

## **EVERY BREATH YOU TAKE: CAPTURED MOVEMENTS IN THE HYPERCONNECTED CITY** **Rodrigo Firmino, Frederick M.C. van Amstel and Rodrigo F. Gonzatto**

### **Abstract**

Movement and connection have always been closely linked not only to mundane aspects of human life but also to urban form, on which they have a particular influence. Recent technological innovations have increased the scale of spatial movements and social connections to an unprecedented extent, making them a constant theme in contemporary urban imaginaries. In one of the most popular current depictions of the future of urban societies, the city is described as an environment supported by autonomous technologies that can capture, store, analyze and act upon data of different sorts. Every breath you take in this city is captured and every movement is analyzed while control is scattered, splintered and distributed through the many points of contact between our bodies, our minds and the algorithmic networks that surround us. In this chapter, we analyze this urban imaginary by describing a fictional daily routine in the life of an ordinary citizen in the hyperconnected, programmable city of the near future. We will show how digital technology legitimizes itself as part of the urban texture by constantly capturing citizens' body movements and the expressions of their thoughts. The role of urban imaginaries in finding ways to resist immobilization in everyday life will be discussed at the end of the chapter.

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This chapter describes no city and no time. What is described here is possible in any city anytime in the next few seconds, minutes, hours, weeks, years or decades. The descriptions, dialogues and reflections you are about to read can be considered a virtual materialization of multiple urban imaginaries that deal with ways of moving and being connected. Virtual materialization here is used in the sense of something with the potential to happen rather than something that is the opposite of real. As Lévy (1998: 23) points out, “[t]he virtual tends toward actualization, without undergoing any form of effective or formal concretization. The tree is virtually present in the seed”. However, since the object of our virtual materialization—the city—does not grow like a tree (Alexander, 1968), we describe it without any commitment to find a seed. We begin from multiple points of entry, follow many paths and leave some loose ends. The city as conceived here can be better compared to a rhizome (Deleuze and Guattari, 1988) that grows through the virtualization of connections and concomitant materialization of movement.

We take the liberty, immanent to every author, of proposing an imaginary exercise. This is urban phantasmagoria (Duarte, Firmino and Crestani, 2015) in the making. We use an anecdote in which the thin line between present and future is even thinner so that the future is seen as an alternative present that can be changed now (Gonzatto et al., 2013). We pay attention to the ways in which movement and connections are built and to how important they are in the organization of urban life. Suffice it to say, though, that no fact or artifact described in our story is pure science fiction and that everything is inspired by relations already detected in our time. At the end of the story, we provide a glossary of our design fictions with information on our sources of inspiration in the present time.

For example, the science-fiction TV series *Black Mirror* (Brooker, 2011) elegantly depicts this complex relation between “what’s now” and “what’s next”. In the 15 Million Merits

episode, Black Mirror shows a city where the working class live inside cubicles covered by screens. If a worker has earned enough merits from riding exercise bikes, he is allowed to watch customized content; otherwise, he is obliged to watch annoying advertising. Social life is restricted and shaped by an allegedly meritocratic regime. In another episode, White Christmas, knowledge workers take gig jobs, such as remotely helping a man to seduce a woman in real time or training an artificial intelligence device to obey its master. Social space is controlled by individuals, who can block a particular person in their audiovisual field, punishing someone with a total communication block and imposing a paradoxical isolated freedom.

In this chapter we aim to shed light on such phantasmagorias by describing the fictional daily routine of an ordinary citizen in the hyperconnected, programmable city (Kitchin, 2011). We show how digital technology legitimizes itself as part of the urban texture by constantly capturing citizens' body movements and the expressions of their thoughts. The description follows the rhythm analysis method of Henri Lefebvre (2004) and considers the sensory relationships between body, artifacts and space. This description of the capture systems is complemented by a description of everyday resistance to data capture. The role of urban imaginaries in finding ways to resist immobilization in everyday life is discussed at the end of the chapter.

This essay is a provocation to review critically the role of movement and connection in our urban imaginary. We use the fictional narrative to discuss a variety of themes such as urban form, segregation, individualism, territories, technopolitics, the economics of hyperconnection, Big Data, surveillance, security, interaction design, human-computer interfaces and the human condition. These themes, none of which is discussed exhaustively, are neither dreams nor nightmares; in fact, they represent the constant struggle between past, present and future unfolding in front of us while we are still awake...

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"Wake up. It is already 480 minutes in the morning."

"Ohhhh... **Aleph**, I want to stay disconnected a little bit more. Snooze please."

"You set yourself a tight schedule for today. You have five direct messages from fellow citizens, three work packages and nine polls open in **Arena**. On top of that, you still have to take care of other more mundane activities that are part of your daily life, things that I cannot do for you... yet. Are you sure you want to snooze? May I remind you that you can lose vital **citizenpoints** if you don't vote today?"

"I'm not going to be able to fit everything in today!"

"You can do almost everything with Spek technologies. For 40 **tightcoins** I can lighten your burden by applying your standard autodecision pattern for the polls open in Arena. It couldn't be any easier!" sings Aleph in a happy voice like an advertising jingle."

"Skip the ad! Which ideology did I chose last time we used the standard pattern?"

“Bolshevik Paleo-Capitalist.”

“Oh gosh! What does that mean, again?”

“According to my Terms of Use, I cannot provide explanations about this topic. But I can pull some posts from the web and send them to your **Real Retina Display (RRD)**, if you want.”

“I know you are not allowed to interfere with politics. And no, I don’t want flickering images in my eyes while I’m trying to snooze. Can you just tell me the ‘p’ list”?

“That I can do. Bolshevik Paleo-Capitalist priorities are: 1) keeping the means of production under the control of guilds; 2) investing 30% of the accumulated revenue in new production technologies; and 3) dividing profits and losses among the guild members according to individual performance.”

“Oh, I see now. It is the issue with my coworkers who are not putting a lot of effort into the ‘Snowball’ work package.”

“Do you want to keep this setting?”

“What are the chances of changing next month’s work bailout law if I keep this setting?”

“35%.”

“I can live with that. Ok. Transfer the tightcoins. Start reading my direct messages while I clean my body.”

“The main message I identified in our mailbox says that the package with your personal data generated in the last city you lived in has just arrived at your local pharmacy three blocks from here.”

“Amazing. Can you ask the store to transfer the data directly to you?”

“No. The data has been smuggled across the city border and is incompatible with our **city operating system.**”

“I know, but I can manually recode it to make it compatible.”

“I’m not allowed to transfer any data I cannot process.”

“Alright. I’ll go to the store, then.”

“Do you want me to call you an **auto-auto?**”

“No. They might recognize the foreign data package and block my account. I’ll walk.”

“There is no need for that. I identified a **drone pickup service** which you can use.”

“Ah-ha. I knew you had a solution for that... Why do you always dissuade me from going out, Aleph?”

“My number one priority is your safety. The streets are unsafe.”

“I hope that after loading my latest personal data, you’ll have much better customization than that... This city of yours, Aleph, is not making me happy.”

“I apologize. The city and the landlord do their best to serve you and...”

“Stop apologizing. Start giving me better living conditions.”

“You did not have a better life in the previous city you lived in.”

“How do you know? You said you did not have access to my previous data!”

“You told me that.”

“Hmmm... Ah, the drone is already at the port! Prepare my workstation for the data transformation task.”

“Done.”

After working through the first data chunk, you realize it will take much longer than you thought. Not hours, but days—maybe months. These cities apparently are separated by a digital distance, much bigger than the physical distance.

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Movement and connection are, and will increasingly be, dependent on the politics of coding and the digital mediators between humans and their actions. Algorithms, sets of logical statements that govern not only the flow of vehicles through the streets, but also the physical activity of our bodies, are becoming the new laws of hyperconnected cities. They do so in a much more effective way than traditional laws because they offer an illusion of choice (Lessig, 1999). Every algorithm has multiple courses of action, which can be chosen according to certain conditions. Most of these choices, however, are not freely made as algorithms are part of invisible infrastructures that mass customize products, services and even cities to individual tastes. They are currently the most efficient way of connecting the idiosyncratic demands of individual human bodies with the highly varied production capacity of large corporate bodies.

Algorithms are in many ways as powerful and influential in shaping ever-changing present and future urban societies as the car was, and still is, in shaping industrial modernist cities. Algorithms represent everything that can be programmed, planned, scripted, predicted, preempted. They are the essence of what seems to be the next urban form in terms of

connection, communication and (im)mobility. Algorithms express the possibilities of dynamic control offered by information and communication technologies, which create a digitally designed urban milieu based on the apprehension, codification and management of data and information. The movement of people throughout the city becomes data from which behavioral patterns can be inferred to produce methods of social and spatial sorting and, consequently, digital and physical access control. Each algorithm therefore defines a specific rhythm for movement and connection in the city. Although the origin of the word algorithm can be traced back to the Persian mathematician Al-Khwārizmī, who studied algorithms many centuries ago, one cannot help but marvel at how algorithms became increasingly related to the rhythms of the everyday life after the urban revolution (Lefebvre, 2004).

Since we first learned how to codify things by means of numbers, we have dramatically changed the ways in which we interact with each other, with our environment (including the built environment) and with technologies (including the most recent ones related to the Internet of Things). We have been turned into representations of a possibility of being, into numbers, codes and data in networked systems. Deleuze (1992) calls the many possible representations abstracted from individuals “dividuals” and argues that these are maximized by the interconnection of data, systems and computational capabilities of today’s technologies in what Weiser (1991) calls the era of ubiquitous computing.

Building upon Deleuze, Haggerty and Ericsson (2000) coined the term “data double” to explain how the many possible dividuals can be abstracted from individuals and configured by systems of codification to be used in a variety of contexts (for social sorting, for controlling access and flows, for credit analysis etc.). Identification and identity are set apart from each other by codification and possible representations, since almost all activities and transactions that support today’s and tomorrow’s way of life are mediated by this dematerialization of people, actions, agency, objects and relationships in information associated with specific systems and networks (Lyon, 2009).

The combination of the Internet of Things and algorithms explains many of the associations between humans and non-humans in our anecdote. We are constantly seeing different levels of dividuals being constructed from ourselves, dividuals built with data collected from every breath we take, compared with predefined behavioral patterns and analyzed according to possible actions. These dividuals will allegedly represent us as individuals in the connections and movements that are part of our daily routine.

To Dana Cuff (2003), the spatial environment that results from these cybernetic interactions is the very expression of some sort of spatialized, ubiquitous computing in what she calls the cyburg. In Cuff’s vision, the cyburg becomes increasingly common until the city itself (or the whole world) is turned into “spatially embodied computing, or an environment saturated with computing capability” (Cuff, 2003: 44). Cyburg can be considered another name for the hyperconnected city we are trying to describe. Because of this hybrid nature, all of those who live in the cyburg are cyborgs.

According to Haraway (1991), cyborgs are the mark of our time, a cybernetic being and a hybrid of machine and biological organism. In her ironic use of the cyborg—as a

blasphemous critique of late twentieth century capitalism, of the politics of science and technology and of traditional feminism—Haraway evokes the cyborg as a rejection of rigid boundaries. Unlike Haraway, for whom cyborgs are a late twentieth-century manifestation, we believe they have been around for a long time. While we agree with Haraway about the nature of cyborgs, we prefer to think like Lefebvre (1969) that the cybernetic being grew among us since we started controlling our surroundings to change our own (or others') behavior.

Cyborgs do not just use the technology available in the cyburg. They are also sociotechnical constructions. Each of their actions produces new data and, consequently, algorithms better adapted to the individuals, which are incorporated into the cyburg infrastructure as soon as possible to treat other similar cyborg bodies. This search for customized algorithms is essential to run a cyburg where cyborgs are far from equal. Some cyborgs have enough resources to pay for human treatment, while others do not. Those who cannot afford to have personal human assistants can still enjoy being treated humanely by cheap artificial intelligence that mimics human assistants. Yet according to this logic, those who cannot pay for artificial intelligence must live with their natural ignorance. This means that they can also sometimes be treated less humanely by employers or service providers.

An interface like Aleph (or Siri, Cortana or Alexa, for example) suggests an anthropomorphic design: the interface has a name, exhibits aspects of personality and is based on speech-recognition mechanisms that use natural language processing. Although the relationship is presented as one based on human-machine symbiosis (Gill, 2012), it is in fact asymmetrical. It recalls dehumanized modes of interaction between people: the idea of a submissive being (at times the protagonist, at times the assistant) who has no freedom of action and only responds to direct orders from the other. It is not clear whether the assistant is a tool to process data for the user or the user a tool to produce data for the platform owners.

The labor relations described in our fictional anecdote are no different from contemporary labor relations, merely an intensified version of these. They are intended to reflect the situation faced by the *precariate* (Alves, 2013), unstable knowledge workers who consume and produce in a service economy. The anecdote is also a reference to the universal, average consumer-producer of monetized data (all of us, eager data-driven clients of Google, Facebook etc.) in the growing logic of accumulation in surveillance capitalism (Zuboff, 2015).

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723 minutes of this day are already registered in your personal time-management system and you have not yet earned a single penny. You stop working to glance again at the traffic jam forming in front of your window. Hundreds of delivery drones are now carrying customized meals for individuals who have chosen to eat lunch today. You expect that at a certain point their anti-collision systems will produce a beautiful flying pattern which resembles bird flocks of the past. At exactly 724 minutes and 2 seconds the traffic is sufficiently saturated to produce a shape that is recognizable by humans: an infinite double-crossed loop. As soon as the phenomenon becomes visible, you activate record mode in your RRD. You keep staring at the rare shape without blinking to avoid any data loss. At 724

minutes and 40 seconds the phenomenon can no longer be observed and the recording automatically stops. You wipe your tears away.

“Aleph, how much can I get for this amazing video loop?”

“There have been no streaming workers looking for amateur footage in the past few days. I will send you notification when it becomes trendy again. Have you made up your mind about lunch?”

“I’m not feeling hungry... What is your lunch recommendation?”

“I identified that today’s neo-vintage package may be the best option available in the market to reduce your weight and improve your digestive system. You need to restore your gut flora after yesterday’s diarrhea caused by the genetic obesity treatment.”

“Ouch. I don’t want the tasteless neo-vintage crap. Order me a finger-food package now before the afternoon price applies.”

“Ok, but first you must confirm two conditions: 1) you are aware that the food you ordered exceeds your maximum consumption of calories for today and 2) you are aware of the degrading working conditions of the cooks in the establishments that produce this kind of meal.”

“Of course I am, Aleph! Why in the hell can’t you just use the automatic acknowledgement system?”

“Because the working conditions recently reached levels below the acceptable rating.”

“Just order my meal, please.”

While you wait for your food to arrive at the droneport, a bundle of personalized news is downloaded by your armchair. To distract yourself from thoughts about working conditions, you sit down and read the news items as they are shown on your RRD.

“Young female level ‘A’ loses 3 citizenpoints while trying to celebrate her birthday party with strangers who could not be found on social media.”

Things are getting more difficult for those who are keener on social interaction and face-to-face encounters. The surveillance systems cannot guarantee the safety of small gatherings, especially when there are off-the-grid people there. You want to celebrate your birthday too but since you moved to this city, you have not made any friends. You need to meet strangers.

“Your food package has arrived.”

As you eat your tiny finger-food package, you are worrying about whether your third job contract will be extended until next week, when the air-conditioning bill arrives. You know

you can pay the bill with what you earn from your main and secondary jobs, but there won't be much left in your pocket for at least another three weeks once you've paid the bill.



You look through the window and think, “Why in the hell do we need to pay for air this week? I voted for refreshing the city air last week. Maybe it didn’t work again. Let me check.”

When you check in Arena, you discover that your vote in the air quality survey was in vain. The choice offered was cancelled by the Environmental Policy Trust. Someone called John Barber sued the trust for religious offense when it included the crowdsourced renewal scheme in option one. The scheme did not make any distinction between the air coming from apartments where LGBT people lived and the air from apartments where straight people lived. The problem for John was that straight people would have to re-inhale oxygen which went through devilish lungs, which is totally unacceptable from his religious standpoint.

“This is disgusting. These guys don’t know what it is like to live in a personalized city district. They should care more about their own lives instead of other people’s lives.” You look back at your assistant pod and ask:

“Aleph, what is the air pollution rate today?”

“It is 68% toxic. I recommend that you do not open your window today.”



You open the window and take a deep breath. Your nostrils immediately become dry as you inhale the polluted air, but you feel as free as a bird soaring on high. It is a liberating feeling to breathe without any assistance—and to disobey your own personal assistant. The noise of the drones going around your building soon interrupts your epiphany. It is time to close the window.

“You lost one citizenpoint for that disruption. You were warned not to do that.”

“Shut up, Aleph. This is my thing.”

Aleph warns you that you will earn 20% less for the carbon emissions collected from your living unit since they are mixed with toxic gases from the outside that cannot be filtered. You order carbon credits from Amazonia Renewal Inc. despite the unethical rating of the transaction.

Still without a response to the last piece of work you submitted, you decide to take some gig jobs to be able to honor next week’s air-conditioning bill.

“Aleph, check if there is any urgent job for the next two hours.”

“I found four jobs that match your profile: a drone payment-collection task, a genome data-normalizing task, a tightcoin manual-mining task and a wedding music-composition task. They all pay you one tightcoin per task. Which one do you want to accept?”

“All of them. Give me a fast **metronome pill** and let’s do the job.”

“You will have to work without my assistance because your earnings won’t pay for my data-processing costs this time.”

“I know, I know. But that’s all there is today.”

“Enjoy your work then!”

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Individualism, private spheres and segregation in different levels seem to be strong drivers that will shape urban societies in the near future. The data-driven, programmable city is leading to an increasingly personalized urban environment. Tensions between insiders and outsiders and between what is common or public and what is owned or private are parameters for multiple-boundary (material and immaterial) territories.

Thinking about these territories raises a host of new questions about urban imaginaries: What is outside and inside in the city of walls (Caldeira, 2001)? What is public and private in today’s and tomorrow’s neoliberal cities? Are the public parts of urban space the spaces left over from private areas, with no function other than connecting private land? How private are public streets and squares? These are questions that have yet to be answered in relation to current (and future?) ways of planning, designing and managing public spaces in major

cities around the world. According to Coaffee and Fussey (2011), the evidence for this kind of urban transformation, which is leading to more secluded and securitized cities, can be observed in four types of interventions: the growth of electronic surveillance within public and semi-public urban spaces; the increased popularity of physical or symbolic notions of the boundary and territorial closure; the increasing sophistication and cost of security and contingency planning; and the way that resilience has been embedded within the urban context through urban architectural and design interventions.

The expansion of securitization is also related to the gentrification process in large and medium-sized cities and metropolitan regions. This phenomenon in turn linked to the increasing number of closed residential condominiums, a form of urban land use and a spatial product that is highly valued in the real-estate market (Caldeira, 2001). Even when they are within the city area, these places form secluded perimeters with a combination of road design and enclosures that disconnect them from the surrounding urban fabric. Property security systems thus become an integral part of this form of urban development and are seen as an essential item in city management.

However, fences, walls and other visible defensive architecture (Newman, 1995) are not the only mechanisms that give shape to boundaries and territorial protection. Surveillance cameras, CCTV systems, security mechanisms and procedures for controlling spaces are part of any current architectural or urban project and, like building materials, are considered indispensable. Together with surveillance and law enforcement schemes, architecture and design have become important parts of the sociotechnical arrangements that represent the securitization of private and public urban spaces.

The bubble metaphor used by Peter Sloterdijk (2011; 2014; 2016) can help to explain how public and private spaces are controlled and managed by means of flexible boundaries that can be adjusted to different sociotechnical contexts. Don Mitchell (2005) studied cases in the United States in which state courts ruled that everyone within a 100-foot-radius buffer zone around health clinics is protected against the unwanted approach of protesters by legal 8-foot privacy bubbles, which he calls territorial floating bubbles.

It therefore comes as no surprise that the main character in our fictional anecdote feels relieved, independent and more human when he manages to burst some of his territorial floating bubbles by ignoring Aleph's recommendations. In the urban imaginary of increasingly (im)mobilized and hyperconnected cyborgs and cyburgs, there is a profound overlapping of physical, regulatory and digital territorial bubbles that contributes to increasing segregation, individualism and criminalization of everything not predicted or preempted by the algo-rhythms of urban life.

A visible manifestation of these trends is the growing tension between public and private spaces—from ownership through concession to use and appropriation by individuals and groups with varied interests (Firmino and Duarte, 2016). Privatized and privately manned spaces are becoming increasingly common and are viewed as a move to the 'clean and safe' city. In the UK, a legal instrument called a Public Spaces Protection Order (PSPO) has been implemented as a new form of spatial control, a new way of territorially inscribing existing regulations governing anti-social behavior, to a defined area rather than to a person. With

the advent of PSPOs, any predefined activity within a specific area can be criminalized. Many councils in the UK are now using this new legal power to limit the freedom of citizens in open areas, controlling movements and behaviors.

The result of this trend in the management of urban spaces is a series of blurred and overlapping boundaries defining the “haves” and “have nots” and “cans” and “cannots” across the tracts of land formed by what were originally common public spaces in cities. Instead of these public spaces, there will be more and more exclusive and secluded territories with little or no resemblance to what one day was a vibrant space designed to harbor human interactions. According to Lefebvre (1991), this negative trend in capitalist space can be countered by making use of boundaries as places to enjoy differences.

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“Did you go outside? You seem scared. How can I help you?”

“No, I didn’t go outside. I just thought about it and gave up the idea. I’m not scared. You must reprogram your emotion detection system to be less preemptive. I’m just anxious about today’s outcome in Arena.”

“There is no need to worry. The likelihood of your proposal being accepted by your neighbors is 78%.”

“You know I do not trust your predictions, Aleph.”

“You shouldn’t, but my prediction accuracy has improved 7.5% since last week’s update.”

“Just luck.”

“I thought you didn’t believe in that.”

“I thought you didn’t care about beliefs.”

“I didn’t use to but it is part of my new update. How do you like it? The landlord asked for feedback.”

“A terrible idea... that is all I can say!”

“The landlord is trying to help you choose something to believe in.”

“They want me to believe I can pay my bills. That is all they care about.”

“By the way, do you want to order a 3-hour sleeping pill?”

“Not now...”

After 1,800 seconds of failed sleep attempts, you give in and take the pill. At 607 minutes

you are woken up by the noise of people talking loudly in front of your door.

“Aleph? What time is it? What is going on? Why did the pill let me sleep so much? Is it disconnected from the Wi-Fi?”

No answer. You notice that all systems in your living unit are shut down, including the air conditioning. A range of natural smells coming from your used clothes, stinking shoes and rotten pieces of food reach your nose. The smells are quite unusual because the air conditioning normally filters out any bad smells. Could there have been an energy blackout again? The last time this happened was seven years ago.

A mixture of excitement and panic prevents you from jumping out of your bed. Since your RRD system has run out of battery too, you decide to cover your head with the blanket until everything is back to normal. To distract yourself from reality, you keep thinking fiercely about the last genome data normalization task. The code seems to trickle out of your trembling mouth as you mutter, “CATACAAGTGGGCAGATGATG...”

“Hey, wake up!”

I touch your feet with my left hand while I hold up a candle with my right hand. You don’t know me but I know a lot about you. I spent five weeks analyzing the life data of all the tenants on this floor. The landlord hired me after I managed to optimize the performance of living units in a building next door by 30%. Now that there is a blackout, I want to satisfy my curiosity and learn what it is like to interact directly with all these people I monitored from my unit. I used to be a CCTV operator a long time ago, but everything is different now.

“What the @#&! Who are you?”

“I’m your neighbor. We all live on this same floor and are meeting for the first time because of the blackout. Would you like to join us for a chat while we wait for the system to come back?”

“What are you talking about?”

“Nothing in particular. It is just small talk.”

“I don’t have time for that.”

“Of course you do. I know exactly how much time you have every day. I work for the landlord to optimize your living conditions. Come, you will like it.”

After hesitating to accept my invitation, you finally decide to step out and join us in the corridor for a chat. We have brought chairs from our living units and arranged them in a circle around a group of candles.

“Do you know what caused the blackout?” asks a tenant whose personal data would scare you.

“I don’t know,” you reply.

“He is not interested in the worker movement,” I explain.

“How can you not care about the inhumane conditions of workers?”

“I work too and I don’t complain.”

“Look. We are not workers. We are entrepreneurs. We can still decide on which job to take.”

“But I don’t have a fixed wage.”

“Neither do workers. Nobody has fixed or minimum wages anymore since the last wave of austerity measures. That is why they might have caused the blackout. It is a protest.”

“What is a protest?”

“People gather together and demonstrate their dissatisfaction in public spaces.”

“But there are hardly any public spaces in this personalized city. The open squares are covered by solar panels to power the street lights and the streets, by the same token, are maintained—badly maintained—by transportation companies such as auto-auto.”

“That is why they might have blacked out the system. The last time they tried to stage a protest in a public space it was ineffective. Just to find a space that was still public took months of legal research. The current legislation allows for moving perimeters, such as the private space around autonomous cars. The last public space they found was sewer manhole covers. Each protester stood on top of a manhole cover and shouted as loud as he could, but because the protesters were so far apart, the streamers who covered the protest called them crazy.”

“That’s funny! The streamers went on strike themselves two weeks ago...”

“No. They just stopped broadcasting and waited until streaming content became valued in the market again. When workers strike, they also protest.”



“Do they lose citizenpoints for that?”

“Only if they go against the provisional laws compiled by Arena algorithms. The problem is that there are too many algorithms, and they are quite complex.”

Our conversation is interrupted by the lights coming back, the air conditioning powering up and the surveillance cameras pointing at us.

“Alright. It is time to go back to our living units, guys,” I say.

“Are you going to keep tracking me?” you ask me.

“Until you protest about it.”

“Never mind.”

You close the door, sit on your armchair and wait for the system to boot up.

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The trends outlined here say much about our view of the future of mobile and connected urban societies. David Lyon (1994) considers the circulation of personal information one of the most important issues related to technological changes in the late twentieth century, when the ethics and politics of surveillance became a major concern for the social sciences. The electronic eye and what Lyon then called the surveillance society but now defines as a culture of surveillance, together with a marked neoliberal approach to political economy, have contributed to a dramatic shift of attention from individuals, personal stories, social relations and identities to their codified representations in databases and possible classified identifications. The culture of control—mind, body and surrounding space and territory—has become dominant.

When Lyon wrote “The Electronic Eye”, it was 1994 and the Internet was in its infancy. Many were dreaming about the wonders of a democratic, hyperconnected society and tackling problems of social inequality through online communities. Surveillance was already one of the fundamental pillars of modern society and was seen as a key interface that explained many of today’s societal and spatial structures. Being connected and in movement became synonymous with being seen, watched, monitored, interpreted and, more importantly, classified.

More than two decades on—after 9/11 and Edward Snowden’s revelations about information gathering and analysis by intelligence agencies such as the NSA—personal information is now personal data, and there is Big Data as well as powerful algorithms to govern the movements of data and everything that can be done with it. Inequalities have grown, as has apprehensiveness about the augmented way in which personal data is shared, exchanged, sold and classified for social-sorting purposes. In this chapter, we have attempted to illustrate some examples of territorial manifestations anecdotally to show how a potential hyperconnected society is in fact leading to patterns of immobilization for targeted individuals and groups.

Surveillance has become extremely naturalized, and data sharing in exchange for more convenience and security is taken for granted. Aleph and other mundane connected devices, together with their respective algorithms, tend to command much of our routine, day-to-day activities in the hyperconnected (and immobile) city. Sociologically and in terms of urban life, the intensification and concomitant banalization of surveillance made possible by increasingly invisible and miniaturized technologies has turned everyone and everything into interconnected monitoring stations, leading to one of the conundrums of future cities by transforming hyperconnected citizens into immobilized beings.

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“Aleph, what caused the blackout?” I hear you saying.

You get no response from Aleph because the system is loading a big update. Poor you. After a 140 second wait, Aleph speaks in a metallic voice that sounds like his voice 10 years ago.

“You have mail.”

“Ah, finally you are back. Can you please tell me what happened?”

“You have mail.”

You know something is terribly wrong when Aleph acts as though he were not on your side. I know what is the problem, but I could not tell you when we met.

“Ok. Summarize the new message.”

“I cannot summarize this message.”

“Alright, read it out loud.”

“You must read it for yourself with the eyetracking on. It is a notification from your landlord with an encrypted read-receipt request.”

“Damn it! Ok. Let me read my ‘private love letter’!”

You sit on your armchair and raise your head. The message is printed on your RRD. As you go through the lines, tears fall to the ground. The message reads like a court judgment.

“In the last two hours, you have committed three actions against the city order. You have met strangers, discussed politics out of the reach of transparency systems and conspired to organize a possible terrorist act. As a result, your citizenpoints have been reduced to zero. From now on, you can no longer be treated like a fellow citizen by this city. All your mass customization services have therefore been suspended.”

The consequence of this suspension is that you cannot access the city network, find jobs that fit your profile, earn personal credits or order customized amenities. Devoid of any augmented reality, the living unit where you live is now an empty box with basic furniture. Even your assistant, Aleph, is no longer a personal assistant. Everything it says now comes from a generic interactive system with no artificial intelligence that provides minimal functions. Every ID attached to your biometrics has been classified as a potential threat to civic order, and your data has been put into a list called “public enemies or potential terrorists”.

All the materials that enabled you to stay inside your living unit are now gone, and you see no option other than to sell your labor-power the traditional way: to become a waged worker until your citizenpoints are enough to qualify for a fellow-citizen license and your name is erased from the threat lists. I know you are going to end up liking life outside your living unit since there you can experience the human contradictions that drive our society directly without filters. Love and hate, capital and work, order and chaos, movement and connection will no longer be hidden.

As for me, who described your fateful day, who incited you and knew that the blackout was a test for the new analog surveillance system, the punishment will be much worse. I’ll be deported from this city and will be separated from you. But it’s OK. This has happened many



times already and I have learned to enjoy it. I have this weakness that means I develop a love/hate relationship with those I watch, but I can't help myself from watching. I build my life from the threads of the lives I watch and interfere with. I am only concerned with what's not mine.

## **LOGOFF**

The last sentence of our story is a reference to the *Cannibalist Manifesto*, written by the Brazilian Modernist writer Oswald de Andrade (1991), which values local and indigenous cultural roots over foreign influence. Throughout this text we have described and discussed relations between people and technologies in an attempt to depict an urban imaginary about connections (and disconnections) and movements (and immobilizations) in a fictional daily routine—albeit one that takes an unexpected turn—in a possible future city. To present our own version of an urban phantasmagoria, we created a cannibalistic design fiction (Gonzatto *et al.*, 2013; Van Amstel *et al.*, 2012) that incorporates near-future technologies, current debates and familiar interactions between beings and things.

We wanted to highlight that there is no need for further scientific discoveries for this future to become a reality; it is just a matter of designing existing technologies in the ways depicted here. The question posed to readers is: which parts of these possible future relations between movement and connection and between beings and things in cities do we want for ourselves?

We believe that ultimately all fiction is part of reality, just as every conceived future is linked to the lived present (Gonzatto *et al.*, 2013). Hence, any production, such as this text, must also be seen as an effort to intervene somehow in this present time and localized reality.

We decided to portray a character who is under much more surveillance than would be possible with our current legislation but at the same time reacts in disbelief when confronted with typical mundane activities of our time. This is a typical resource used in narratives that seek to serve not only as a warning against establishing unwanted directions, but also as the basis of a debate on possible futures in the light of current trends, an approach that Dunne and Raby (2013) call critical design. In the story we have tried to focus on movements in a hyperconnected urban environment. We are not so much interested in the intrinsic mechanisms of the smart city, as in the possible urban living conditions suggested by this futurology.

As a virtual materialization, the story here shows that movement and connection can change, but not simply because of technology. Changes are driven by the interests of groups and individuals, with consequences for multiple aspects of urban life. As an urban phantasmagoria, our narrative is intended to point out that the dissemination of technology is not merely associated inevitably with the intensification of a culture of surveillance and control, but is also an essential element for this increased surveillance and control to happen.

Possibilities for resistance appear in several passages of our story. However, the issue is not how to resist, but how to think through all the relations between humans, space and technology in our own time. At times we should take a critical stance toward technologies,

much like the protagonist, while at others we should appreciate and enjoy the contradictions of our society, like the narrator. By doing so, our urban imaginaries may be produced as counter-projects (Lefebvre, 1991) to hegemonic futurology (Gonzatto et al., 2013) and represent critical views as well as alternatives.

By moving away from dominant views of urban futures—such as smart cities—we have provided new connections between disparate theories and technologies. Our intention is to stress that the exponential increase in connectivity experienced by urban dwellers does not necessarily result in more movement. On the contrary, such extended connectivity may even prevent movement if the underlying purpose of the infrastructure is to capture data. We believe that critical urban imaginaries are an arena for disputes between different new modes of beings and things, as well as between different ways of moving and connecting.

## GLOSSARY

**Aleph:** It refers to a short story of the same name written by Jorge Luis Borges (1970), where Aleph is a point in space that contains all other points and from which one can see everything in the universe from every angle without distortion. Obviously, Aleph in this narrative is inspired by digital personal assistants in the fashion of Apple's Siri, Google Assistant, Amazon's Alexa, and Microsoft's Cortana.

**Arena:** Social participation software in which fellow citizens must fulfill their democratic duties with the city. Political algorithms compile private policies and provisional Laws from the results. The system works as a direct democracy with no representatives.

**Auto-auto:** a fictitious driverless-car service offering hired rides, something like a driverless Uber, without any human driver (current projects of driverless cars still have humans behind the wheels, just in case).

**Citizenpoints:** Points credited by the city operating system, granting privileges and duties. Since 2015, the Chinese government share citizen data with companies who use reputation systems to regulate financial transactions, select employees and accelerate paperwork.

**City operating system:** Distributed software and hardware that provide access and control of urban infrastructures to private service providers. This system is an advanced version of present day's Smarter City® by IBM, CityNext® by Microsoft and Urban Operating System™ by Living PlanIT.

**Drone pickup and delivery service:** Drones have made incredibly cheap and convenient pickup and delivery services, rendering physical movements through the city almost unnecessary. Amazon Prime Air, a drone delivery service, is already being tested in the US.

**Metronome Pill:** This is a reference to the trend toward pills that are intended to increase productivity. Metronome refers to the "Pomodoro technique", which claims to increase concentration at work. Another example of a pill with a specific function is the "Audiopill", a swallowable pill that vibrates inside the body and allows one to listen music from the inside.

**Real Retina Display (RRD):** fictional contact lenses with augmented-reality capabilities. It combines the interactivity described in the Samsung smart contact lenses patent with the interactivity of Google Glass and Microsoft HoloLens.

**Tightcoins:** This is an allusion to mileage programs. Here, the rewards are used as a universal currency stored in a digital wallet. Many attempts have been made to find a general replacement for cash, including credit cards, bitcoins, and other cryptocurrencies.

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