrongdoing.

In the corporate world the concept of “dissociation” is also used to differ from that of “association.” The latter denotes a set of practices aimed at increasing the notoriety of the links evoked by the quality ideas associated to a brand/product, while “dissociation” denotes practices of weakening or concealing significant negative links between a brand/product and other entities. (Ibert, et al., 2019) According to Oliver Ibert (et al., 2019), dissociations do not occur alone, but “require continuous effort […] to take advantage of the inherent instability of assemblages by attempting to create gaps and omissions in webs of relations and to actively demobilizes undesired translations between different registers of value.” However, this is not only decided by the company, but between the domains of the buyer and the seller where there is “a tacit pact of collective non-responsibility” (Te Velde et al. 2002, cit. in Ibert, et al., 2019) through which “dissociations unfold a geography of their own” (Ibert, et al., 2019). Thus, the commercial, urban, and social success of ghost kitchens—as of other similar devices—depends, to a large extent, on the dissociative spectrality that their architectures can maintain.

This is a historical characteristic of the infrastructure space built under logics of “blackboxing”19 that reproduces a modern dichotomous model: it defines a physical and political boundary between a reality in which citizens’ everyday life flows alongside another life, hidden and reserved to the knowledge of experts, where the technological devices that support the previous one run (see Dominguez & Fogueú, 2013). This model has been updated and is still valid, since “the contemporary ordinary world is crossed by technologies of different nature that run, invisible, in parallel to our day-to-day life.” (Fogueú, et al. 2020) Thus, the black-box architectures of ghost kitchens ensure that no unexpected force capable of causing an accident that delays their operation can sneak in. We could affirm that it is because of the obsessive dissociative will to contain accidents that these kitchens establish relationships with their environment, since, as Benjamin Bratton (2006) states, it is through the understanding of the imminent risks that logistics wants to contain, that the strongest bonds of the contemporary polis are formed.

**What if There Were Other Ghosts?**

We have seen how digital platforms, by operating as urban infrastructures, enact “a new urban political ecology, that is, a new way of conceiving, organizing, and governing the relations between the city’s different inhabitants.” (Dominguez & Fogueú, 2013) Thus, although the controversies that underlie them are addressed from various areas of culture, it is urgent to problematize them from spatiotemporal perspectives that enable the development of new disciplinary debates. Spectral devices, both architectures and other spatial or corporate practices, are revealed as strategic allies with an active role in a silent territorial conquest that favors the expansion of delivery companies. But it also involves networks of establishments promoted by other smaller-scale private actors that adopt ghostly dimensions. Thus, the controversies and potential future of “last-mile urbanism”20 in retail are heralded, where “the speed imperative tends to further merge the logistics operations space with cities” (Altenfried, 2019).

We have defined these assemblies around the platforms as huge complex structures with a systemic nature that obscures them. Along with this, these structures standardize practices while promoting their “functional heterogeneity” through a geopolitical distribution that, finally, resembles historical extractivism.
this context, although the unprecedented creation of a set of cartographies and architectural reconstructions is rudimentary in the face of the technological sophistication of the platforms, it helps to visualize the virtual’s agency in the physical world and the transformative potential of its infrastructural role. Thus, the study of PedidosYa in Montevideo could be extrapolated to other cities and companies with similar characteristics, and/or advanced through approaches that research further, for example: the urban and temporal dynamics of the platform’s distributors; the territorial logistics behind the ingredients of the offered menus; domestic rituals associated with the consumption of delivery food; or, or, looking into other forms of contemporary spectral devices.

From the disciplines of design, we can imagine optimistic explorations that test new types of alternative links between the powerful technologies of digital platforms and urban food preparation and distribution, prioritizing and materializing community and care values beyond the notion of efficiency. In doing so, these inquiries will have to work from a temporal sensitivity that takes a step away from the modern Western clock and from transcalar gazes that do not only pay attention to recognizable physical objects. It will be from these or other paths that we can expand a critical disciplinary field on these new urban infrastructures. By studying them, we will be able to test alternative narratives and practices around the digital from the certainty that space is also an "innovation technology" (Easterling, 2021), and this will be our main collective tool of transformation.

NOTES

1. While there are other terms used for ghost kitchens like “dark kitchens,” “cloud kitchens,” “virtual kitchens” (Pitchbook, 2020), this article uses the term “ghost” for its conceptual relevance.
2. We could even consider a “ghostification” process of kitchens on a domestic scale, or consider new rituals associated with delivery consumption since, for example, according to recent Spanish statistics, 56% of clients use this type of applications on the occasion of “watching a series or movie” (Just Eat, 2019; GastoMetró 2020 Edición vi di estudio anual de comida a domicilio) or notice dynamics associated with our daily time management, such as the so-called “paradox of free time,” which refers to a prevailing need to “save time” that, in the end, does not seem to serve us to have more idle time, but on the contrary (Wajcman, 2006).
3. In this regard, in the famous book City of Bits, the architect and urban planner William Mitchell (1995) advanced speculations about a future asynchronous city of bits in which heterogeneous temporalities would coexist in a non-linear way. In turn, Daniel Ilanerany (2008) recognizes in “de-synchronization” possible mechanisms of temporary exclusion, in the form of acceleration, impatience or uncanny. For their part, Anu Amann and Alcocoer and Rodrigo Delss (2016) defend an “asynchronous citizenship,” which recognizes “those strategies that light for alternative forms of urban synchronization” and, in turn, “resist the subordination of geopolitics to space in Western intellectual thought and its simplifying idea of a linear time called ‘progress’.”
4. Term introduced by Paul Virilio that designates the relationship between the control of time and political decision-making, expanded to form a tangled entity that cannot be separated from space.
5. According to Mark Fisher (2018), “hauntology” was a puncept, in which “the pun was on the philosophical concept of ontology, the philosophical study of what can be said to exist […] and it referred to the way in which nothing enjoys a purely positive existence. Everything that exists is possible only on the basis of a whole series of absences, which precede and surround it, allowing it to possess such consistency and intelligibility that it does.”
6. PedidosYa currently operates in 15 countries in Latin America: Argentina, Bolivia, Chile, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.