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**Enabling assemblages: A public transport system held
together by embodied practices**



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PhD in Geography
University of Edinburgh
2020

Declaration

I declare that the work presented in this thesis is my own original work and that it has not been submitted in whole or in part for any other degree or professional qualification. The research is entirely my own except where otherwise acknowledged.

A handwritten signature in black ink, appearing to be 'DM', with a horizontal line extending to the left and a vertical line extending upwards from the 'M'.

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Acknowledgments

I intentionally left this for last, because I knew that the long list of people I am indebted to would continue to grow to the very last day. The last five years of my life have been a journey into the unknown, and now that I have reached a place of accomplishment and have a completed thesis in my hands, those who have encouraged me along the way come to mind.

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Abstract

Transantiago was a promise. Inaugurated in 2007, it was a system supposed to be a ‘world class’ solution to the public transport needs of Santiago de Chile. Order, regularity, and predictability were the core elements of its agenda, aimed at modernising the mobilities landscape of the city. However, Transantiago ended up encountering many issues that turned this pristine idea into a much messier outcome. Among them, the bodily diversity of actual passengers, and the practices with which they produced local orders, did not match Transantiago’s expectations of ‘standard shape’ users who follow a delocalised, abstract rational behaviour. This mismatch affected the experience of the users as well. Pressured by the need to travel using an overcrowded service on the one hand, and being directed by disciplinary devices on the other, the users of Transantiago became a frenetic tide that not all are able to navigate. Some users – those of older, slower, or more fragile bodily configurations – tend to be left behind, implicitly excluded, disabled, and rendered immobile.

This thesis describes different instances of disabled and older people navigating the challenging spaces of Transantiago. Ethnographic work and video analysis reveal a complex scenario in which passengers and system encounter each other and actively produce a precarious order that is held together through ordinary practices. I argue that this holding together is achieved through a constant work of everyday mutual adjustment. Just as Transantiago continues to unfold different technologies that would enable the sorting of people, users adjust and repurpose materialities, learning how to make their bodies ‘fit’. In Santiago’s public transport, disabled and older users engage in everyday struggles in order to deal with lack of accessible spaces, coordinate with other passengers, and interact with restrictive, exclusionary devices.

Led by modernistic ideals of universality and standardisation, Transantiago was conceived as a system that would provide a ‘one-size-fits-all’ transport service for the inhabitants of Santiago. In practice, however, Transantiago has faced the ‘trouble’ of dealing with differently-abled users, who are varied in shape and size, and who bring their own capacities with them in their encounter with the public transport. Conversely, passengers and staff unfold practices of coordination and adjustment that compensate for Transantiago’s shortcomings, propping it up through everyday interaction.

Lay Summary

Transantiago was a promise. Inaugurated in 2007, it was a system supposed to be a ‘world class’ solution to the public transport needs of Santiago de Chile. While it sought to modernise the mobilities of the city, it encountered several difficulties and complexities in the practical aspects of its users’ everyday lives.

One of such complexities was providing an accessible and easy to navigate space for disabled users and other physically vulnerable people (e.g. older people), who present needs and abilities that vary greatly from case to case. This diversity has been difficult to manage by a system which was designed to produce a ‘one-size-fits-all’ type of transport service. This has led, in occasions, to instances of exclusion that disabled passengers have to routinely experience.

This thesis describes the practices of disabled and older people navigating the challenging spaces of Transantiago. Ethnographic work and video analysis reveal how passengers encounter the system and contribute, with their everyday practices, to the functioning and stabilisation of the system itself. This is a process of mutual adjustment in which Transantiago deploys different technologies to organise the practices of people, and users adjust to and interact with these infrastructures in order to ‘fit’ in the system. In Santiago’s public transport, disabled and older users engage in everyday struggles in order to deal with lack of accessible spaces, coordinate with other passengers, and interact with restrictive, exclusionary devices.

While Transantiago faces the ‘trouble’ of providing transport to differently-abled users, who are varied in shape and size, passengers and staff coordinate and adjust in ways that compensate for Transantiago’s shortcomings, propping it up through everyday interaction.

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INTRODUCTION: TODO CAMBIA

I was 19 years old when Transantiago started. To be honest, I had not been paying much attention to the matter. For me, a second year undergraduate student of Sociology, public transport was a technical issue that had nothing to do with me or the social sciences. My relation with it would be as inconsequential as it had always been. I would simply pay my fare and ride the bus.

It was February 2007, so I was just returning from my summer break to my city, Santiago. I missed the last month of the media campaign that announced the imminent arrival of our city's brand new public transport system, with its state-of-the-art, low carbon emission, articulated buses, bigger than our old, ramshackle and dirty 'micros'.



Figure 1.1 A bus stop of Transantiago, with new informative signs. Retrieved 17th of May 2016, <diario.latercera.com/>

Despite my initial apathy, the campaign was deeply emotional. TV commercials and big signs showed a city that was radically going to change. The soundtrack of the TV campaign itself was an adaptation of the traditional song *Todo cambia* ['Everything changes'], by Julio Numhauser. The videos depicted the new buses, flowing harmoniously through Santiago's streets; the drivers proudly wearing their uniforms; the contactless cards being swiped;

ramps allowing older and disabled people to seamlessly board the bus. New technologies and happy, proud faces populated this exciting future, soon to become a reality. Everyone would have a space, no one would be left behind. The very slogan of Transantiago was a single word: 'Súbete', meaning 'go on board'.

The idea of totality was at the core of the Transantiago project. *Everything* would change, *no one* would be excluded. The scale of this transformation was a reflection of its massive ambition. Transantiago has been described as a "monumental experiment" (Ureta 2012: 5) that sought to wipe out, once and for all, everything that was wrong with our previous system. Up until 2007, Santiago's public transport could have been described as a deregulated mass of small entrepreneurs that competed in the streets for getting clients. Each entrepreneur owned a small fleet – or even just the one – of *micros amarillas*



Figure 1.2 'Micros amarillos' [yellow buses] prior to the Transantiago system. Retrieved 15 December 2015, <blog.recorrido.cl>

[yellow buses]. This was a problematic arrangement of private initiatives trying to meet people's demand for transport. 'Free competition' took the form of speeding buses, confrontations between drivers and people literally hanging – and sometimes falling – from the open doors of moving vehicles. Additionally, drivers did not have a fixed salary, but rather their income depended on the amount of fares paid. This led to even more fierce competition for passengers against other buses with similar routes, and to decline stopping for users who would not pay the full fare (i.e. students) or would delay the boarding process too much (i.e. people with reduced mobility).

In turn, Transantiago's promise – intensively broadcasted by its emotional campaign – “was to produce a *'world class'* public transport system that would show the successes of Chilean development in the last two decades” (Ureta 2012: 5). As a means “to produce a generalized sense of social good to which the majority of people subscribe” (Harvey & Knox 2012: 522 cited in Velho & Ureta 2019: 3), this new infrastructure was aimed at consolidating a sense of universal access to modern life. This was no easy feat. Accordingly, as Darío Hidalgo has described, the project “was the most ambitious transport reform undertaken by a developing country” (Hidalgo & Grafiteaux 2007, cited in Ureta 2015: 3).

Some were wary of Transantiago's ambition. Others showed much enthusiasm. Despite feeling optimistic or sceptical, the truth was clear to everyone: The whole network of travels – the millions of journeys performed in Santiago everyday – was about to change the next day. Every inhabitant of my city would need to go out and explore a new landscape of technologies, routes, protocols, and interactions.

New, bigger buses would only stop at official spots. No more would we be able to ask the driver to stop the vehicle at our street's corner. A new payment system, based on contactless cards, would require the users to plan and pay their trips in advance. Negotiating a reduced fare with the driver would be no more an alternative. The knowledge accumulated throughout the years using the previous system would not be of any use. Now we had to learn how to use apps and websites in order to find out which bus to take.

Each of us had to prepare. Some of us spent hours in Transantiago's website, figuring out how to get from our homes to our jobs, schools, universities, healthcare centres, and so on. We had to go out and top-up our smartcards in advance. Even before starting operations, Transantiago had populated our city with cards, leaflets, information centres, maps and signs.

And then the first day came. At first, everything seemed confusing. Then, difficult. Finally, dramatic.

That day, only 1400 buses – of the expected 5000 – were available and fully operational. The news broadcasted Transantiago's first day as an overwhelming, unexpectedly traumatic, experience. People waited for their buses for hours. When they finally arrived, they were already full and did not stop. The bus stops started accumulating commuters. Eventually, anger and people would reach critical mass and spontaneous riots broke out across the city. The police had to intervene. Traffic got worse because of the masses of desperate citizens trying to stop the buses. Most people decided to go to work by walking. Many topped-up smartcards were never used that day.

This disaster was explained as an anomaly of the system, an exception. Things would get better. We tried again the next day. And the week after. And the one after that. Now, Transantiago is 13 years old and is still considered a system ‘in crisis’. An image of Transantiago as something bad, uncomfortable, slow and not to be trusted has solidified, becoming a piece of ‘common knowledge’ about living in Santiago. Forever a failure.



Figure 1.3 Spontaneous riot against Transantiago. Retrieved 15 December 2015, <radio.uchile.cl>

Starting from scratch

Following its modernistic ideals, Transantiago was designed so that nothing from the *micros amarillos* era would remain, completely replacing the previous public transport system. This was, in time, one of Transantiago’s most criticised characteristics (Ureta 2015); its complete disregard for the previous organisation of things. This approach was a reflection of both the negative assessment of the prior system – a true nightmare of *laissez-faire* mobilities – and the belief that a well-designed transport service should come with all of its parts already in place for its desired functioning. Indeed, one of the new system’s goals was to unify the chaotic amalgam of different bus companies under only one name – Transantiago – and standardising its functioning across the city. Thus, Transantiago’s original design changed everything, from infrastructures and governing technologies, to fare prices, and bus routes. Or did it? In this thesis, I explore the role that routine embodied practices play in the functioning of a big infrastructure like Transantiago. The refoundation of urban transport dynamics that Transantiago was supposed to be was heavily based on doing away with all of the elements of the previous arrangement, replacing it with a self-sufficient, definitive new order. By describing everyday practices of Transantiago users, I will show how processes of change and stabilisation of new infrastructures are greatly dependant on *what people do*.

Among the changes Transantiago brought, the new payment system was one of the most salient. Based on new contactless cards – known as Bip cards – fare payment would no more be done with cash. It would require some planning ahead to keep the card topped-up, and to keep a mental count of remaining credit. Crucially, somehow reminiscent of Latour’s (1990) account of hotel keys, the Bip card would not ‘speak’ to the driver anymore – who was, in the previous system, the one in charge of collecting fares. The card was meant to be tapped against card sensors that *beep* and flash a green light if there was enough credit in the card; or *beep beep beep* flash a red light if there was not. Having delegated the arduous task of collecting and enforcing payment to an automatised system, the driver would be now free to concentrate on steering the vehicle. However, at times when the restrictive binary arrangement of the green/red light

of the Bip card has proven to be insufficient, users have still relied on negotiating with the driver as a relevant practice. In the following chapters, I will show how users and driver continue to intensely interact in order to produce passengers, payments, politeness, and solidarity among people in the bus.

In its pursuit of producing a new, standardised order, Transantiago also introduced new signage, information websites, bus stops, and bus routes. The latter was a major point of controversy, since public transport users were used to the routes that existed during the yellow buses era and relied on them to move through the city. The old bus routes were also longer – usually connecting very distant points in Santiago – which allowed



Figure 1.4 The contactless Bip card became one of Transantiago's most iconic elements. Retrieved 06 July 2020, <www.tvn.cl>

for trips that could usually be completed in one go. Transantiago was built around a structure of multiple, shorter services, and encouraged transfers between buses and the underground system of Metro de Santiago¹. The Bip card was built into this strategy, charging just a fraction of a fare when people were changing from one bus to another. However, more transfers also meant more waiting for the next vehicle, as well as the strenuous need of rushing down or upstairs to change from the bus to the underground and vice versa. It also required the users to have a fairly good knowledge of the new routes in order to make the most of this new arrangement.

These aspects of the design of Transantiago show that the system was built around a certain imagined, or scripted user (Ureta 2015; Woolgar & Neyland 2013) that would behave in certain orderly, predictable ways. Transantiago was built around the assumption of a passenger that would know the different combination of routes the system could offer; that would have a topped-up Bip card at all times; that would tap their card against the sensor without having to be told to do so; and so forth. This is not to say that actual public transport users are not organised or that do not behave orderly. Quite the contrary, in this research I will describe how skilful organisation of ordinary practice takes place among public transport users and other members of the system. The problematic aspects of the encounter between user and system emerge from the disjunction between the standardised, *abstract* user as it was conceived by Transantiago planners, and the *actual* inhabitants of Santiago. Some researchers have pointed out that public transport users were still

¹ The relationship between buses and metro under the Transantiago regime is an interesting controversy. While officially Metro de Santiago (founded in 1975) became part of the totalising system of Transantiago in 2007, its functioning continued to be more or less independent from the governing body monitoring and managing the bus system (the Directorate of Metropolitan Public Transport, DTPM). As a means of shielding the well-regarded image of Metro de Santiago from the disliked Transantiago – a symbol of policy incompetence and bad everyday experiences – some continue to regard the underground system as not pertaining to Transantiago. In this thesis, I stay with the official assertion that Metro de Santiago is part of Transantiago as policy infrastructure. Note that both buses and underground in Santiago share the same payment system based on Bip cards.

used to the previous system, and relied on acquired knowledge that, suddenly, had been rendered obsolete (Muñoz & Gschwender 2008). Building on this perspective, I will also show that Transantiago users unfold diverse embodied practices that enable them to conform to certain expectations inscribed in the system. Through ordinary interaction, I argue, users and staff enable one another to competently navigate this massive infrastructure, managing in the process to make Transantiago operate in a more or less orderly manner. Quite different from its intended universal, standardised solution to the city's mobility needs, in this thesis I will describe a Transantiago that heavily depends on constant adaptation, adjustment, and local organisation of embodied practices.

The assumptions about the users that were originally inscribed in Transantiago still circulate throughout different devices and protocols. This is especially apparent when looking at the experience of users as embodied beings, who are implicitly expected to display particular bodily capacities in order to be fully competent passengers. Ironically, the 'failure' of Transantiago has meant that its vehicles have suffered for years of record-high overcrowding issues (Tirachini, Hensher & Rose 2013), which is a shortcoming of the service that is bodily endured by its users. Both in paper and in practice, a Transantiago rider has to be capable of certain physical feats, which excludes some members of the public.

And yet, Transantiago's advertising campaign highlighted Transantiago as a system that would universally include disabled people. Manually-activated ramps, braille-based signage, and tactile paving were presented as the vehicles for this belated and necessary inclusion. Transantiago's pursuit of becoming an accessible public transport system is of crucial interest for this research. By following this process through interviews and the analysis of Chilean legislation, I will reflect on the problems and limitations of attempting to make disabled people be part of a modernity-inspired project. Opposed to the aspiration to produce definitive accessibility solutions for disabled users, I will argue in favour of a type of accessibility that is continuously made to emerge through practices and material adjustment.

Can Transantiago be fixed?

Many different voices have described Transantiago as a failure. According to Muñoz et al, (2014: 184), it "is considered by many as the worst public policy ever implemented in the country". The magnitude and gravity of the system's malfunctions have kept escalating, configuring a challenging scenario of political pressure for 'fixing' Transantiago, and of technical experts debating how to 'normalise' its operation.

Normalising Transantiago, nevertheless, has proven to be a much more complex task than anticipated. As Ureta (2014a) suggests, to normalise the system means to assume there is a predetermined, fixed 'normal' standard of functioning to be achieved. However, determining how a 'normalised' Transantiago would be like, and what we would need to do to make it so, has stirred many debates that reinforce our public transport system's image as a confusing mess. While Santiago's public transport system seemed to pursue a de-territorialised ideal of effortless motions that would solve, once and for all, the vicissitudes of our

everyday need for mobility, the embodied practice of Transantiago is actually quite different. A much less glamorous dance, Transantiago's everyday life reality turns into a non-linear and unpredictable event when approached from an embodied perspective. Contactless cards are dropped (or lost), hands are unable to reach the handrail, feet lose ground, and eyes miss signs.

A considerable amount of research focused on Transantiago has been produced in the last years. Muñoz & Gschwender (2008: 45) comment on the political motivations behind the project, referring to it as a "traumatic process" (Muñoz & Gschwender 2008: 45, see also Muñoz et al 2008). Figueroa & Orellana (2007) argue that the institutional capacities were insufficient to manage Transantiago's complexity. Briones (2009) affirms that Transantiago's failure was due to design problems, and not to technical implementation. Other researchers have focused on specific critical factors, like overcrowding (Tirachini et al 2013), labour conditions of drivers (Tiznado et al 2014), or fare evasion dynamics (Guarda et al 2016). The vast majority of research has tried to approach the issue from a purely technical perspective, considering Transantiago as a service governed by experts, and its users as aggregated demand.

Contributions to the matter from the social sciences have been less numerous. Taking a phenomenological stance, Jirón (2008; see also Jirón & Mansilla 2014; Jirón, Imilan and Iturra 2013; and Jirón Lange & Bertrand 2010) has discussed different forms of daily mobility in Santiago, without necessarily focusing on Transantiago. Drawing upon STS, Ureta (2012; 2014a; 2014b; 2014c; 2015) has extensively reflected on Transantiago's implementation as a sociotechnical arrangement. Ureta's work has given importance to how certain attempts at 'normalising' Transantiago have put pressure on the passengers as embodied beings. In one of his most interesting contributions (2012), he describes how the metro system, preparing for Transantiago's launch, implemented different disciplinary devices in order to 'educate' the mass of users which was anticipated to dramatically grow in number after the new system started operating. The installation of new signage and blockades aimed at managing the users' movements, encouraging efficient and fast circulation of people. Treated as an unruly mass of bodies, passengers are subjected to standardising devices that count, sort, block, reroute, steer, and rush people along predetermined paths, enacting very specific formulas of optimal speed and use of available space.

This scenario of accumulation of people, and of sociotechnical arrangements trying to manage speed and



Figure 1.5 Tobalaba subway station. Retrieved 15 December 2015, <www.emol.cl>

user behaviour, has configured Santiago's public transport as a space where embodied beings are pushed to the limit on a daily basis. Users struggle and strain in order to 'fit' in Transantiago. They encounter the suffocating masses of people pushing through crowded platforms and buses, and the rigid, unyielding materialities of barriers limiting and sorting

their movement. Beeping sounds, turnstiles, one-way doors, and signs are meant to govern and manage the chaos of passengers and their varied shapes and behaviours in space. Attending to this landscape of sorting technologies, I will show how they have the effect of promoting specific bodily configurations, interacting with certain users with more ease than with others. Pressured by the need to travel using an overloaded service on the one hand, and being directed by governing devices on the other, the crowd of Transantiago's users takes the form of a frenetic tide that only some are able to navigate. Others – the older, slower or more fragile – tend to be left behind, implicitly excluded, disabled and immobilised.

A great part of the efforts devoted to 'fixing' Transantiago have been targeted at governing the chaotic mass of embodied beings that navigate it – by making them circulate in certain ways, preventing them from fare-evading, timing their boarding and alighting from the vehicles in a fast and efficient manner, etc. It seems that the Transantiago's abstract aspirations of predictability and regularity are in contention with the wild bodily diversity and local rationality of actual human beings. In an attempt to tame the "barbarian masses" (Ureta 2012), infrastructures and governing technologies have been deployed to simplify, control, and standardise complex behaviours into manageable regular units. It goes without saying that this has had a severe effect on how those who fall outside the bodily 'norm' are able or not to perceive themselves as a valid member of society.

With this research, my goal is to propose a shift in perspective that does not require big infrastructures to battle their own users in order to be able to interact with them. While research on the Transantiago case has been focused on its failure – 'what went wrong?' – there is no account of how Transantiago manages to hold together every day². How do Transantiago and its users hold together in what seems to be a functional, although precarious, arrangement?

Ureta (2014a) asserts that Transantiago now exists as a system under constant repair, inhabiting the difficult balance of being a 'permanently failing organization' (Meyer & Sucker 1989 cited in Ureta 2014a), yet still managing to hold together somehow. Part of the explanation of how this happens, I believe, can be found in the quotidian encounters between people and infrastructures taking place every day. This shift in perspective frames the passenger not as a passive entity being delivered a service, but as a skilled and active member of a precarious assemblage of things that, despite everything, has continued to operate for thirteen years.

I argue that this holding together is achieved through a constant work of everyday mutual adjustment. Just as Transantiago continues to unfold different devices that would enable the sorting of people, users adjust and repurpose materialities, learning how to make their bodies 'fit' the expectations inscribed in the system. Even though they have been conceived as a chaotic mass to be civilised, organised, sorted, and standardised, diverse bodily capacities are not to be seen as a source of 'inconvenience' to the system. People and their

² A similar thought has been raised by Laurier and Philo (1999) in reviewing Latour's *Aramis or the Love of Technology*, pointing out Latour's lack of interest in 'postassembly'.

capacities hold Transantiago in place. Patience, creativity, stubbornness, politeness, and solidarity also find their way in buses and coaches through the embodied practices of the travellers. Disabled and older users engage in everyday struggles in order to deal with lack of accessible spaces, coordinate with other passengers, and interact with restrictive, exclusionary devices. Making room for one more in the crowded train coach, or unfolding the manual ramp for a wheelchair user to board the bus, are all simple but crucial events that Transantiago depends on and are only possible because of embodied capacities opportunely taking place.

Through ethnographic work and video analysis of different disabled and reduced mobility people using Transantiago, I intend to describe how these practical struggles are quotidianly resolved in the interaction of users, staff, and different kinds of materialities. This fine-grained description will allow me to trace just how the passengers' doings play a role in the routine organisation and continued



Figure 1.6 Police forces controlling a crowd of people waiting the bus. During Transantiago's first months, waiting times could be of more than an hour. Retrieved 17th of May 2016, <eldinamo.cl>

existence of Transantiago as a whole. With this, I will advocate for an approach to big infrastructures not only as serving and accommodating diverse human beings, but actually being made by them and held together by their practical actions. This will serve as the baseline for more participative and open-ended approaches to design and management of big urban infrastructures.

Led by modernistic ideals of universality and standardisation, Transantiago was conceived as a system that would provide a 'one-size-fits-all' transport service for the inhabitants of Santiago. In practice, however, Transantiago faces the 'trouble' of dealing with differently-abled users, who are varied in shape and size, and who bring their own capacities with them in their encounter with the public transport. Conversely, passengers unfold practices of coordination and adjustment that compensate for Transantiago's shortcomings, propping it up through everyday interaction. However, this bears the question of what is at stake for those whose bodily skills and experiences are involved in adjusting to the system and its devices.

Throughout my undergraduate years, I was never that bothered by the experience of riding Transantiago. I would, of course, be routinely mad at it, like everyone else. But navigating its crowded spaces was never really *painful*, or *exhausting*, or *disorienting* to me. I was never ashamed of my own physical body, or experienced the sensation of not fitting in its paths. These geographies of discomfort and exclusion may remain hidden for those who, like me, live unaware of their own privilege – interacting with a metropolitan infrastructure that treats us as 'normal' human beings. As part of the following chapters of this research, I

will discuss how the notion of normality is circulated in the discourse of designers, inscribed in mundane technologies, and dealt with in practice by the users of Transantiago. Exploring this is relevant because it opens up opportunities to understand how the pursuit of regularity and normality can be hurtful to some.

Producing a landscape of mobilities that is universally orderly risks trampling down the diverse, irregular, and local forms of being an embodied entity in space. Similarly, producing paths of inclusion for those historically excluded, by pursuing universal, definitive solutions will prove insufficient in practice. In this thesis I will contend that the continued existence and functioning of Transantiago relies on the embodied practices of its users, which display a local rationality, and are diverse and adaptive.. In this sense, levelling the field for everyone should not mean that bodily diversity needs to be flattened down.

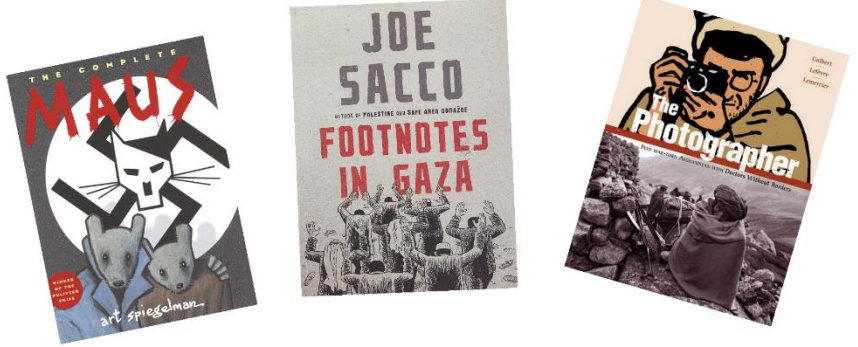
By becoming ethnographically involved in the mobile lives of bodily diverse people, I have collected different stories that intertwine themselves with the tale of Transantiago. The story of how this modern infrastructure, with its goal of producing a predictable and standardised public transport service across the city, interacts with the diverse capacities and nuanced shapes of countless people who bring with them skills and habits that are not only crucial for them, but for the functioning of Transantiago as a whole.

AN ETHNOGRAPHIC (graphic) TALE

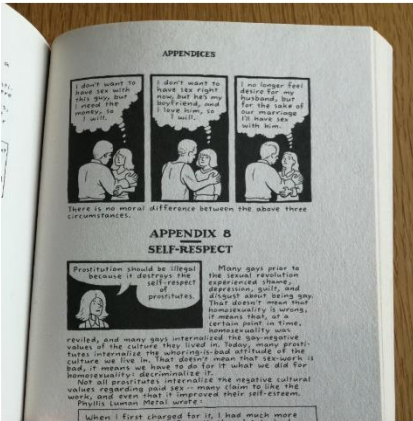
The rich possibilities provided by by the comics medium cannot be overstated



Widely used for fiction, in the last decades more geographers, anthropologists, historians and journalists have used comics to great result in research



So for example, Chester Brown merges text and images in his extensive and autobiographical take on prostitution



Harvey Pekar and Ed Piskor use drawings to present the bizarre character of Williams S. Burroughs



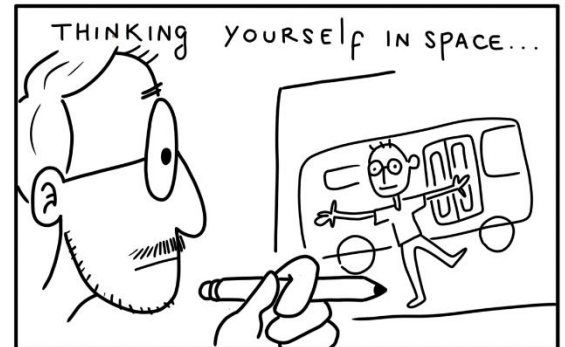
And similar to Spiegelman's Maus, Jason uses animals to depict real people. His character displays an awareness of being part of a story



There is richness in becoming a character at the service of the story



VISUALISING YOURSELF

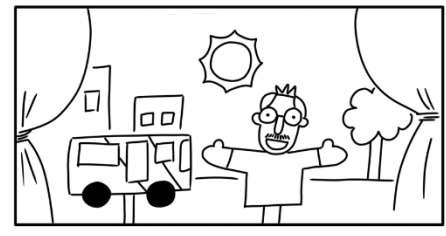


...And in time

ROSANA GUBER SAYS THAT DOING ETHNOGRAPHY IS ABOUT ENGAGING IN REFLEXIVITY AS MUCH AS ABOUT DOING FIELDWORK.

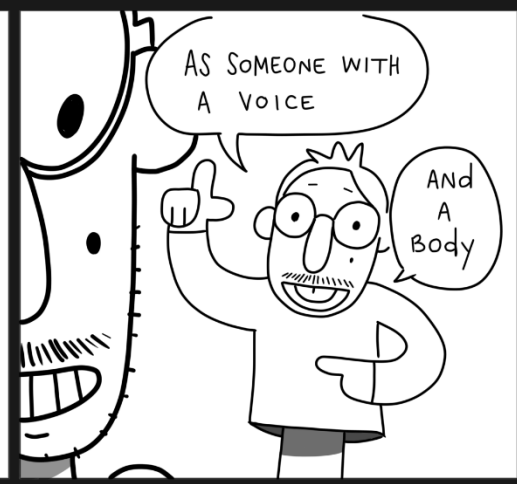


I THINK BECOMING A CHARACTER IN THIS STORY WILL HELP ME ACKNOWLEDGE THAT I'M TELLING THIS TALE FROM A PARTICULAR PERSPECTIVE

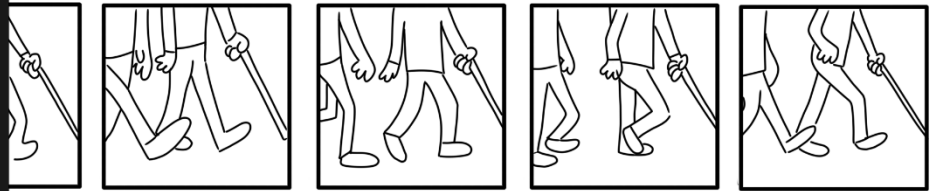


AS SOMEONE WITH A VOICE

AND A BODY

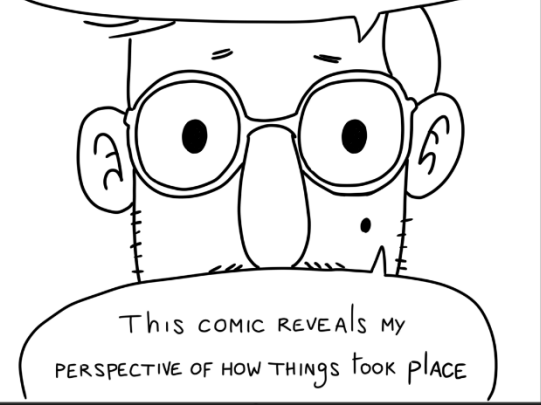


I WANT TO AVOID PRESENTING THE METHODOLOGY OF MY RESEARCH IN AN ABSTRACT, DELOCALISED, DISEMBODED FASHION. ITS ELEMENTS MAKE MORE SENSE WHEN PUT IN RELATION TO ONE ANOTHER



THE DECISIONS MY PARTICIPANTS AND I MADE, THE WAYS IN WHICH WE MET... THEY ARE ALL A SEEMINGLY DISORGANISED COLLECTION OF EVENTS AND TOPICS THAT MAKE SENSE AS PART OF A STORY.

I AM BOTH A CHARACTER AND THE NARRATOR OF THIS STORY



THIS COMIC REVEALS MY PERSPECTIVE OF HOW THINGS TOOK PLACE

I REALISE IT MAY SEEM NARCISSISTIC, BEING THE TALKING CHARACTER IN EVERY PANEL, BREAKING THE FOURTH WALL, EXPLAINING THINGS...



BUT THAT'S PRECISELY THE POINT, I THINK. BECOMING VULNERABLE, EXPOSED...



AND I THINK THAT'S FINE. WHEN IT COMES TO METHOD, IT'S MORE USEFUL TO SHARE YOUR MISTAKES, RATHER THAN YOUR SUCCESSES



IT WILL BE DIFFICULT, I'M NOT A WRITER



Boo...!



LITERATURE REVIEW: A FRAMEWORK FOR UNDERSTANDING THE PRACTICAL WORK OF DISABLED USERS ENCOUNTERING TRANSANTIAGO

Transantiago users face barriers, turnstiles, one-way doors, beeping sounds, signage, and seating spaces that, in an attempt to produce an efficient ‘modern’ transport system, are designed to sort and govern the passengers in predictable and standardised ways. This research concentrates on how is it that disabled or older people deal in practice with the difficulties that arise in such encounters. Inscribed with certain assumptions of the human and what a functional Transantiago passenger is like, these devices and infrastructures outline a particular geography of ‘the normal’ and the orderly. These delocalised standards of order and normality reinforce dynamics of exclusion or, at the very least, make public transport spaces more difficult to navigate for some. In this sense, I work with the question of how is it that the abstract, universal expectations of ‘normal’ bodily capacities are dealt with in practice, by the actual embodied beings who conform a much more varied, irregular array of entities. In addressing this, I will describe how differently-abled people go about as public transport members in everyday life, dealing with these arrangements in their encounters with humans and nonhuman.

In this chapter I will discuss relevant issues related to mobilities, disabilities, and the normalising effects of large infrastructures, by drawing on assemblage thinking and Ethnomethodology and Conversation Analysis (EMCA). Drawing on recent discussions within these fields will allow me to outline a critical review of the modernist aspirations to a universal, abstract, delocalised order – which were present in the original philosophy design behind Transantiago (Ureta 2015) – as opposed to the actual organisation of embodied practices, which display a local rationality to them.

In the first section I discuss an approach to mobilities that is attentive to the difficulties and work that goes into moving through space. In the second section, I outline an understanding of disabilities as embodied practical struggle. In the third section, I present a critical analysis of the attempts of large infrastructures to ‘normalise’ its users. In this chapter I show how these three fields of research encounter the same type of challenge. That is, to expand the understanding of mobilities, disabilities, and infrastructures as being locally organised through embodied practices, rather than simply determined by disembodied and totalising aspirations to universal travels, accessibility, or normality. This will lay the conceptual groundwork for the coming chapters, in which I explore the practical constitution of accessibility, the skilled work done with prosthetic devices, the local organisation of payment and dodging practices, and the felt consequences of subjecting people to a restrictive bodily standard.

With the review I will present here, I aim at highlighting the importance of practices in the everyday organisation of large assemblages like a public transport system. A shift in perspective that puts people’s doings at the forefront will allow this thesis to show how the practical work that public transport users put into making their travels happen is crucial in ‘holding together’ the massive infrastructure that is Transantiago.

Urban mobilities

The last decades have shown mobility studies as a burgeoning field for the exploration of social life. It has mobilised different epistemological (Sheller 2014; 2017) and methodological (Büscher & Urry 2009) approaches across different topics that intersect (Büscher et al 2016) in the experiences of being on the move. Public transport as a mobile setting has enjoyed a fair amount of attention as a place in which difference (Bissell 2016; Wilson 2011) and inequalities manifest (Figuroa et al 2018; Orfeuil 1999). Recognising the importance of classic structuralist studies, that emphasise these inequalities as the manifestation of categories like class and gender; and of poststructuralist readings of politics as everyday practices, I too attempt to describe public transport as a site whose political character is locally produced in the encounter between people and a system composed of materialities inscribed with certain governing agendas.

My interest is in looking at public transport users as embodied beings, and therefore understanding public transport as a place where diverse embodied struggles take place, shaping the system itself in the process. This point of departure will allow my research to explore in what ways the system and its users affect one another; learning, gauging, propping up, and, sometimes, harming each other in a variety of fashions.

Cities of flow and friction

In their book *Cities: Reimagining the urban* (2002), Ash Amin and Nigel Thrift provide a critique of essentialism by presenting a particular ontology of the city understood as becoming. They assert the idea of a city not as something that *is*, but as something that is always *going on*. Their emphasis is on actual and potential associations and encounters of entities which, when together, “produce something more than when apart” (Amin & Thrift 2002: 27). Thus buildings, roads, financial interests, people, airline routes, animals, waste, mobile phones, etc., do not only meet at the city, but actually make it happen every day.

Influenced by phenomenology and its attention to embodied practices, as well as an attention to a more-than-human world (Sheller 2014), a ‘new mobilities paradigm’ has emerged (Sheller & Urry 2006; Sheller 2011; Urry 2011). This paradigm encourages social research to stay attentive to different aspects of movement and flow. We may see here an invitation to producing a more complex understanding of movement than the one which usually informs transport planning, as “[u]rban travel is not just about getting from point A to point B. It is about producing and re-producing the city and the self in a complex relationship involving mobility cultures and different types of mobility knowledge” (Jensen 2009: 152). So movement would be no more a ‘black-boxed’ human need requiring mere technical assessment and solving, but a relevant spatial formation where different entities, human and nonhuman, encounter one another and deal with practical issues of normativity, legitimacy, and exclusion. Influenced by Actor-Network Theory (Latour 1993; 1999a; 2007) and Ethnomethodology and Conversation Analysis (Garfinkel 1967, 2002; Sacks 1995), I too subscribe to those researchers who put emphasis on understanding mobilities as *enabled by local*

practices and interactions between humans and nonhumans, which produce different forms of ordering and exclusion.

Research interested in mobilities has sometimes shown an emphasis on fluid movement, particularly in addressing contemporary hyper-connectivity, or focusing on an alleged lack of meaningful relations in public spaces of modern life (Graham & Marvin 2001; Castells 1996; Augé 1995, see also Sheller 2004, and Sheller & Urry 2003). This attention to the fluid aspects of mobility can be misleading. Cresswell (2006) warns against a romanticisation of the nomad (see also Law 2002: 101, on “the romance of fluidity”), which “enables a conceptualisation of urban mobility that remains unlocated, ungrounded, disembodied and ‘unmarked’” (Pinder 2013: 177). My aim is to contribute with an approach to mobilities as local and embodied, with particular attention to categories that explicitly differ from the ‘unmarked’. In this sense I align myself with research that considers movement and stillness to be equally relevant. Both are part of a clash of forces and drives that outlines the practical struggle of moving. In Pinder’s (2013: 182) words, “[m]ore than movement per se, what is crucial politically is attaining the right and power to move or, equally importantly, to remain in place”, and following the same line, Bissell (2009: 174) reminds us that “the speed of some is premised on the slowness of others”.

Tsing (2011) invites us to go further and understand movement not as a disembodied, abstract ideal of freedom that only suits certain ‘unmarked’ individuals and interests. Rather, the universality and fluidity of movement could “only be charged and enacted in the sticky materiality of practical encounters” (Tsing 2011: 1). This focus on encounters is relevant because it juxtaposes a more grounded meaning against modernity’s abstraction of free movement. Actual movement is uneven, problematic, it produces friction, and it takes work. Similarly, Transantiago’s promise aimed for smooth daily urban mobilities, but different embodied beings and materialities turned out to be far more rugose, irregular, and undisciplined:

“In fact, motion does not proceed this way at all. How we run depends on what shoes we have to run in. Insufficient funds, late buses, security searches, and informal lines of segregation hold up our travel; railroad tracks and regular airline schedules expedite it but guide its routes (...) Coercion and frustration join freedom as motion is socially informed” (Tsing 2011: 5-6).

In his diagnosis that “[r]eal bodies moving have never been at the top of the agenda in transport studies”, Cresswell (2010: 19) develops an attention to friction as a way of understanding the political features of mobility. Friction puts forward the “particular and varied” (Cresswell 2010: 26) character of movement. While movement can be planned and modelled, it is also widely present in people’s lives in an unplanned manner. As it is experienced differently and in varying intensities by different people, it seems to describe a distinct geography of inequality.

This thesis challenges modern tendencies to picture movement simply as the fluid achieving of freedom, when moving is in fact a negotiation of frictions, pressures and different, sometimes conflicting, agendas. A diverse array of human and nonhuman entities converge in the cities’ continuous process of becoming,

producing friction against one another. But friction is not an antagonist of movement, something to get rid of. Rather, it is part of it. Without friction, we would float in space, unable to move. In this research I analyse instances of struggle and difficulty faced by disabled people and other vulnerable bodily configurations, as an attempt to unveil the varied, specific, and skilled amount of work that goes into making their trips in Transantiago possible.

Transantiago as assemblage

Relational thinking and politics populated by humans and nonhumans are notions skilfully systematised by Bruno Latour's work (1993; 1999a; 2005). In revisiting ANT, Latour describes it as a theory of circulation (Latour 1999b), asserting that agency is not fixed or contained in certain political actors, but distributed between many moving parts. Latour (1999c) emphasises that agency circulates among humans and nonhumans, displacing our



Figure 2.1 When possible, some passengers bodily adapt in order to, quite literally, dodge fare payment. Retrieved 30th of May 2016, <pasajeroactivo.cl>

attention from the structuralist distinctions between freedom and domination, and refocusing it on how different actants produce one another and shape how they act. Transantiago and its passengers, too, are intertwined in a relation of mutual shaping. Both parts are involved in the process of becoming of the other, which takes place in the multiple encounters between public transport users and the system's devices. For example, a person's process of becoming a passenger of Transantiago unfolds in interaction with elements that enable or constrain processes of passengering. Transantiago's Bip card, turnstiles, ramps, and lifts play a crucial role in this process. Conversely, Transantiago's programme of becoming an 'accessible to all' service is also underpinned by the passengers' bodily capacities to adjust to a changing environment.

To address the importance of practices and interaction in the 'becoming together' of Transantiago and its passengers, I also draw upon Ethnomethodology and Conversation Analysis (EMCA). This analytical approach is particularly attentive to locally produced practical knowledge, while avoiding the imposition of extraneous categories of understanding in order to analyse a given phenomenon. With its radically indexical approach, EMCA invites us to understand a given situation with the tools or methods that the very members are utilising (Garfinkel 2002; Sacks 1995; Lynch 2007). I draw upon this perspective to describe the limitations of the forms of top-down universalising ordering that guided Transantiago's design, and to show how passengers and infrastructures locally compose a more or less functional arrangement of everyday mobilities (Crabtree 2004).

There are evident points of similarity between EMCA and ANT, which are not in small part due to Garfinkel's influence in Latour's thinking (Michael 2017). ANT shares EMCA's critical perspective on

‘society’ and ‘the social’ as abstract entities that exist on themselves (Latour 2007). Both perspectives search for ‘the social’ by tracing heterogeneous connections and interactions. However, Latour (1986) critiques EMCA’s radical locality. In his view, EMCA stays with the members’ doings but neglects the distributed agencies of actors who are not present and delegate their doings onto other – nonhuman – entities. Latour (1996) criticises EMCA’s allegedly excessive attention to the social order as produced in local encounters (Michael 2017), somehow giving less attention to “people who are absent today, although their action continues to make itself felt” (Latour 1996: 231), translated and transformed by mediators (e.g. a turnstile, or a ramp). ANT’s notion of agency being distributed among humans *and* nonhumans is a crucial aspect of this research. As I will show in following sections, technologies are of great importance in the lives of disabled people, both as embodied companions and as mediators in the interaction with others and Transantiago as a system. For example, a person and their wheelchair can come together and conform a prosthetic relation that enables a competent public transport user. Alternatively, a piece of infrastructure like a set of escalators can be inscribed with hegemonic expectations of a ‘standard passenger’, outlining an inconspicuous geography of exclusion.

While I share ANT’s emphasis on tracing the effects of nonhumans inscribed with specific visions of the human, I also draw on Lynch’s (1996) reply to Latour. Lynch brings up a caveat regarding ANT’s use of the term ‘agency’ as homogeneously applied to humans and nonhumans, and not seeming to stop to wonder what does ‘agency’ look like in each case. The actual doings of people in a given setting risk being occluded by a ‘flattened’ distribution of agency that is “all-too-easily naturalized” (Lynch 1996: 250). Agency must remain a question, and not an assumption, regarding how people interact with one another and with objects. In a following chapter, inspired by EMCA, I analyse the case of Transantiago passengers interacting with a physically restrictive turnstile, exploring how devices can be inscribed with certain expectations of their users, but what *they actually do* with the turnstile is produced in observable local interactions.

Another limitation of ANT has to do with the emphasis this approach places on stability, which makes it a limited framework when analysing Transantiago’s functioning. As Laurier and Philo (1999) notice in reviewing Latour’s *Aramis or the Love of Technology*, ANT seems to lose interest in actor-networks that have stabilised, become taken-for-granted, and ultimately black-boxed. Even though ANT’s focus on relationality and distributed agencies are fundamental to this research, its emphasis on stability (Law 2002) might render Transantiago difficult to describe. Transantiago is neither black-boxed nor broken down. It is considered to be in crisis, but somehow has been transporting more than five million passengers every day, for the last thirteen years. Despite all of its critical points; high rates of fare-dodging; contested disciplinary devices; material decay; and big crowds of frustrated, disappointed, anxious users, how does it hold together every day? And similarly, how do those who cannot run downstairs, fit in crowded carriages, lift heavy ramps, stand for too long, or fit through a turnstile, manage to routinely become public transport users?

Our understanding of this relational achievement could be enhanced by drawing upon assemblage thinking. According to Marcus and Saka (2006), assemblages provide tools for understanding the numerous entropic forces driving events.

“An assemblage is the product of multiple determinations that are not reducible to a single logic. The temporality of an assemblage is emergent. It does not always involve new forms, but forms that are shifting, in formation, or at stake. (...) assemblage implies heterogeneous, contingent, unstable, partial, and situated” (Ong & Collier 2004, cited in Markus & Saka 2006: 104).

Assemblage’s emphasis on formation is underpinned by “a specific form of relational thinking that attends to the agency of wholes *and* parts, not one or the other” (McFarlane & Anderson 2011: 162). Both the agency of the assemblage and of its parts are relevant, and none is reducible to the other. Because of each actant keeping its own ‘pulse’, according to Bennett (2010: 24), “an assemblage is never a stolid block but an open-ended collective, a ‘non-totalizable sum’”.

Thus, assemblages are never fully stable. Their shape and characteristics are attained as they are made, composing and decomposing, letting new parts enter and leave, reformulating their place within the assemblage. This autonomy of elements allows us to understand the assemblage as a “provisional holding together of a group of entities across differences and a continuous process of movement and transformation as relations and terms change” (Anderson et al 2012: 177). Within this framework, Swanton (2013) works with the case of the steel plant. He uses the concept of assemblage to take the plant’s instability as central, not just focusing on the ‘final product’ (the steel). As the ongoing effect of multiple material practices, the steel plant is enacted. There is so much continuous labour taking place there, that the plant cannot be black-boxed. Neither can Transantiago. They have been trying to do it for thirteen years now, and yet it remains problematic, open-ended, unstable.

Gaps in public transport research

Structuralist approaches have explored public transport as a site where social inequalities and disadvantages manifest. Jean-Pierre Orfeuil (1999) indicates that mobility access, especially for low income groups, can pose an even greater challenge than of getting access to housing and services. Following the same line, Le Breton (2004a, cited in Lazo 2012: 20) emphasises that mobility can be an expression of freedom as much as a burden; a mandatory mobility that comes along with disadvantageous living conditions. The focus on social inequality has led to the emergence of formulations such as ‘transport disadvantage’ (Hine & Mitchell 2001) or ‘motility’, which could be defined as “how an individual or group takes possession of the realm of possibilities for mobility and builds on it to develop personal projects” (Flamm & Kaufmann 2006: 168). Typical axes of social exclusion that guide research on public transport have been class (Orfeuil 1999; Jouffe & Lazo 2010; Sabatini et al 2013) and gender (Hutchinson 2000; Jirón 2007; Uteng & Cresswell 2008). As Cebollada (2006) states, these everyday travels draw a line between *being ‘in’ or ‘out’*. This approach has led structuralist research to frame public transport as a ‘political arena’ where social inequalities are reproduced, as well as a space for domination and disciplining (Baerenholdt 2013; Jensen 2011). It is not only

socioeconomic difference that is constructed through everyday life mobilities, but also subjective identities: “Mobile subjects types can be understood as particular identity constructions that relate strongly to particular mobility systems” (Richardson & Jensen 2008: 222). However, these somewhat deterministic perspectives seem to gloss over the orders, moralities, and adjustments achieved by the practices and interactions that take place in the public transport every day.

Although relevant, research focused on mobilities, as a platform for structural inequalities to manifest, tends to neglect the question of how, despite all difficulties, people manage to somehow become part of public transport through a deployment of diverse tactics in everyday life. These experiences have been studied from a phenomenological standpoint, drawing upon affects and more-than-human perspectives (Bissell 2010a, 2010b; Jensen 2012; Lobo 2014; Wilson 2011) in order to access the ‘micropolitics of mobility’ (Bissell 2016). That is, the subtle transformations and negotiations that take place between bodies and other materialities in everyday life. For example, managing their belongings; avoiding certain times and routes to feel safer; or unfolding practices of ‘place making’ during their journeys (Jirón 2010; Jirón, Imilar & Iturra 2013) allows travellers to negotiate, convince or squeeze their way into the public transport. My research aligns with this approach by seeking to more attentively describe these mundane practices, an end to which EMCA lends itself as the ideal analytical approach. By exploring the locally-produced categories that organise interaction in the public transport, I examine how issues of exclusion, interdependence, and injustice are enacted and dealt with in ordinary encounters.

And yet, here we find a knowledge gap to which this research aims at being a contribution. There is EMCA research on mobility-related practices, like walking (see the foundational studies of Ryave & Schenkein 1974; and Lee & Watson 1993; De Stefani & Mondada 2014; Broth & Lundström 2013), crossing the street (Lieberman 2013), cycling (McIlvenny 2014; Smith 2017), and driving (Deppermann 2019; Deppermann et al 2018; Haddington & Rauniomaa 2014; Laurier 2004, 2019; Lieberman 2019; Mondada 2012), but EMCA-led descriptions of public transport settings are comparatively scarce. This outlines an opportunity to bridge EMCA analysis with structural concerns. By approaching the Transantiago case with an attention to the practices of its users, my intention is to show how exclusion, accessibility, inequality, and other elements that have been of interest for structuralist research, can be traced out – and in fact are organised – in the mundane encounters of people and things.

I would highlight two notable exceptions to this, the first one being Heath, Hindmarsh & Luff’s (1999) account of train drivers’ practices in London’s underground. Their research’s novelty is its focus on the train as a workplace, giving particular attention to how the drivers perceive the passengers and are able to interact with them. The authors highlight driving the underground train as an interactional achievement, by showing how drivers engage in practices of awareness to what the passengers are up to. Heath, Hindmarsh & Luff give attention to tools and technologies as part of these accomplishments on the move, which is of inspiration to this research.

A second inspiring example of EM research on public transport is Noble's (2008) description of passenger practices in Edinburgh's Lothian Buses. Working purely from observations in the bus, Noble's work reminds us that relevant ethnomethodological work does not need to rely on video or audio transcripts, and brings about questions of involvement as a 'disinterested observer' that is present in the scene, being affected by and affecting what is going on. Having been myself

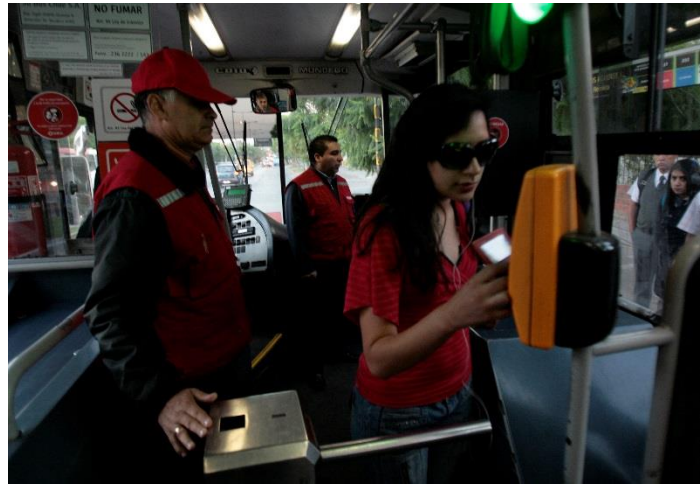


Figure 2.2 Since 2010, fare-evasion inspectors oversee payment of each passenger in certain bus stops. Retrieved 30th of May 2016, <diario.latercera.com/>

present in the collection of data for my own research, I relate to Noble's attention to her own experience as informing, and not detracting from, her analytical perspective. Among other things, Noble (2008: 201) highlighted the "moral accounts that are part of the ordering and policing of the public space of the bus". I follow up on these findings and explore locally-emergent moral accounts in relation to practices (e.g. not paying the bus fare) that, depending on how they are done, can be seen or not as morally accountable.

However detailed, EMCA research on public transport settings leaves much room for further inquiry. Neither Heath, Hindmarsh & Luff (1999) nor Noble (2008) explore in depth the role played by system planners and governing devices in these everyday interactions, and there is little said about the specific embodied aspects of engaging with the public transport as a user. Even less so on how these dynamics are dealt with in the case of particular bodily configurations that may fall outside expectations of normality, like in the case of disabled users.

Inspired by ANT, EMCA, and assemblage work, this research aims at producing valuable knowledge in that direction. As I have shown, my emphasis will be not on *what* are the things that determine the travels of disabled public transport users, but on *how* they find ways for adjustment in the coming together of humans and nonhumans on the move. In order to continue unfolding this research, it is necessary to apply the same treatment to our notion of disabilities.

Embodied disabilities

What is disability? Even considering the extensive amount of work that the disability studies field has developed in recent decades, this question continues to feed a difficult, ongoing debate. Trying to answer it gives way to a number of new interrogations and related avenues to explore them. Following different epistemological approaches, research across the social sciences have reframed the question of disability time and time again.

The importance of the body, as part of a geographical approach to the disability issue, is undeniable (Butler & Bowlby 1997; Dyck 2010; French 2004; Freund 2001). However, the role that research on disability has given to the body has varied greatly (Hall & Wilton 2017; Park et al 1998). By reviewing relevant work from the disability studies and the geographies of disability fields, I will present an outline of the body as a fundamental element in the development of more complex notions of disability, particularly informed by a geographical sensibility. Bringing forward the practical and ongoing aspects of being disabled, the question about the body outlines disabilities not as a fixed thing, but as a much more complex and unfolding process within which embodied practices play a crucial role. As part of this more contemporary framework, the relevant questions also shift (Buchanan 1997); from *what* is disability, to what does disability *do* and, importantly, *how is disability done and dealt with* in practice.

'Bringing the body back'

Between the 1970s and 1980s, a critical response to the hegemonic views of the biomedical model of disability emerged. This new approach was composed by reflections from the social sciences intertwined with an incipient political movement of disabled people. Its main exponents (Barnes 1991; Oliver 1990) criticised an extended and hegemonic medical understanding of disability as a merely biological phenomenon, which resided on each person's particular body, and ought to be treated or corrected. These are the main reasons that led Mike Oliver (1990, 1996) to coin the term 'social model of disability' in opposition to what he called 'the individual model', referring to the biomedical approach. Thus, while the latter understands disability as a consequence of physical conditions and the experience itself as a "personal tragedy" (Oliver 1996, 2004), the former asserts that disability is a social condition, imposed by society upon certain people that were born with or had developed a physical impairment³.

This conceptual distinction is underpinned by the Union of the Physically Impaired Against Segregation's (UPIAS) definition of disability, which distinguishes disability and impairment as completely different, albeit connected, categories. The UPIAS declaration (1976) defined *disability* as a set of disadvantages inflicted by social barriers and institutional dynamics against people with *impairments* – defined just as "a description of the physical body" (Oliver 1996:35). In this manner, the UPIAS declaration rejects the rehabilitative notions of the biomedical definition of disability.

The social model of disability is regarded as a valuable theoretical and political tool, though it has not been without critique. Between the 1990s and early 2000s, the social model of disability was targeted by severe questioning, focused on its dualistic heritage and deterministic inclinations (Kitchin 1998, see also Watson 2002). Former defendants of the social model (e.g. Crow 1996; Shakespeare & Watson 2001) have developed a critique against its classic divide between *impairment* (strictly biological condition and medicine's area of interest) and *disability* (strictly social condition and object of policy concern). The social model "in

³ As I agree with the core ideas of the social model of disability, in this thesis I use the term 'disabled people' rather than 'people with disabilities'. With this I mean that disabled people *have been disabled* by various sociotechnical arrangements present in their everyday lives.

spite of its critique of the medical model – actually concedes the body to medicine and understands impairment in terms of medical discourse” (Hugues & Paterson 1997: 326). Some voices (e.g. French, 1993; Hughes 2009) have advocated for a reshaping of the social model through a more complex comprehension of the body as socially relevant. These approaches, however, tend to regard the body more as a symbol or object of representation, rather than as an agent involved in practices and sensuous experiences. The emphasis remains in seeing the body as discourse, and the “fleshy, corporeality of the body” (Dyck 2010: 255) seems to be still missing. Referring to the body as ‘text’ or ‘representation’ leaves its materiality still in the hands of the medical experts. The divide outlined by the social model of disability stays intact. The call to “bring the body back in” (Chouinard et al 2010:7) poses a challenge that this research addresses by drawing on a geographical perspective of bodies in space. In so doing, I will explore disabilities through looking at embodied experiences and interaction.

The field of human geography has been instrumental in the formulation of approaches that give a more relevant place to embodiment and materialities as part of the discussion about disabilities. Following Kitchin (1998: 344), “[a]n understanding of how disabled people have become marginalised and excluded within society cannot be understood without an appreciation of the socio-spatial processes that reproduce social relations”. Some authors (Gleeson, 1999; Imrie, 1996, 2014) see a strong relation between the social model’s understanding of disabling environments and a geographical sense of what disability as a spatial experience is. These approaches, such as Gleeson’s (1996; 1999), tend to align themselves with a socio-materialist point of view, which Oliver (1996) shares as well. Imrie (2014), for instance, on criticising how public transport as an urban service is predominantly oriented to the activity of commuting, takes notice on how these arrangements reproduce the hegemony of certain ‘productive bodies’ over others. While Imrie’s approach is useful in outlining these aspects of structural inequality, there is still space for studies that explore how these differences are negotiated on the move, through interactions and events that leave certain bodily configurations out, allow them in, and those that make their journeys possible despite these ‘disabling environments’ (Imrie 2000).

This enables the exploration of qualitative bodily differences – as it is not the same being a wheelchair user than being a pregnant woman – when describing the experience of being disabled. Different ways of being disabled would arise from different, and shifting, body-environment relations. The experience of disability would be no more distributed among binary categories (abled/disabled) and, as Hansen and Philo (2006: 495) put it, it is important to see the body “not merely as a surface of contested representations or an inert object latched on to by social processes, but rather as the three-dimensional site *where the biological and the societal fuse...*” (emphasis added). From here we may wonder how bodies, rather than passive surfaces upon which representations are impressed, can be understood as actual vehicles for social interaction – not only shaped by space, but active forces in the everyday production of space. This connects to the idea of embodiment (Gilleard & Higgins 2018) – a way of understanding the body as a material medium through which human agency is enacted. No longer seen as part of a deterministic relation, body and space are deeply entangled elements which take part of a continuous process of mutual shaping (Longhurst (2001;

Gleeson 2000; 2001). This suggests that disability is neither contained in people's bodies, nor merely created by disabling spaces. Where is disability located, then? Where does it reside? In order to contribute to answering these questions, I work with the idea of disabilities as being *done*, or enacted, through embodied practices and spatial configurations.

Embodied beings in space

Disability is not exclusively tied to people's bodies, nor solely determined by spatial configurations. Rather, it emerges in the encounter of these two elements. In this sense, disability is articulated through practices, and therefore is open-ended, nuanced, and shifting. Instead of a clearly defined and static category – determined by the binary abled/disabled – disability appears to be something that is made, accommodated, translated, and contested.

Feminist approaches within geography have a long history of reflecting upon the body as a site of oppression and emancipation, as well as a platform for actively shaping our identities in space (Chouinard et al 2010; Colls 2012, Longhurst 2005; Rose 1993). It is based on this situatedness that we can see bodies are always *in relation* to other things, human and non-human, and never just on their own (Mol 2002). Guided by the understanding of bodies as enacted through heterogeneous relations, this research will concentrate on the elements of social life that impress upon embodied beings certain agendas, expectations, and restrictions, while also exploring how embodied practices shape spaces and the materialities they come in contact with. As Garland-Thomson (2011: 595) puts it, “[t]he relational reciprocity between body and world materializes both, demanding in the process an attentiveness to the distinctive, dynamic thingness of each as they come together in time and space”. Thus, bodies transform and become different things in their multiple encounters with the environment, which is itself shifting. This type of thinking underpins a clear rejection of understandings of disability as a fixed, still, and easy to trace state of being (Roulstone & Morgan 2014).

In this sense I align myself with Macpherson (2009; 2010), who speaks of embodiment and embodied practices in space rather than of simply ‘bodies’. Similar to Macpherson, who describes the relations between visually impaired (VI) people and the landscape, this research also explores how these users interact with an urban public transport system through embodied practices. From memorising the sequence of underground stations to relying on particular skills as cane users when navigating the platform, VI passengers interact with a number of humans and non-humans in their travels, while also affecting them as they go by. In describing these practices I seek to contest traditional separations between ‘body’ and ‘environment’, “as static, fixed or de-limitable entities” (Macpherson 2010: 3).

An emphasis on practices understands disabilities as a pragmatic struggle, rather than a condition imposed upon certain ‘types of body’. Underpinned by a conceptualisation of bodies as an ongoing process of being/becoming in space, “...a relational material approach encourages a shift towards a disability politics based on *practice*” (Hall & Wilton 2017: 739). Such a shift calls for thinking through disabilities by exploring the political relevance of *doing with* other humans and non-humans. Infrastructures, caretakers, prosthetic

objects, and strangers in the public space can shape experiences of disability through the blurred boundaries of an embodied being that is not seen as something *that is* as much as something *that does* and *is done*.

EMCA research on disabilities aligns to the notion of disabilities as being dealt with in interaction, albeit several recent contributions have tended to concentrate on intellectual disabilities and on how that affects conversational encounters (Antaki et al 2008, 2016; Finlay 2008a, 2008b, 2008c; Goodwin 2004). Physical or sensorial disabilities have received comparatively less attention, with research by two former students of Garfinkel; Goode (1994) and Robillard (1999), being notorious exceptions. Both accounts concur in describing disabilities as being produced in interaction, and in highlighting the relevant role of other members in facilitating functional practices (see also Goodwin 2004, who describes how a man with aphasia can function as a competent speaker by means of drawing upon the gestures of his interlocutors). More recently, Saerberg (2010) offered an ethnomethodological analysis of the differences between ‘sighted and blind styles of perception’. These accounts, however, while producing a contribution to understanding disabilities as interactional struggles, neglect the role of material devices and infrastructures, or their situatedness as part of larger assemblages like public transport systems.

Produced and contested through practices, disabilities can be understood as being locally defined. These practices are local because they take place in specific contexts and in relation to particular resources at hand, rather than being determined by external, abstract forms of agency. Embodied practices, infrastructures, habits and personal characteristics coalesce in an interplay that outlines particular forms of disability (Papadimitriou 2008). Framed as a process of situated accomplishments, disability is a type of struggle that is always shifting and is affected by ever-changing assemblages of humans and non-humans. As announced at the outset of this section, the question of *what disability is* proves to be restrictive, as it tends to fix the phenomenon – and, with it, body-space relations – to some kind of substance. We ought to avoid essentialist approaches to the matter. Instead, we should be asking ourselves *how disability is made, or done* (Macpherson 2010), and who or what are the agents that have an effect in shaping it.

Technologies and disabilities

Throughout the previous sections, I have presented a critique against essentialist views of the body portraying it as existing independently from the environment and other entities in the world. Within science and technology studies (STS), Moser (2000; 2005; 2006; 2011) delivers an empirically grounded critique of this set of assumptions as she explores how people deal with disability in everyday life, particularly through their quotidian relationship with technologies. Indeed, and echoing the ideas presented earlier on relational approaches to disability, technologies have received an important amount of attention from social research as relevant entities to the experience of being disabled.

Technologies play a crucial role in the ongoing configuration of disabilities in contemporary life. Drawing on Haraway’s (1991; 1997) notion that technological, social, and human aspects of life are not separated by

neat boundaries, we may also consider that “ability and disability are located neither within people nor society, but in the particular sociomaterial arrangement of relations and ordering of practices that simultaneously produce the social, the technological, the embodied, the subjective and the human” (Moser 2006: 376). This emphasis on relations brings my argument back to Actor-Network Theory (ANT). Moser and Law (2003), for example, make the case that disabilities are produced through arrangements of heterogeneous entities, human and nonhuman. Such perspective decentres the traditional view of ‘action’ as the purview of subjects, bringing forward the importance of what is achieved in the *interaction* of humans and nonhumans.

Here, an EMCA perspective is useful in highlighting how competence and functionality can be achieved in the coming together of embodied gestures, words, and the gestures and talk of others (Goodwin 2004). The isolated individual is not enough to produce relevant action – and we may argue, there are no bodies that exist in isolation (Mol 2002), but rather it needs to be seen as in semiotic connection to the materialities available. Goodwin’s (2003) work reveals that we do gestures with things around us – soil, canes, pencils, and even other people’s gestures. In a similar vein, McIlvenny (2019) has observed mobility scooter users as they cross the road, demonstrating that these mobility practices are joint-activities done in conjunction with the device and in coordination with other co-movers. This is an example of how disabled people achieve functional mobilities by drawing on surrounding materialities, and prosthetic devices in particular. This has been analysed in the case of VI cane users (Due & Bierring Lange 2018a; 2018b; 2019), who display skilled use of these assistive devices in order to avoid collision with other pedestrians in orderly fashion.

In the following chapters I will empirically explore these notions by describing how, through skilful embodied work, disabled people develop abilities in conjunction with the affordances of their prosthetic devices (canes, wheelchairs, rollators etc.), which enables them as competent public transport users in the face of the system and other passengers. I will show that these abilities are produced in a process of continuous adjustment (Winance 2007; 2014; Papadimitriou 2008) between user and device, which is transformative for both entities (and other around), and gives way to new possibilities for action. As put by Winance (2014: 1337), rather than delimited by a type of essence, “[p]eople are defined in a relational manner. What they are –their dis/abilities and their qualities – emerges from a heterogeneous network made up of human and non-human entities into which they are integrated”. This, in turn, means that different processes of adjustment between heterogeneous entities will give rise to diverse kinds of solutions to practical problems – unique ways of doing things that are themselves dynamic and under constant rearrangement. Thus, as we will see, even among VI cane users, each particular person-cane pair will develop a slightly different, particular ‘way’ of doing things that is responsive to their own circumstances, habits, and history. Moser and Law (1999) emphasise how these relations between humans and nonhumans compose what is *specific* about a person, shaping their capacity for action and autonomy.

The influence from post-structuralist thinking is evident in the relational notion of embodiment, in which disabilities and embodied capacities are the result of ongoing practices that bring heterogeneous entities in contact with one another. This is particularly true when it comes to experiences of disability, as “*all* bodies are emergent, unfinished and relational (with other bodies and objects), shaped by everyday practices of affect and desire, yet within the constraints and contexts of dominant sociospatial-cultural constructions of dis/ability” (Hall & Wilton 2017: 736). It is in this sense that different forms of dealing with disabilities, like producing an accessible public transport system, has to do with exploring and reinforcing certain types of relation between people, objects, and infrastructures. In a following chapter, discussing Transantiago’s process of becoming an accessible public transport for disabled people, I examine how accessibility is enacted through practical encounters between travellers and materialities that can be adjusted over time.

Interaction with technologies can also be influenced by dominant assumptions about dis/ability, and the expected characteristics of ‘normal’ embodied beings that are sometimes inscribed in mundane devices. In this research I will show how seemingly innocuous technologies like turnstiles, and even orthopaedic objects like wheelchairs, can produce exclusionary interactions that risk becoming stabilised as part of a landscape of what is, and is not, expected and accepted. Inscribed in them at the design stage, technologies circulate assumptions about bodily configurations and capacities that are treated as better, healthier, proper, or normal (Moser 2006). As technologies are part of assemblages that enforce the enactment of ‘competent’ subjects, it is important to explore in what capacity they carry problematic agendas with them. The following section discusses such risks in more detail.

Standardisation, universality, normality

Turnstiles, signs, warning sounds, officers, barriers, apps, and cameras are there, shiny and carefully placed, conforming a smooth path to be traversed by the users of Santiago’s public transport system. They all seem to await, silently, the arrival of the masses, ready to guide, count, accommodate, inform, and distribute the passengers. Suddenly, the gates are open and a flood of uneven, multiple, asymmetric, erratic entities break in running, wheeling, and limping; carrying boxes, prodding with canes, dragging bags, and leaving belongings behind.

Modernistic ideas of frictionless and unproblematic circulation in public transport are underpinned by several unspoken assumptions that can be themselves quite problematic and potentially unjust. The assumption of normal, well-behaved, predictable, and manageable passengers, ready to be transported from one place to another, is a pervasive idea the traces of which we can detect in design projects, official memos, corporative PowerPoint presentations, and projected calculations of aggregated demand. In this sense, it could be said that Transantiago faces a puzzling dichotomy – as many other large sociotechnical assemblages do – between encouraging efficient and fast circulation of users on the one hand (Ureta 2012), and the ‘trouble’ of dealing with the infinitely diverse capacities of differently-abled people, on the other.

The social sciences regard standardisation as a form of ordering that modern systems traditionally strive for. Authors who have explored the emergence (Ureta 2015) – or assassination (Latour 2002) – of large public transport systems have become interested on how the engineers and policy makers behind such infrastructures assume or favour certain types of users. An abstract type of user, less problematic and rugose, produces less friction and unpredictable situations as a member of the system. He (it usually is a he) becomes the template upon which the projected functioning of the infrastructure relies. Eventually, its shape becomes the point of reference against which every other user is measured.

Frictionless fictions of modernity

In her exploration of ‘big things’ in geography, Jane Jacobs (2006) discusses the modernist highrise as an exemplar locus for modern, utopian ambitions. Impressive in scale and enabled by massive bureaucratic machineries, the highrise was at the centre of utopian views of human living throughout the 20th century. As a vehicle for modernist aspirations, the highrise “was both a mark of becoming modern (more civilized, more international) and a mark of becoming different (independent, not colonial)” (Jacobs 2006: 7, see also Holston 1989). The aspirations mobilised by big infrastructures such as the highrise respond to a modern set of values, which revolved around predictability, regularity, and totality. “[S]ameness and everywhere-ness” (Jacobs 2006: 14) were, among other things, crucial elements that modernist infrastructures seemed to enable.

As a massive implementation led by modernistic aspirations (Ureta 2014), Transantiago operates as a delocalised artefact that aimed at operating optimally, regardless of context and locality (Sandercock 1998). Formulated as a top-down definitive solution to Santiago’s transportation needs, the system heavily relied on modelling passenger demand and behaviour according to standards that were treated as universal regardless of their specificity. Part of these assumptions, as Ureta (2015) has noted, were built upon particular bodily shapes, that were in turn inscribed in the design of buses, seating spaces, handrail heights, and so forth.

Bodily standardisation has been at the core of modern architecture, which can be seen in the notorious case of Le Corbusier’s Modulor Man. In his words, “[t]here has already appeared the need for *universal agreement on a single standard* by which to regulate the machine production of certain objects” (Le Corbusier 1947: 20 emphasis added). The pursuit of modernity’s ideology to produce clear, stable forms, as described by Latour (1993), resonates with Le Corbusier’s sayings. Male and white, but also standing, of athletic build, and in an active pose, the Modulor Man embodies the modern values of functionality and agency (Buzzi 2017) while simultaneously passing as a neutral subject. It is the archetypical example of how modern notions of space and hegemonic views of the human body are genealogically interconnected, while also embodying all that this research’s participants are not.

This hidden, prescriptive standard for proper measurement and design has been presented as ‘matter of fact’ and has remained present to this day under many different guises. Rose (1993: 7) sees here a move by the masculinist agenda to “claim itself as universal”, configuring what she terms as ‘the master subject’.

Longhurst (1997: 492) explores how the master subject, as the default point of reference from which the world is understood, “cannot recognize difference from himself in terms which do not refer to himself. The master subject understands his supposed disembodied rationality to be the norm, the Same, the unmarked category”. From this starting point, every other bodily configuration is understood as particular, exceptional, or deviant:

“The strong, well-framed, non-disabled, masculine body is the benchmark and against his benchmark a woman is found wanting and a disabled person – man or woman – is weak and vulnerable. Whenever a corporeal universal is used as a benchmark for ontological categorisation the roll call of those who are invalidated is a significant proportion of humanity” (Hughes 2009: 400).

Falling outside the physical characteristics that are defined as the baseline, those who are older, do not walk, or see, or are weaker or bigger than a certain measure are also left to inhabit a territory outside ‘normality’. Canguilhem (1989) highlights the concept of ‘normal’ as mobilising a double meaning: that which corresponds to the majority of cases (‘normal’ in the descriptive sense), but also that which ought to be (‘normal’ in the prescriptive sense). Inscribed by design in infrastructures and modes of living, authors like Glassner (1992) and McRuer (2006) find that contemporary life is filled with devices that treat able-bodiedness as compulsory. In a future chapter, I return to this theme when I examine how a simple device like a turnstile can mobilise particular notions of the ‘normal body’, while also forcing onto the passengers the practical consequences of not fitting – both into the device and into expected bodily standards.

Provision of public services, accessible buildings, and inclusive working environments have made evident that something needs to be done with the ‘abnormal’ masses. The following section explores research on the efforts made to normalise modern infrastructures, and their users.

Normalising infrastructures and users

The modern aspiration to produce universal, distinct, and stable arrangements has been explored by STS researchers looking at the case of ambitious, large infrastructural projects and systems like highways and power grids (Hommels 2005; Geels 2007). Crucially, some of the most interesting contributions in this sense have come from research focused on large transport systems (Ureta 2012, 2014, 2015; Valderrama 2010).

As part of this field, Sebastián Ureta’s research traces the origins, design, and implementation of Transantiago. Both in the discourse of its promoters and in the decisions made before and after its start, Ureta finds clear aspirations to predictability, regularity, and totality inscribed into the system. The massive scale of Transantiago, along with its premise of completely replacing the previous service, was part of the government’s aim to demonstrate that Chile had become a truly modern nation (Ureta 2015). Transantiago would be the tangible proof of this to the rest of the world. Superseding the previous order in one fell

swoop, without leaving a trace, also resonates with Latour's (1993) description of modernisation as aspiring to exit an 'Old Regime' and replacing it with a definitive, better, new order.

Velho & Ureta (2019: 2) reflect on how, "[i]n many cases, infrastructures appear as the most prominent embodiment of 'modern' entities, from states to ways of being a person. (...) aiming to impose particular kinds of order and rationalization upon worlds that had, so far, existed largely beyond such categories". As a device aimed at producing a reliable and long-lasting form of order, a modern infrastructure follows a prescribed set of expectations regarding proper functioning. In describing the public transport system Aramis – not dissimilar from Transantiago in its ambition – Latour (2002) links these expectations to what he calls a 'dogma of efficiency' that relies not just on a well-designed infrastructure, but also on its users:

"...we are all subject to its discipline, and in our stressed-out state, before and after work, we all have to put up with physically exhausting compressions in uncomfortable spaces and annoying waiting periods owing to breakdowns in the traffic flow" (31).

A certain 'docility' is expected from the users of these large modernising infrastructures (Akrich 1992; Latour 2002). For the system to operate *normally*, the users need to be effectively recruited. To put it differently, without the cooperation from its users, the system will fall apart. Lack of cooperation on the users' part does not necessarily take the form of active subversion or deliberate disobedience, but it can also correspond to certain ways of being and doing that regularly give the system trouble. Relatedly, in Latour's semi-fictional account of the system Aramis, a transport engineer puts it this way: "You know, when you invent an urban transportation system, you always get into trouble with the little old blind lady with a heart condition who gets her umbrella stuck. You always have to take her into account" (Latour 2002: 26).

Ureta (2012) finds a similar situation in the case of Metro, Santiago's underground system, when it became known that Transantiago would start operating in 2007. Due to a new integrated tariff that encouraged intermodal journeys, the managers of Metro knew that their public would change dramatically with the start of the new system. Lacking what they called a 'Metro culture', the new users of the underground were seen as unruly "barbarians" (Ureta 2012: 8) needing to be incorporated into the system; educated and civilised. This resonates with the case of Transantiago engineers reacting to disabled users as problematic entities that are difficult to accommodate and cater for, particularly as they are being belatedly taken into account as users who are entitled to access the system by law. The issue of disabled people being seen as 'infrastructure disruptors' by those in charge of normalising these massive systems will be explored in a following chapter.

Users and technological arrangements are inextricably linked, embedded in a process of co-construction (Oudshoorn & Pinch 2003). The user is a complicated mixture of behaviours and embodied capabilities, and it cannot be separated from the heterogeneous technologies and infrastructures surrounding it: "they both [user and infrastructure] emerge when such devices are continually incorporated into practices" (Ureta

2012: 3). Thus, normalising Transantiago, in response to its initial critical months in operation – described as *failure* by many influential voices in the public sphere – went hand in hand with ‘normalising’ the users themselves (Ureta 2014). The failures of Transantiago were seen as the result of poor implementation of the system’s original design, but also as an accumulation of ‘error’ originated from ambient factors, among which the users and their ‘irrational’ behaviour were central.

At this point, relevant insights can be obtained from ethnomethodology, which concerns itself with rational order and how this is produced in ordinary interactions. Eschewing the idea of a delocalised, decontextualized, abstract understanding of order, ethnomethodology describes the emergence of particular forms of order* with a “*”, whereby “EM seeks to respecify them as locally produced, naturally accountable *phenomena* of order*” (Garfinkel 2002: 118). Drawing on EM, we are enabled to think through ‘rationality’ and ‘order’ not as universal concepts, but rather as the particular accomplishment of local interactions (Garfinkel 1967).

Fare-evasion – something that Transantiago managers deem irrational and morally accountable – is, in practice, *locally* dealt with in ordinary encounters. Drawing upon video analysis, I will describe how the contingent, occasioned moralities and rationale of dodging practices are locally produced in the interaction of users, Transantiago staff, and materialities. Common sense knowledge and moralities, understood as practical accomplishments of everyday life, are then produced in practice and not passively received from above. The effectiveness, intelligibility, and orderliness of practices should not be assessed “by using a rule or a *standard obtained outside* actual settings within which such properties are recognized, used, produced, and talked about by setting’s members” (Garfinkel 1967: 33, emphasis added). Rather, the tools for assessing the rationality and moralities of a certain practice are already present in how the practice is locally organised.

Nevertheless, different disciplinary devices have been brought forward in order to govern (Baerenholdt 2013) the behaviour of Transantiago’s users in a standardised manner. Signage and ads encourage and regulate certain types of interaction between passengers (Ureta 2012), and as I will later show, physical barriers and blockades aim at regulating their behaviour as paying passengers, while also creating problematic outcomes of ill-fitting in the encounter between diverse users and a restrictively designed turnstile.

It is relevant to wonder, then, what are the standards and expectations according to which these devices are deployed, unpacking what exactly are the subjects that Transantiago pursues to enact through these governing devices (Ureta 2015). The human profile that these infrastructures attempt to produce is usually problematic in its abstraction of reality. These “human-beings-on-paper” (Latour 2002: 183) are endowed with properties, abstracted assumptions about actual people that might end up not conforming to what is expected of them. In Latour’s (2002: 187) words, “will flesh-and-blood passengers subscribe to Aramis’ version of them, and settle nonchalantly into the comfortable spot that the experts have spent ten years preparing for them?”.

Other authors from the STS field have produced a similar type of argument, more generally referring to how technologies are designed and developed alongside their users (Akrich 1992; Jain 1999; Shove 2003). Crucially, Akrich (1992) provides the concept of *script*, which refers to the set of expectations, about prospective users, that designers inscribe in the device they are developing. Scripts “define actors with specific tastes, competences, motives, aspirations, political prejudices and the rest” (Akrich 1992: 208), thus reflecting the designers’ views of what an appropriate user of a certain infrastructure might be like. This has been critically addressed by social scientists studying disabilities (Butler & Bowlby 1997; Imrie 1997, 2000a, 2000b, Imrie & Kumar 1998; Gaete-Reyes 2015), who warn against the risks of normalisation enacted by spatial design and policy making. I will also address this in describing the interactions between Transantiago users and ramps, lifts, turnstiles, seating spaces etc, with an aim at denouncing how the continuous creation of disabling environmental barriers are in fact rooted on ‘assumptions’, ‘traditions’ or ‘habits’ that are often times mobilised by scripts.

Thus the normalisation of a policy infrastructure – a public transport system, for instance – requires the definition of “an optimal model that is constructed in terms of a certain result, and the operation of disciplinary normalization consists of trying to get people, movements, and actions to conform to this model” (Foucault 2007: 85, cited in Ureta 2014: 4). Such a model, in the case of large infrastructures like Transantiago, may follow principles of efficiency and minimum cost for a maximum of benefit. These templates of efficiency can also include certain assumptions about the characteristics of a ‘normal user’ – their capacities, habits, and needs – especially if they are functional to a model of efficiency. And in fact:

“Part of the problem is that the disabled body cannot easily be the ‘ordinary body-of-functions’ demanded by the capitalist West, and so it is entirely unsurprising to find many accounts couched in terms of how difficult it is for disabled people to cope with the things that they are expected to do by non-disabled society” (Hansen & Philo 2007: 502).

From these accounts we start to realise how modern pursuits to produce normalised systems and users entails the production of segments of the population who fall outside the category of ‘normal’. Scripts can – and often do – produce unexpected results, bringing forward subjects that are then enacted as *strange things* (Ureta 2015). These are the unexpected results of ordering practices; the mismatch between scripts (expectations) and users (actuality). “In this sense,” asserts Ureta (2015: 136), “every single ordering exercise produces strange things as much as it produces *normal* subjects”. A modern system that heavily relies on normalisation, then, holds the power of demarcating notions of desirability upon its users, marking some as ‘strange’ and others as ‘normal’. Disabled people, who do not conform to modernistic, standardised views of the ‘normal’ – because they do not fit, sit, or orient themselves in space as the unmarked category does – are seen as strange, problematic entities for the system. The case I will analyse in later chapters, on the turnstile found in Transantiago buses, aims at showing how exactly the demarcation of the normal and abnormal is produced and contested in interaction, as people are able to respond and resist the script of these devices.

Rather than a means to improve the lives of people, normalisation of infrastructures operates as a means to maintain power (Ureta 2014) – staying with the belief that there is *one way of doing things right*. Or, at least, that one specific way should be standardised across a large sociotechnical system. The question about the consequences for those who *do not fit* the standard, however, remains open.

Doing things differently

“Normalcy is the fantasy”, says Davis (2002: 30, cited in Hughes 2009: 407), of which we have seen examples in modernist infrastructures. And yet, these fantasies are made to circulate and exert a very real influence over the design and implementation of infrastructures, as we have seen from Ureta’s account of the Transantiago case.

The mismatches between the expected ‘normal’ user of an infrastructure and the actual characteristics of the people encountering it can bring forward instances of ‘error’ that mark those users involved. These mismatches unfold a complicated geography of what becomes more visible, and that which remains taken for granted. While some socio-technical arrangements – as ‘successful’ encounters between a user and a technology according to the corresponding script – have the privilege of remaining in the background, unnoticed; other “[n]on-standardized bodies and subjectivities on the other hand appear as problematic and particular, and so do the material arrangements and relations that disable or enable them” (Moser 2006: 388).

Garland-Thomson (2011) understands these instances of salient mismatch between person and environment as *misfitting*, as a means of understanding the problem not as located on the inherent characteristics of a person, but rather as the outcome of a misalignment between infrastructures and the humans encountering them. In practice, however, misfitting carries undesirable connotations, and entails a cost for the person experiencing it. While some people maintain a privilege of material anonymity (Garland-Thomson 2011) – not causing attention to be drawn to them – others end up being made *visibly out of place*, as they become involved in misfitting situations.

Being systematically exposed as outsiders is a prevalent aspect of disabled people’s lives, who “have arguably yet to ‘belong’ in such places and it is as if their presence is treated as a form of trespass” (Hansen & Philo 2007: 496). Cresswell (1996) analyses how people and things shown to be out of place also expose what are the entities that have the privilege of being ‘in place’ on a regular basis. In this sense, the constitution of places as ‘normal’ (i.e. right and good) depends on the corresponding indication of the deviant and wrong. Thus, the definition of the boundary separating the normal and the deviant is a geographical expression of privilege and dominant cultures. This boundary, as we will see, is inscribed in infrastructures and objects built upon standardised ideas of the human body, against which “non-standardized and disabled bodies will always come out as problematic...” (Moser 2006: 388).

Enacting alternatives to these orderings, however, entails work, adjusting and adapting our relation to a precarious assemblage of things. This research shows examples of this by describing the limitations and

possibilities of alternative forms of design, that remain open to diversity and eschew the constraints of modernistic aspirations (Sánchez Criado 2017; 2019); and also by highlighting the importance of everyday interactions as a tool to revert these orderings (Moser 2005). As the production of ‘normality’ takes place in relation to *how we do things* (Hansen & Philo 2007), then it is through practices that it may be possible to challenge the modernistic notion of there being *just one way of being normal*.

Conclusion: An infrastructure of practices

This review of relevant works of research was an attempt to bring together three lines of inquiry that rarely intersect all at once. Exploring the everyday relation between the Transantiago system and its users as embodied beings benefits greatly from paying attention to mobilities, geographies of disability, and normalisation of infrastructures. Drawing on a combination of ANT, assemblage work, and EMCA, I will remain attentive to how Transantiago’s overarching aspirations are circulated through materialities and dealt with in practice by humans and nonhumans encountering one another. In this sense, I contend that abstract and delocalised notions of order and rationality fall short both as a means to make Transantiago’s functioning possible, as well as for understanding what is it exactly that makes it hold together every day.

Following a perspective critical of modern notions of movement as pure ‘flow’, I instead choose to trace the practical difficulties and skilled effort entailed in making Transantiago accessible for disabled users, and for disabled users to become passengers of Transantiago. Both ‘ends’ of this equation, we will see, are deeply intertwined. The high-level design and operation of a massive public transport system is affected and depends on the embodied practices and capacities of its users, just as much as these practices are enabled or constrained by design and policy choices.

EMCA provides crucial tools for approaching this case, while also presenting knowledge gaps that I intend to contribute to with this research. Though EMCA-led studies have done extensive work in mobilities, they have tended to neglect the mobile experiences of disabled people, in public transport in particular. When EMCA has concentrated on disabilities, it has done so in a more ‘a-spatial’ way, forfeiting the exploration of the methods disabled people deploy in order to move about their environments and negotiate their journeys in urban spaces (McIlvenny 2019). Overall, it seems that an EMCA approach to disabilities has lacked a geographical perspective, which, as I have argued earlier, is crucial to continue expanding our understanding of how disabilities are done in everyday life.

Ethnomethodology as an approach remains attentive to the members’ perspective and avoids at all costs to rely on imposed categories and assumptions, which is often the case for disabled people not only as research participants, but as members of society in general. Those who, working from an ethnomethodological standpoint, have studied the everyday lives of disabled people, concur in that it is the ideal toolset to approach disabilities (Goode 2003; Robillard 1999). As Goode (1994: 204) has asserted, “[e]thnomethodological observation is particularly suited to describing difficult-to-describe worlds”.

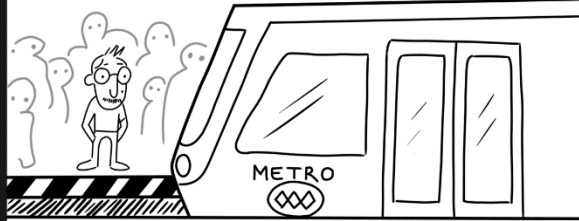
In the following chapters I trace the matter of disabilities as an unfolding process of practical struggles, rather than as a static category or essence. Drawing upon relational geographies of disability (Hall & Wilton 2017), this thesis will attempt to describe how disabilities are enacted in the Transantiago case by describing the ways in which its users interact with each other, and with the system's devices and materialities. Similarly, a relational reading of disabilities will be instrumental in blurring the theoretical separation between individuals, between individuals and environment, and between humans and nonhumans. Free of these constraints, I will be able to describe how disabilities are enacted in practice as human capabilities, infrastructures, and assistive devices are brought together. This will allow me to highlight practices of embodiment, attunement, cooperation, and assistance as valid forms of making disabled people competent and legitimate public transport users.

From this standpoint, I will explore the case of a public transport system encountering and being shaped by the embodied practices of its users. By the same token, the people navigating the system encounter devices and protocols attempting to steer and shape them in specific ways. The following empirical chapters explore instances in which travellers and materialities interact and produce arrangements that enable the continued existence of the precarious assemblage that is Transantiago. From the practical encounters that enact accessible arrangements for disabled people, to the skilled ways in which prosthetic devices are used to coordinate with fellow passengers, to the local production of the moralities of fare-evasion, to the uncomfortable adaptations to exclusionary governing devices, this research describes a geography of practices that do not only occur in Transantiago, but contribute to holding it in place.

Throughout this thesis, I present stories of collaboration and antagonism between Transantiago and users who, for different reasons, escape or exceed its totalising views of predictability and order. I will describe how these encounters produce outcomes that are sometimes painful, and sometimes promising. My expectation is to hint at the fertile opportunities behind a public transport system that recognises itself in the practices of its users, rather than regarding their local and radically diverse ways of doing as problematic things to be standardised. If anything, the stories that I will share should serve as a testimony that there is much to be gained from recognising that an infrastructure, and the embodied practices of those who use it, all take part of the same assemblage.

The purpose of my RESEARCH IS TO BE AN ACCOUNT OF EVERYDAY life,

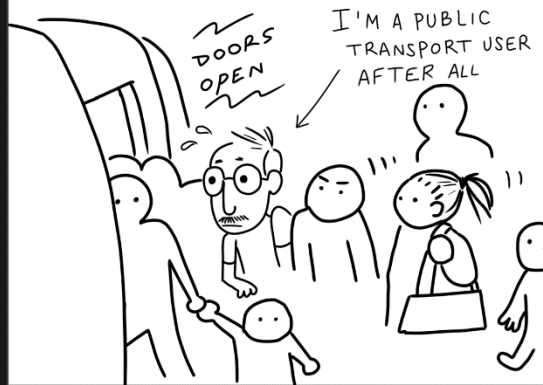
BREAKS



Which I SEE AS MADE AND ORGANISED THROUGH EMBODIED PRACTICES

DE CERTEAU 1984

As an ethnographer, approaching the everyday entails taking part of it



EVEN MORE SO, SINCE I'M CONCERNED WITH THE EMBODIED DIMENSION OF USING TRANSANTIAGO



SOME ACCOUNTS, INSPIRED BY NON-REPRESENTATIONAL THEORIES, ARE CONCERNED WITH EMBODIED KNOWLEDGE AS EXCLUSIVELY PRECOGNITIVE



I agree that much of everyday life is composed of such EMBODIED PRACTICES AND KNOWLEDGES.

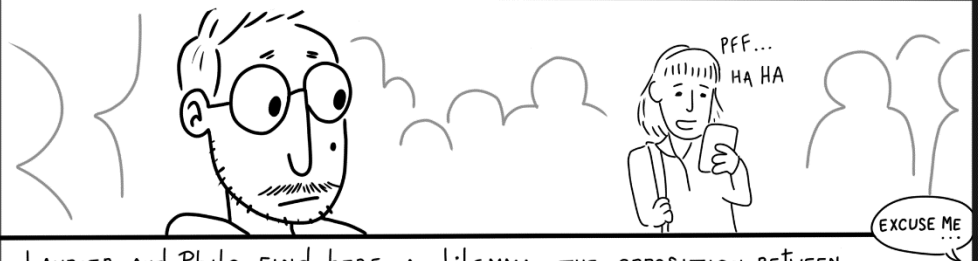
BUT EVEN IF WE CAN'T EASILY EXPLAIN OR DESCRIBE THEM, THEY'RE SKILFULLY DONE AND EXHIBIT THEIR OWN ORDERLINESS



We may feel tempted to treat these HABITS AND PRACTICES AS "UNSPEAKABLE, UNSAYABLE AND UNWRITABLE" (LAURIER & Philo 2006:354)



BUT WE NEED TO BE CAREFUL WITH APPROACHES THAT LOCATE HABITS AND KNOWLEDGES IN THE BODY, TREATING IT AS OPPOSED TO THE MIND... OR TO LANGUAGE



LAURIER AND PHILLO FIND HERE A DILEMMA - THE OPPOSITION BETWEEN AUTOMATED, PRE-REFLEXIVE ACTIONS, AND GIVING ACCOUNTS OF OUR ACTIONS. BUT...

Isn't talking something we do with THE BODY, after all?



Ordinary talk HARBOURS both INTENTIONALITY AND AUTOMATISM



Would you LIKE to sit?

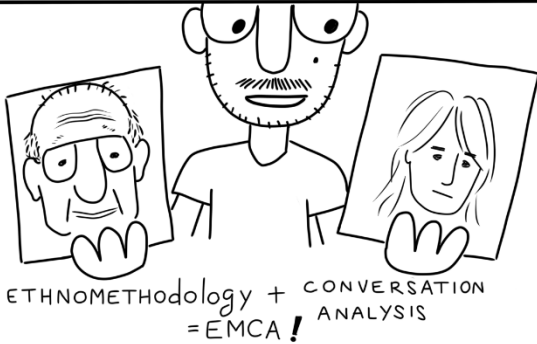
VERBAL OFFER

smiling

We might not be able to EXPLAIN HOW WE DO IT, but there IS A WITNESSABLE METHOD to it

This is why I ended up relying on EMCA, an analytical approach that combines the work of Harold Garfinkel and Harvey Sacks

EM studies the PRACTICAL methods that MEMBERS of a group use to achieve social orderliness.



Take Helen's kitchen for example. She is visually impaired and has arranged her kitchen in a way that embeds her method in her space, making it intelligible for her



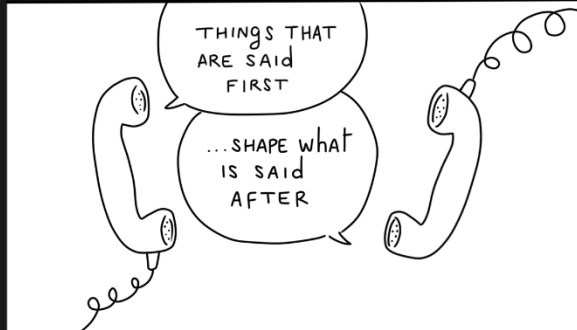
POTS, PANS AND TOOLS HANG FROM THE WALL WITH A REGULAR SPACE BETWEEN THEM

SPICES AND INGREDIENTS ARRANGED NEATLY ON TOP.

COPIED FROM GARFINKEL (2002)

CONVERSATION ANALYSIS builds upon this and emphasises the sequential aspects of interaction

CONVERSATIONAL EXCHANGES REVOLVE HEAVILY AROUND THESE 'UNITS', OR ADJACENCY PAIRS, IN WHICH THE TURNS PEOPLE TAKE TO SAY THINGS AFFECT THE NEXT ONE

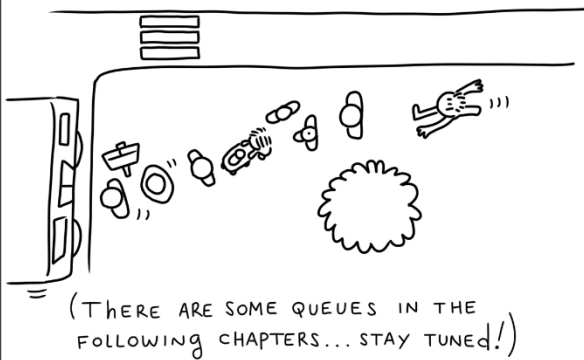


- Hello
- Hello, is this DANIEL?
- Yes, I'm DANIEL. Who's this?
- Uhh...



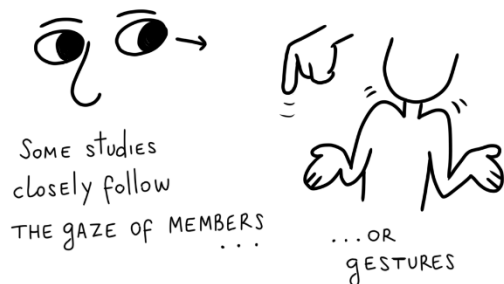
QUEUING is a good example of an everyday PRACTICE BASED ON SEQUENTIAL ORDER

Among other things, an EMCA approach will be interested in how order is locally achieved and made intelligible to people.



EMCA'S TYPE OF ANALYSIS IS ATTENTIVE TO DETAIL, TO SAY THE LEAST

INTONATION, PAUSES, AND TALK OVERLAP ARE ALSO TAKEN INTO ACCOUNT. GAIL JEFFERSON'S TRANSCRIPT NOTATION (2004) WAS DEVELOPED AS A MEANS TO 'PRESERVE' what IS BEING SAID BY PEOPLE WITHOUT 'FLATTENING DOWN' how THEY WERE SAYING IT. BEING TEXT-BASED MAY SEEM RESTRICTIVE, BUT OVER THE LAST DECADES THERE'S BEEN GROWING INTEREST IN MULTIMODAL TRANSCRIPTION



(Excerpt from Zimmerman and West corpus, 1975)

Male: Where the hell have you been?

(1.4)

Female: Well I had to find Foster n' **[then]**
Male: **[Do]** you realize

what time it is?

I'M INTERESTED IN EMBODIED PRACTICES, SO I'LL BE USING VIDEO RECORDINGS OF PEOPLE USING THE PUBLIC TRANSPORT.

HERE'S A 'GRAPHIC TRANSCRIPT' TAKEN FROM LAURIER ET AL (2015). DRAWING ON COMIC-STYLE NARRATIVE, IT BRINGS VISUAL AND AURAL ELEMENTS INTO THE SAME TRANSCRIPT

THIS POSES THE QUESTION: HOW TO BRING VIDEO INTO TEXT FORMAT?

LOOKS COOL, DOESN'T IT



Transcript 3a. Dani's reconnaissance and Carol's confirmation of their mistake.

BY USING SPEECH BUBBLES, COMICS MAKE TURNS IN TALK VISIBLE, SIMILAR TO HOW TRADITIONAL CA TRANSCRIPTS DO

READ IT LEFT TO RIGHT TOP TO BOTTOM



THE SELECTION OF VIDEO FRAMES GIVES A SENSE OF PASSING OF TIME, AND THUS RHYTHM. THE SHIFTING CAMERA ANGLE ALSO CONVEYS A SENSE OF SPATIALITY AND MOBILITY

Transcript 3b. Reading the street names and adjusting the map.

FROM LAURIER ET AL. 2015

'Mediated Pedestrian Mobility'

REPRODUCED WITH PERMISSION FROM CORRESPONDING AUTHOR

THIS FIRST

THEN THIS

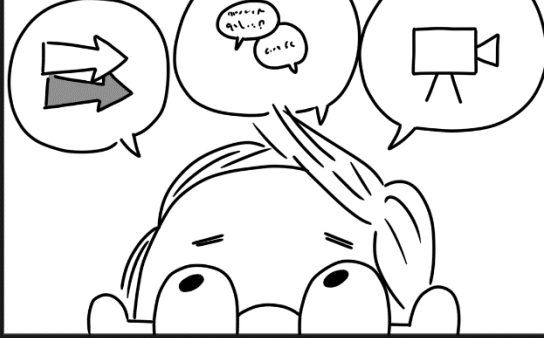
ALSO, NOTICE HOW BOTH SERIES OF PANELS ARE TWO SIMULTANEOUS PERSPECTIVES OF THE SAME STORY. THE SPEECH BUBBLES GIVE THE READER A REFERENCE POINT TO READ THEM COMPARATIVELY.



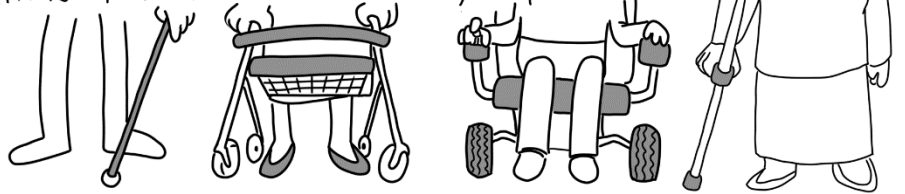
LAURIER (2014) EXPLAINS THAT GRAPHIC TRANSCRIPTS ARE MORE APPROPRIATE FOR REPORTING ANALYSIS. I WILL USE THEM AS AN EDITED COMPOSITION TO GUIDE THE READER'S VIEW OF SEVERAL INTERESTING CASES

CONCRETELY, I BASED MY FIELDWORK IN THREE 'TECHNIQUES':

ETHNOGRAPHIC
GO-ALONGS INTERVIEWS VIDEO

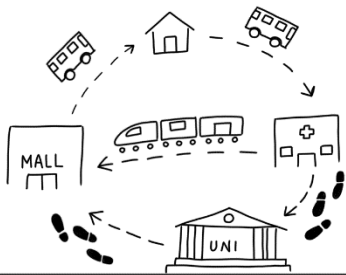


THROUGHOUT THREE VISITS, I SPENT NINE MONTHS IN SANTIAGO (THE CITY I AM FROM), INTERVIEWING TRANSPORT ENGINEERS, CONDUCTING PARTICIPANT OBSERVATION IN THE BUS AND METRO SYSTEMS AND, MOST IMPORTANTLY, MEETING AND USING TRANSANTIAGO ALONGSIDE PEOPLE WITH DIFFERENT KINDS OF DISABILITIES OR MOBILITY IMPAIRMENTS.



AS PART OF A BROADER ETHNOGRAPHY, I STAYED IN TOUCH WITH EVERY PARTICIPANT THROUGHOUT MY FIELDWORK. THIS ALLOWED ME TO CONDUCT AT LEAST TWO GO-ALONGS WITH SEVERAL OF THEM (SOMETIMES FOUR TIMES)

THIS WAS NOT ALWAYS POSSIBLE, THOUGH. I ENDED UP ACHIEVING VARYING DEGREES OF TRUST WITH MY PARTICIPANTS



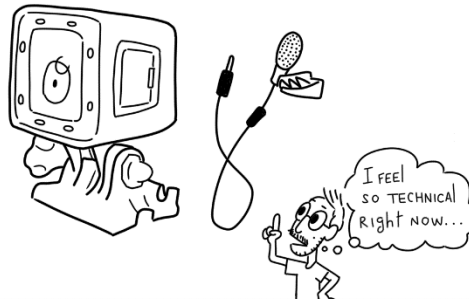
I WAS ABLE TO GRASP, MORE FULLY, THE GENERAL DYNAMICS OF THEIR EVERYDAY TRAVELS, NOT LIMITED TO JUST ONE TRIP TOGETHER



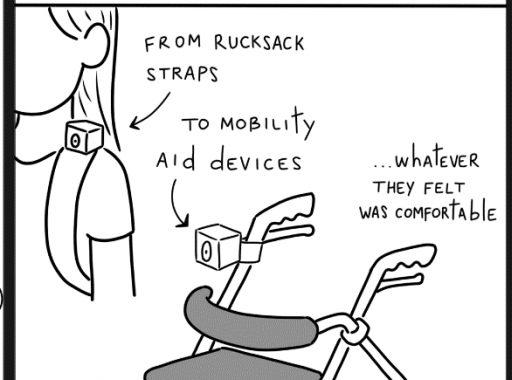
OTHER TIMES I ENDED UP CHANGING MY PARTICIPANTS OLD CURTAINS



THE TRIPS WERE VIDEO RECORDED. I USED A GoPRO HERO SESSION, QUITE INCONSPICUOUS, AND TWO SETS OF LAVALIER MICROPHONES.

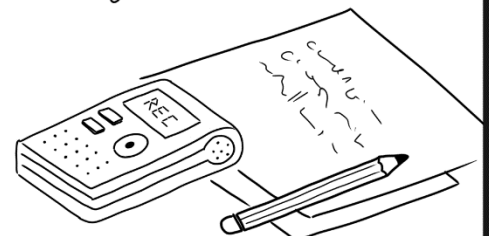


WE AGREED, WITH EACH PARTICIPANT, ON A SUITABLE PLACE OF THEIR BODY TO ATTACH THE CAMERA TO.



I ALSO CONDUCTED SIT-DOWN, SEMI-STRUCTURED INTERVIEWS WITH THE PARTICIPANTS. ALWAYS THE FIRST TIME WE MET, AND SOMETIMES AGAIN LATER TO DISCUSS NEW, OR MORE PERSONAL, TOPICS. I FEEL LIKE I GOT TO KNOW MY PARTICIPANTS QUITE WELL, AND WITH SOME OF THEM I NOW ENJOY A RELATIONSHIP OF CARE

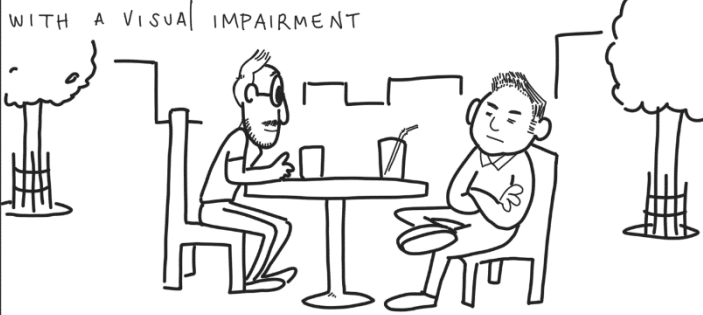
I WILL DISCUSS EACH TECHNIQUE IN MORE DETAIL, FOCUSING ON THE CHALLENGES I ENCOUNTERED.



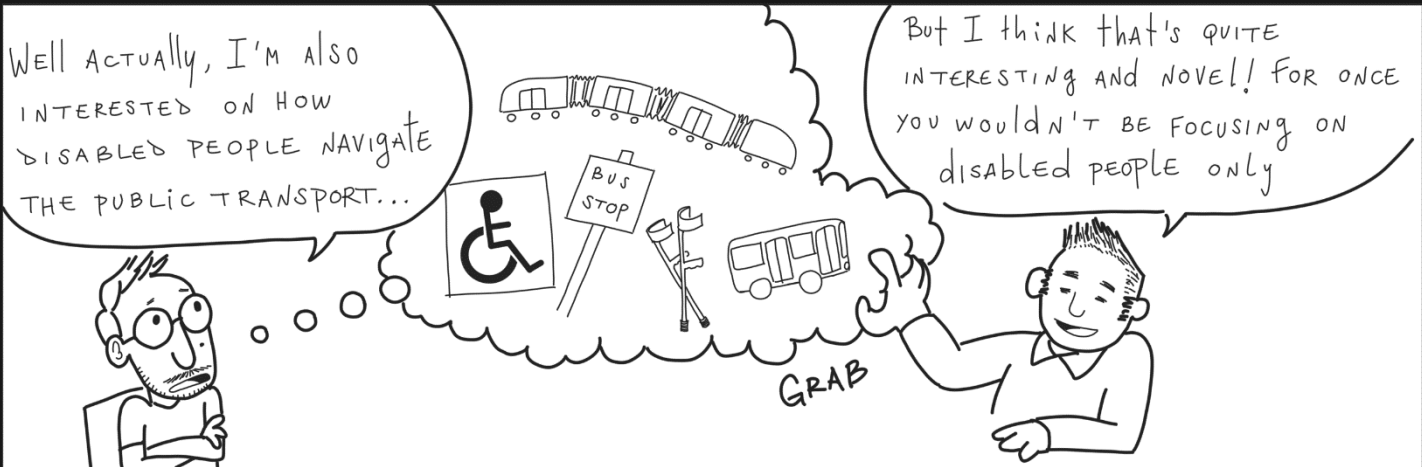
I WILL START WITH THE ISSUE OF INTERVIEWING MY PARTICIPANTS

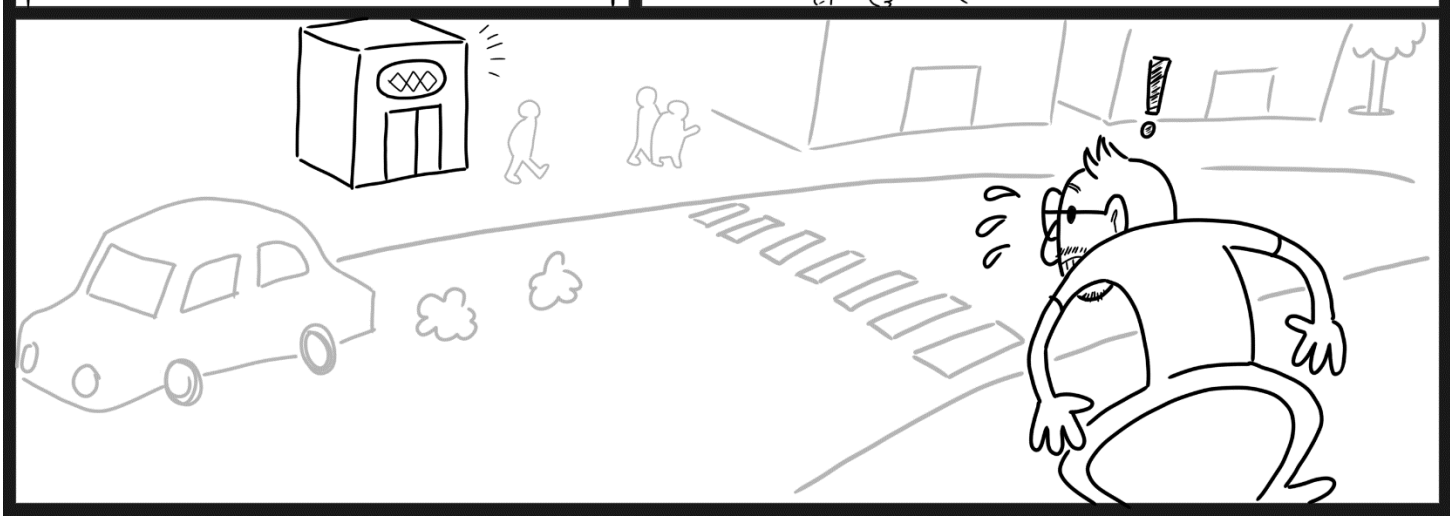
INTERVIEW DIFFICULTIES

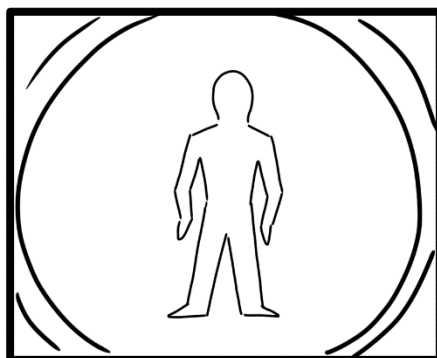
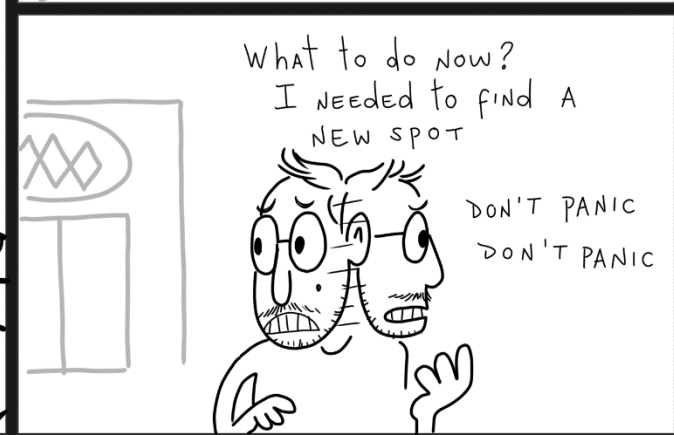
I met with Roberto, a VI activist who works at the Catholic University and has a blog on living with a visual impairment



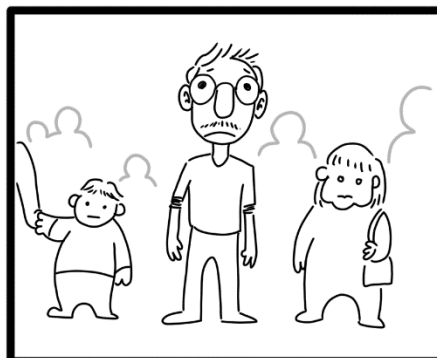
I explained my research to him. His answer was quite direct



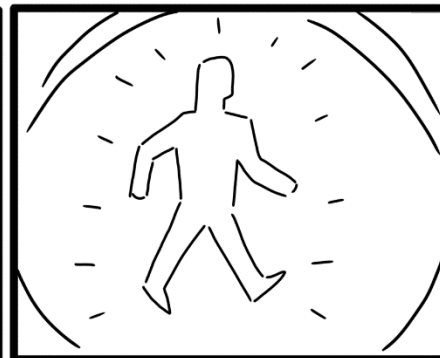




I thought I could ANTICIPATE
THIS, BE MINDFUL OF
OUR DIFFERENCES

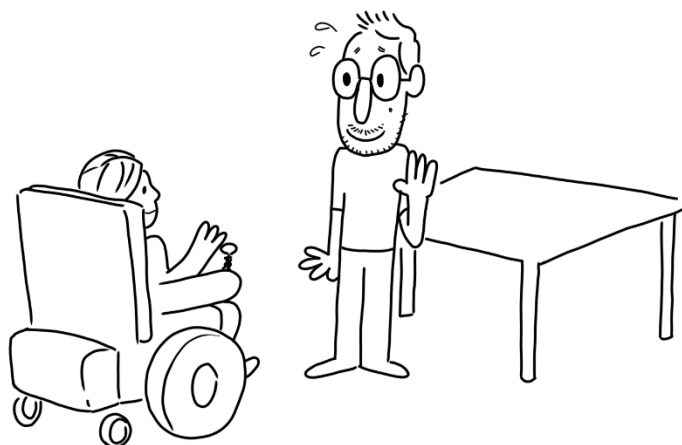


RATHER, OF MY PRIVILEGE.
BUT IT WASN'T EASY

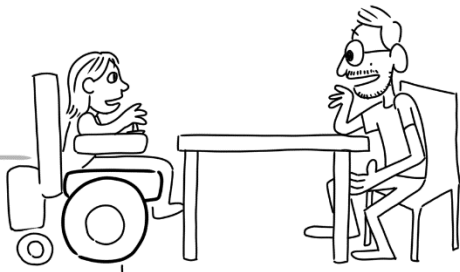


IT TAKES PRACTICE TO UNDO THE
ASSUMPTIONS PROVIDED BY A WORLD
TAILORED TO MY CAPACITIES

WE ENDED UP MEETING IN THE CATHOLIC UNIVERSITY'S
CENTRAL CAMPUS. I WAS LUCKY TO FIND AN ACCESSIBLE
PATH FROM THE METRO LIFT TO HERE.



WE TALKED ABOUT HER LIFE AS A WHEELCHAIR USER IN THE PUBLIC TRANSPORT.

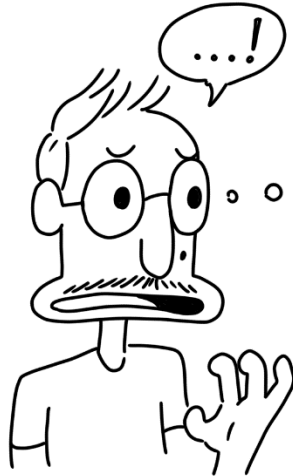


I WAS AFRAID MAKING A MISTAKE, SOMEHOW BEING INSENSITIVE. BUT I RELAXED OVER TIME.

IT IS DIFFICULT NOT TO FEEL INSECURE AS AN INTERVIEWER WHILE ALSO TRYING TO BUILD TRUST AND TO SET A RELAXING ATMOSPHERE



HEH, SO IT WAS LIKE A BLIND DATE OF SORTS?



What the @%%# did I just say??!



HA HA YEAH, LIKE GETTING MARRIED BEFORE MEETING YOUR PARTNER



she laughed



NATALIA AND I KEPT CHATTING FOR A LONG WHILE. AND EVEN THEN, WE WERE JUST GETTING TO KNOW EACH OTHER. WE AGREED ON MEETING AGAIN SOON, TO DO A GO-ALONG TOGETHER AND RECORD IT.



MEETING HER HELPED ME FEEL A LOT LESS NERVOUS IN MY FOLLOWING INTERVIEW

EMPIRICAL CHAPTER 1: ASSEMBLING ACCESSIBILITY⁴

It's 6:40 pm in Santiago, near the Tobalaba Metro Station. I am early for my meeting with Natalia, but this is intended on my part. Last time we met we had some trouble finding our way around the city centre, since Natalia's electric wheelchair is not always accommodated by the material surroundings. This time, I wanted to make sure we would be able to locate a suitable spot for our interview. She turns up punctually at 7:00 pm, and I have already found a comfortable table outside a café.

We chat over coffee about her first experiences using an electric wheelchair, years ago. I tell her I feel bad for making her wait an extra hour before going home, but she does not seem worried. Peak hour tends to be particularly bad on Fridays, and she prefers to kill some time before venturing down into the crowded and suffocating Tobalaba station. But now it's almost 8:00 pm and, with a bit of luck, it will have cleared up a bit.

We find the lift down to the station's foyer. We are the only ones waiting for it, but I hesitate. More stations have recently been equipped with lifts like these as part of an accessibility policy by Metro, which has ignited controversy around who is and is not entitled to use them. Seemingly able-bodied people attempting to use the lift are sometimes subjected to public scorn, and media coverage has tended to cast a light of scandal over the issue. I am still not sure what my position is on the matter, but I do worry about not being able to quickly find Natalia if we go down to the station through different entry points. The lift arrives. Natalia goes in and I follow after her. The doors close behind us. As we descend, Natalia tells me that she finds this lift more comfortable than another one that is across the street, slightly out of her way. This reminds me that it has not been that long since disabled people have been able to navigate Santiago's public transport system, let alone having preferred routes and points of access. Our bus and underground systems have changed, and dramatically so, for this to become a reality. I look around and internally wonder 'How did this lift get here?'...

In this chapter, I will focus on the issue of accessibility, and on the arrangement of things and practices that make it emerge. For Santiago's public transport to offer an 'accessible' experience to someone like Natalia, a whole collection of things had to be put in motion. From a hostile and dangerous system prior to Transantiago, to its beginnings in 2007 and leading up to its current state, Santiago's public transport system has mobilised a series of policies and design standards aimed at enacting an 'accessible' public transport

⁴ Part of this chapter has been published in Muñoz (2018).

service. Accessibility has made its appearance, or rather, it has been slowly made to emerge by legal and technological devices, but also everyday practices taking place throughout Transantiago.

Transantiago's process of becoming accessible has been inspired by several principles of the Universal Design (UD) framework. Albeit well-regarded and a main reference point in the accessibility field, UD has also become the focus of a growing body of critics who question its underlying assumptions and orientations toward disability (Hamraie 2012, 2016; Winance 2014; Erkilic 2011; Gibson 2014; Imrie 2012). Most of these critiques foreground UD's seemingly weak reflection on its own theoretical background, having to do with certain problematic aspects of the idea of 'design for all'. This chapter will contribute to that debate by means of interrogating the borders of accessibility as a concept, and by thinking of accessibility as an assemblage of heterogeneous things coming together. By drawing on a notion of accessibility as made out of interrelations (Titchkosky 2011), I contend that rather than a design horizon – as presented by UD – accessibility is better understood as a composition of practices, interactions and infrastructural implementation, requiring of constant work and attention to continue to hold together. I argue for a grounded and practiced notion of accessibility that remains open to the influence of heterogeneous actors, and not the exclusive purview of technical experts. In so doing I problematise some of UD's core assumptions, seeking to contribute to our understanding of how accessibility is made to continuously take place in everyday life. Hence, in this chapter I will approach accessibility by describing the actors involved in its emergence, and the assumptions and capacities they bring with them.

In the first section I trace the history of a particular legal device; the bill 20 422 which was passed into law in 2010. Designed to enforce the social inclusion of disabled people in Chilean society, the bill triggered a strong process of transformation within Santiago's public transport system. By interviewing engineers and transport policy makers, I reflect on Transantiago's capacity to change as an infrastructure. Rather than fixed, static arrangements, infrastructures can be understood as things in constant reconfiguration (Graham & McFarlane 2014; Velho & Ureta 2019). Seeing Transantiago as a process, rather than as a finished thing, allows me to trace its process of becoming an increasingly more accessible space. This requires conceptualising change as a constant, laborious, and context-specific accumulation of small adaptations, rather than the implementation of one, definitive, big reform. Albeit less than grandiose and usually provisional, I argue that such collection of small adjustments is the platform that, to an extent, has made (and continues to make) possible the admittance of disabled people into Transantiago. With this I seek to contest the notion that inclusion can be achieved through a 'good design' procedure that would give way to a definitive solution for accessibility needs. I will explore the limitations of pursuing a definitive solution for accessibility, as this assumes the existence of an ideal state in which the problem has been solved, requiring no further action. Good design, in this sense, can also take the form of multiple iterations, and testing of diverse adjustments can be more welcoming to bodily diversity. Within this section I will articulate two main ideas. First, that many technical adaptations and procedures tend to conceive disabled people as problematic agents that 'disrupt' an already existing assemblage of flows, protocols and devices. Second,

that even though they are often regarded as ‘static’ and ‘rigid’, infrastructure materialities can be much more flexible and adaptable than we would expect, capable of supporting nuanced and context-driven alterations.

In the second section, I attempt to complement the notion of accessibility as the expert implementation of infrastructure and devices. Thus I approach accessibility as a process of adjustment between people and the environment (Winance 2014; Ingold 2000) that hinges upon the user’s capacities, knowledges, and skills just as much as on the design quality of surrounding materialities. Within this section I collect and describe everyday practices of adjustment, performed by wheelchair users and VI people, and other public transport passengers. These stories show how accessibility is socially configured through ordinary practices, locally enabling spaces and arrangements that are more suitable for users. This approach invites us to conceptualise accessibility not as an intrinsic characteristic of objects, inscribed in them at the design stage, but rather as enacted (Mol 2002) in the encounter of materialities and users. I contend that the role of disabled users is much more crucial and active than traditional approaches to accessibility design tend to assume. The question of how spaces *become* accessible to users calls for further exploration, as it is just a recent notion that users exert influence over the accessible qualities of the infrastructures they interact with (Titchkosky 2011). By paying close attention to the capacities and expertise brought about by the users themselves, UD’s principle of producing accessible spaces *regardless* of the user’s capacities is put into question. My aim in this section is to foreground the crucial individual capacities and interactional accomplishments that contribute to infrastructures becoming accessible.

Finally, in the third section I explore how people assisting one another, mediating in the interaction between disabled users and available materialities, props-up Transantiago as an accessible infrastructure. These interactional accomplishments contribute to the *holding together* of the system’s functioning. While UD’s principles hinge upon the idea of users being granted access to space without depending on others, I draw together the notions of independence and assistance, which are usually put in opposition to one another. The cases I analyse portray the nuances of how help is recruited, offered, and accepted or rejected, showing that giving aid to others is the result of multiple capacities coming together – an interactional achievement rather than a unidirectional delivery of help. Assistance is something that needs to be offered, but also accepted and managed by its recipient, and is usually mediated by multiple nonhumans that prompt, facilitate, or shape the process in different manners. These forms of assistance compose a complex and dynamic network of interdependencies that is crucial for configuring accessible environments in practice, understood as always being the result of relations with other humans and nonhumans.

Searching for a definitive solution to accessibility

This section focuses on transformations Transantiago underwent in order to become a ‘universally accessible’ public transport system. Legal devices, design standards, and various materialities were brought together in a process that originally aspired to become a definitive solution to the problem of including disabled people into urban mobilities, but ended up manifesting as something much messier. Rather than

an major reform that would provide with an ‘accessible for all’ public transport system, designers and engineers had to make concessions in order to adjust to material limitations and performance demands. These concessions are regarded by the experts as technical shortcomings. As we will see, however, there is fertile ground for more nuanced and adaptive forms of accessibility if infrastructural implementations remain flexible and adjustable.

From buses with stairs to a ‘world-class’ public transport system

Up to 2007, any kind of encounter between a disabled person and Santiago’s public transport system was accidental at best. Prior to Transantiago’s debut that year, the city’s mass transit needs had been served by an agglomeration of small private initiatives. This deregulated mass of *micros amarillas* [yellow buses] cruised Santiago in the lookout for clients, as bus drivers were paid according to the number of people they served daily.

Aside from the dangerous conditions in which this oversupply of yellow buses competed against one another in the streets in order to get more clients, there were no regulations focused on accessibility whatsoever. The model of the vehicles varied greatly but, in all of them, passengers had to traverse a set of steps in order to board. The buses also lacked any kind of dedicated space for wheelchairs or baby carriages and were considered uncomfortable, if not even dangerous, for older people and pregnant women.

Aside from the lack of appropriate accessibility equipment, the yellow buses’ payment scheme used to function as a perverse incentive for the bus drivers when it came to taking in certain types of passenger. Difficult to take on the bus, people like wheelchair users occupied more space than other passengers did and took longer to board. Along with other ‘less profitable’ groups (i.e., students who paid a reduced fare), disabled people were avoided by the yellow buses, in the rare cases where they attempted to use the public transport. Within this context, Transantiago’s launch could be seen as a major revolution. For the first time in Chilean history, a metropolitan public transport system would consider universal accessibility by design. The modernisation of Santiago’s public transport system also followed a democratic principle in terms of access. At least in theory, this would entail the incorporation of new technologies and protocols that would guarantee equal access to every citizen, including disabled people. In practice, this took the form of low-floor buses for easier access through the front door, and a manually operated ramp in the middle door of the larger vehicles (see Figure 3.1). Even if manually operated, the ramps provided reduced mobility people with the unprecedented capacity to become passengers. The wider aisles allowed easier navigation once inside the bus, and a dedicated space for wheelchairs reinforced the idea that Transantiago considered reduced mobility users, just the same as any other passenger. The staired buses era had been left behind.

Albeit well-regarded, these implementations recognised just the bare minimum accessibility standards followed in other parts of the world, were limited to the bus system, and were mainly focused on the needs of wheelchair users. Social inclusion for disabled people as an agenda was falling behind in Chile, and so in 2010 the bill 20 422 was enacted. This new bill settled a frame to enforce equal opportunities for disabled

people, which, among other things, reconsidered access to education, job opportunities, and the built environment.

One of the bill's most salient features was, as established in its Article number 3, that inclusion should be pursued by adhering to the principles of Universal Design (UD). The bill defines it as “the activity by which environments, processes, goods, products, services, objects, instruments, devices or tools, are conceived of and projected from origin, so they can be used by every person, or by as many people as possible” (Chilean bill 20.422). More broadly, Mace (1988: 1), who coined the term ‘Universal Design’ in the 1970s, describes it as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design”. UD’s core ideas started to come together as a design philosophy between the 1960s and 1970s, coinciding with the civil rights movement in the United States (Hamraie 2012). Given its roots, UD’s emphasis is on social justice, which made it “part of a long standing philosophical tradition concerned with enabling people to live a good life premised on human dignity” (Imrie & Luck 2014: 1317). These are, too, the core ideas guiding the formulation of the bill 20 422.

In practical terms, as an architecture and design approach, proponents of UD push for a more diverse understanding of the user, calling out long-standing tendencies to depict the ‘average user’ of a space as an able-bodied adult male. UD’s views eventually coalesced into a list of principles (Center for Universal Design 1997), which has been used to inform design of spaces and products that are



Figure 3.1 A wheelchair user waits for the Transantiago driver to activate the bus ramp. Retrieved 15th January 2019, <https://www.ciudadaccessible.cl/?p=6298>

accessible for “as many people as possible, regardless of ability, age, or sex” (Hamraie 2012: 1). UD’s principles have encouraged designers and practitioners to reconsider their professional practices and the way in which these reproduced inequality and exclusion. Indeed, UD’s influence has expanded continuously during the past decades and, according to some analysts, it has become a form of orthodoxy, even seen as to have acquired a “totemic status” (Imrie 2012: 874). As Imrie (2012) points out, the core drive of UD is to acknowledge and address the human condition as a whole, by engaging with it from a universal perspective. This core idea has oriented the formulation of the bill 20 422: accessibility should be granted to all users, “irrespective of their corporeal form and performance” (Imrie 2012: 879).

UD's widespread influence has, however, led to the consolidation of certain assumptions that remain quite strong within accessibility design practice. In this vein, authors like Erkiliç (2011), Imrie & Luck (2014) and Hamraie (2016) have pointed out UD's weak connection with its philosophical base and make a call for a more critical revision of some of these core premises. The remainder of this section and the following ones empirically explore the limits of three of these pursuits: (a) the design and implementation of *fully accessible* spaces, (b) that these spaces are accessible to all users *regardless of their capacities*, (c) emphasising *independence as exercised by unitary fixed subjects* (Gibson 2014). By tracing the ways in which alternatives to these assumptions take place in practice, I seek to expand mainstream understandings of what accessibility is and how it is enacted.

The goal of providing an inclusive environment to every kind of person in society, paramount in UD's ethos, is manifest in the discourse of accessibility designers working within the legal frame of the bill 20 422. I will now explore the ways in which disabled people are conceptualised with these goals in mind, and how material change has taken place within the Transantiago system.

Disabled people as infrastructure disruptors

The core ideas underlying bill 20 422 have been influenced by the 'social model of disability' (Barnes 1991; Oliver 1995; Oliver 1990). Thus, the bill endorses a view of disability not as a biological condition but as a social one, imposed by society over certain people that were born with or have developed a physical impairment. In other words, disability is not seen as a static condition carried by individuals, but rather a problem that emerges in the interaction of people and certain disabling environments (Imrie 2000a). Depending on its characteristics, a public transport system can certainly be a disabling context for some people, and the purpose of the bill 20 422 was to correct that. Aside from triggering many adjustments to Transantiago's infrastructure and equipment, the bill 20 422 also had an impact on disabled people themselves, and the ways they were conceived by designers and planners. Despite the bill's theoretical inclinations, the delayed entrance of disabled people into an urban space hitherto closed off for them has signified, in many subtle ways, the reassertion of their condition as a marked category (Longhurst 1997).

In this regard, it is interesting to see how the Metropolitan Public Transport Directorate (DTPM), one of the main entities supervising Transantiago, perceives the issue. Its technical staff members are quite aware that Transantiago has made possible a new kind of everyday interaction in the bus. During an interview, a member of DTPM's User Experience Department lists some of the changes Transantiago brought along, associated to the transformative entrance of a new kind of user:

“The incorporation of lower-floor buses, the accessibility devices aboard the bus to uh, to include these people as actors, even the informative stickers – people taking the bus know they could now interact with reduced mobility persons, something they didn't do before. That is, this is a new kind of interaction, since the beginning of Transantiago”.

Disabled people's arrival to the public transport system brings a new infrastructural scenario along with it. Some of these changes have been seen by policy-makers as a cost for 'the general public'; an unexpected source of discomfort or even a threat to the service's capacity to operate efficiently. A transport engineer who worked as a consultant for Transantiago's early design explains that the inclusion of disabled people

“conditions the bus type, into a lower-floor bus as they call it. Therefore, since the bus's level is the same as the street's, the wheels remain inside the bus, leaving much less seating space. So, because you're trying to include disabled people in the bus, the bus becomes much more uncomfortable. That is true”.

Disabled people are thus seen as linked to a feature that is problematic for the rest of the users, turning the disabled users into problematic entities themselves, and thus reinforcing a sense of difference between disabled and 'regular' or 'normal' passengers⁵. The risk entailed by this contraposition is that of conceiving disabled bodies in the public transport as inherently problematic, somehow failing to realise that any kind of body-environment configuration can, eventually, produce trouble. Rather than residing in the disabled passengers' bodies, the 'problem' emerges in the interaction between them and the characteristics of the system⁶. However, the incorporation of disabled users disrupts the socio-technical *status quo* of Transantiago, and thus changes needed to accommodate them in the system's functioning are seen as difficult and costly.

Examples of this can be seen in another space that has undergone several transformations in order to admit disabled people; Santiago's underground system. Widely known as Metro, this service was first inaugurated in 1975 and carries over 2 million passengers a day (Metro de Santiago 2017). It became part of the Transantiago system in 2007. Even though Metro had already been installing accessibility devices (e.g. lifts and stair lifts) in its new stations since the late 1990s, the service did not have a proper accessibility programme until the bill 20 422 prompted it so in 2010.

One of this programme's main features is Metro's lifts project, which aims at installing at least one set of lifts in each station of the network, including the oldest ones, which have been operating since 1975 and are located in the very dense central area of the city. This reshaping of each Metro station entails a complex and different puzzle each time, and thus this project has made slow progress. A source of difficulty experienced by the Metro staff in charge of this project has been its low priority, particularly when compared to the importance assigned to managing the system's already existing flows. According to a Metro representative:

“We might want to define the lift's position in a certain spot, but we are unable to implement it because if we do, we'd need to stop the entire circulation of passengers, and Metro cannot – I

⁵ Exploring the case of legal devices regulating fat bodies, Evans (2006) also encounters a discourse that conceives fat bodies as disruptors of the social order.

⁶ See Colls & Evans (2014) for a description of a similar situation in the case of fat bodies and obesogenic environments.

mean, one of Metro's premises is that Metro never, never stops running (...). It just doesn't stop. We could perhaps close a station's access for a while, maybe during the weekend, but we can't close a whole station because of the lifts project".

Thus, when prioritising the inclusion of a smaller new group of users versus the continued service to an already constituted public, Metro rules in favour of the latter. This type of decisions are usual within the service's accessibility programme and, to Metro's members of technical staff, notions of inclusion and efficiency seem to form part of a problematic trade-off. The technical definition of a suitable spot for a new lift is, for example, subjected to the premise of no flows being disrupted. This prioritisation logic has meant not only that progress of Metro's accessibility agenda has been slow in practical terms, but also reproduces the sense of disabled users as being less important. They will be incorporated into the flows of Santiago's underground system, but only as long as their entrance is not a disruptive one. Their inclusion remains, therefore, a secondary process.

From these examples we can see that, even if rarely acknowledged, there is an implicit perception of disabled people as disruptive entities for an already complex system. To successfully include them in this set of existing flows does not only demand material adaptation, but also a critical revision of hegemonic notions of efficiency. In this regard, it is interesting to note that there have been several attempts to design an alternative transport system, or paratransit, exclusive for disabled people, as a well-respected transport engineer describes:

"They would call a number, uh, and a special taxi would pick them up, and take them wherever they need. That would be much cheaper than installing lifts in every Metro station, and to equip every bus with accessibility devices. And now, that's a political questions we need to ask ourselves, and so far our answer has been 'no, we don't want that'. We don't want that group of people, with disabilities, to live in a different world, but to share our own. It's good for us that they are part of our daily travels (...). It may be more expensive, but that inclusion is worth it".

Many works of research (Butler & Bowlby 1997; Gaete-Reyes 2015; Imrie 2000b; Imrie 2000a; Imrie 1996; Imrie & Kumar 1998) have described how the creation of disabling environmental barriers are rooted in 'assumptions', 'traditions', or 'habits' that are reproduced by policy makers, architects, and designers alike. The idea of implementing a transport system exclusively for disabled people seems in line with "a 'segregationist ethos' that serves to perpetuate discrimination against persons in the built environment" (Park et al. 1998: 212). The disruptive character assigned to disabled users feeds the discourse of those who would see segregationist solutions as a viable, more efficient, arrangement. Conversely, the political will to provide a public transport service *we can all share* is not only commendable, but necessary in order to continue challenging notions of what disability is, and how it is reproduced by infrastructure and design choices. This strongly resonates with the principles of UD, which today guide the content of the bill 20 422 and thus the discourse of designers and engineers.

As we have seen, however, inclusion of disabled people into a public transport system can trigger several kinds of reactions and enact problematic, even dangerous, trade-offs. One of the main risks is to reproduce a notion of the disabled user as difficult to accommodate, an entity that is problematic on itself, rather than the subject of a problematic human-environment relationship. There have been several relevant contributions that, from a relational point of view, have addressed this issue. While Sunderland et al (2009) and Harris et al (2017) discuss the topic of minorities being made invisible, Gaete-Reyes (2015) specifically describes how wheelchair users are often seen as ‘lesser’ or ‘non-citizens’ by able-bodied people. Clearly, if a public transport system fails to appropriately adjust itself in order to admit disabled people as legitimate passengers, it negates their citizen right to access a public service. Disabled people would remain as part of a realm of ‘otherness’ (Chouinard 1997; Butler & Bowlby 1997; Hughes & Paterson 1997), rendered immobile by a system unable, or unwilling, to take them in.

These considerations outline Transantiago as more than a mere background or arena where social inequalities become apparent. Rather, this public transport system plays an active role in the everyday making of more-or-less abled or disabled bodies in the city. Designers and engineers had to find a way to enact the bill 20 422 so that it would take the form of concrete infrastructural adaptations that would ensure social inclusion. This, as we have seen, has also caused for certain conceptualisations of disabled users to manifest in their discourse; as citizens that had a right to partake of the public transport system, but also as disruptive entities to an already existing set of flows and performance standards.

Part of the bill’s impact came from the fact that it set a time frame for governmental institutions to produce pertinent changes in order to guarantee equal access for disabled people. In the case of public transport, the deadline was 2018. According to a representative of the National Disability Service (Senadis), this made the bill “utopian from birth. But it set such a high bar, it has forced us to truly mobilise”. Indeed, the bill 20 422 has set in motion a whole array of decisions and transformations regarding Santiago’s public transport system. New protocols, infrastructure investment, and revised rhetoric started being circulated by the bus and metro system’s technical staff, managers, and public representatives. As we shall see, this ambitious new legislation has materialised as a collection of particular adaptations, an accumulation of small adjustments that had to struggle its way into being.

Plastic materialities, flexible environments

The lifts door open, and the echoing atmosphere of the station’s underground foyer invades our senses. ‘Can I go out?’... Natalia’s question catches me off guard and I hesitate for a second until I realise she needs me to confirm that there is nothing blocking her way out of the lift. The space is narrow and she cannot turn, so she is forced to go out by moving backwards, with my assistance. I reply affirmatively, and she skilfully moves in reverse until she is out of the lift. Then she rotates and finds herself in a very narrow, uncomfortable space.

A turnstile and a barrier enclose the little space available immediately outside the lift. A station assistant leans against the door, looking at her phone. She notices Natalia coming out of the lift and opens the barrier for her, however Natalia does not immediately go through. She extends her hand instead, offering her card to the member of staff. “Me puede marcar porfa?” [Would you please tap my card?], asks Natalia, who is unable to reach out and swipe her Bip card herself. The assistant politely accepts, takes the card, taps it, and returns it to Natalia. She thanks the assistant and continues through the door that had been kept open for her. It is my turn next and the assistant closes the barrier. I tap my own card and push my body through the turnstile that is next to the accessible doorway. I catch up to Natalia moments later. As we go to our platform, I cannot help to wonder about the awkward arrangement of the lift and the turnstile blocking the way out.

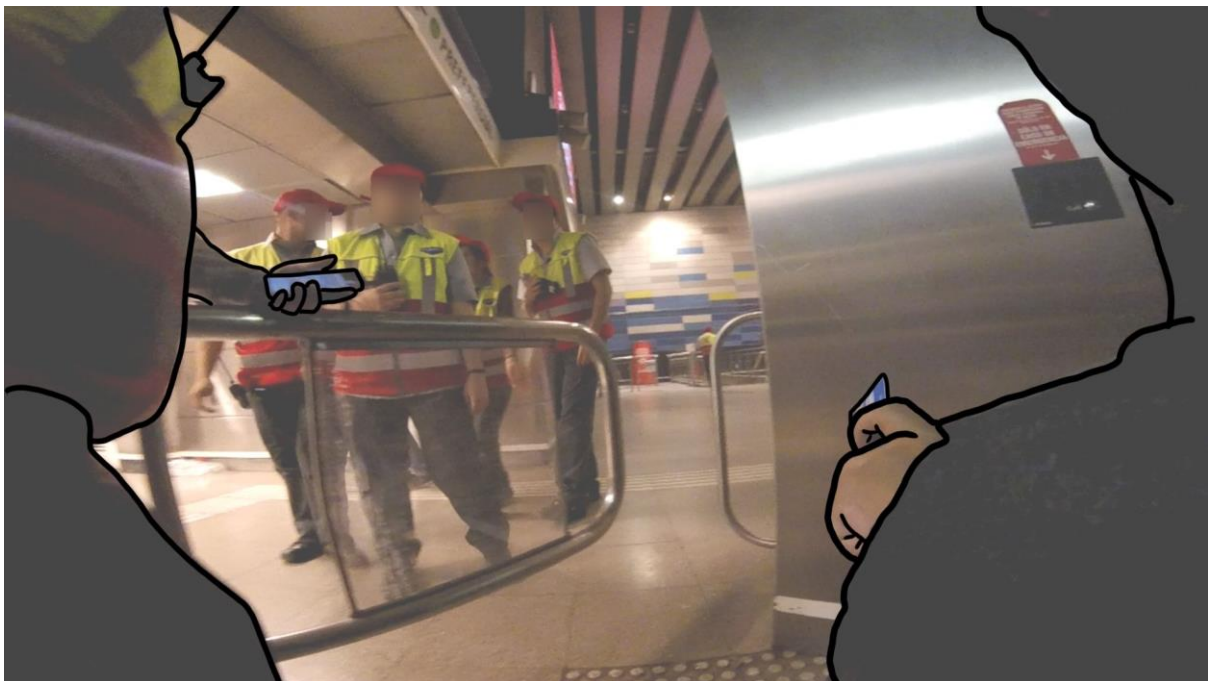


Figure 3.2 Natalia coming out of the lift

Despite its sluggish progress, Metro’s accessibility programme stands out because of the intense effort its technical staff has put into seeing it through. One of the main obstacles to their lifts project, for example, has been the very configuration of Santiago as a city. Adapting their oldest stations has proven to be quite difficult, since these stations never considered lift systems to begin with and are located in Santiago’s dense and busy city centre. Populated by underground cabling, pipelines, sanitary sewers, and undiscovered archaeological sites, Santiago’s subsoil makes it hard for Metro’s lifts to find a straight way through. Rather, Metro’s lifts project needs to be adaptive and flexible. Like live, obstinate beings, the lifts worm their way through to the surface. In facing the challenge of finding a suitable spot for a new lift shaft, engineers need to account for over and underground flows of people, producing a proper integration of lift users into the

ebbs and flows inside the station, while also maintaining safety standards and keeping an eye on the budget. Such a combination is not always achievable, and this has meant the installation of the new lifts has produced some weird outcomes. While the one Natalia and I used left us in an awkward residual space, lifts in other stations take their confused occupants directly from the street to the platform, completely skipping any sort of payment process.

Plastic capacities of adaptation can be found in many infrastructures and devices being reconfigured to be more inclusive. Classic approaches from the urban studies have tended to describe non-human materialities as rigid and oppressive, while associating human practices with flexibility and inventiveness (de Certeau 1988; Augé 1995; Caldeira 2012). However, as we will see, this assignation of attributes can be contested and relativised. In so doing, we will be able to consider infrastructural change not only as the execution of an ambitious master plan but also as the gradual accumulation of subtle, flexible adaptations.

Such has been the case of Metro's escalators. A member of staff describes this technical issue as a source of questions with no clear standardised answer:

“To have faster, high speed escalators is, for us, more efficient, as they allow for greater transport capacity. I mean, an escalator with a speed of 0.75 meters per second transports more people than an escalator with a speed of 0.6 (...). But we need to find a midpoint, because we have to consider our slower clients, usually reduced mobility persons, older people, pregnant women...They need more time in order to use these electromechanical equipment. So, what do we go for? Do we go for, uh, transporting more passengers, or do we rather find a point where we can transport all of them?”

This 'dilemma' resonates with the inclusion/efficiency trade-off previously discussed in this chapter. To offer a more inclusive public transport service, it seems, would take a direct toll on Metro's transport capacity. However, the speed of the escalators can be complemented by features of design, allowing for higher velocities as long as these are underpinned by a certain combination of design elements.

One of the first adaptations that Metro implemented, widely known and utilised around the world, was to demarcate the border of each step of their escalators with bright, yellow paint. This helps the users identify the steps more easily, particularly in the case of reduced mobility or visually impaired people, since they can sometimes feel less confident when it comes to boarding a moving escalator. Additionally, Metro's escalators have been modified to have three 'flat steps' at their entrance points, thus creating a bigger transition space into the device. This larger 'boarding zone' to the escalator allows the user to have a less difficult experience when trying to align to the escalator's pace. Finally, in some stations with a lower influx of passengers, it has been possible to install handrails that are positioned *before* the beginning of the escalator. This way, users can accommodate their pace to that of the escalator in an easier way, as the handrail also helps to separate the flows of people using escalators and stairs, which are usually adjacent.

We can see how Metro's search for a 'middle-ground' solution has allowed for the testing of different, subtle mutations to the original escalators design. The gradual accumulation of small adaptations has given way to a device that, on the one hand, seems more sensitive to the needs of certain users, and does not impede the eventual addition of further modifications, on the other.

A different case where the 'malleability' of technologies is at the centre of accessibility solutions is that of the subway's 'gap'. Almost an iconic feature of underground systems, the gap that separates the train from the platform can range from being a nuisance for some, to being an actual threat, and even an unsurmountable barrier, for others. Even though able-bodied passengers can navigate over the gap by just 'minding it', other users can have trouble dealing with it, even when applying care. Small wheels, feet, canes, and other objects can experience the gap as perilous, particularly so because its width can vary greatly in the case of Metro (from 5 to 12 centimetres, depending on which station).

To leave a gap between train and platform is of the utmost importance as it leaves some free space for the natural sway of the train. Consequently, as a Metro member of staff explains:

"We attached a rubber band to [the platform], in order to make that gap smaller. It used to be bigger. Much bigger (...). But this device is not, I mean, it has to be rubber because it needs to be malleable, but at the same time it requires constant repair, a lot of replacement. That's a high maintenance cost. We'll look for a different solution at some point".

So, even though it is technically impossible to get rid of 'the gap', it is nonetheless viable to think of ways of making it less disruptive for the users. In a way, the gap *shrinks* thanks to an adaptation with flexible qualities not only because of the materialities used, but also because of how easy it is to reproduce, reconfigure, and replace.

However, this very same set of qualities is what makes the rubber band a temporary alternative; a provisional answer to the problem of the gap. Metro's staff members see this as a negative point of the rubber band; an imperfect solution that fails to *fix the problem* definitively. Fixing the problem, though, resonates with an aspiration to 'stop' the issue; to make it static, *fixing* it in time and space into an allegedly permanent category of having been 'solved'. The rubber band adaptation seems to point in a different direction entirely. Though it is impossible to make the gap disappear, it can be shrunk down. Rather than making the problem go away, it is negotiated with. This kind of approach allows for more detailed, responsive, and eventually more participative ways of engaging with problematic issues. This is particularly important when dealing with disabilities, as a dynamically complex social phenomenon, in a constant process of unfolding.

Interviews with representatives of Metro indicate that, unlike the different technical arrangements that have been discussed (lifts, escalators, and rubber bands disregarded by Metro's technical staff as 'temporary'), there seems to be high expectations for the underground system's new lines 3 and 6. Each of the new lines' stations includes lifts, gateways, and signage designed from scratch to be 'fully accessible', which makes the accessibility engineers very proud. Thus instead of producing provisional arrangements, this time Metro

hopes to offer a definitive solution to the accessibility needs of their clients. 'The new lines' design is the culmination of a long learning process, whose final stage would be an infrastructure that considered Metro's accessibility standards from the design stage. However, this seems to be at odds with a relational understanding of disabilities, which presents notions of inclusion and disability as flexible configurations responding to changing social, political and technological circumstances (Hall & Wilton 2017). Disabilities will keep on unfolding as they encounter new materialities and flows in everyday life. However, the idea of a 'definitive solution' – the pursuit of a state where further adaptation and correction would no longer be needed, is still preferred among technical experts. Indeed, as a Metro engineer stated: "When you solve this issue at the design phase, it becomes much cheaper and goes more smoothly than having to deal with gaps and making adjustments. It's too expensive [otherwise]". The amount of work and money that goes into testing out different, adaptable adjustments to accessibility issues is part of the reason why Metro's technical staff sees this approach as suboptimal and provisory; an imperfect solution to a specific problem, rather than as an opportunity to explore context-specific and flexible ways of responding to a dynamic need of their public. In their discourse it is also noticeable that the problem of 'solving' the issue is a matter of timing, and could be done at (ideally) the design stage of devices and infrastructures.

To be sure, while these cases outline the limitations of pursuing accessibility as a definitive solution by design, we ought to be wary of condoning the common practice of 'adding access as an afterthought' (Alphin 2014; Lewthwaite 2011). Rather than advocating for a loose and less rigorous approach to implementing accessible solutions for the public, I contend that a serious and realistic strategy requires acknowledging that the process is not ever 'complete'. If anything, this calls for an even deeper involvement on the part of technical experts and institutions. Seen as assemblage work, accessibility is produced by constant engagement not only in the design and testing of material implementations, but also regarding their maintenance, updating, and improvement.

The universalistic imprint underpinning the aspiration to a definitive solution to accessibility may be traced down to UD's influence, which as Gibson (2014) explains, maintains a tendency to conceive of disabilities as a static phenomenon determined by the social and material environment. Whereas authors like Titchkosky (2011) and Winance (2014) invite us to conceptualise accessibility as a constantly unfolding process of adjustment between heterogeneous actors, UD remains within a "static ontology of relations" (Sanchez Criado 2019: 410). It is such logic that underpins the aspiration for achieving states of universal and permanent stability (e.g. a fully accessible Metro station), aiming at having problems forever 'fixed'. However, the risks of fixity are well-known within the disability studies field. Referring to policy design, Roulstone and Morgan make a call to avoid assuming that "disability is fixed, static, knowable and easily measured" (2014: 67). Within the Transantiago case, the emphasis of engineers and planners on finding definitive accessibility solutions fails to acknowledge disabilities as a relational phenomenon, one that will keep on transforming as new information, technologies, and policies enter the scene. A comprehensive approach to disabilities, then, must understand the issue as intersecting with many other categories of identity that, as Büscher et al. (2016: 491) clearly put, are "socio-materially mediated".

An additional limitation linked to the assumption that there is a ‘correct’, or ‘complete’ state of accessibility is that this can cause previous iterations to be seen as failed or incomplete. By opposition, as explored by Sanchez Criado (2019), a more adaptive design approach can be responsive to new inputs from continuous learning, participation, maintenance, and unfolding forms of conceiving disabilities. The author highlights the importance of “ongoing, fragile and difficult material exploration” (Sanchez Criado 2019: 413) as a form of involvement that hinges upon diverse points of view coming together, including the ‘expert’ view as well as the different users of these spaces under transformation. His approach challenges the pursuit for stabilising the meaning of accessibility (and its relationship with disability and bodily becoming), and rather remains open to these elements being dynamic and affecting one another in everyday life. From this perspective, rather than focusing on the provision of accessible spaces as an isolated and one-way task, accessibility designers might find value in interrogating *their own place within the assemblage* of practices and materialities that enacts accessibility.

The cases visited throughout this section show the opportunities behind continuous material adaptation, as a form in which new arrangements can emerge within a setting that has a material history of its own. This more subtle form of implementing infrastructural change remains attentive to forces and needs that might seem in opposition at first, but that can be brought together through inventive and adaptive solutions. Thus, the flexible properties of a rubber band can help reconcile the technical need of subway trains for swaying space, with the problematic experience of having to deal with gaps that are sometimes all too wide. A continuous exploration of more plastic adjustments hinges upon an understanding of accessibility as something always in-the-making, ductile, and unfixed. The adaptive qualities of such implementations can also help alleviate the notion of disabled people as being intrinsically problematic and difficult to cater for. As we have seen, putting the bill 20 422 into motion has meant that designers had to enact particular understandings of accessibility and, importantly, particular versions of disabled people as potential public transport users. While disabled people are portrayed by the bill 20 422 as citizens with a right to access space, the task of transforming spaces in order to accommodate these users also marks them as entities whose inclusion is disruptive and costly. This point of view, however, fails to acknowledge the great diversity of skills and knowledges that disabled people themselves mobilise in order to make accessibility possible in everyday life. The next section explores different embodied resources that allow travellers to navigate and experience the public transport system in more accessible manners.

Bringing capacities along

This section explores the limitations of conceiving accessibility as a unidirectional process, in which an accessible space is provided by one party (i.e. engineers) to benefit the other (i.e. disabled passengers). Users of a space or product are not mere passive receptors of its accessible affordances. Ramps, lifts, type fonts, and escalators need to be activated, managed, and interpreted, and the ways in which they manifest in everyday life are made to happen by their users just as much as by their designers. ‘Good design’, in this sense, is not the only thing that is relevant for an accessible space to take form. Within the Transantiago space, capacities of passengers coalesce and fold around materialities, circumventing their limitations and surfacing their possibilities. These sets of capacities are also crucial in the interaction of passengers, evidencing that accessible spaces for the disabled and other vulnerable people are continuously and collectively practiced rather than just received.

Making way for others

Embodied capacities to remain flexible and adjustable proves to be crucial in the ongoing coordination with other passengers. Public transport is populated by multiple trajectories and a diversity of bodily configurations, it is a setting that requires adaptability to accommodate ourselves with and around others. Among practices of tolerance and adaptation to others, one that remains, as simple as it is ubiquitous, is: moving out of the other’s way.

An example of this can be observed in Transcript 1.1. Ximena, a research participant, walks down a busy subway platform in Baquedano Metro Station. Ximena is visually impaired, and we can see the tip of her cane just in front of her, on the lower side of the images (circled yellow). The camera, in Ximena’s case, has been attached to the strap of her backpack, near her right shoulder. She has just got off the train and is finding her way toward the exit. A woman carrying a bag approaches from the front, moving diagonally as part of a group of people walking toward a connection to a different line (trajectory indicated with a red arrow, panel 1). The woman notices the cane (panel 2) and initiates a quick step to the side, possibly in an attempt to get out of Ximena’s way. Her manoeuvre is interrupted as a man with dark glasses passes by her left. The woman’s left step suddenly stops in an incomplete, awkward position, and her torso leans slightly to the side to balance the unexpected halt (panel 3). Her right foot meets her left in a constrained stance, occupying the small remaining space between the passing man and Ximena’s approaching cane (panel 4). Just as the man advances, the woman takes a small left step to the side, positioning herself behind him and out of Ximena’s trajectory (panel 5). Another small step takes her out of harm’s way (panel 6) and then she accelerates toward her destination. Ximena gives no sign of having noticed this sequence took place, and continues to advance in a straight line.

This sequence shows an interesting case of a passenger making way for others in response to Ximena’s visually available characteristics. Noticing Ximena’s cane⁷ seems to afford at least two things. First, it

⁷ The affordances of the cane, both for its user and for others around, have rich implications for the interactions in these public settings. I will explore this in more depth in the Empirical Chapter 2: Prosthetic relations.



Transcript 1.1

presents Ximena as an unexpected ‘shape’ in the platform, one that occupies with her cane the space in front of her. Second, it causes Ximena to be seen as someone with whom visual coordination as platform users won’t be possible. Hence the woman pursues an alternative solution – stepping out of Ximena’s way. The woman deals with this lack of mutual looking by keeping her gaze focused on the floor throughout the sequence, staying attentive to the cane and the man’s feet, rather than attempting to establish visual contact with Ximena.

Ximena’s trajectory and visual impairment being visible from afar, the woman seeks an alternative way. The man’s appearance, however, is sudden and unexpected, which forces the woman to adjust her initial plan and wait an extra moment for the path to be cleared. We might interpret that the woman yields to the man’s trajectory to avoid bumping into him as well as in recognition that she was, in fact, moving into his ‘lane’ without precaution. A capacity to modify her own speed and adapt to the available space around other people can be seen in the progressive reduction of her step’s longitude (represented in the transcript with red arrows) as needed, making use of the space as it becomes available to her. We see here how ‘making way’ is accomplished by the woman under the difficult circumstances of doing so for others who are not coordinating with her. This mainly hinges upon her attention to Ximena and quickly recognising her as a member of the platform who is unavailable for visual coordination. The next case builds upon this one. It illustrates how passengers organise their positioning in the platform based on the capacities that others are assumed to have.

Natalia and I are in the train platform of Tobalaba Station, preparing to take our train. Her intention is to get to the end of the platform, where she would be able to board the next train in an easier fashion. In Transcript 1.2 we see her moving down the platform, which is quite busy. The camera was installed in the left armrest of her wheelchair, and we can see her left arm in the lower-right corner of the images. In the platform most people orient themselves toward the rails, waiting for the train's arrival while they leave some free space behind them, which other commuters use to move through. A few meters ahead of Natalia, a man wearing a red jacket walks down the platform as well (panel 1). He then approaches a woman carrying a black bag. She leaves little free space behind her for others to pass, and the man solves this by adjusting his body: Slightly turning his torso and keeping his left arm behind (panel 2). Natalia approaches the woman with the bag, and stops because there is not enough room for her to go through (panel 3). Unlike the man with the jacket, Natalia's body is unable to fold in the same manner. Forced into a halt, she tries to get the woman's attention. Natalia calls out to the woman, saying 'excuse me' one time, and then a second time,



Transcript 1.2

after realising she has not been noticed (panels 4 and 5). The woman with the bag finally sees Natalia and moves to make more space for her to pass. Natalia thanks her as she goes through (panel 6).

There is a striking difference between Natalia's situation and the one of the man in the red jacket. While he is able to adjust his body in a seamless fashion – passing through without slowing down or even being noticed – Natalia has to stop for a long while in order to produce the amount of space she needs to continue. We see here how the passengers stand in the platform in such a way that they constitute a passage for others who need to move through the platform. Natalia's situation, however, shifts our perspective as for her the people standing constitute a barrier. The disposition of the people waiting for the train makes apparent the sets of expectations they draw on in order to organise themselves in space. What constitutes a passage in this case is given by the expected adjustment capacities of others passing by, who would be able to fold their bodies and adapt to the space available. Conversely, Natalia's bodily configuration involves a rigid object – the wheelchair – and thus is unable to physically adjust to negotiate her passing through. She needs to revert the responsibility of adjusting back to the woman, by means of making herself noticed and recognised as an entity that is not encountering a passage, but a barrier.

Both Ximena and Natalia's cases depict the accomplishment of 'making way' in which flexible bodily capacities, as well as expectations of others' capacities, play an important role. We see in these cases the relevance of the users' embodied capacities as a resource that underpins the interaction of passengers in the platform. In Ximena's case, her navigating the platform relies on others' capacities to recognise her as a VI person and fold around her trajectory. Conversely, others around Ximena see her as a member from whom they cannot expect certain capacities (i.e. visual coordination), and act accordingly. Natalia's case is different as the other passengers organise their waiting position in the platform by relying in an expected capacity to 'squeeze through', which does not correspond to the capacities Natalia brings along with her. Hence, in her case, a barrier is configured.

Both cases make evident how relevant it is to be noticed by others in order to make these kinds of adaptation possible. Having been spotted from a distance, Ximena's cane and trajectory operate as resources for the woman to decide she needs to adjust her own way. Conversely, Natalia has not been accounted for in the organisation of the people standing in the platform, and the way in which she solves this is by making herself be noticed. An accurate assessment of other passenger's needs and capacities is a crucial element to create situations that are more – or less – accessible for them. While this is true for designing accessible spaces and devices, we also see its relevancy when it comes to something as seemingly simple as making way for others.

Embodied capacities, organised through attentiveness to others, are a fundamental platform from which accessible situations are made to emerge. In what follows, I explore narrations of such capacities being developed, adjusted, and tailored to respond to specific needs over time.

Becoming familiar with things

The train has finally arrived. Since we are in the first station of this line, the train is fresh and empty. As soon as its doors open, passengers crowd at the doors and find a spot to sit or stand. Natalia enters the coach and approaches the pole in the middle. I follow after her and watch closely. There is a couple with some bags standing by the pole, and as Natalia moves closer she addresses them. "Permiso" [Excuse me/make way] she says, in a polite but firm manner. The couple look at her and move further inside the carriage, freeing up the space by the pole. She had explained to me that, instead of looking for a spot by the other seats, she would rather stay by the pole and use it as a source of stability. I now see what she meant. She moves closer to it and skilfully catches it between the seat and the arm of the wheelchair, effectively 'anchoring' it to the pole. This way, the swaying movement of the train is mitigated and Natalia feels it less. Her body is quite small in comparison to her wheelchair, so more 'steady' arrangements are more comfortable for her. This need is particular of Natalia, and she has developed a habit and an expertise in ways of meeting it.

As a wheelchair user, Natalia is expected to utilise the dedicated spot for her inside the train carriage, which is located by the rest of the seats. In cases where there is not a specific place for them, wheelchair users or people with prams tend to locate themselves by the rest of the seats anyway, removed from the doors and the influx of people. But Natalia's specific physical condition makes the sway of the vehicle one of the most important sources of discomfort for her. In order to prevent this, she is willing to remain in the busy side of the carriage, where the pole is. As a way of ameliorating her discomfort, she has learnt the complicated manoeuvre of catching the pole between her seat and her armrest (none of which were designed for such purpose). In a matter of seconds, she locates the pole, negotiates her approach with other passengers, and produces the 'anchoring'. She is not following the expected programme inscribed in the accessibility design of the carriage, but rather producing an ad-hoc adjustment to her own very specific needs. This is not an act of defiance, but rather the skilful practice of becoming a passenger in her own embodied terms, even if it means to behave in an unexpected manner. By means of interacting with the pole in this way, she repurposes it to serve her own needs.

Other participants have also told me about the particular habits and skills they have developed to repurpose available materialities into resources for accessibility. Ximena, whose case navigating the platform has been presented above, draws on her 'low' sight to make sense of the progression of the train she rides. Not every stop is announced via the PA system, and the fact that the announcements only account for the current station is not convenient for someone who needs some preparation to get off a crowded underground coach. Ximena tells each station apart by paying attention to variations in light intensity, colour, and sound patterns. During an interview, she explained to me how she identified her usual stop:

“First, the sounds are different when we [the train] leave the tunnel, and second, the walls look different...How can I describe it? They’re not plain, but actually sort of stripped, and they’re blue-ish...”

These subtle variations make Ximena capable of telling the train stations apart and follow her habitual routes depending less on PA announcements. In the face of a technological arrangement that is not all that convenient for her, Ximena has developed a sense of orienting herself throughout the underground network in a way that is unique to her and responds to her routine trips. This unique form of orientation works only for her because it emerges from her own particular experiences as a user with the specific routes that compose her mobile everyday life. It is an expression of her own specificity; a set of tools tailored to and by her own capacities and habits. She draws upon the available qualities of the environment, turning them into useful resources to find her way around.

Memory and habit play a relevant part in the development of these capacities. Ximena has learnt minute but crucial details about her habitual stations, for example learning to count pillars on her destination platform to identify her preferred exit⁸. This was neither easy nor immediate. For several days while learning the new route, Ximena had to ask platform assistants for directions, until habit took hold and she felt confident enough to navigate the station on her own. In a similar fashion, Diego, another VI participant, tells me about how his knowledge of the Metro network was developed over time with his mother’s help when he was younger:

“My mum and I used to take the metro together when I was little. She would say ‘Okay, now we’re on this and that station, let’s count...’ My mum taught me how, she prepared me. And she was always nagging me about using the cane...”

Besides showing a different application of counting (stations, and not pillars in this case), Diego’s story also expresses the importance of developing a certain familiarity with the public transport infrastructures, paths, and layouts in order to draw on their readability and careful accessible design in terms of navigation. Both Ximena’s and Diego’s case show that such forms of familiarity develop over time, but can also be assisted by other actors, like relatives or transport staff.

Her wheelchair securely attached to the train coach’s pole, Natalia tells me about her first experiences with an electric wheelchair, the kind she uses to this day. She got her first electric model when she was fourteen years old, and so her process of getting used to the new device also corresponded to an expansion of her spatial comfort zone:

“I started by exploring, practicing with ramps, dropped kerbs you know...and I got better at the manoeuvres I could do. At first I moved just around the house, then I started going out nearby,

⁸ It’s the first stairs to the right after the third pillar.

around my street, then I started going to the shop, and a bit farther every time. Then I started using the public transport”

This aspect of Natalia’s case resonates with research by Worth (2013), who establishes a relation between mobility independency for VI people and the process of transitioning into adulthood. Natalia’s capacities are intertwined in a growingly complex relationship with technologies and infrastructures that populate her life. We see here how accessibility is not merely provided by ramps and dropped kerbs as much as ‘worked out’ along with them, made to exist in an unfolding interaction of embodied skills and materialities. Rather than already contained in an ‘appropriately designed’ object, these stories outline accessibility as emerging in the coming together of heterogeneous things. In this case, the practiced encounter between Natalia, her wheelchair, and the ramps produce an accessible arrangement for her. The possibilities afforded by infrastructure are made relevant and incorporated through the users’ capacities to understand, navigate, and draw on them. The cases I have collected here show that an accessible experience arises from a form of habit and familiarity that disabled people develop alongside materialities, and not just passively receive from them. Reframing accessibility as an interrelation (Titchkosky 2011) of embodied capacities, materialities, and practices allows for a more dynamic and evenly distributed conceptualisation of what accessibility is, how it is practiced, and who the actors that take part of it are. This also poses a challenge to views of accessibility informed by UD, whose philosophy tends to leave the responsibility of producing accessible spaces in the hands of technical experts and minimise the particular abilities, skills and ordinary practices of the users, rather than working alongside them (Sánchez Criado & Cereceda 2016). The cases reviewed show that, in reality, embodied capacities are always present in skilful practices that underpin and draw on available materialities.

In this regard, Winance (2014) addresses UD’s aspiration to producing spaces that are ‘accessible for all’, underpinned by the problematic notion that the user’s capacities should not make a difference (for better or worse). The maxim of producing spaces that are accessible regardless of the capacities of individuals hinges upon the notion of a user that the author has identified to be a *minimal* one. This minimal user sees their abilities reduced to a minimal expression, as accessibility – according to UD’s approach – ought to be provided by a ‘well-designed’ environment, and not achieved in collaboration with the user’s capacities. In this sense, UD’s reduction of abilities of its prospective users reinforces a separation:

“The UD approach pushes to the limits the separation between impairment and disability, the separation between the body/subjective experience and the environment/policy put forward by the social model of disability. This is to the extent that it is based on a clear separation between the user and the environment, while concretely these boundaries continually shift, both in space and in time” (Winance 2014: 1336).

Winance addresses here UD’s inclination to erase friction by producing arrangements where the user’s capacities do not need to appear. In practice, as we extract from the cases visited, capacities will always be present as even the smoothest of slopes needs skill to be navigated. Winance’s research (2007) highlights

the user's capacity to adjust over time, by developing habits along with the surrounding materialities. Such particular capacities account for the ontological specificity of human beings, finding their way about everyday spaces, contributing to their enactment as more-or-less accessible. Drawing on Mol (2002) we see how Transantiago users like Natalia, Ximena, or Diego, encounter its infrastructures and devices and *enact* them as resources that make their journeys possible and comparatively more accessible. Thus the status of disabled users of accessible spaces turns out to be much more *active* than how transport engineers describe them in the previous section of this chapter.

Natalia 'anchoring' her wheelchair to the carriage's pole points in that direction. Her skills as a wheelchair user enact a tailored solution to particular needs, even if there is another standardised solution by design (like a dedicated space for wheelchairs and prams). In doing this she also becomes salient, conspicuous, and unexpected within the carriage. She enacts a solution that is specific to the particular arrangement that she is along with her wheelchair. This also resonates with Ximena's case, where her visual and aural capacities come together as a way of identifying her particular stops. Rather than a 'lacking' sense that needs to be compensated for, her 'low' sight is key in the identification of the light and colour variations that allow for this, her, practice.

In a similar vein, Hall & Wilton (2017) describe disabilities as a "prolific diversity" that serves as a counterpoint to UD's focus on designing spaces that work *regardless* of bodily configuration. In the authors' view, disabilities are not just connected to impairments, but are also a collection of varied and specific capacities that are crucial in the encounter of disabled people and the world. The universal user as minimal user, on the other hand, is one that theoretically engages with infrastructure as little as possible (both in terms of use and design). In the search for providing a smooth and unproblematic experience to every user regardless of their specificities, UD formulates spaces that are accessible because their users do not need to do much. However Natalia, Ximena, and the other cases I have presented show that their ability to navigate Santiago's public transport system is not just dependent on good design. These users are *actively engaged* with the environment, drawing on the affordances of infrastructure through their own quotidian interactions with it, making more accessible spaces to emerge. Far from merely compensating for a lacking accessibility design, capacities appear in these cases as an expression of agency, manifest and attuned in the mutual process of adjustment between people and objects (Winance 2007). These stories evidence that such a process takes place over time, and the important role habit plays in it. Accessible spaces, from this perspective, are also enacted through familiarity. The narratives presented throughout this section, exploring the cases of people becoming more used to certain material arrangements, allow us to think of familiarity as a resource for enacting a grounded, lived way of building accessibility together.

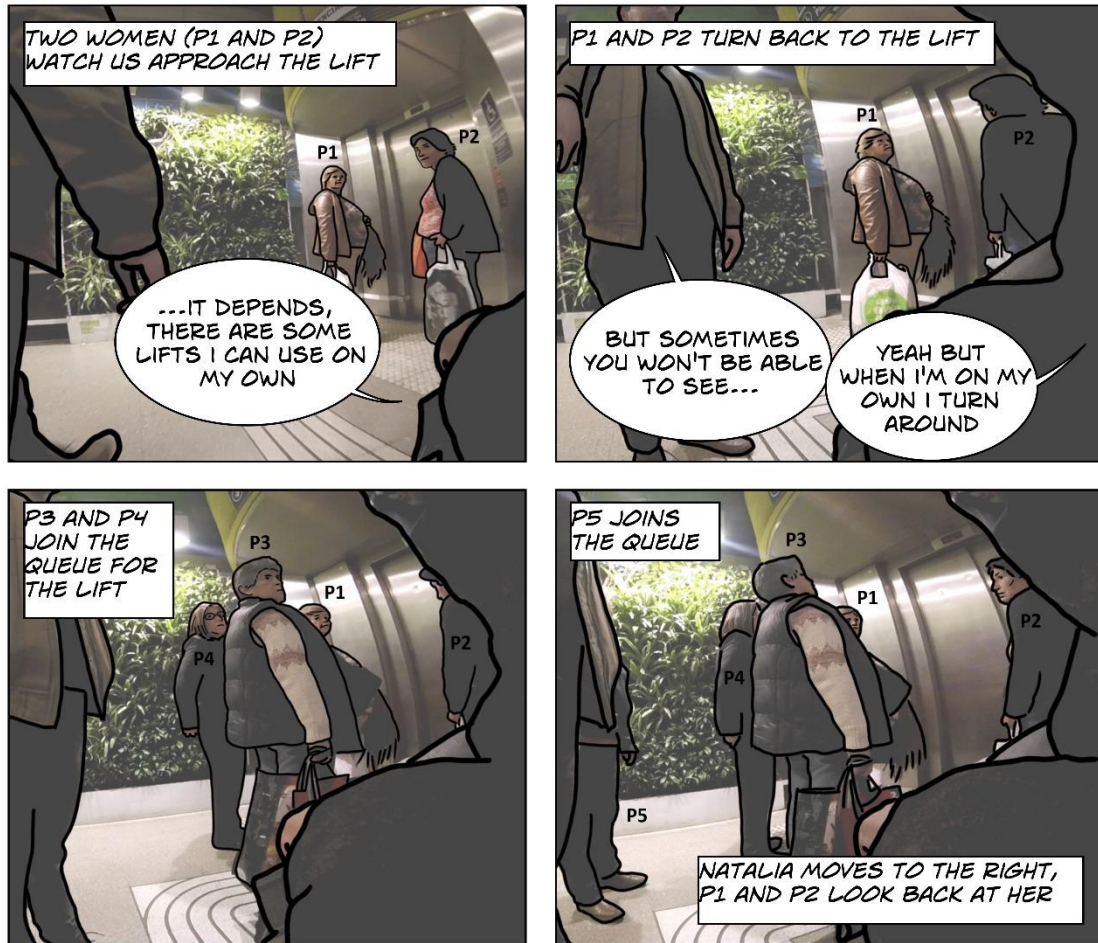
By acknowledging accessibility as partly enacted by people's capacities, we may wonder who else plays a relevant role in the assemblage. Some of the stories discussed in this section already mention the importance of others being of assistance – actively participating of the configuration of accessible spaces in everyday

life. The following section focuses on this in more depth, exploring the possibilities and difficulties produced by offering and receiving help in the public transport.

Recruiting help

This section continues exploring accessibility as something that is locally enacted, and not limited to being designed and delivered. Still focused on the importance of capacities making their appearance in such process, the cases I will present here make a more specific point about the intervention of others through practices of assistance, as well as the proficiency of disabled people in prompting and managing help offers. These narratives will allow us to explore the limits of the modern assumption of ‘independence’ as being an intrinsically good thing, which would exist as in opposition to being dependent on others. Rather, the following cases present a more nuanced view of the opportunities and complexities posed by building relations of interdependence.

Natalia and I are a bit lost. We have been looking for the right lift down to our next platform for a while, and I am being of little help. When I commute, I do not commonly use lifts so I do not have a proper sense of how to navigate a Metro station through its elevator system. We now seem to be on the right track though, and I follow her as she confidently approaches a lift which is already being expected by two women (see Transcript 1.3a).



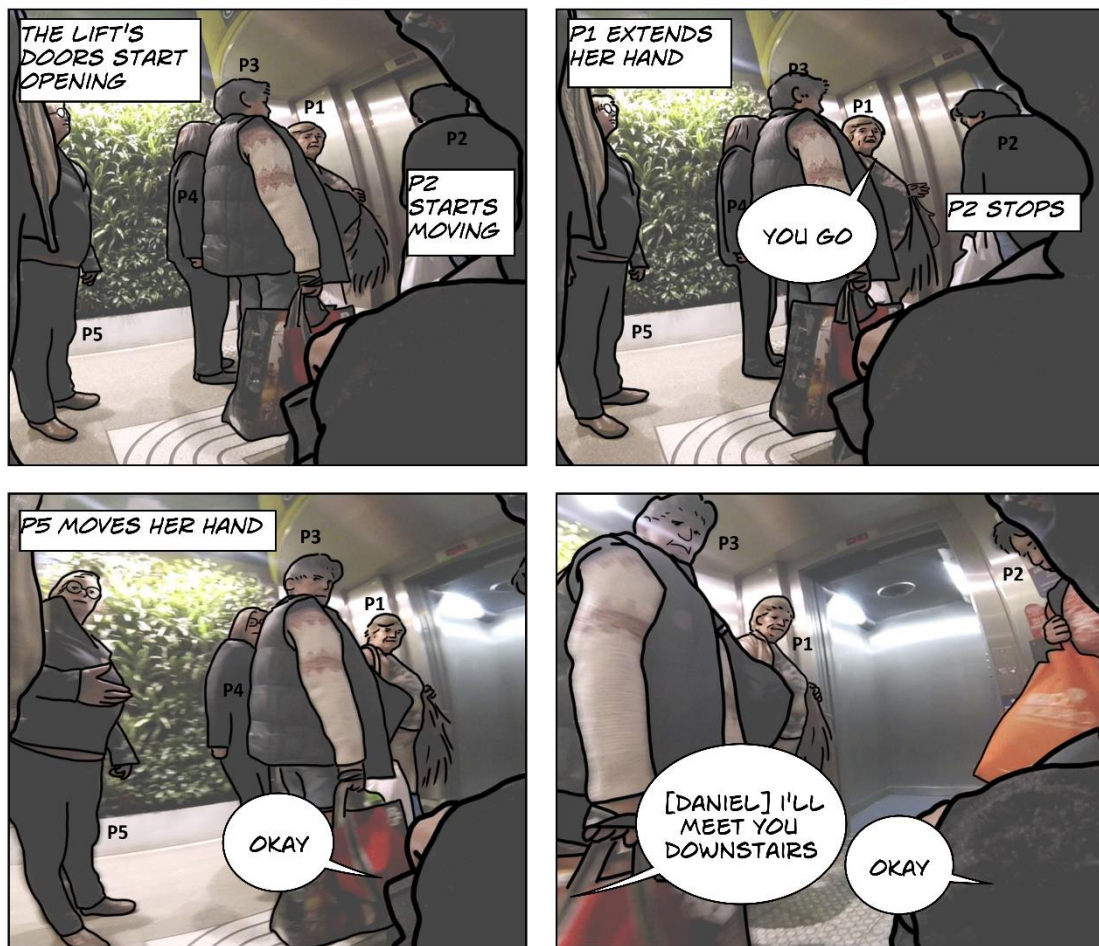
Transcript 1.3a

Doing priority

Besides ad-hoc infrastructures, accessibility measures also include priority devices seeking to govern that disabled users get priority in certain circumstances. In Transcript 1.3a we see an instance of this. Natalia and I approach the lift, while we chat about how difficult it is to know beforehand whether Natalia will be able to reach a lift's buttons. There is a sign on its side, which reads 'Priority' and bears the International Symbol of Access (ISA). We take position by two women carrying bags, P1 and P2, already waiting for the lift. Both of them turn and look at us (panel 1) before turning their attention back to the lift's doors (panel 2). Natalia and I continue our conversation. Even though we have chosen a position near the lift, we have left a free spot immediately behind P1 and P2. This seems to be seen as an ambiguous relation to the queue in formation: P3 and P4 take the empty space, and look at us as if monitoring our reaction (panel 3). P5 also approaches the group, and stands in a third row behind P3 and P4. The entire group looks at the screen on top of the lift, keeping track of its approach. It is close now, and Natalia moves slightly to her right and closer to the lift. This seems to provoke a reaction from P1 and P2, who look back at her (panel 4).

The story continues in Transcript 1.3b. The lift's doors start to open and P2 quickly moves forward, lifting her bags. P1 on her part looks at Natalia more intently, as she prepares to formulate an offer (panel 5). Panel 6 shows an interesting moment: P1 opens her hand and turns to Natalia, saying "adelante" [you go].

This triggers a change in P2's trajectory, who stops and quickly turns. Every member of the queue turns to Natalia. P2 steps away from the lift, opening a path for her to go first. P1's offer is reinforced by her nodding, as well as by P5 moving her hand in an invitational manner. Natalia responds with a "ya" [okay] and moves toward the lift (panel 7). P3 stands sideways, causing the path produced by P2 to widen a bit more. As Natalia moves, I announce that I will meet her downstairs, in the train platform. She acknowledges this and carries on (panel 8).



Transcript 1.3b

A number of things can be said from analysing this scene. It is apparent that the lift is treated as a device with limited availability. It requires turn taking, prompts queue formations, and being left out of the lift can be seen as costly because of how long it takes to complete a cycle. Hence the lift's usage revolves around queue dynamics, although we see from this case that such ordering remains flexible and subject to adaptation depending on the circumstances. The 'priority elevator' sign on the side reinforces the sense that common rules of queuing are to be reconsidered if a priority user comes along⁹. This is of course not

⁹ Even though disabilities can be invisible/hidden, their representation with the universal icon of a wheelchair (see Ben-Moshe & Powell 2007 for a more detailed account of the International Symbol of Access) might be working for Natalia's advantage in this case.

policed by the sign itself and it takes in fact quite a bit of work on the member's part to reorganise the ordinary rules of the setting in order to produce an accessible arrangement for a priority user. The question then is, who is a priority user? How is a priority user identified and dealt with? This case shows one way in which this is done.

Priority in this case is enacted through a rearrangement of everyday rules of queuing, which commonly establish that those first in the queue will go/be served before those coming after them. In looking at customer/seller interactions, Brown (2004) has observed that despite the importance of supporting artefacts to order queues, queues are principally constituted by people queueing. In that sense the sign stating reduced mobility people are 'priority users' does not do all the work necessary to give Natalia such priority to board the lift. Rather it is the group of people constituting the queue who ends up reconfiguring it.

Though P5 shows willingness to let Natalia go first in panel 7, P1 is the one with the highest 'authority' because of her being first in line. This can be seen in panel 6, when her hand gesture is capable of interrupting P2's trajectory. This is, of course, not only P1's doing. Natalia moves slightly to her right as the lift gets closer, orienting herself toward the lift and getting both P1's and P2's attention. Natalia's shift seems to recruit P1's cooperation, who has seen the subtle movement as an interest in taking part of the boarding process. The other users comply with P1's invitation, either by reinforcing the offer with gestures or by repositioning themselves, forming a more comfortable path for Natalia to go in first.

Regarding this we can go back to Brown (2004: 4), who also establishes that "[o]ne 'challenge' to queuing is that there is little or no verbal interaction in a queue. The co-ordination is done with bodily interaction alone". Indeed, in this case verbal interaction is kept to a minimum. Its scarcity seems to be compensated by positioning, gestures, movements, and glances. Verbal resources make an appearance only to reassert an already established offer. The importance of visually available resources is reasserted by the notion that queuing "is as much about being able to *show* one's actions as it is being able to *see* the actions of others" (Brown 2004: 11). Despite our ambiguous position in the queue (which is initially challenged by P3 and P4), Natalia shows herself to be next in line with her movement to the right. This form of "working the queue" (Brown 2004: 1) on Natalia's part is picked up by P1 and prompts an offer from her. This seems to indicate that an accessible situation is not just produced under the form of 'help' being given on its own, but rather as an interactional accomplishment in which Natalia's expression of interest works as a way of "mobilising assistance" (Middleton & Byles 2019: 80) from certain key actors.

Finally, P2's case is also noteworthy. Even though priority as an imperative was already established by the sign, and Natalia's signal had been noticed by her, P2 still initiates her entrance as soon as the lift arrives, remaining within the frame given by common rules of queuing. P1's actions have the effect of stopping P2 in her tracks, causing her to move to the side and comply with Natalia's prioritisation. This subtle form of resistance to the collective task of prioritisation is dealt with by P1's gesture (panel 6), an extended hand

that does not physically impede P2's progression, but has nonetheless the enough amount of influence to reorganise her trajectory.

This case shows how priority for disabled users can be established as morally relevant by signage and other material features, but ultimately needs to be enacted by the participants of the situation. In this case priority is done by a rearranging of the ordinary rules of queuing, but notably this very set of rules serve as a resource to reorganise the situation toward Natalia's prioritisation. Thus the importance of non-verbal interaction in queue ordering is drawn upon by Natalia, who expresses an interest in being prioritised by moving closer to the lift when it arrives. Similarly, the common rule of queue order manifests as a form of authority in the case of P1 who, because of being first in line, is able to reorganise the order in Natalia's favour.

Working the ramp together

The situation at the lift gets me thinking about the issue of offering assistance. As I take the stairs down to the platform to meet Natalia there, something that happened to me a few days ago comes to mind. I was in the 501 bus on my way to see a friend. I like that bus because I usually take it to the end of its route, so I do not need to keep track of stops. That day there was a wheelchair user in the bus, so I discretely focused my attention on him. The bus arrived to its final stop by Parque Bustamante, but another bus was blocking the stopping space for ours. The passengers were getting restless (most people take the metro from here and continue their journeys), so the driver opened the doors anyway, even though we were not in the bus stop yet, and we were actually a bit far from the kerb. The bus was emptied very quickly nonetheless, save for the wheelchair user, a young man, and me. The young man approached the wheelchair user and asked, "Can you reach?" The other answered that he could. I observed the younger man getting off the bus and unfolding the heavy, dirty ramp. The ramp turned out to be broken, pathetically hanging from just one of two hinges. I was sad to realise that this did not surprise me much. Transantiago buses and stops are usually in disrepair in some way or another. I approached the younger man with the intention to be of help, although not sure how: A clumsy "Watch out pal" was all I could offer. He smiled reassuringly and attempted to install the ramp anyway. The gap between bus and kerb was too great though, and the ramp rested against the road in a pronounced angle that was impossible to navigate. He seemed taken aback for an instant, and then lifted the ramp again, yelling instructions at the bus driver for him to move the bus closer to the pavement. The driver reacted quickly and we were able to coordinate with him a more suitable angle. The wheelchair user waited patiently, even though he had been waiting two or three minutes to get off the bus. The second attempt went better; the ramp as correctly installed connecting the vehicle and the kerb. But its stability was still an issue, it was

loose from the side missing a hinge. The young man decided to make up for this himself, standing on one of the ramp's sides and physically holding it in place with his hands. I joined his effort from the opposite side. The wheelchair user approached the ramp and got off the bus slowly moving backwards, which gave him more control over the whole manoeuvre. The platform and our arms held his weight well enough, and the alighting process took less than ten seconds. I imagine some people passing by maybe slowed down for a second to look at what we were doing, but if they did, I did not notice. The wheelchair user, finally on the pavement, smiled and thanked us, to which I responded that the younger man was the one that had done most of the work. The three of us said our goodbyes and parted ways. As I walked away, I could still see the young man dropping the ramp back in place, making a loud noise. It was very heavy indeed (Field notes, 10th May 2017).

This story is filled with injustices. From the longer time that a wheelchair user has to wait for something so seemingly simple as to get off the bus, to the infuriating neglect of crucial accessibility devices like the ramp. While we may feel tempted to say that these situations can be avoided with proper design of materialities and protocols, what I would like to emphasise is, rather, how active and relevant is the role of passengers – disabled passengers included – in ‘making stuff work’ so as to enact accessible solutions. As with Natalia’s encounter at the lift, the anonymous wheelchair user was also involved in a form of adaptation aimed at producing a more accessible arrangement for him in the face of neglecting accessibility protocols and maintenance. Whereas in Natalia’s case it was people’s conduct and queueing norms adapting to produce priority, his situation revolved around physical adaptation and ‘making up’ for a lacking material solution. Both stories, however, show the importance of assistance being offered and properly organised. While the woman who was first in line for the lift used her position as leverage to rearrange the queue’s order, we coordinated our efforts with the bus driver to more conveniently install and hold the broken ramp. The wheelchair user from the bus patiently waited for us and carefully adapted his way of using the ramp to our precarious impromptu solution. Natalia, for her part, gladly accepted an offer that was, partially, prompted by her own signals. The two of them played an active role in the adaptation work produced, be it by bringing their own bodily capacities into it, or by enlisting and managing help from others.

Such practices of assistance are also part of the widely diverse forms of adjustment we have explored throughout this chapter. The cases visited show how practices of adjustment weave together material resources, bodily capacities and skills, and the intervention of other people in passing arrangements that accommodate particular needs and situations. Vyjayanthi Rao (2014) offers a similar description of adjustment when looking at solidarity practices in Mumbai’s highly dense transit. Rao draws on the views of two writers describing practices of adaptation. The first is Suketu Mehta, who in his book *Maximum City* (2004) speaks of solidarity forms of adjustment in helping passengers who are being left behind by the train. In his story the other passengers who have boarded the train will reach out, “many hands unfolding like

petals to pull you on board” (Mehta 2004, cited in Rao 2014: 45). Interestingly, this form of adjustment combines the possibilities given by materialities (a train without doors which can therefore be boarded even while moving), bodily capacities (reaching out and producing one more spot for another passenger), and other people’s willingness to come into our aid. The second writer, Rohit Gupta produced a blog entry aimed at criticising Mehta’s romantic view of the city’s mobility dynamics. It is noteworthy that Gupta’s counterargument is still presented as a particular form of adaptation, albeit a selfish one in this case:

“These hands that pull you upon the train is a particularly interesting case in point. Normally when this happens, it is because you are being pulled by a work-buddy, since you work in the same office/factory, get on at the same station or whatever, and you do this every day...When the evening rush hour trains leave from Churchgate, what people standing near the doors (these are open trains) do is that they create a human door, an impenetrable blockade so that they can at least breathe for the next hour of the journey...” (Gupta, cited in Rao 2014: 46).

Gupta’s narration illustrates a form of adaptation as complex as the one described by Mehta, though organised as a subtle form of violence rather than as altruism. Adaptation as a practice is not intrinsically ‘good’. It can underpin forms of selfishness or, as the ramp story made me realise, apply a veneer of idealised solidarity over insufficient accessibility solutions. Transantiago users often encounter materialities and infrastructure whose design is lacking, or that have fallen into disrepair. Different forms of adaptable assistance can compensate for these gaps and produce a more accessible arrangement in particular cases, but also risk naturalising other entities’ negligent absence.

Rather than a call for avoiding assistance as an ordinary practice in public transport, the cases I have presented in this section hint at the complexities of giving and receiving help for disabled public transport users. Mainstream forms of pursuing accessibility, influenced by Universal Design thinking, place high value in independence and generally use it as a criteria for identifying a ‘fully accessible’ space. However, several works of research focusing on experiences of disabled and older people invite to a more nuanced, critical engagement with the notion of independence.

Focusing on the case of mobility in the later life, Schwanen et al (2012) point out that independence is often promoted as a value by institutions associated to neoliberal or modernist forms of governance. The authors identify in these cases a notion of independence that is equated to isolation – that is, not needing others in order to function in social life. Such a notion however struggles to realise “human embodiment and the fundamental enmeshment of individuals in relations with other humans, other forms of life, technical artefacts and other forms of inanimate matter” (Schwanen et al 2012: 1314). Similarly, authors like Worth (2013) and Ball et al (2004) find that notions of independence change over time as bodily capacities transform with aging, reasserting that experiences of independence and embodiedness are strongly interleaved, and thus remain dynamic and tied to changing relations among humans and nonhumans. It is worthwhile to transition from a notion of independence to one of *interdependence*, acknowledging it as an ever-present aspect of human life in general, and of the life of disabled people in particular. As bodily

capacities change and come together in public spaces, they make new arrangements possible. The cases I have presented echo this notion; they are stories where access is made to happen in heterogeneous collaborative manners, of which disabled people are not a passive receptor. Rather, they actively engage with others whom may be of assistance, prompt and organise offers of help, draw on the affordances of available materialities, and align their bodily capacities in order to make assistance possible and convenient.

Looking at the experience of blind persons, Schillmeier (2008) describes how in/dependencies are made to be through practices in everyday life. They are highly situated and depend on relations that bring together humans and nonhumans. In Schillmeier's view, in/dependence comes about as the result of an ongoing process of mediation between people and things, as "the very ability or disability to do things is not a question of independency *or* dependency. Rather, dis/abilities are effects of heterogeneous relations that actualize *dependencies* on heterogeneous others" (Schillmeier 2008: 226). An arrangement of heterogeneous dependencies can, in fact, complicate things. As we have seen, certain forms of assistance seem to be compensating not for the lacking capacities of disabled bodies, but rather for deficient material infrastructure, poor maintenance, or overburdened services.

UD positions independence as a value that is tightly tied to accessibility, where a universally accessible space would be one that is useable by anybody, without needing help. The cases analysed in this section, however, show that different forms of assistance are crucial for accessibility to take place, even in the face of 'well-designed' solutions. While some forms of help are undesirable as they make up for lacking design or maintenance, others express capacities for social organisation that come together along with infrastructure and technologies as accessible arrangements. These dynamics of assistance show an opportunity for thinking and designing material interventions as a crucial part of assemblages of interdependence. Rather than deeming dependence as contrary to accessibility and outright attempting to avoid it, it is intriguing to think of ways in which material intervention can find a place within the assemblage, alongside practices of assistance, and the embodied capacities of public transport users.

These thoughts stay with me after I meet with Natalia again in the platform and ride the last train to our destination. After a 35 minutes ride we arrive to La Cisterna Metro Station, in the southern part of the city. We get off the train and look for the lift connecting this platform to the surface. This will be, finally, the last one we will need to take to complete Natalia's commute. While the rest of the crowd heads to the stairs and escalators leading to the exit, I follow Natalia past them. There is a lift at the end of the platform, where an older woman is already waiting for it. It is just the three of us and no one else seems to be coming, so I figure I will take the lift with them this time. It takes me a couple of seconds to realise something is different, though. The lift's shaft looks unfamiliar, smaller and somehow less...solid. The lady who is also waiting stands really close to the lift's doors, leaning against them with both her hands. Natalia explains to me that this station's lifts are actually hoist-like machinery, different from the bigger

and sturdier lifts from other stations. This one just admits two people at a time – I have just noticed a piece of paper in the shaft’s doors stating that. Plus, the lift won’t move unless someone keeps pressing the summoning button. That is what the lady had been doing this whole time; pressing the button with both her hands until the slow platform is finally here. She lets go of the button and opens the door, which is not automatic. It is a heavy glass door with a metallic frame that needs to be pushed aside in order to get in. As she does this, the woman turns to us and offers Natalia to go in. “Don’t worry, you go” responds Natalia in a friendly tone.

Through the dirty glass of the lift’s shaft, we watch the older woman slowly ride the platform up. In the meantime, Natalia sends a message to an Uber driver with whom she has a close relationship. He has a vehicle fitted for wheelchairs and always takes Natalia from La Cisterna to her house. The lady and the lift are finally out of sight, and Natalia approaches the button. She then hesitates. “You think the lady is done with the lift? We need to wait for the other person to free it”. I try looking up but see nothing. We give it a couple more seconds to be sure and try it. With a loud whirring sound, the hoist comes for us. I hold the door open for Natalia and she enters the lift moving backwards. Once inside, she shows me the button I need to press to make the platform move upwards. The device gives a strong shake and starts slowly moving up. I picture myself as a construction worker operating industrial machinery – an idea that would amuse me if it did not feel terribly unfair. I keep my finger pressing down on the button that keeps us moving up. I feel the strong vibration of the crude machinery against my hand. Due to her disease, Natalia’s hands are weak. Even opening up water bottles give her trouble sometimes. How does she do this every day? She adjusts, I suppose.

I cannot help but think of the enormous efforts that Metro staff is devoting to the installation of lifts in every station of their network, as part of their accessibility programme. How difficult it has been for them to provide the busy and older stations in the city centre with proper lifts. But we are far from that area here in La Cisterna. “Have you asked anyone from Metro if this is a definitive solution?” I ask, as we reach the upper floor and I can finally let go of the button. Natalia looks away from her phone – her Uber driver is waiting for her – and thinks for a second. “No, I haven’t. But this has been here for years”.

Conclusion: Accessibility as assemblage work

In this chapter I have presented several stories that contribute to our understanding of accessibility as exceeding the purview of experts finding the appropriate arrangement of infrastructures and protocols. I have shown how practices by the passengers also contribute to enacting accessibility, either by drawing on the available materialities, or propping up their shortcomings. I have proposed understanding of accessibility as assemblage work – as the coming together of heterogeneous entities and the vast and continuous work that goes into holding them together. As a way of addressing this, I have sought to explore the concept of accessibility in a more grounded manner, paying attention to how it is enacted in everyday life through practices and interactions.

Throughout each section, I have critically reflected on certain assumptions that tend to guide accessibility design by aspiring to universality. The pursuit for *definitive solutions*, which should be accessible to all *regardless of their capacities*, so they can navigate spaces *without depending on others*, configure a design ethos that has been deeply influenced by UD. This set of universal principles is guided by modernist urban notions (Jacobs 2006) inclined to see accessibility in abstract terms, and not as enacted through practiced accomplishments. Drawing on the materials I have discussed in this chapter, I have sought to contest these universal principles by hinting at a more situated form of accessibility: one that is driven by constant material adaptation, embodied capacities, and changing interrelations between humans and nonhumans.

This much more complicated landscape resonates with Titchkosky's (2011) presentation of accessibility as a question, rather than as an answer, to the issue of social inclusion. Much more than a simple “synonym for justice” (Titchkosky 2011: 71), accessibility relies on everyday tasks, negotiations, adjustments, and questionings. This messier and more dynamic form of accessibility, one that is continuously practiced rather than eventually ‘completed’, more evenly distributes the responsibilities for making it happen and holding it in place. To conclude, I will now specifically address each of these aspects.

From definitive solutions to material adjustment

Since its beginning in 2007, Transantiago as a public transport system witnessed the unfolding of many profound changes in terms of accessibility and social inclusion for disabled people in Chile. It can be argued that this process of transformation was properly set off in 2010 by the bill 20 422. This legal device was an actant strong enough to ‘trigger change’ within the stagnated accessibility configuration of Santiago’s public transport¹⁰. However, by paying close attention to how change has been enacted in this particular case, we have seen the importance of tracing ‘just how much’ change has found its way into existence, and depending

¹⁰ On Monday, April 14th of 2018, the Chilean Ministry General Secretariat of the Presidency put forward a motion in the Chilean Congress to extend the time limit of the bill 20 422, which had already been met. The organisation Ciudad Accesible has publicly criticised this move, seeing it as an endorsement from the Government to keep postponing a crucial policy of inclusion (Santibáñez, 2018).

on what kinds of adjustment. In a similar vein, Titchkosky (2011) reflects on how inclusion legislation manifests in practice:

“The interesting thing about legislation oriented by an inclusion mandate (and its implementation into policy and plans) is that all such practices not only need to be fought for and carried through but also lived – which means they are being interpretively addressed” (Titchkosky 2011: 96).

This ‘lived’ implementation of the mandate, as we have seen in the case of Metro de Santiago, has manifested as a collection of changes that, however minute, accumulate over time and consolidate as increasingly impactful yet still flexible material adaptations. Rather than as big reform, change prompted by the bill 20 422 seems to have slowly trickled into Santiago’s mobility dynamics, through small adjustments to ramps and escalators, and the testing of flexible solutions like the rubber band that fills the platform’s gap. Little by little, iteration after iteration, a new order has been emerging through transformation, rather than substitution (Geels 2007).

This is not always well-received by designers and experts. Even in the face of interesting flexible capacities of the materialities we have discussed in this chapter, they are still deemed as inefficient and incomplete. In the design of the new Metro lines 3 and 6, we have encountered a persistent aspiration on the technicians’ part for pursuing an infrastructural state of ‘full accessibility’; a definitive solution to the problem of disability. In this regard Titchkosky (2011: 96) highlights how “bureaucracy conceives of disability as a problem that it is endeavouring to include and yet is successfully making disappear”. The problematic aspects of this logic have also been addressed by Hamraie (2016), who criticises how modernistic design approaches implicitly aim at eliminating disability by ‘solving’ it.

We see here how the ways in which accessibility is pursued are tightly tied to implicit notions of what disability is. Sánchez Criado (2019: 410), for example, criticises the production of “ready-made commodities enabling a distinctive one-way and static ontology of relations – i.e. including ‘the disabled’ in ‘abled’ worlds”. The problematic dimension of the ready-made solution, or of pursuing solutions that are *static* and *definitive*, lays not only in the fact that such arrangements are usually tightly tied to ‘expert’ epistemologies, but also in the treatment of disability as a static phenomenon, one that exists independently of other changing elements and that can be ‘dealt with’ with the appropriate design implementation.

Is in this sense that we see the limitations of an approach that aspires to finding a final state of complete accessibility. Looking at different mobility systems, Bissell (2018: 153-154) has suggested that “focusing just on the success or failure of large, grand-plan infrastructure overlooks the countless potentials that all kinds of diverse, smaller-scale, incremental infrastructural changes might provide”. Rather than being ‘fixed’, the constantly unfolding nature of disabilities demands that they are engaged with permanent work of adaptation, repair, and reconsideration. This also allows for broader opportunities for disabled people to be acknowledged as an active part of the everyday enactment of accessibility, and not mere passive receptors of expert technical implementation. The cases we have observed in this chapter – stories of ‘flexible’

materialities that accumulated variation over time as circumstances changed – show an interesting opportunity to keep on exploring responsive, inclusive, and ever-improving forms of accessibility; rather than dismissing them as inefficient implementations. This kind of *tinkering*, as Sánchez Criado (2017: 159) has pointed out, is “a permanently unfinished and unfinishable activity – breaks away from the idea of a final product”. To embrace a notion of accessibility as assemblage allows us to recognise and value the vast amount of work that goes into this pursuit. Rather than a goal to be reached, it is an ongoing practice of which all manner of actors are entitled to take part. The continuous testing of material adaptations remains within a space of uncertainty, but as Callon et al (2011) have suggested, uncertainty calls for more inventive modes of decision-making and co-design.

Heterogeneous capacities brought together

The cases I have presented in this chapter do not only show the flexible capacities of materialities. Humans navigating Santiago’s public transport system also display a fascinating array of adaptive capacities, which in many different instances make accessibility possible through practices. In looking at the accomplishment of ‘making way’ we have seen how our own capacities, as well as our awareness to the capacities of others, are instrumental in the emergence of mobile spaces capable of welcoming different bodily configurations.

This is particularly salient in the case of disabled passengers, who enact their navigation of public transport spaces *through* their capacities. Rather than a form of living characterised by absent or lacking capacities, authors like Winance (2007) and Hall & Wilton (2017) present a view of life with disabilities as organised around capacities that exceed expectations of ‘normality’. This was palpable in Natalia’s case, in which her skilful control of her wheelchair was crucial not only for navigating lifts and platforms alongside other people, but also to meet her own highly specific needs for mitigating the train’s sway.

In order to continue exploring better ways of making public transport accessible, it is crucial then that we keep track of the capacities disabled people bring along with them. These capacities, as we have discussed, expand and become more complex as disabled people encounter the world. While Natalia has improved her skills as a wheelchair user by navigating ramps and slopes, Ximena becomes more proficient at noticing variations in colour and sound that allow to identify *her own* underground stations. These embodied capacities are profoundly personal, ever-unfolding, and respond to the material features of our environment. They organise practices of adjustment in encounters between users and infrastructure that are not only functional, but have potential to grow and develop over time. In this sense, rather than aspiring to producing spaces where these capacities would not need to appear, it is perhaps worthwhile to think of spaces that become accessible with and thanks to heterogeneous human capacities.

This resonates well with the point previously discussed. A more flexible and iterative approach to material implementation would show a more responsive arrangement to unfolding capacities. As Zola (1989: 410) puts it, “[i]f society perceives that the needs and ability of people are constantly changing, it might alter its attitudes toward the built environment from one of ‘permanence’ and ‘maintenance’ to one of ‘flexibility’ and ‘adaptation’”. In this sense, dynamics of mutual adjustment between humans and nonhumans can foster

the emergence of accessibility as assemblage, where heterogeneous actors bring together their capacities for adjustment and explore unfolding ways of accommodating to one another.

Ongoing relations of interdependence

In discussing the need for providing housing and transportation for disabled people, Gilderbloom & Rosentraub (1990: 280) forthrightly established that “[t]he disabled do not want sympathy. Their main goal is to live as independently as possible and to be integrated into the mainstream of society”. Indeed, the idea of avoiding a ‘sympathy’ approach toward disabilities has been at the core of the accessible design movement throughout the 20th century (Hamraie 2016), and approaches influenced by UD have strived for designing spaces that are accessible for all, that is, without needing help from others. Straightforward as such notion may sound; some elements discussed in this chapter seem to point in a different, more nuanced, direction.

Research focused on mobility experiences of older and disabled people, like the one conducted by Schwanen et al (2012) and Middleton & Byles (2019) concur in finding certain problematic aspects in the mainstream modernistic notion of independence. As an imperative that is usually set by institutions of neoliberal orientation, independence tends to be promoted as a value that allows individuals to look after themselves. Needing for others, by the same token, is commonly seen as a negative element that takes away from our agency as subjects. Modernistic accessibility design has not been foreign to this kind of thinking, usually using the notion of independence as a measuring tool for the quality of accessible spaces implemented. Having empirically explored the notions of independence in the mobility of older people, Schwanen et al (2012) warn against equating independence to disconnection. In a similar vein, Gibson (2014) invites to explore notions of independence from an assemblage thinking approach, which offers conceptual tools for us to reorganise the negative connotations usually assigned to dependence. Gibson asserts that behind the valuation of independence lies a set of assumptions on the ontologies of the human, as “at its most fundamental, independence relates to the enlightenment notion of humans as fixed beings, composed of individuated minds which are encased in biological bodies” (Gibson 2014: 1329). Drawing on assemblage thinking, on the contrary, opens up possibilities for acknowledging interdependence as one of the most fundamental aspects of human life. My intention is not to romanticise practices of assistance as intrinsically good (which would just replicate the logic of UD’s striving to make assistance become unnecessary), but rather to show that such practices are an integral part of public life. An assemblage-inspired approach to accessibility requires that we keep exploring how this happens, and why, in public transport settings.

Looking at the mobile experiences of VI people in the UK, Middleton & Byles (2019) emphasise the importance of being able to recruit assistance or support from others (family and friends, other passengers, staff, apps, etc.) in order to expand knowledge and familiarity of a certain area. We saw similarities with this in Diego’s case, whose proficiency at navigating Santiago’s underground network was built with his mother’s help; and in Natalia’s case when taking the lift, where her actions prompted other people to

produce priority in her favour. These and other cases presented show that spaces can become more navigable and expand their accessibility for disabled users as *more* relations come together in and around them, rather than less.

Albeit undoubtedly indispensable, infrastructure and device adaptations are not enough on themselves to constitute an accessible environment for users. Accessibility is also enacted through the users' developing skills and interactions; and the influence of other actors with capacities to share information, organise priority, or simply adapt their own needs to the ones of other people. From a caring parent to an attentive stranger ahead in the queue, other actors also take part of a more distributed network of agencies that influences the configuration of more or less accessible spaces. As McRuer (2006: 94) argues, “[a]n accessible society (...) is not simply one with ramps and braille signs (...) but one in which our ways of relating to, and depending on, each other have been reconfigured”. Rather than the ‘good design’ elements that would make objects accessible in and of themselves, it is the assemblage of heterogeneous relations what makes accessibility possible in everyday life.

Brought together, all of these aspects – materialities in continuous adjustment, human capacities enabling humans and nonhumans, and the recognition of interdependent relations – allow us to consider accessibility as assemblage work that calls for the engagement of all. Rather than delivered in a one-way manner from an expert to a passive sector of the public in need, accessibility can be seen as an ongoing practice enabled by situated interrelations of humans and nonhumans. By this, I mean that accessibility is underpinned by heterogeneous actors that are continuously involved and remain open to further change and learning. I argue that, even in a big and complex public transport system like Transantiago, such way of enacting accessibility does take place and can be further encouraged. Even though it was conceived to be massive reform to Santiago's transit, the ways in which Transantiago is practiced and made to become accessible are, like I have shown, multiple, nuanced, and ongoing. Rather than a shortcoming, this fertile heterogeneity can be drawn upon to pursue accessibility in ways that include disabled people not just as passengers, but as the co-designers, of the public transport they would like to navigate.

ON RECRUITMENT (AND SERENDIPITY)

TO EXPLORE THE INTERACTION BETWEEN DIFFERENT 'VULNERABLE' FORMS OF EMBODIMENT WITH TRANSANTIAGO, I HAD TO FIND PEOPLE WHO DIDN'T RESEMBLE THE 'NORMAL' BODILY SHAPE

THEY'RE EASY TO FIND IN SIGNS, BUT LESS SO IN REAL LIFE.



I KNEW THAT I WOULDN'T BE ABLE TO COVER EVERY POSSIBLE CASE OF 'DISABILITY' OR REDUCED MOBILITY.

ETHNOGRAPHY WORKS BEST FOR ENGAGING IN DEEPER RELATIONSHIPS RATHER THAN COMPOSING A 'REPRESENTATIVE SAMPLE' OF CASES.



I WAS HOPING SHE COULD INTRODUCE ME TO SOME OF HER REGULAR PENSIONER PATIENTS WHO USE THE PUBLIC TRANSPORT REGULARLY.



AN OLDER COUPLE ARRIVED IN THE WAITING ROOM. SHE USED A CRUTCH.



JUST FRIENDLY TELL THEM ABOUT MY RESEARCH.



Hi, sorry to bother you. I'm a postgrad student and right now I'm conducting research on...



...ON...THE EXPERIENCE OF... TRANSANTIAGO USERS WHO...uh



BUT PEOPLE SEEMED TO GET IT



Most Santiaguinos have something to say about TRANSANTIAGO



Also, turns out that people in waiting rooms don't have much else to do.



These first approaches were useful to gauge our expectations and introduce ourselves

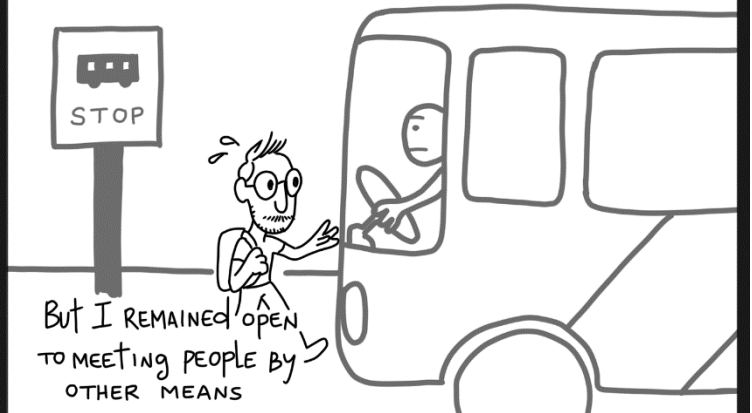
That time at the healthcare centre we chatted for about 30 minutes. They were keen on helping me with my research. We decided to meet again.



That's how I met Alba and Mario. During my fieldwork I also approached other institutions, like the Corporation for the Blind or the accessibility department of some universities.

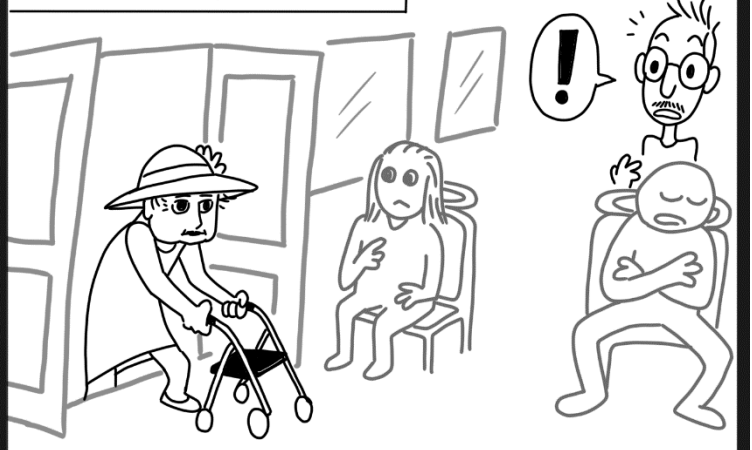


I met and interviewed several people that way



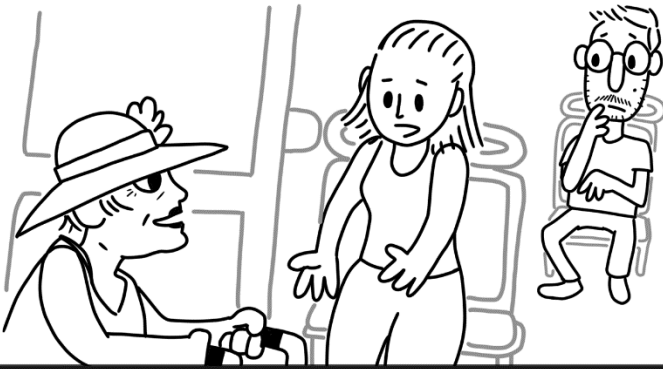
But I remained open to meeting people by other means

Sometimes it was a matter of being on the public transport a lot.



I WAS TRYING TO REACH POTENTIAL PARTICIPANTS THROUGH 'official' MEANS, BUT MEETING SOMEONE BY CHANCE, IN THE BUS, WAS EVEN MORE APPEALING

And that device was so intriguing...



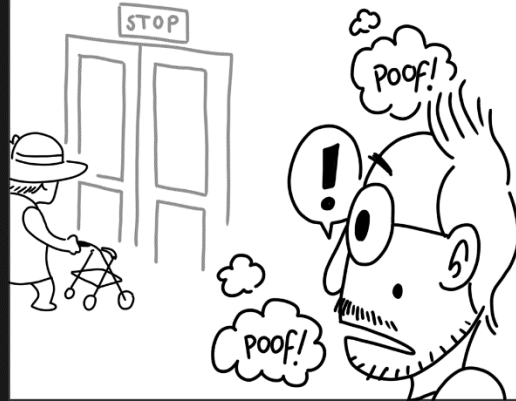
A FOLDABLE ROLLATOR



I was still shy though

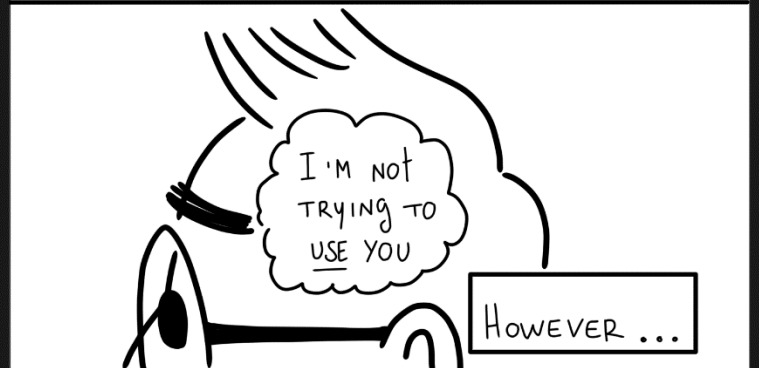
Suddenly, I realised she was about to get off the bus. NOW OR NEVER!

I helped her out with the rollator



And then we chatted for a bit

I WASN'T FEELING TOO CONFIDENT. SHE MIGHT SEE MY APPROACH AS OPPORTUNISTIC ON MY PART.



ANA BECAME ONE OF THE PARTICIPANTS I MET THE MOST TIMES WITH. I GUESS SERENDIPITY CAN BE WEIRD LIKE THAT SOMETIMES



EMPIRICAL CHAPTER 2: PROSTHETIC RELATIONS

The constant whooshing of trains makes me lose track of time. I can see them coming and going from where I'm standing, in the foyer of the Los Presidentes Metro Station. The hypnotising ebb and flow of the trains is marked by the stark differences between them. In the late evening, trains heading north are almost empty, while their southbound counterparts are packed full of exhausted people on their way back from work. I feel selfishly relieved that Ximena and I are about to take one of the empty trains. I have been waiting for her a while now, so I take my phone to check the time. I have a text from her.

Ximena has ocular albinism and an atrophied optical nerve, so I was not expecting she would communicate with me through texting rather than calling. The message reads: "Running a bit late. Will be there soon!". I reply with a reassuring message and, almost immediately, I see the three moving dots that indicate she is texting back. The conversation is fluid. Nothing from it would make evident that my interlocutor is visually impaired. The fact that this is surprising to me makes me feel stupid and insensitive. Of course, more and better mobile apps for VI people come out every year, making this kind of interactions smooth and available to all¹¹. From built-in functions that help the user to better navigate their phone, to apps that use photos to identify objects, technologies have become more receptive to the needs of different types of user. "Almost there" is Ximena's last text, which she adorns with a smiley face: ☺

A few minutes later I see Ximena approaching. I recognise her face and hair from a distance. The cane she holds in front of her does not only make her more recognisable to me, but also frames her as 'blind' to people around her. She approaches the place where I'm standing, but I don't think she has noticed me yet. I say hi in a loud voice, trying to overcome the whooshing of a train leaving the station. She seems startled for an instant, and then happy to have found me. As is customary in Chile, we kiss each other's cheeks as a greeting. I am careful not to be too sudden as I approach her face. From an easy fluidity during our texting, our interaction feels a bit clunky again. Is it the absence of technological mediators that makes our interaction difficult, or my lack of experience in dealing with an interlocutor that does not see me as I see her?

Buses, turnstiles, ramps, lifts, doors, handles, and escalators. Transantiago is populated by a variety of objects, but the collection of things mediating the encounter between the system and its users is larger still, if we take personal belongings into account. In this chapter, I will reflect on the role of technologies in the

¹¹ As long as you have a smartphone, that is.

mobile lives of disabled and other bodily ‘frail’ people who are users of Santiago’s public transport. A myriad of personal assistive technologies ride the public transport along with their users, making their journey possible, but also re-shaping it, and sometimes hindering it too.

My aim is to explore assistive technologies as part of the everyday life of disabled people, older people and others who, by varying circumstances, develop a significant and functional relationship with an object that takes part in their everyday life and daily journeys. The concept of ‘prosthesis’ evokes this idea well, though it might require some expansion. While ordinarily understood as implants or replacements for a ‘missing’ part of the body, researchers from the fields of disability studies and studies of science and technology have explored the concept in a different way. In thinking of disabilities and embodied experiences as a continuum, with no clear ‘inside’ or ‘outside’ of the body, authors like Wigley (1991), Jain (1999), and Moser (2006) work with a wider notion of prostheses, as something that exceeds the supposedly inherent capacity to replace a missing limb.

Notably, Winance (2006) presents the prosthesis as the result of a process, something that is *made to be* through practices that bring an object and a human body together. The stories that I collect in this chapter underscore the relations between humans and nonhumans that are both functionally and emotionally driven. A relational understanding of the prosthesis gives significance to the proximity and familiarity that unfolds in an ongoing process of incorporation (Winance 2006), and thus does not limit itself to ‘classic’ notions of prosthetic limbs. Wheelchairs, phones, canes, crutches, and other companion objects can be also explored as part of prosthetic relations, and in this chapter I will show different ways in which such relations influence everyday encounters with Santiago’s public transport.

However, exploring and understanding prosthetic relations does not come without friction. Hegemonic humanistic notions (Braidotti 2006) lie at the core of the issue of how prosthetics are generally perceived and valued – an undesirable way of compensating for bodies that are ‘lacking’. As discussed by Braidotti (2013), the human as unitary subject (i.e., a ‘natural’ body with no ‘extra’ parts) is still widely regarded as the ideal standard from which other human-nonhuman assemblages merely deviate. In this respect, social researchers have embraced Haraway’s (1991) concept of the cyborg as a destabilising of boundaries that serve as domination mechanisms based on the production and reproduction of binaries. In Haraway’s view, the cyborg condition applies to every person, it is not a characteristic of a few ‘odd’ individuals. Thus, we are all cyborgs, hybrids of contemporary life as it is underpinned and organised through, and around, technological infrastructures. However, the cyborg concept remains at the centre of an ongoing debate within disability studies. Some authors have embraced the concept (Kafer 2013, Grant 2015), while others have criticised it (Jain 1999). Following an STS approach, Moser uses the cyborg concept to explore relations between disabled people and assistive technologies, and comments that

“These new virtual worlds neutralise time and space, it is said, and thus put axes of difference like gender, class, race, age and disability out of operation (...) Old marks of difference are turned into

identities that we can play on, but that do not matter – we are not excluded because of them” (Moser 2000:215).

This optimistic view of ‘new’ technologies and their effect on disassembling ‘old marks of difference’ is at the very centre of the development of Haraway’s cyborg. This is a kind of human-technology assemblage that, by means of transgressing essentialist boundaries, opens up new possibilities for emancipated life. However, Reeve (2012) highlights that while issues of ethnicity and gender play an important role in Haraway’s discourse, her attention to disability is practically nonexistent. He finds clear limitations in the cyborg concept, pointing out that it does not encompass the material complexity of disabled people’s lives; neither does it allow us to understand the porous boundaries between the disabled and non-disabled. My encounter with Ximena, too, indicates that the process of dissolving marks of difference is not always that simple, nor is it the same for everyone. While she and I were able to keep a fluid conversation through texting, with no apparent marks of difference, seeing her texting in person reveals a different scenario. Compared to many people, Ximena has a low degree of vision that allows her to navigate her phone and send text messages by holding it very close to her face. This is her preferred way of doing it and she has become skilled at texting in this fashion, but the unusual close distance at which she holds her phone makes her stand out amongst other people. Additionally, the phone has been designed with certain bodily assumptions that Ximena does not meet. Holding the phone close to her face limits the available space for typing, and thus she can only do it with one hand. Rather than disappearing, then, Ximena’s marks of difference remain, albeit in a different shape. Predominantly used as a metaphor, the cyborg concept shows limitations when it comes to understanding concrete practices and experiences such as this. In this sense I turn to Reeve’s (2012: 91) invitation to observe the “lived experience of impaired people who have intimate relationships with technology”, and thus my aim in this chapter is to offer a detailed description of the *practiced and embodied relation* between human users and nonhuman devices in Santiago’s public transport.

The following sections explore different aspects of my participants’ life with their assistive technologies as embodied, ongoing, and practiced relations. By drawing on these stories, in the first section I analyse the more problematic and constraining aspects of prosthetic relations. In the second section I then analyse the skilled embodied gestures that users are able to produce in conjunction with these objects. The cases will highlight disability in the public transport as a set of interdependent relations bringing together humans and nonhumans (Goodley et al 2014). Building on this idea, in the third section I reflect on how prosthetic devices intervene in the everyday encounters their users have with the system’s infrastructure and other passengers. This highlights the importance of understanding public transport users not only as owners and carriers of objects, but these very objects as enablers of particular interactions among different members of public life.

Feeling like a robot

It has been argued that ongoing and complex human-technology relations tend to dissolve the borders that clearly demarcate the human from the object (Haraway 1991). However, these porous boundaries are challenged and tensioned by certain aspects that arise from the relation itself. Though usually described in a celebratory manner (Moser 2000; Braidotti 2006), the cyborg concept is not often used to describe the practical problems of living in close relation with an object.

By framing prosthetic relations as a practice, I will focus on different aspects that are relevant to understanding how the relation is routinely *done*. This includes the expansion or transformation of the capacities of human and nonhuman as they come together (Jain 1999), but also the possible practical problems of the relation itself: from how the prosthetic relation is perceived by others as a stigma, to the effects triggered by technical malfunction, to the influence of prescriptive agendas inscribed in orthopaedic devices. In the following sections, I will focus on the difficulties and unpleasant feelings that people's relationship with these devices can produce. Then I shift to how these devices can carry external ableist agendas, reinforcing certain forms of normalising the body and keeping it 'in check'. These agendas can be experienced as constraining because they encourage specific 'ways of doing' from which actual embodied practices can deviate greatly. There is, then, practical and emotional work that people need to do, in order to produce their own ways of doing in the face of a fixed set of expectations inscribed in certain prostheses.

When a part of you fails

Either critically or in a more embracing way, several researchers from disability studies and science and technology studies have drawn upon Haraway's (1991) concept of the cyborg. As a metaphor aimed at thinking through ways of living beyond boundaries, the idea of transgressing classical human/machine divisions has permeated in contemporary notions of what prosthetic devices do. In this respect, researchers like Reeve (2012) and Jain (1999) reflect on how technology and human body come together, challenging essentialist understandings of where the human ends and the thing begins.

In broader terms, Goodley et al (2014: 349) establish that "[i]f the posthuman condition is characterised by assemblages that connect the subject to her/his outsides then disability allows us to think across binaries of self/other, nature/technology and human/machine". Indeed, in paying attention to people living in close relation with assistive devices, overcoming ready-made definitions of human and machine becomes all the more necessary. Stone (1995:5) delivers an insightful account on these 'boundary debates'. On attending a lecture by Stephen Hawking, she observes:

"There is the obvious physical Hawking, vividly outlined by the way our social conditioning teaches us to see a person as a person. But a serious part of Hawking extends into the box in his lap. In mirror image, a serious part of that silicon and plastic assemblage in his lap extends into him as well (...) No box, no discourse; in the absence of the prosthetic, Hawking's intellect becomes a tree falling in the forest with nobody around to hear it. On the other hand, with the box his voice is

auditory and simultaneously electric, in a radically different way from that of a person *speaking* into a microphone. Where *does* he stop? Where are his edges?”

Stone’s reflections on Hawking’s body-prosthesis assemblage highlight the difficulties of clearly identifying a boundary separating the man from the machine. The coming together of Hawking and the box establish a distributed type of agency that would not be possible if any of the two were missing. Crucially, and even though Stone admits there is still a ‘social conditioning’ to how we see and define an individual, this conjoined arrangement interrogates how a person looks and sounds. To be sure, these boundaries remain undetermined in part because they are shifting, and keep on changing over time.

Following Haraway’s (1991: 193) description of the self as “always constructed and stitched together imperfectly”, I will now explore stories that illustrate the specific aspects of such ‘imperfection’ and how the trouble arising from it is dealt with (or not). I argue that prosthetic technologies exist in dynamic tension with the organic body, and such tension is made manifest and worked out through everyday practices. At this point, Haraway’s cyborg shows some of its limitations. Being usually understood as a metaphor, the cyborg concept was not conceived to critically explore the *practical* aspects of a body-technology relation, nor does it pay much attention to the difficulties that technologies can bring along as they find a place in our lives. As Siebers (2008: 6) puts it, “[p]rotheses always increase the cyborg’s abilities; they are a source only of new powers, never of problems. The cyborg is always more than human – and never risks to be seen as subhuman. To put it simply, the cyborg is not disabled”.

These ideas are clearly illustrated by the case of Natalia, a young professional who has been a wheelchair user practically her whole life. Natalia was born with spinal muscular atrophy type 2 (SMA2), which makes her unable to walk independently. She got her first wheelchair when she was three years old, and the unfolding of her bodily capacities have been tightly tied to the development of a certain proficiency as a wheelchair user. She recalls her first wheelchair as being “like a stroller with a...with a wheelchair feel. I could move about with my arms. At the time my, my arms were stronger”. People with SMA2 can experience a decrease in muscular mass over time, and Natalia’s first wheelchair story is a reflection of this. As her condition developed, her relationship with the wheelchair also changed, and as she grew older, new models were brought in. She got her first electric wheelchair at age fourteen. We see here how Natalia’s growth and bodily history has never been fully independent from the wheelchair device. Quite the contrary, as we will see, Natalia’s wheelchair plays an integral role in her understanding of her own embodiment.

However blurred, the boundaries between Natalia and her wheelchair still exert an influence in her life. Their porous nature does not mean these borders are any less problematic or painful. They need to be negotiated in practice, because the user’s identity is tied to their relationship with the device. This negotiation can be appreciated in one of Natalia’s concerns about her wheelchair, which is mainly focused on its size. From the three wheelchairs she has owned, the current, smaller model is the one that works best for her in functional terms (for instance, when it comes to fitting in a table), but also in aesthetic terms. Natalia’s body size in relation to each wheelchair has been a source of discomfort for her in the past. She found her small

body and her previous bulky electric wheelchair to make up a somehow disproportionate arrangement. As time went by and she had a chance to get a different model, Natalia pushed for a smaller wheelchair that would feel more aesthetically fitting.

In discussing the case of the walking boots, Michael (2000) has described how they both physically mediate the relationship between the user and the environment, as well as signify style and identity. The boots, too, can generate difficult or even painful situations to the person wearing them, when there is not a right 'fit'. While these notions also apply to the case of Natalia and her wheelchair, there is more at stake for disabled users of assistive devices. Three decades ago, Zola (1989) had identified the wheelchair as carrying a 'stigma' that was starting to be challenged by favouring certain design features. These changes led to "sleeker and lighter models but also to different colors, fabrics, and with the add-on features and 'creature comforts' usually thought more relevant to cars" (Zola 1989, p.411). And even though wheelchairs, canes, and

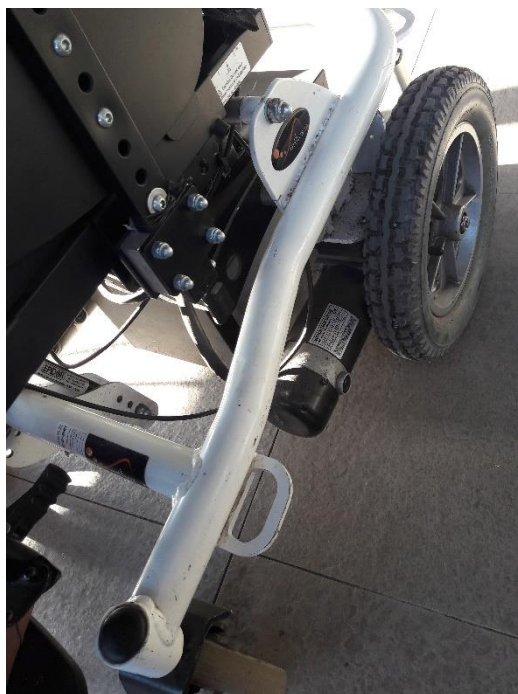


Figure 4.1 The electric engine of Natalia's wheelchair.

rollators admit much customisation, user and prosthesis are usually involved in a complex relationship that is affected by limitations to replacement, repair, and technological update. Gowran et al (2020) describe how, for wheelchair users, access to wheelchair provision and repair services are as crucial as they are scarce. This alone marks a difference from how people interact with other prosthetic devices (e.g. walking boots), in that something seemingly simple as a malfunctioning device can render the person immobile and isolated. Natalia's wheelchair affects both her capacity to interact with the environment and how she is physically perceived. Thus, her self-image cannot be considered without accounting for her wheelchair, and how her body looks in it. She manages her own appearance by negotiating her bodily relation with the wheelchair, reflecting the fact that both existences are somehow intertwined.

Authors like Wright (2009) and Grant (2015) have critically analysed how prostheses are primordially assessed by non-disabled people in functional terms, leaving its aesthetic dimension in the background. Grant (2015) in particular has explored how prosthesis users negotiate femininity. Most of the people she interviewed felt their feminine identities to be 'at odds' with the prosthetic device. The case of the cane used by visually impaired (VI) people is exemplary here, because it has been identified by many researchers as a 'stigma' (Butler & Bowlby 1999; Hansen & Philo 2007; Worth 2013; Sakaja 2018). The idea of the cane as stigma is a salient aspect in Ximena's discourse, who tells me about female friends who avoid using the cane because of fear of being purely seen 'through' the object: "They're ashamed of being seen with the cane. Lots of my friends don't use the cane, they say 'they won't see me; they'll see the cane first'". However,

Ximena herself is dismissive of these apprehensions. She highlights how useful the cane is and, in her words, “I’d rather have no sex appeal because I’m using a cane, than act like I can see and then fall in a hole”.

Ihde (2008) has discussed the ‘desirable’ aspect of being/becoming a cyborg in his own experience of incorporating prosthetic devices like dental implants, or stents. Working from a phenomenological standpoint, he highlights the implicit desirability of being a cyborg in Haraway’s approach, as a type of expansion of our own capabilities, and how this feeling of desire encounters the resistance produced by the prospect of experiencing a transformation of the body. While Ihde’s analysis is focused on the desirability underpinning the relation between the prosthesis and its user, the stories I review here open up this problem to other people around – by means of becoming involved in a prosthetic relation, the technology might ‘mark’ its user as disabled and limit how others perceive them as potential subjects of desire.

Diego, another VI participant, is a university student and feels quite comfortable as a cane user. He has transitioned from feeling insecure about being a cane user to having a much more open attitude. When I ask him about his first experiences with the cane, he says: “At the time I had an issue with using the cane. It was tough, I didn’t like it. I was too much of a teenager, I think. I used to think it was unaesthetic...my friends didn’t use it, so I didn’t want to either”. Whereas Ximena highlighted the functional importance of her cane and dismisses its lack of sex appeal, Diego seems to associate becoming a more confident cane user with growing up. Both of their cases show different ways of recognising how their prosthetic devices are connected to certain aspects of their self (attractiveness, self-confidence, independence, maturity, and so forth), and of dealing with the problems this can entail.

Jain (1999) describes prostheses as technologies that can simultaneously enable and ‘wound’ their users. The wound can manifest in literal terms – like a prosthetic calf chafing its user’s upper leg – but we may expand this notion to other forms of distress and sorrow. By acknowledging the blurring of boundaries between human and technology in these stories, it is easier to observe how prosthetic devices can expand the user’s capacities while also exposing them to a whole array of difficult feelings: from emotional insecurity to actual physical pain. In this sense, the failure of devices can expose their users to distinct feelings of distress. An experience from Natalia’s past resonates with this. During one of our interviews she told me about when, years ago, she was out in the street using her newly acquired electric wheelchair. Suddenly, and without any obvious reason, the wheelchair’s battery exploded! The unexpected and over-the-top nature of the event left me unsure how to react. “Exploded?!” I asked, at a loss for words. Natalia laughed, but then gave more details to help me gauge the seriousness of the situation: a loud sound, smoke, and a piercing burning smell. She was stranded on the street, unable to do anything until someone came to pick her up. I asked her how she felt at the time, and her tone changed into a more serious one. She confirms it was a very negative experience for her, and adds: “The thing is, it’s like, it’s like a part...of your body, the wheelchair. Like, there is a kind of respect that...you know, other people could see it as just one more electric appliance, but...but it is a part of your life. Of your body”.

Reeve (2012) reflects on how malfunction reveals the ‘melding’ of body and machine as illusory. The taken-for-granted machine comes to the foreground and is experienced as distanced from the body. However, Natalia’s story frames this issue in a more nuanced way. The situation felt bad, as she explained, precisely because the wheelchair is a part of her. The device’s failure is painful as it is a crucial enabler of Natalia’s mobility independence. The melding of human and nonhuman cannot be all that illusory, as its interruption brings about a very real sense of malaise.

I have discussed how the cyborg concept seems to imply an emancipated assembled being that resists standard categories of domination. By focusing on how these prosthetic relations are done in practice, our views about their characteristics become nuanced. Human-technology assemblages enable diverse ways of being in space, but they are also prone to produce trouble, insecurity, and pain. Such forms of tension coexist with the intense affectivity of having an object become part of our body. Depending on the circumstances, boundaries between body and device may be blurred or retraced, in a dynamic tension that does not stay put. I will now reflect in a particular kind of tension – one produced by prostheses as carriers of normative agendas.

I use it wrong

I have reviewed how prosthetic relations can produce trouble and discomfort, either physically or emotionally, in the user’s life. Being a relationship in which the boundaries between person and object are blurred, the identities and wellbeing of people are at stake. When devices malfunction, do not fit, or are perceived as unattractive, the user is affected at a personal level. These ‘impairment effects’ as Reeve (2012: 96-97) calls them, are “restrictions of activity due to bodily variation and ways of managing that difference”.

Individual differences in skill and habits produce different kinds of capacities and trouble. Sometimes there are more agents involved in these prosthetic relations, besides the user and the device. By being objects that have been purposely designed and circulated as ‘orthopaedic’, prostheses can also be seen as bearers of particular sets of expectations and normative views of the human body. Dant (2004) finds a similar phenomenon in the case of car-driver relations:

“[T]he mobility and locomotion of the car are dependent on the affordance of a driver; it would be more precise to say that it is the assemblage of driver and car that affords mobility. And the complexity of the relationship between driver and car has many social dimensions; it is designed, made, adapted, learnt, maintained, policed, changes over time and varies with cultural context” (Dant 2004: 67).

Indeed, the prosthetic relations I am focusing on in this chapter become even more complex once ‘external’ influences are taken into account. Following Moser (2000: 201), prosthetic arrangements are subjected to a type of “norm which locates agency, mobility and a centred subjectivity in a naturalised and given human body”. In fact, prosthetic devices enforce these sets of expectations, adding new layers of complexity and tension to an already ambivalent relationship. Thus, sociomaterial arrangements can, and do, expand

capacities and make possible that different ways of living may come together, but these practices are also permeated by normative ideals and aspirations. As we incorporate them, prostheses ‘leak’ other agendas into our embodied practices and experiences. Moser (2006) argues that assistive technologies are usually designed from a compensatory standpoint, rendering these devices as a means to “turn disabled people into competent normal subjects” (374). Their orthopaedic character makes prostheses like canes, crutches, and wheelchairs mobilise certain views of how bodies should look and function in social life. Therefore, certain notions of being a ‘proper’ or ‘improper’ prosthesis user can find their way into the relationship itself. This became clear to me one day that I joined Ximena in one of her journeys to the university where she studied:

While waiting for the green light to cross the street, we started discussing canes and how different they are, depending on the height of the user. “I use it wrong”, she says, abruptly. This takes me by surprise. “I keep it very low”, she continues, “but the cane should be used like this”. As she says the last part, she fixes the cane’s handle to her right hip. I notice the difference in position from her habitual stance, and point out that she usually holds the cane in a more horizontal fashion, reaching further ahead with it. “Right”, she says, “but I’m already used to doing it this way”. The green light is on now, and the people in front of us start crossing the street. It takes Ximena a few more seconds to notice this, then she starts walking and I follow. “The thing is”, she continues her explanation, “completely blind people use the cane the right way, while we who can see a bit – we don’t”. She laughs, but this intrigues me and I ask how a ‘wrong use’ of the cane looks like. Ximena explains that her way of using the cane is ‘wrong’ because she “moves it in whatever direction”. “If a Special Education Teacher saw me”, she adds, “she would say ‘darling, you don’t know how to use the cane’”. I look at Ximena and her cane while she tries to show how ‘wrong’ her way of using the cane is. To me, evidently, it just looks as how Ximena always does it. “So, what would be the right way to use it?”, I ask. “Like this”, Ximena grips her cane with decision, and explains that it should be close to her hip, while moving the cane in a controlled pace, that matches her steps. “Like this, like this, like this”, she repeats with every step. The so far silent cane starts producing a rhythmic, clacking sound against the pavement. We stop at the next crossing, again waiting for the green light. Ximena stops, and so does her demonstration. “But I feel like a robot”, she says, leaving the issue at that (Field notes, 21st March, 2017)

A first thing to notice in Ximena’s account of how she uses the cane is that it includes more characters than just herself. Other cane users, like ‘completely blind people’ are mentioned as a case in point for a different, more adequate, way of cane usage. The Special Education Teacher, on the other hand, is presented as a voice with the authority to dictate who knows how to properly use a cane, and who does not. The prosthetic relation of Ximena and the cane is part of a wider assemblage of institutions, medical practice, and expectations of proper ways of being in space.

These elements are not just present in Natalia's verbal discourse. By adapting her posture and pace, she is also able to bodily perform the 'right' use of the cane, as an illustrative demonstration for me to better understand the difference. The cane has been socialised into her life, introduced through formal instruction and with the strong sense that this is an orthopaedic object – one that is all too close to an 'experts' world. While their expectations of proper usage are clearly present in Ximena's appreciation of things, a different form of doing has ended up emerging through everyday practices. Ximena's own way of being a cane user is not the mere product of formal rehabilitation training, but rather the outcome of an accumulation of experiences and habits; shaped by Ximena's own height, hand shape, and grip strength, the material characteristics of her habitual routes, the passing of time, and the fact that she has a certain degree of vision. Compared to the highly complex and dynamic features that compose Ximena's way, it is easy to understand how any other formal protocol to use the cane will feel restrictive and robotic.

And yet, Ximena feels the need to explain that her own style is 'wrong' as opposed to the right official way of using the cane. She gives hints as to why she does it like that – her degree of vision, as opposed to "completely blind people" – and accounts for the constraining sensation that enacting the 'right' way produces – "but I feel like a robot". Car drivers who, over time, have deviated from formally taught driving styles, also account for it. Laurier (2004), for example, has explored how fast drivers can draw upon locally available resources to accomplish a 'moralising of speed' that accounts for their own driving style. These accounting practices are a reflection of the pervasive influence of specific regimes of action (Latour & Hermant 1998) that circulate in the socialisation of user and object. Speedometers, signs, and the police can enforce a particular right way of driving, and drivers will develop variations from that template as they encounter the actual circumstances of their own practice.

In Ximena's case, the cane is both seen as a personal object and as an orthopaedic device that carries the authoritative voices of doctors and Special Education Teachers. In this sense, while developing her own way of using the cane marks Ximena as an independent user, she is simultaneously aware of a 'proper way' to which she is not conforming. Feeling like a robot, in this case, expresses the oppressive feeling of enacting a way of bodily being in space that does not come naturally to her. It corresponds to the scripted and constraining way of doing things according to a standard that has not emerged from actual practice. This normative way of using the cane may be presented and circulated as the 'right' one, and Ximena acknowledges that to such a degree that she labels her own way of doing as 'wrong'. And nevertheless, inevitably, her body and the cane will find a way to be different from anything else. Specific and local, Ximena's lived experiences accumulate and deviate from the formal template of a 'right' way of using the cane – one that, ultimately, is not *her way*.

The following section continues this thread and discusses in more depth the emergence of particular forms of doing with prosthetic devices. I will argue that these are the outcome of forms of attunement between bodily capacities and the materiality of the object, as well as the influence of others who we encounter in public space.

Incorporating the thing

In approaching the relation between a human and an assistive device, several questions are laid out in front of us. Particularly, questions about agency have prompted an animated debate among researchers interested in prosthetics and other forms of human-technology assemblage. Traditionally, agency tends to be assigned to the human part (understandably called the *user*), and a more obedient, passive role is allocated to the technology (frequently known as the *tool*). Straightforward as it is, this schematic ordering of agency tends to produce a problematic framing where too many things seem to be ‘taken for granted’. Dant (2004) notices this in the case of the driver and the car:

“‘Driving’ is treated as something that the human being inside the car does to the car, on the road. The process is treated as predominantly psychological so that the car is considered simply as a tool that is known and predictable. The ‘skilled driver’ is also taken for granted...” (Dant 2004: 64).

This form of viewing the car-driver relation assumes two separate entities that remain unchanged by the encounter, during which one takes over the other. Wigley (1991) follows the same type of rationale in order to describe prostheses, albeit reversing the hierarchy. In his view, the prosthesis is a kind of technology that “restructures the body that wears it” in the same way as “[t]he body itself is a prosthesis of consciousness” (8). Again, this way of understanding human-technology relations operates by assuming separate entities that affect one another in a unidirectional manner. This has been the base for Wigley’s approach to be widely criticised by contemporary authors. Jain (1999), particularly, has critically addressed these ideas, pointing out that Wigley’s perspective marks the disabled body as something not whole until it has been ‘propped up’ by a prosthesis. In this regard, Moser (2000) presents a view of prostheses as a form of control over the disabled body, meant to return it to ‘normal’:

“Measured against the norm, disability is constituted as a loss or lack. This loss or lack is in turn constituted as dependence, on other people or on technology. The technical aids enter the scene as a replacement and compensation for a lost limb, a lost sense or a lost function; or as a supplement that heals a broken bodily whole” (Moser 2000: 206).

Moser’s approach, however critical, sees prostheses as compensatory devices, a pessimistic account of technologies being part of modes of control and normalisation. They stand in for their users’ lacking capacities, unidirectionally producing a normalised body. She seems less attentive to the skilled work that users of prostheses do in order to produce new and personal ways of functioning. Conversely, Jain (1999, p.39) is critical of any perspective “that considers the body, as a general category, to be a ‘side effect’ of technologies of production”.

In this section I contribute to a more complex description of prosthetic relations by analysing how these objects are gradually incorporated into their user’s embodied selves. Rather than a form of control (of an idealised rational user over a tool, or of a normalising device over a lacking body), I propose that we explore prosthetic relations as a type of complex encounter in which every participant affects and is affected by the

other. Understood as assemblage, person and object come and are held together through embodied practices. This arrangement enables the user-prosthesis composite to develop gestures that are useful for adapting to changing situations in the public transport. From becoming members of a queue to coordinating with other pedestrians in the train platform, the things people do with their objects are resources for becoming competent travellers.

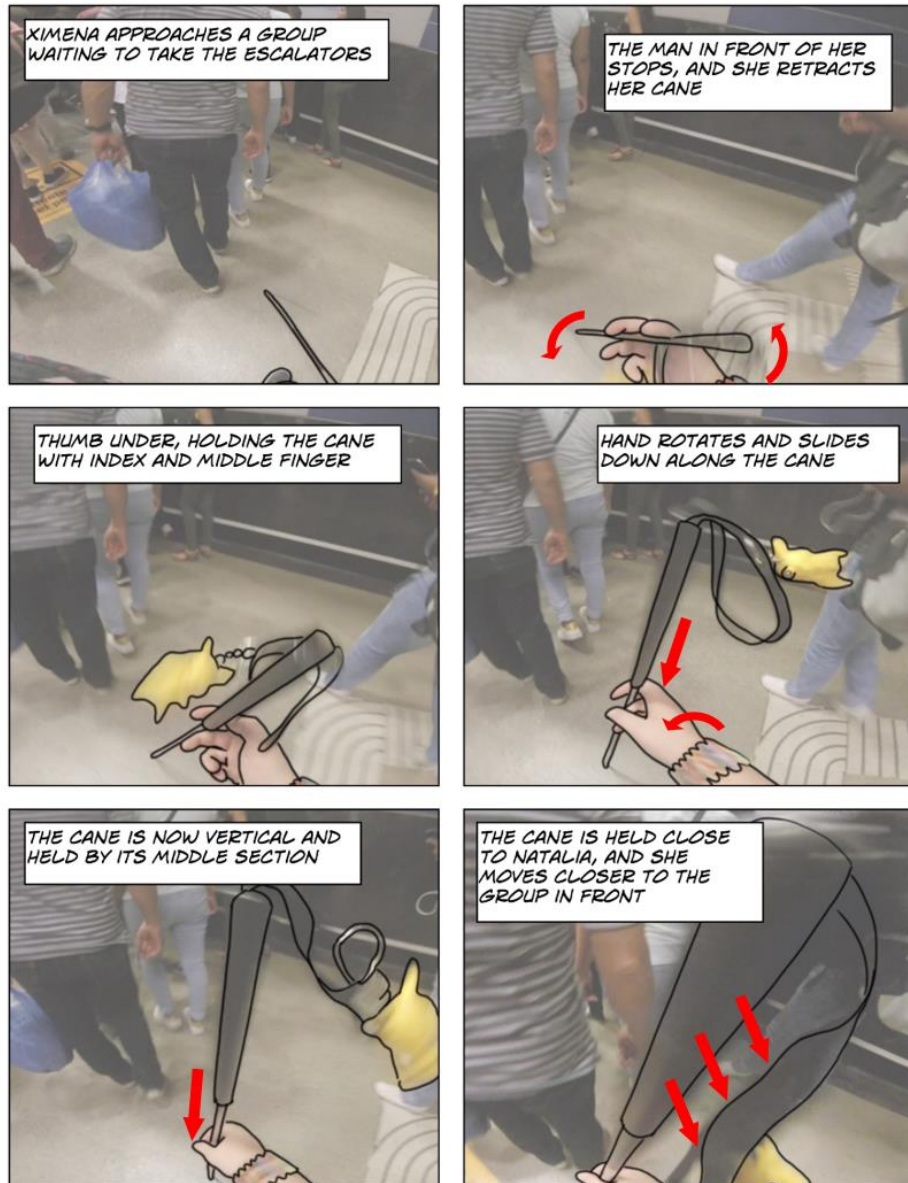
Adaptive gestures

The coming together of human body and nonhuman device entails much more than a subject merely ‘taking control’ of a tool. Rather than a unidirectional relation where an active agent takes over a passive entity, Jain (1999: 32) suggests that “the use of tools and artifacts requires a degree of incorporation into the body”. As the human becomes better at using the device, their body grows into something different, more attuned to this new configuration. The reshaping process of a body that becomes attuned to an object produces a composite with new affordances (Dant 2004), capable of experiencing a broader world (Latour 2004; Michael 2000).

Winance (2006) explores this idea by drawing on Actor-Network Theory and making an emphasis on ongoing practices, by pointing out that “action is the result not only of distribution [among heterogeneous entities] but of a long process of negotiation between a person, the devices he or she uses, and the collective in which he or she is included” (53). This unfolding process of negotiation is what the author calls ‘adjustment’, a concept she developed by observing instances of people trying out new wheelchairs.

Natalia’s case as a wheelchair user illustrates this well. Having been a wheelchair user since she was very young, her unfolding relationship with the device overlapped with Natalia’s exploration of her surroundings. When she first learnt to propel the wheels with her hands, other rooms in her house became available to her. Later on, as she became used to steering her electric wheelchair, Natalia was able to move around her neighbourhood and, eventually, become a public transport user. Rather than a one-way type of relationship where a human takes control of an object, or a device ‘compensates’ for a lacking body, Natalia and her wheelchair *adjust* in a practiced form of continuous experimentation (Grosz 2003) that reshapes both and produces an expanded set of relations. As she becomes a more proficient wheelchair user, she also becomes a commuter, a more independent person, a member of the neighbourhood, and so on. The wheelchair, on the other hand, becomes Natalia’s wheelchair, an artefact that she understands well and eventually considers a part of her body.

Such a particular and continuous process underpins the emergence of personal ways of doing things with the prosthesis. Whereas in the previous section we analysed Ximena’s description of a ‘right’ way of using the assistive cane, we will now focus on a gesture that forms part of *her own* way (see Transcript 2.1).



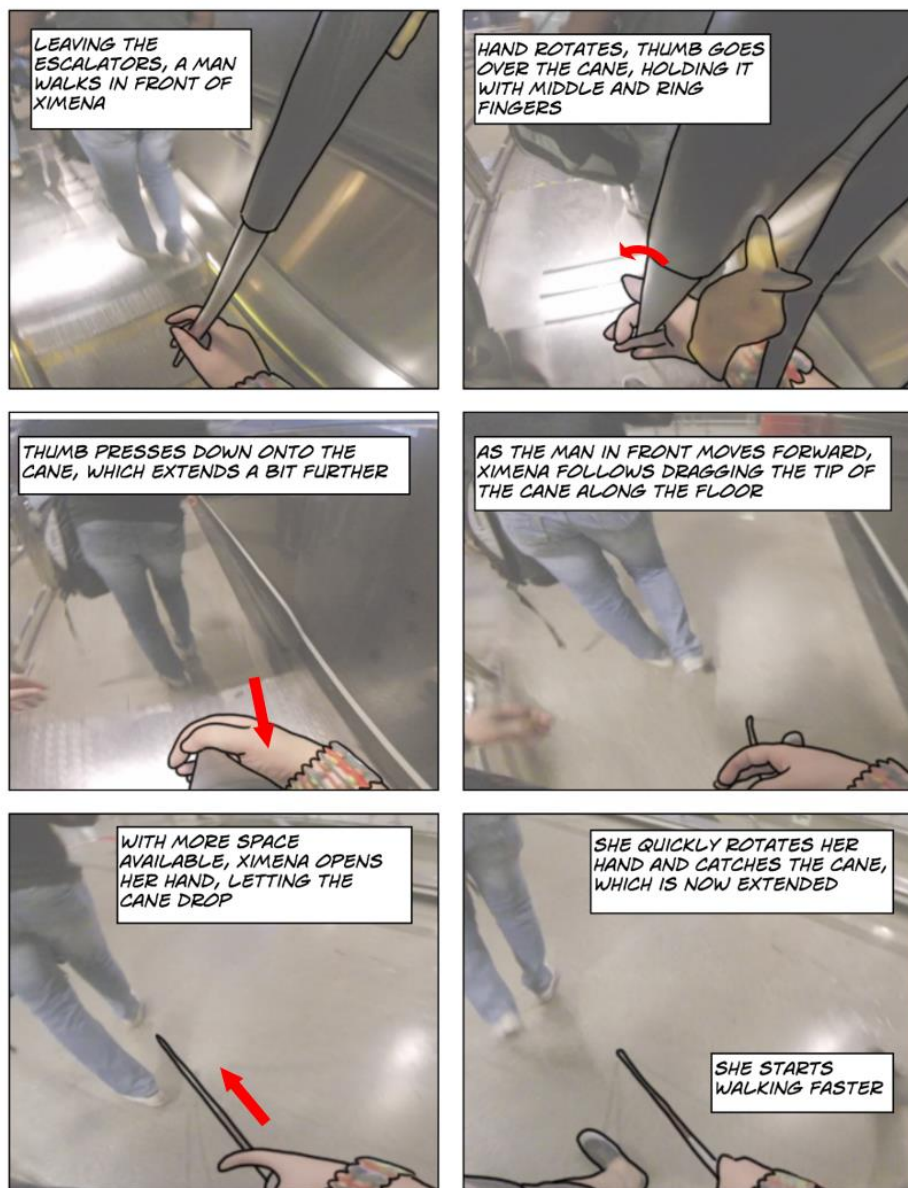
Transcript 2.1

This sequence shows Ximena¹² in a metro platform, approaching an escalator that will take her to a different line. Passengers start accumulating as they wait for their turn to take the escalators going up. Ximena approaches the group, walking closely behind a man with a striped shirt (panel 1). The man stops, and Ximena initiates an adaptive gesture. She moves her right hand up, and rotates it slightly, partially exposing her palm (panel 2). She moves her thumb under the cane, while she holds it with just her index and middle fingers (panel 3). Ximena's hand rotates again, her palm facing down, as she runs her hand down along the cane (panel 4). She grips the cane again, though she is now holding it by its middle section rather than the black handle. The cane is now almost completely vertical, and stays close to her body (panel 5). Having retracted her cane, thus minimising the space she occupies, Ximena now stands close behind the man with

¹² Ximena is carrying a Go Pro camera, attached to the rucksack strap on her right shoulder.

the striped shirt, waiting for her turn to board the escalators (panel 6), and has become a member of the waiting group.

The thick description of each step composing this adaptive gesture might be deceptive; it takes Ximena less than a second to perform this ‘shrinking’ motion. And yet, breaking the sequence down clearly shows the high complexity that it entails. This form of adaptation reveals an amount of skill, a proficiency on Ximena’s part as a cane user, but also as a public transport passenger. She is aware that the connection route she is taking includes taking escalators, and she is able to read the subtle changes in the crowd around her so that she knows when she needs to minimise the space her cane occupies in order to become a member of the waiting group. Let us now consider a sequence that takes place seconds later, when Ximena is about to leave the escalators (Transcript 2.2).



Transcript 2.2

We see Ximena's right hand, still holding the cane in a vertical manner. She stands behind a man with blue jeans, who has just left the escalators (panel 1). As she approaches the end of the escalators, she takes a step forward. She lifts her cane a few inches above the floor. While holding it with her ring and index fingers, her thumb goes around the cane until it rests on top (panel 2). Her thumb presses down onto the cane, which is now extending a bit further ahead (panel 3). Maintaining this grip, Ximena slowly walks a few steps behind the man, dragging the tip of her cane along the floor (panel 4). The man walks around a corner and accelerates his pace. Ximena opens her hand, letting the cane drop, extending it in front of her (panel 5). With a quick and decisive rotation of her hand, she firmly holds the cane in front of her. She has returned to her habitual 'walking stance'. Her steps become longer and faster.

Again, Ximena produces a complex adaptive gesture in response to the changing situation. After more space becomes available in front of her, she performs a hand motion that makes the cane switch from a vertical to a more horizontal position. This could be seen as returning to a 'walking stance', since she accelerates her pace as she produces the grip adaptation.

Seen in this manner, this adaptive gesture indicates two things. First, a sense of Ximena's way of doing things with the cane as *her own*. We can say this is Ximena's gesture not because it is unique to her (although that might as well be the case), but because it comes to her 'naturally', as part of a repertoire of hand-cane gestures that she does without thinking, as it is evidenced by its fast, almost reflex speed. We see Ximena's cane extend and shrink down its area in a swift and smooth manner, much like people would sometimes do with their shoulders or legs to accommodate their size in more crowded spaces. Which takes us to the second element that becomes clearer from seeing Ximena proficiently handling the device, specifically a sense of awareness and responsiveness to changing circumstances that is done *with the cane*. Rather than just providing tactile inputs for Ximena to find her way around the station, the cane also takes part of embodied gestures of adjustment that are social in the sense that they are done for and in response to others people's doings. In other words, the cane does not only take part of interactions with Ximena, but also with other members of the public transport. In this sense, Ximena operates as a skilled public transport user and conforms to local norms of crowded spaces (e.g. making room for others) *with the cane*.

To Ximena, using the object has become an ordinary practice, an extension of bodily gestures that allows her to accommodate her corporeality to changing circumstances in a mobile setting. Similarly, VI participants of Sakaja's (2018) research have described using the cane as being in a 'concentration trance', a functional state of mind in which their gestures with the cane 'flow' in a smooth manner. This is, in Winance's terms, what it marks the emergence of a prosthesis:

"Emotional adjustment is the dynamic through which the person becomes 'oneself-with-his-or-her-aid,' through which his or her action becomes fluid. Moreover, the adjustment leads to a 'personalization' of the aid as it becomes a 'prosthesis'. This means that the aid becomes part of the body (and the person) in the sense that it modifies the way the person perceives, moves, and relates to the world" (Winance 2006: 58-59).

The smoothness of these gestures does not mean that their emergence is easy or without effort. As established in the previous section, prosthetic relations can be cumbersome and complicated. This is particularly true when the device comes along later in life. More new elements need to be learned, while other embodied habits need to be abandoned or adapted. Ana, a participant of my research, was diagnosed with Parkinson's disease a few years ago. Her condition has progressed enough that she now needs a rollator to maintain her balance when she is out in the street or using the public transport. Now in her 60s, Ana feels the difficulties of having to incorporate a new device into her life, as part of her embodied habits. Her way of describing this situation underscores the fact that she sees it as an unfolding process. She says "I think that you evolve as you receive things. I had no choice but to use the rollator. I'll have to get anywhere I need with it. I *have* to learn".

In Ana's description, she had no choice about whether the rollator would come into her life. Rather, she sees the rollator's presence as a new, unavoidable state of things. Having no other choice than to learn and adapt out of necessity, she opens herself up to becoming used to the device in order to continue living. This resonates with Papadimitrou's (2008) account of people who become wheelchair users as a process of re-embodiment. In her perspective, 'becoming en-wheeled' has to do with experiencing a reshaping of the body as new experiences, abilities and habits start to take shape. A new bodily configuration is negotiated, one that sometimes will push the limits of what is expected as a 'proper' way of functioning:

It is around 1:00 pm and the sun is beating down on Santiago's streets. Here, in the Independencia borough, there are not many trees. It is mostly concrete all around, making the heat feel even more unbearable. This does not seem to faze Ana, who pushes her rollator with force and speed down the street. I walk along feeling sweaty and squinting at the glaring sun. Ana and I were just at the Centre of Movement Impairments, on her monthly visit to get some medication for her Parkinson's disease. The stop for our bus back to Ana's home is still two long blocks away. It is almost time for Ana's medication, so she decides to make a stop at a local shop. She gets a fizzy drink, and insists in treating me to one, too. We leave the store and walk a few meters to the nearest shade under a tree, where we stop. She activates the rollator brakes, making it more stable. She then grabs its cushioned seat and lifts it, revealing a small pocket underneath. She opens the zip and puts away her change from the purchase. She puts the seat back down and places her can of soda on the rollator's seat. As I take a sip from my own drink, she uses the portable hand sanitiser that always hangs from one of the device's handles. Using the seat as a table, she opens some of the medicine boxes, counts the pills, and then gulps them down with her drink. Some people walk past us and give us what I feel are weird looks. Ana does not seem to mind or notice. After a couple minutes, she puts everything away – the medication boxes, the hand sanitiser, the tins – and we continue our way to the bus stop (Field notes, 2nd March 2017).

This was how I came to realise Ana's rollator was much more than a 'mobility aid'. Equipped with a secret compartment, it is Ana's preferred way of carrying money. Depending on the circumstances, it can shape-shift into a resting hub, configuring a pit stop for Ana to manage certain tasks wherever she needs. The versatility of things Ana and her rollator can do, however, sets them apart from the rest of the public when out in the street, or in the public transport. They are configured as an odd pair, a strange team capable of doing unexpected things. Standing with her rollator turned into a resting spot, handling her drink and medicine, Ana becomes a stationary odd element in the pavement. People move around her and steal glances to understand what she is up to. As opposed to Ximena and her cane adapting to a waiting group, it is now the rest of the public who reacts to Ana and walks around her.

But Ana has grown used to the rollator and chooses to make the most of its affordances. Rather than emulating a 'proper' way of functioning in public, she uses what the rollator has to offer. Taking advantage of the device, she turns a simple 'rest under the shade of a tree' into an expanded project that allows for much more, even at the expense of being perceived as strange. These new 'gestures' might set her apart from the rest, but are the genuine emergent product of Ana having learned to act 'from the device' (Papadimitrou 2008).

Knowledge in the hands

As tangible objects, prostheses are sensorial mediators of space. They are materially affected by and responsive to barriers and textures, expanding the user's capacity to act in the world as well as to experience it (Moser 2000). As a rollator user, Ana experiences her surroundings in particular ways. The device's wheels and metal frame carry the vibrations produced against the ground to her hands, arms, and shoulders. This transmission of tactilities outlines a certain continuity of the world (Merleau-Ponty 2002 [1962]; Bissell 2010; Macpherson 2009a) as Ana vibrates *with* the rollator. Again analysing the relation between car and driver, Dant (2004) notices how these kinaesthetic inputs become relevant to the user:

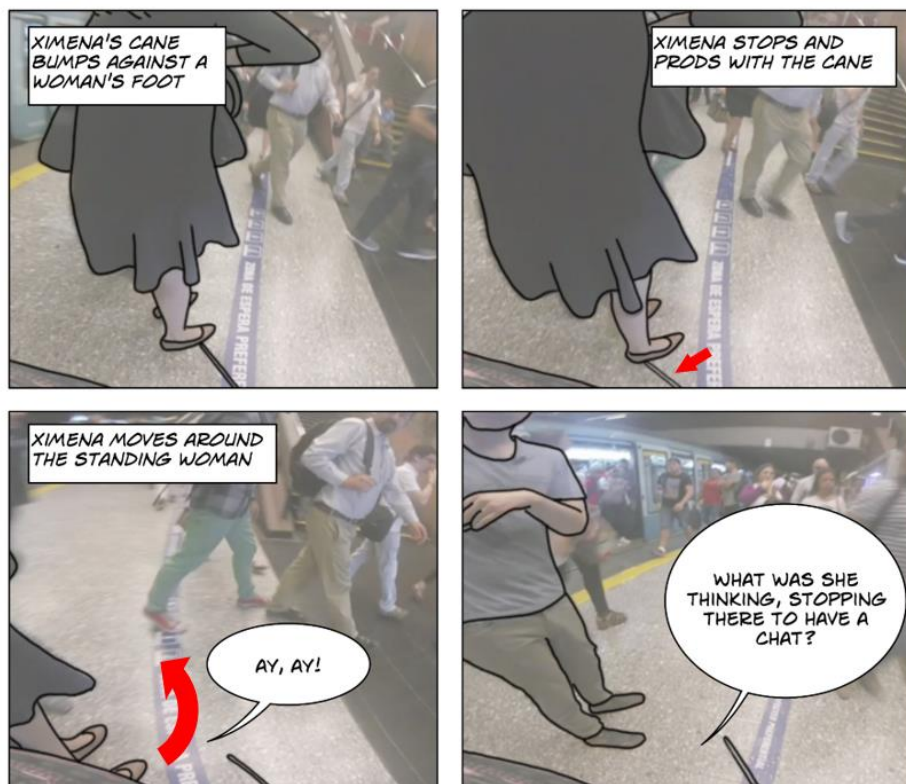
“What is perceived in the visual field is complemented by the kinaesthesia of the body and its trajectory as a whole, by the sounds of the engine, the road and the wind on the car, by the resistance of steering wheel, accelerator and brakes – even the feel of the road through the wheels of the car” (Dant 2004: 72).

Feeling the world through the object might be problematic, as Ana's rollator or Natalia's wheelchair can bump against obstacles or vibrate with painful intensity. However, the tactilities transmitted can also be a source of knowledge. A device for which this is particularly true is the assistive cane. Just as the 'feel of the road' in Dant's example feed into the driver's experience and guide their behaviour, the cane can be crucial to orient the walking of a well-attuned user (Paterson 2006). A well-known part of Merleau-Ponty's study on perception focuses on the blind man's (sic) cane, which “has ceased to be an object for him (...) rather, the cane's furthest point is transformed into a sensitive zone” (2002 [1962]: 144). In the following extract, we see this dynamic at work when Ximena has just left the train and walks down a platform (see Transcript 2.3a):

We see Ximena advancing in a straight line, while a woman holding a bag is about to cross in front of her. The woman, manipulating her bag, does not appear to have noticed that Ximena is approaching (panel 1). At the very last second, the woman gazes down and notices Ximena's cane. She lifts her right foot quickly, avoiding tripping over the object (panel 2). She then changes the pace of her walk; with a quickstep, she gets out of Ximena's way (panel 3). Ximena appears to remain oblivious to the whole sequence, as she continues walking on a straight line, keeping her pace. But there is another obstacle ahead. In this case, two women standing, facing in a different direction. They seem unaware of Ximena's approach. A collision is imminent!



Transcript 2.3a



Transcript 2.3b

Indeed, the tip of Ximena's cane bumps against the woman's right feet, who seems to be busy adjusting things in her bag. Ximena reacts to this by slowing down (Transcript 2.3b, panel 1). Ximena stops her walking. She then moves the cane a bit to the left, further exploring the shape and size of the obstacle. At this point, we can also overhear part of the two women's conversation (panel 2, conversation not transcribed). 'Ay, ay!' exclaims Ximena, an expression of surprise and annoyance. She circumvents the obstacle by taking her right (panel 3). She then walks a few steps, where she reunites with me. At this point, Ximena says 'What was she thinking, stopping there to have a chat?', and then laughs while she continues walking.

This scene, in two parts, shows a distribution of knowledge around collisions and near misses, as well as reasserting the cane's social features. When moving through a busy space like an underground platform, Ximena's movement is implicitly reliant on other passenger's awareness of her trajectory. Otherwise, every encounter with a passenger would result in a collision. The cane, in the first woman's case, operates as a visual sign that it is necessary to keep out of Ximena's way. In the second case, neither the cane, nor Ximena, are seen as approaching, which results in a collision. Ximena switches to a more active role in order to correct her trajectory and find a way around the obstacle. We see how she first tests the shape of the woman's shoe to the left, before choosing an alternative route through the right. She then produces an assessment of the situation: there was a woman in her way, standing and having a chat. Hence, while the cane was the 'sensitive zone' that brought the woman to Ximena's attention, it was Ximena's hearing what complemented this and allowed her to produce a complete understanding of what happened. This sequence illustrates how the affordances of the cane and its user's other capabilities can come together in order to produce detailed knowledge of a given situation. The moral assessment that Ximena subjects the other passenger to draws on this detailed understanding of the event, while also marking that a more attentive behaviour is expected in the platform.

As Sakaja (2018) nicely puts it, the cane is a device for knowledge production. However, in this scene we can see that the distribution of such knowledge does not concentrate purely on the cane user, as the device is also an interactional resource for others around. Similar to Winance's (2006) description of moving as a relational accomplishment of a wheelchair and its user, 'knowing' the way in this case can be understood as an accomplishment, jointly achieved by Ximena, the cane, and other attentive passersby. Crucially, the cane can only become a 'device for knowing' as long as the information it conveys is aptly interpreted and complemented by its user, for example through the sense of hearing, and by other members' of the platform, who use the cane to see Ximena as a visually impaired person. Thus, expanding from Laurier, Brown & McGregor (2015) assertion that mediating technologies like smartphones might involve different parts of the body – midriff, shoulders, etc – in the practice of walking, we may see here how walking with the cane involves other senses, and the attentiveness of other pedestrians sharing the space.

Through habituation, the cane becomes an extension of the senses, to the point that the tactilities transmitted by it can come together with hearing, painting a complete image of a given situation. This way

of moving emerges and solidifies as a routine practice that resonates with Merleau-Ponty's (2002 [1962]: 144) description of habit being “knowledge in the hands”. From being a part of the world, the device is incorporated, and becomes part of the body. This process of adjustment between human and nonhuman blurs the distinction between ‘what the person can do’ and ‘what their world is’ (Winance 2014). The cases we have seen portray how gestures we do with our devices form part of our reflexes, and our ways of knowing the world are enabled not by the device alone, but through our relation with it.

Complex and dynamic, bodies and devices come together in assemblages that are sensitive and produce specific functionalities. Particular and sometimes perceived as odd, these configurations struggle to find a way into a highly normalised and standardised space like the public transport. The following section explores how these prosthetic relations are dealt with in Transantiago, in interaction with other passengers.

Prostheses as social mediators

Ingold (2004) has developed a historical and anthropological reading of human walking and ‘footwork’ as a practice intertwined with the development of shoes, chairs, and other larger prosthetic infrastructures like pavements. As a way to expand humans’ relationship with the world at large, the development and adjustment with prosthetic devices is crucial (Michael 2000). Throughout the cases visited, we have explored how humans and objects are able to come together in a continual process of mutual adjustment that can make new capabilities emerge. We have also seen that sometimes this relationship exceeds a one-to-one configuration and involves other actors as well.

It is possible to analyse technical aids as re-connecting disabled people to the wider community (Moser 2000), and we have seen how prosthetic relations can be understood as more than individual practices because they involve other members of the public and underpin social organisation. Ximena’s case when using the cane in the underground platform shows how the cane is used not only by her, but in a sense it is also used by others present in order to identify Ximena as a passenger with particular ways of moving around. Wong (2018: 86), in this sense, describes how VI people made themselves visually available to others and these “[s]trategies for facilitating travel and being visible in public spaces include performing visual impairment by using a cane and traveling with a guide dog”. Similarly, (Schillmeier 2008: 220) asserts that VI people “become visible as blind in visual relations” in part because of their relationship with the cane, and usually this device triggers “courtesy rules” (ibid: 226) from others around.

However, this visual prompting to others can take many more forms and give way to unexpected results, difficulties, and failure. Even if visually available to others, the prosthetic relation can remain opaque to the fellow passengers. While moving with the device can become an ordinary practice even to the point that conforms a bodily extension of the user, this does not guarantee that it will be seen as ‘ordinary’ by the rest, or even understood in more general terms. It has been established that human-prosthesis relations transform not only embodiments, but also relate to social notions of proper ‘functioning’ (Jain 1999), which adds

another layer of complexity to the lives of those who move with prosthetic devices and share the public transport system with others who may or may not be familiar with such technologies.

This is not a donkey

At last, Ana and I are at the bus stop. We wait for a few minutes until the 201 bus arrives. As it is usually the case, there is another bus occupying the small space of the bus stop, and the people who are waiting for the 201 bus behind are getting restless. The 201 bus stops and opens its doors just where it is, by a tree pit that is impossible for Ana to navigate. The other passengers walk to the bus and board it. Ana gauges the situation and starts walking on the road to approach the vehicle. The bus driver sees her and raises his hand; he wants us to wait for him.

I let Ana know, as she had not noticed the driver's gesticulation. We go back to the bus stop platform and the bus moves closer to us, occupying the space the previous bus has just left. The driver does not stop with the front doors by us, but keeps going until the rear doors of the bus are in front of Ana. Is he telling us to use the ramp? This is usually in the rear doors of buses, and is manually activated. Ana and I decide that we don't need to go through all that trouble, and while Ana climbs onto the bus, I pick up the rollator instead. Once we are finally inside, I see why the driver wanted us to use the rear doors. Blocking the way from the front door, the big metallic turnstile would have been impossible to navigate for Ana and her rollator.

Ana then proceeds to take a seat. Or rather, to produce one. She pushes the rollator against the cushioned space dedicated for wheelchair users, activates the brakes, turns around, and sits on the rollator. I help her out by stretching the seat belt and securing it. I think this would have been impossible to do from where she is sitting. The final result, however, is quite comfortable for her (Field notes, 2nd March 2017).



Figure 4.2 The bus driver anticipated that Ana would not be able to go through the turnstile

Ana and her rollator experience all manner of difficulties when navigating Transantiago and the city. Issues of not fitting, being too slow, clumsy, or heavy are always present and sometimes need other people's intervention to fill in those gaps. While I was instrumental in helping Ana turn her rollator - and the available materialities in the bus - into a comfortable and safe seating space, the driver adapted his strategy to best accommodate her as a boarding passenger. Aware that she would not fit through the turnstile, the driver produced an alternative entrance in response to seeing the rollator.

This is a common happening in Ana's daily journeys. People identify her as a potential target for assistance as soon as they see the device. I asked Ana about this. She tells me that bus drivers are usually very caring, sometimes going even as far as getting off the bus to help her out with the rollator. "It hate it when they call it a *donkey*, though. It's not like a donkey at all".

In Chilean Spanish, a common colloquial name for the rollator is 'burro' or 'burrito' [donkey/little donkey]. Ana insists on using its formal name, 'andador' [stroller] when referring to it. When in the public transport, other passengers seem to struggle with figuring out the rollator's affordances, what it can and cannot do, and how exactly does it interact with Ana. As noted on the previous section, Ana and the 'andador' remain an odd configuration that might confuse other people around them.

As we will see, producing a certain understanding of what Ana and the rollator can do, and need, is not easily achieved in these circumstances. However, such an accomplishment is crucial to orient offers of assistance and coordination across passengers, drivers, and other public transport members. Middleton & Byles (2019) have noted the importance of members of the public making offers of assistance to VI people to enable their daily travels. In the following excerpts I aim at describing how these offers are made, accepted or rejected, and what role does the prosthetic device play in these interactions.

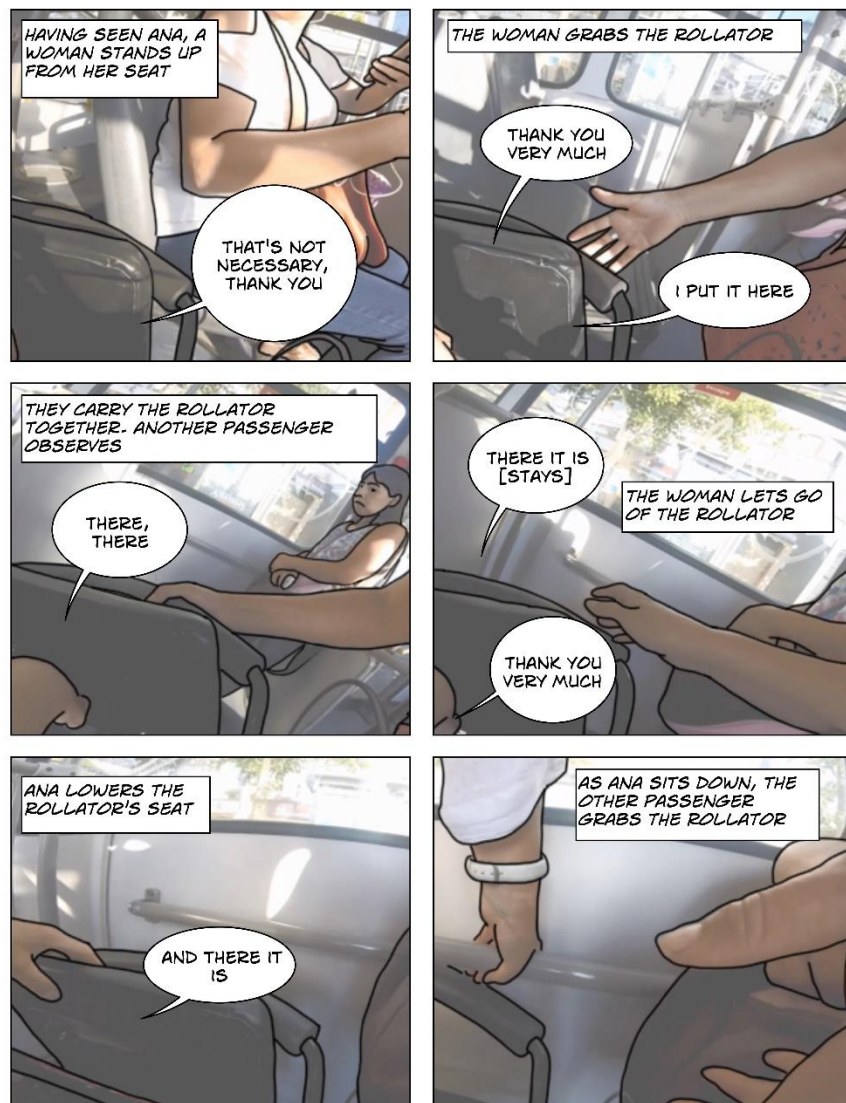
Transcript 2.4 shows a sequence of Ana boarding the bus¹³. Ana has just boarded and greets the driver, who replies with a “Good morning”. Sitting behind the driver, a passenger wearing a white t-shirt watches Ana and the rollator; his gaze switching back and forth between her and the device (panel 1). Ana then moves closer to the card sensor in order to pay the fare. She stops by the man in the white t-shirt and lets go of the rollator (out of shot) while she looks for her card in her bag (panel 2). Without saying anything, the man extends his right arm and grabs the rollator, keeping it in place (panel 3). After several seconds, Ana is still trying to find her card. The bus is still stopped. The man’s grip loosens up (panel 4). From grabbing it, the man’s hand now just rests two fingers on the rollator, an ambiguous gesture with no clear function (panel 5). Ana has finally found her card and now taps it against the sensor. The machine beeps, and the man lets go of the rollator entirely (panel 6).



Transcript 2.4

¹³ The camera has been attached to the rollator, close to its right handle

This sequence shows an interaction between Ana and another passenger, with no words or touch mediating between them whatsoever. Rather, the passenger provides a form of assistance through touching the rollator. Specifically, holding it for Ana while she does something else. Noticeably, a form of assistance that has not been requested, nor verbally offered, seems to be underpinned by a general understanding that it is civil to pay attention to and help Ana. This is consistent with the fact that she does not react in any way when a stranger decides to touch her rollator; in this sense the man's action is readable as wanting to provide help. The man's gesture goes through different phases; from a firm grip to a looser one, to an awkward touch that seems to recognise his intervention is not accomplishing much, since the bus is still stopped. As soon as the beep from Ana's card is heard, the man lets go of the rollator completely, giving the control over the device back to her. The following part of this episode allows us to further explore the issue of touching the rollator.



Transcript 2.5

After paying the bus fare, Ana moves along the corridor. Since the bus's aisle is too narrow for her and the device, she lifts the rollator's seat and grabs a strap underneath. She pulls it up, lifting the rollator, which

folds into a flat configuration. She then moves sideways, carrying the object. A woman sitting rearward notices Ana and reacts by standing up. Ana responds by saying that is not necessary, and thanking the passenger (panel 1). The woman stands up anyway, turns around and extends her hand toward the rollator. Ana thanks again, and as the woman grabs the device, Ana clarifies: “I put it here” (panel 2). They walk carrying the rollator together, and as they get near to Ana’s target spot, she steers the device in that direction. She complements this by saying: “There, there” (panel 3). “There it is [stays]”, says Ana, and the passenger lets go of the object. Ana then thanks her and finishes up installing the rollator (panel 4). Ana lowers the rollator’s seat again, turns around, and grabs the handrail, preparing to sit down. Her remark “And there it is” seems to finalise the sequence of producing a sitting space for her (panel 5). Finally, as Ana sits down and resumes her conversation with me, another woman standing nearby grabs the device again (panel 6).

A first thing to notice from this case is what thanking does here. As Laurier (2019) describes in car driving settings, the act of thanking (verbally or with gestures) recognises an offer as an offer, while also accepting it. However, in Ana’s case, more than one type of thanking seems to take place. In panel 1, an instance of thanking is paired with a rejection of an offer (or what is presumed to be the offer, i.e. being given a seat) as a way of acknowledging the courteous character of the offer. Panel 2 shows a form of thanking that operates in the way described by Laurier (2019), accepting the ‘right’ type of offer, and pairing it with relevant information to carry over the action together. Finally, panel 4 portrays thanking as a relevant part of a joint action, namely the closure of the assistance-giving sequence. This is paired with a line that signals such closure (“And there it is [stays]”).

This dynamic use of the ‘thank you’ takes part of a more complex action of carrying something together. As Ana’s and the passenger’s bodies come together in a joint activity, the ‘thank you’ mark the beginning and end of the formation, which then presumably works as a form of acknowledgement and appreciation, as well as a resource for coordination. Other verbal resources for coordination are given by Ana. These utterances (‘I put it here’, ‘there, there’, and ‘there it is’) are used for steering the formation while foregrounding a certain hierarchy: Ana is the one who knows what to do with the rollator, and the assistance-giving passenger follows her indications. Albeit impossible to appreciate in the images, we can also venture that Ana’s verbal steering is paired with physical steering, pushing the rollator in a certain direction. In this sense, the object is carried via a joint effort that is coordinated *through the object itself*.

This form of embodied attunement and collaboration is commonly seen in public spaces like Transantiago, as people routinely engage in the task of carrying something together. Passengers helping one



Figure 4.3 Transantiago users usually aid one another, carrying things together.

another with carrying heavy bags or buggies while going downstairs into a Metro station are not an uncommon sight, but Ana's case shows how this practice is slightly modified when the object being carried is not familiar to everyone involved.

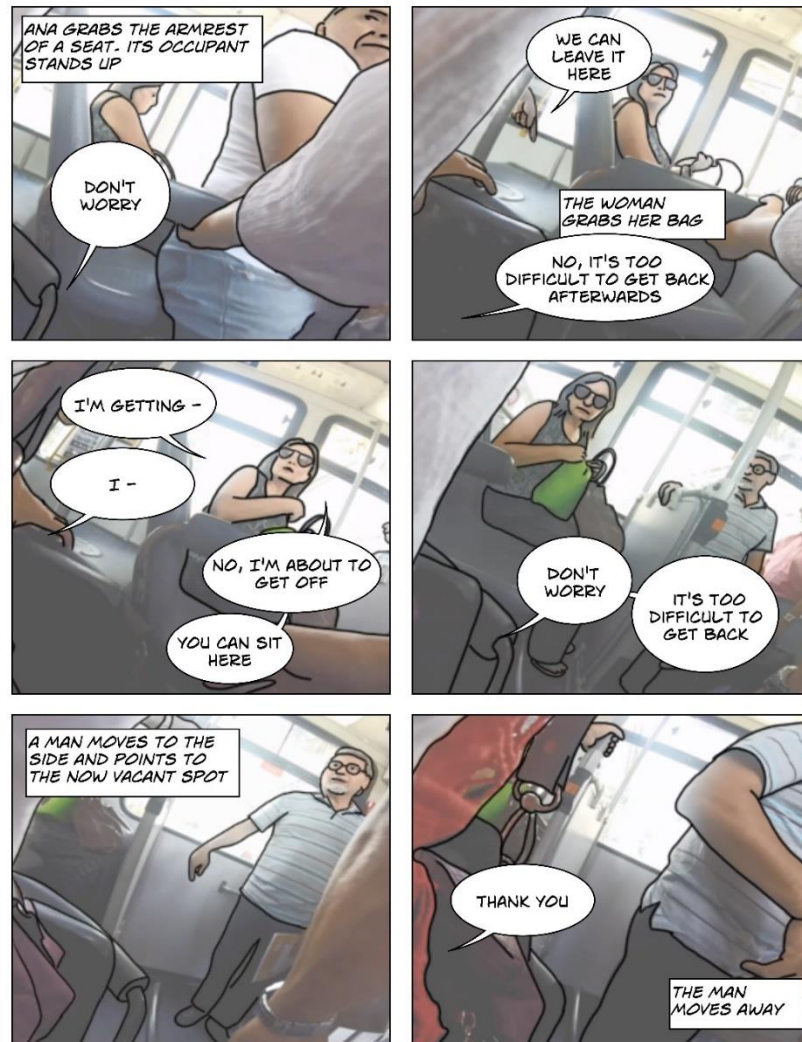
Additional forms of verbal and physical steering might be needed from the object's user in order to clarify what is exactly is the task at hand. Similar to how we will sometimes disclose additional information and instructions about the thing being carried (e.g. 'careful, there are glasses in the box'), Ana provides the information the assistance-giver might not have ('I put it here'). Here we may draw on Tuncer, Licoppe & Haddington's (2019) notion of object-centred sequences, which are mostly about developing a shared perspective of the object's status, purpose, and features. It is through this work that a sort of *intervorporeality* emerges and is maintained throughout such sequences, underpinning passing but crucial forms of relating to others (Macpherson 2009b: 1052).

One final case. In this instance we see various offers of assistance and different ways in which Ana deals with them. We start with Ana having already paid, and making her way through the bus to her preferred spot. As in the previous case, Ana has lifted the rollator and carries it slowly walking sideways.

In order to keep her balance while carrying the rollator, Ana grabs the armrest of an occupied seat. Its user notices Ana and starts standing up, to which Ana replies "Don't worry". The man stands up anyway (panel 1). I then suggest to Ana that we leave the rollator in an unoccupied spot behind the seating space. Ana rejects my offer explaining that it would be cumbersome to retrieve the device later. Meanwhile, a woman has seen Ana and prepares to offer her seat (panel 2). The woman interjects with an offer, overlapping with Ana's line, addressed to me. The woman treats this as a rejection of her offer, and immediately provides further reason for her offer to be accepted (panel 3). Ana continues to move down the aisle, saying "Don't worry" to the woman and repeating that the rollator would make that operation difficult. Both the woman and another male passenger gaze down at the rollator, which is now visible to them (panel 4). The man steps to the side, half-freeing up a space that is offered to Ana. The offer is completed with a hand gesture on the man's part (panel 5). With a "Thank you", Ana accepts the offer and moves closer to the available spot. The man walks away (panel 6).

We see here a complex sequence during which several offers of assistance are produced, which Ana skilfully manages by rejecting some of them and finally accepting one that accommodates her intended trajectory. It is apparent that despite an abundance of people willing to help Ana, she still needs to engage in the work of managing the offers, giving explanations as to why some are rejected, while continuing to advance toward her objective. The use of "Don't worry" here is instrumental in producing a rejection that remains polite, marking a desire not to be a burden rather than merely pointing out the offers as inadequate (notice that Ana does not say "Don't worry" to me, with whom she is acquainted and has a higher level of trust).

So why are most of the offers inadequate? A characteristic all of these seem to share is that they propose an arrangement that separates Ana from the rollator. I first suggest to put the rollator away, and two other passengers invite Ana to take a seat. Taking a seat would force Ana to keep the device somewhere else or by her side, folded, turned into cumbersome luggage rather than a seating space. Her preferred strategy – installing the rollator and sitting on it – is one that makes the most of the device’s affordances, while keeping it close to her and under her control. The passengers, however, remain unaware of this or even of what the rollator can do.



Transcript 2.6

Crucially, the final and preferred offer of assistance is produced after the rollator becomes visible to them. While for Ana and for me the rollator was the focus of the sequence from the start, other members, like the man who leaves his seat, and the woman who offers hers, are oriented toward Ana rather than the rollator. It is after the object becomes visible that the other passengers align to Ana’s needs, treating the rollator as central. Thus, in this case the sequence is not ‘object-centred’ (Tuncer, Licoppe & Haddington 2019) to everyone until the rollator becomes visible to the other passengers. Even though Ana and I are the only

ones who indeed talk about the rollator, once the object becomes visible to all, this triggers reactions that are topically designed toward the rollator.

The way in which the sequence unfolds shows that Ana is, to the other passengers, a difficult entity to figure out. As in previous cases, she is treated as an appropriate target for help, though the form the help should take is less clear. Thus Ana is the one who manages these offers, rejecting or accepting them while maintaining a certain autonomy over what is to happen. The rollator remains an obscure element to others (being less visible, or unknown in its capabilities); a weird object that in this case does not facilitate understanding with others – a donkey in the bus.

In this sense, the Ana-rollator composite struggles to ‘do being ordinary’ in Sack’s (1995) terms, as a way of presenting themselves in a way that “permits all kinds of routine ways of dealing with it” (Sacks 1995: 221). Prosthetic devices as passengers remain a more or less uncommon entity within Transantiago, and while some of its users are ordinarily seen as appropriate recipients of assistance, there is less clarity as to exactly how it should be delivered. In the absence of common ground rules and expectations as to what a device can do, where it should go, or how it is used, navigating these situations can become even more difficult for the user. In any case, the other passengers’ involvement continues to be organised around, and through, the prosthetic device, making evident that assistive devices can and do perform socially, as crucial mediators of the interaction.

Conclusion: Reworking the edges

The social sciences have widely drawn upon the concept of the cyborg to explore the blurring of socio-material boundaries as a critique of essentialist thinking and binary categories of domination. However, a closer look at prosthetic relations and how these are done in everyday life, reveals that boundaries *are* at stake, but these are to be understood as the product of ordinary practices. Rather than brought down or abstractly transgressed, boundaries are done and redone in everyday life. We have seen the great amount of work this can entail.

The cases brought forward in this chapter offered a deeper view of prosthetic relations. They go beyond the generally optimistic view provided by the cyborg concept, which in many regards seems to pay less attention to the lived experiences that underpin the continuous unfolding of these relations (Reeve 2012). Disabled people heavily rely on prosthetic devices, and the skilful things they do with them emerge in the coming together of the human and the nonhuman. Understanding these relations as *practiced* allows us to focus our attention on how these boundaries are *done*, (de)stabilised, and contested in everyday life.

Again drawing upon Stone’s (1995) reflections on Stephen Hawking’s case, we might wonder where are the ‘edges’ of a body-prosthesis assemblage, but also *how* these edges are established, contested, reshaped, and what do they do in everyday *encounters* in public settings like Transantiago. The cases we have seen in this chapter depict different ways in which these edges are locally produced.

A first way in which this is done is by the practiced attunement of bodies and prosthetic devices. The case of Ximena as an expert cane user exemplifies this well; through a cumulative process of adjustment and practice, Ximena's cane has become an integral part of her bodily capacities. When out in public settings, the cane operates as a 'sensitive zone' (Merleau-Ponty 2002 [1962]) as it produces relevant knowledge for her. Depending on the changing circumstances, Ximena and the cane configure diverse types of arrangements – shrinking, expanding, prodding, - and adapt to their surroundings. Habit, in this case, operates as an 'enabling force' (Bissell 2018), opening up embodied paths for Ximena's cane to become part of her gestures' repertoire. The incorporation of prosthetic devices is indeed a reworking of boundaries, one that reframes a particular technological object as an intimate part of the body, with which the person moves, adapts their size, feels their way, or pursues other types of activities that defy hegemonic notions of normality. These skilled and personal gestures and ways of moving through space *with* the object are not a mere representation of boundaries transgressed, but the achievement of such boundaries being reworked through practices. Thus, it is relevant to continue exploring what these gestures can do, how they come to be, persist, expand, and transform with the different encounters taking place in the public transport.

The cases visited resonate with Merleau-Ponty's (2002 [1962]) thinking, which emphasised the importance of understanding how bodies and objects come together through habits, conforming a specific way of being in the world. In his words, "[t]o get used to a hat, a car, a stick is to be transplanted into them, or conversely, to incorporate them into the bulk of our own body. Habit expresses our power of dilating our being-in-the-world, or changing our existence by appropriating fresh instruments" (Merleau-Ponty 2002 [1962]: 143). However, while hats and cars become part of an attuned composite being, it is easy to detach from them, take them off, put them away. Prosthetic relations, in the case of assistive devices, may carry further implications in terms of identity; they hurt, wound, or shame in the face of environments that have been built around very specific notions of normality and proper functionality. The relation itself may be hard to notice or understand, leading to practical difficulties that people like Ana have to routinely deal with. The complexities that prostheses users have to face in these terms – and how intensely some of these are felt – make evident that the person-object imbrication runs deep.

The development of the user-prosthesis relation is influenced by external forces. In the case of orthopaedic devices, they can carry restrictive normalising agendas. In Ximena's case, we have seen how the cane is perceived as something that can be used in a 'right' or 'wrong' way – a distinction that is established by the authority figure of a Special Education Teacher, and that is accounted for in Ximena's discourse. And yet, the abstract standard of the 'right' use of the cane does not take hold in practice. Ximena finds these indications restrictive and 'robotic', as she develops a practiced, embodied way of moving with the cane that is, regardless, highly functional in her everyday travels throughout the city. In other words, the way of using the cane that permeates and establishes itself among Ximena's habits is not necessarily the one endorsed by rehabilitation experts, but rather the one that has emerged through the user's cumulative experiences.

It is important to note that the shape a prosthetic relation will take is not the mere outcome of the encounter between a user and an object. These entities compose forms of doing in space and, in that sense, are shaped by their encounters with other entities. The social character of prosthetic relations is particularly apparent in the public transport setting, because encounters with others are an enormously relevant part of being a passenger. In Ximena's case, while her 'edges' as a cane user differ from other passengers, they are locally worked out as part of what allows for ordinary coordination with others. The cane is understood and accepted as an extension of Ximena's bodily self, as we have seen by noticing how other people react to the cane and keep out of its way. Other times, however, the characteristics of the relationship are not clear to the other passengers. In the case of Ana and her rollator, people usually offer assistance while failing to see that she needs the device to remain under her control. Ana skilfully manages these offers by rejecting or accepting them, while also maintaining control over the rollator. This might mean having to provide explanations as to why certain offers are not accepted, or using the rollator as a way of 'steering' assistance. Most of her efforts are devoted to keeping the device close to her, making clear to others that she and the object 'go together'.

The difficulties that surround these practices are due in great part to the fact that Ana's relationship with the rollator remains obscure to other people. The absence of common rules to organise encounters with passengers like Ana bring about situations that are not helpful or end up being problematic. Lacking awareness of the characteristics of these relations relegates them to a category of 'strange thing'; namely, an object that does not fit in prescriptive forms of ordering life. In looking at the Transantiago case, Ureta (2015: 10) defines the strange thing as a composition "standing both inside and outside determinate orderings that render them 'strange' to other actors more clearly located within or outside such limits". This liminal position, however, is dynamic and subjected to change. Throughout this chapter, we have observed different ways in which the borders that define what is strange, proper, restrictive, or our own, are worked and reworked.

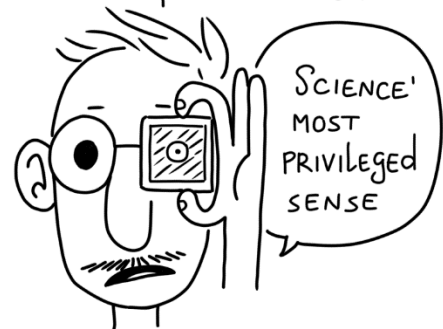
We all travel with objects, and sometimes these devices enable our travels in specific ways. As passengers we are always composite beings - our borders are dynamic, contested, and practiced. However, for some, as we have seen, there seems to be more at stake. As public transport systems expand their accessibility to all kinds of users, it becomes all the more important that they also expand their mainstream understanding of how bodily compositions can look, what shapes they can take, and the many ways in which they can relate – sometimes quite deeply so – with prosthetic objects.

WORKING WITH VIDEO

DURING MY FIELDWORK, EVERY GO-ALONG TRIP THE PARTICIPANTS AND I CONDUCTED WERE VIDEO RECORDED WITH A GOPRO CAMERA.



Is this AN INNOCENT MOVE? MIKE CRANG HAS OBSERVED HOW GEOGRAPHY HAS BECOME MORE CRITICAL OF 'BAD VISION'



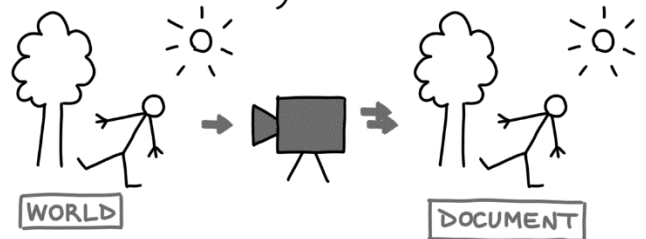
"AN OBJECTIFYING, DETACHED GAZE FORMS THE ANTITHETICAL POLE TO SHARING, ENGAGED QUALITATIVE WORK".

...IS HOW HE DESCRIBED QUALITATIVE RESEARCHER'S APPREHENSIONS AGAINST OBJECTIVE 'VISIBLE REALITIES'



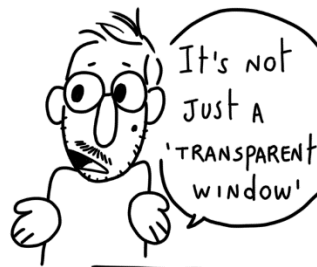
CRANG 2003: 500

THERE IS A HISTORY OF TREATING PHOTOS AND VIDEO AS A DELocalISED, TECHNOLOGICALLY-ENHANCED MEANS TO 'OBSERVE REALITY'



Video AS SIMPLY "PRESENTING THE WORLD AND ALL THAT IS IN IT"

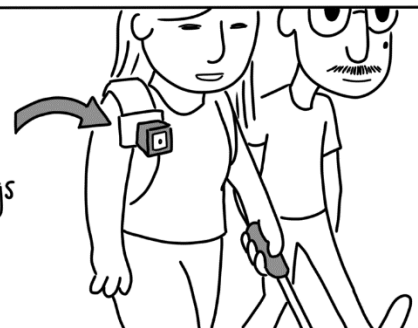
THIS ASSUMPTION HAS A MAJOR OBVIOUS FLAW: NOT ACKNOWLEDGING THAT VIDEO RECORDING TAKES PLACE IN THE WORLD.



MONDADA 2009

TALKING FROM AN EMCA PERSPECTIVE, LORENZA MONDADA HIGHLIGHTS VIDEO AS A PRACTICE; SOMETHING THAT IS DONE.

THE CONTENT OF THE VIDEO IS JUST ONE OF THE THINGS THAT MIGHT BE INTERESTING



AS SARAH PINK HAS SAID, DOING VIDEO CAN CONNECT THE RESEARCHER, THE PARTICIPANT, AND THE ENVIRONMENT

HERE, LET ME JUST ADJUST THE CAMERA A BIT

HA YEAH, I BET IT MOVED WITH ALL THE PEOPLE HERE IN THE METRO

HA HA I KNOW

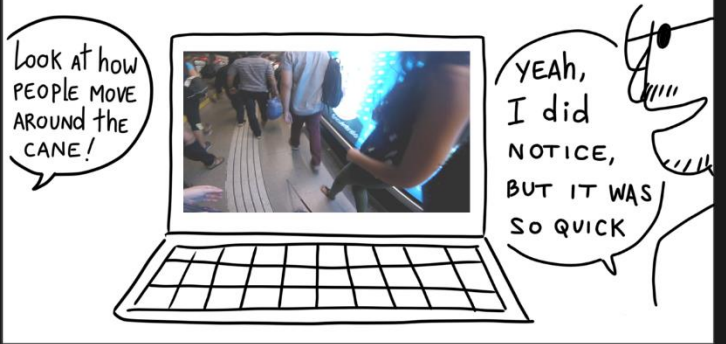


PINK 2007

ERIC LAURIER HAS STRESSED THAT VIDEO CAN BE A DIFFERENT (SOMETIMES ADVANTAGEOUS) FORM OF 'BEING THERE'



I THINK THERE'S SOMETHING ESPECIALLY INTERESTING IN HAVING 'BEEN THERE' ORIGINALLY AND THEN BACK AGAIN THROUGH VIDEO



HAVING THE DOUBLE PERSPECTIVE OF WATCHING THE VIDEO I WAS INVOLVED IN FILMING, STRENGTHENED MY ENGAGEMENT, GAVE ME A DEEPER PERSPECTIVE



IN THEIR 'HABITABLE CARS' PROJECT, LAURIER AND LORIMER INSTALLED DASH CAMERAS IN PEOPLE'S CARS IN ORDER TO GET



THE CAMERA WAS SURROGATE FOR "A CHIN-RUBBING CHARACTER WITH A NOTEBOOK BUSILY SCRIBBLING" (LAURIER 2010:110)

BUT I DIDN'T FEEL LIKE THAT WHILE I JOINED MY PARTICIPANTS



IF ANYTHING, BY KNOWING THE CAMERA WAS THERE WAS ABLE TO BECOME AN EVEN MORE INVOLVED CO-TRAVELLER

LAURIER, AND ALSO PINK ET AL, MENTION THAT WATCHING THE RECORDINGS BARES THE RISK OF SLIPPING INTO A DISENGAGED 'OBSERVATIONAL MODE'.



WHEN I COULDN'T BE THERE, I KNEW THE CAMERA HAD ME COVERED



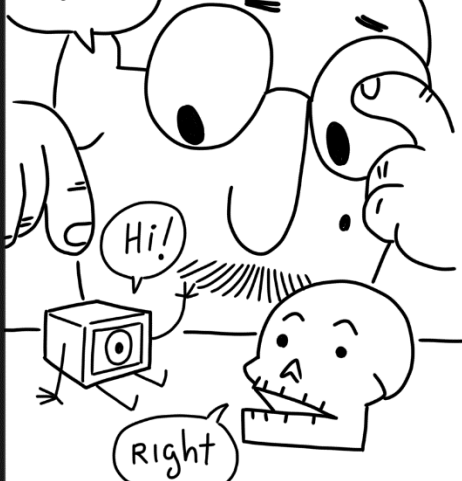
I WON'T SAY THAT DIDN'T EVER HAPPENED, BUT HAVING BEEN THERE HELPED ME STAY CONNECTED TO THE MATERIAL THROUGHOUT LONG ANALYSIS HOURS



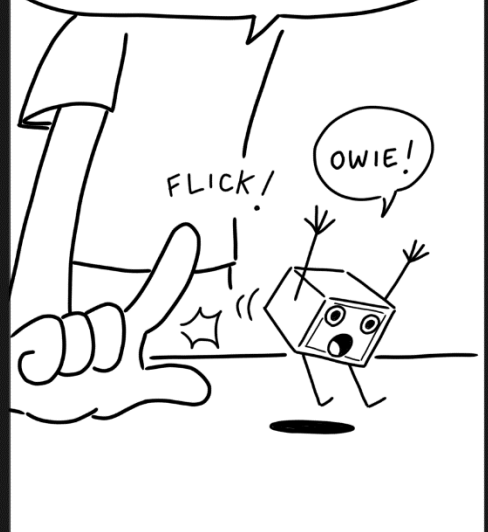
And I think it's not just the video, as a set of images, what UNDERPINS THE ENGAGEMENT



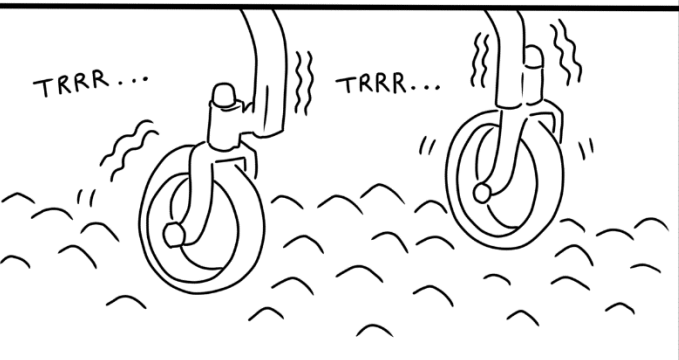
It's EASY to focus too much on the video as 'CLEAN DATA', BUT IT'S ALSO USEFUL to think of the CAMERA AS A PHYSICAL OBJECT



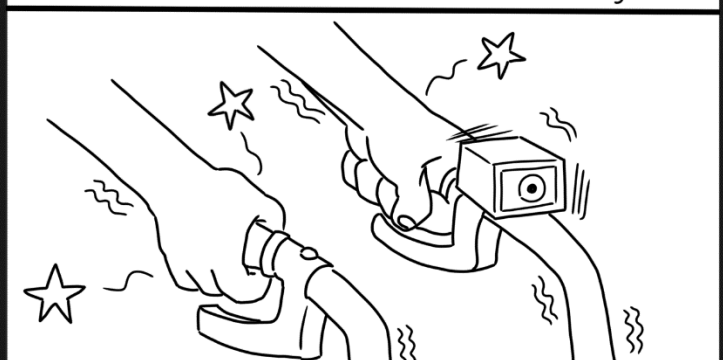
The CAMERA WON'T JUST BE RECORDING WHAT IT 'SEES' IN FRONT OF IT, BUT ALSO WHAT IT HAPPENS to it



So FOR EXAMPLE, HAPTIC EXPERIENCES, LIKE THE VIBRATIONS PRODUCED BY ENCOUNTERING A CERTAIN TEXTURE, BECOME AVAILABLE...



... AND OPEN-UP POSSIBILITIES OF AWARENESS TO THINGS THAT ARE NOT PART OF THE USUAL EXPERIENCES OF THE ABLE-BODIED ANALYST



VANNINI AND STEWART highlight the RICHNESS of the GoPro BEING AN 'ACTION CAMERA'



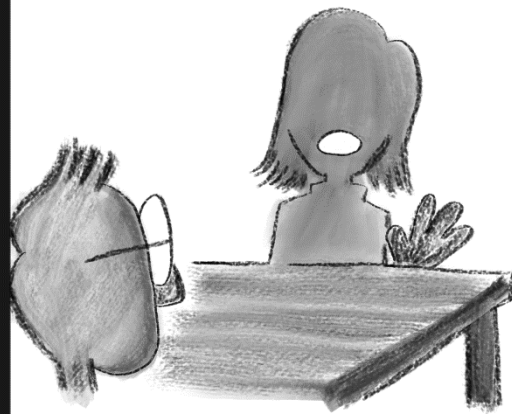
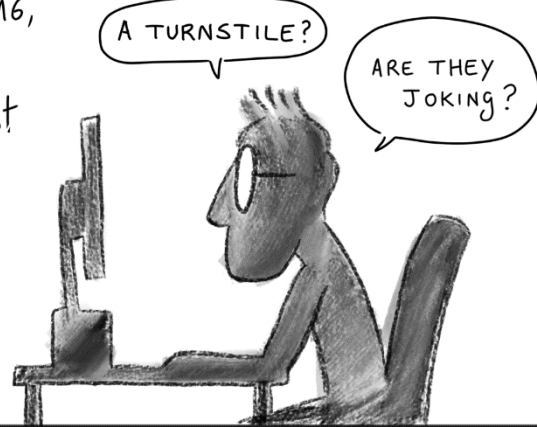
BUT WE RESEARCHERS MAY ALSO LEARN THINGS FROM LESS SPECTACULAR ACTION AS THE CAMERA VIBRATES, BOUNCES, AND BUMPS AGAINST THE WORLD!



THE TURNSTILE CASE

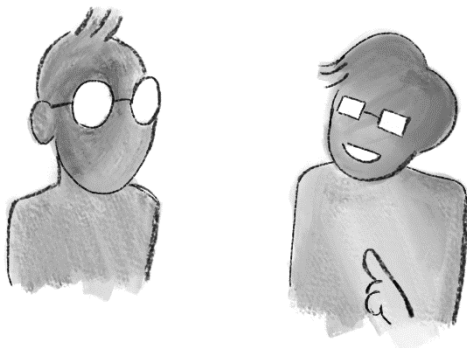
I FIRST BECAME AWARE OF THIS CASE IN August 2016, THROUGH THE NEWS.

IT WAS GOING TO BE ONE MORE IN A LONG LIST OF MEASURES TO FIGHT OFF FARE-EVASION IN TRANSANTIAGO. THIS ONE IN PARTICULAR WAS BASED ON CONTROLLING THE USERS' BEHAVIOUR BY PRODUCING A PHYSICAL BARRIER.



SOME WEEKS LATER I INTERVIEWED A MEMBER OF THE USER EXPERIENCE DEPARTMENT OF TRANSANTIAGO. IN THIS SMALL UNIT THEY WERE AGAINST THE TURNSTILE. THEY TOLD ME THAT FAT PEOPLE, OLDER PEOPLE, PREGNANT WOMEN, AND OTHERS WERE HAVING DIFFICULTIES GOING THROUGH IT.

THEY HELPED ME CONTACT ONE OF TRANSANTIAGO'S BUS COMPANIES. THEY WERE RECEPTIVE IN GIVING ME PERMISSION TO RECORD PASSENGER-TURNSTILE INTERACTIONS, AS I WAS ATTEMPTING TO EXPLORE HOW PEOPLE WERE DEALING WITH THIS NEW DEVICE.



ALONG WITH ONE OF THE BUS COMPANY'S REPRESENTATIVES WE RECORDED THE ENTIRE ROUTE OF ONE OF THEIR MOST USED BUS LINES. SHE FELT LIKE THE TURNSTILES HAD MADE A CHANGE FOR THE BETTER, SINCE DODGING HAD DECREASED.

IT WAS A 90 MINUTES-LONG TRIP, AND BECAME THE FOCUS OF TWO OF MY THESIS' CHAPTERS.

INTRODUCTION TO THE TURNSTILE: A BUTTERFLY'S LIFESPAN

Since its outset, Transantiago authorities have concerned themselves with the issue of users entering the transport system. From social conflict produced by agglomeration of people in stations and bus stops, to the cumbersome nature of paying in cash for bus fares, these elements were considered by transport planners in charge of designing Transantiago.

When the system started, the implementation of the Bip card freed the bus driver from the task of collecting fares. In fact, monitoring who paid and who did not would not be part of the driver's responsibilities anymore. This was aimed at streamlining the boarding process and freeing the driver from an additional responsibility, in theory allowing them to concentrate on driving. This new payment system, however, among other reasons (see Tirachini & Quiroz 2016), saw a dramatic rise of fare-evasion among Transantiago users. As dodging rates increased throughout the years, this issue became one of Transantiago's most problematic issues in the public opinion. Thus, in 2016, Paola Tapia, at the time Minister of Transport under Michelle Bachelet's government, issued the installation of a new kind of turnstile, the 'butterfly model'.

The installation of the butterfly turnstiles in Transantiago was warranted by the assumption that they would be an effective way of fighting off the record-high dodging rates. Its design (Figure 5.1) would supposedly make jumping over or going under the turnstile very difficult, forcing dodgers to either pay the fare or step out of the bus. The device would add its governing affordances to an already complex payment system organised around technologies that included Bip cards, sensors, and lights. The turnstile was incorporated into this array of things with the goal of adjusting and governing the process of people becoming Transantiago passengers in an orderly fashion, keeping fare-evasion to a minimum.

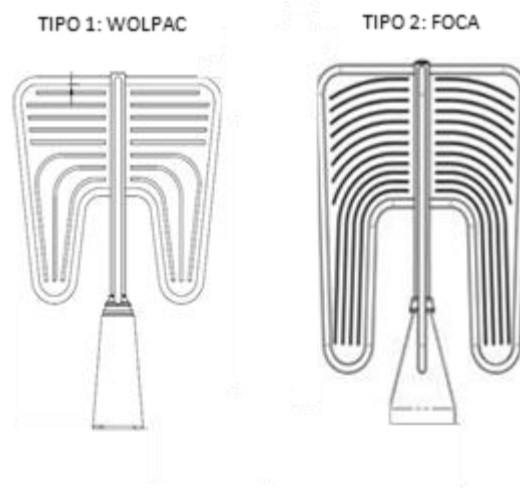


Figure 5.1. The butterfly turnstile: two models. Source: Brújula (2017). Turnstiles evaluation study. Final Report.

The entrance of this governing device into Transantiago's technological composition had a strong impact in the everyday experience of its passengers, and the turnstile was ill-received by the public (Brújula 2017). While turnstiles had been known and used for decades in the case of Santiago's Metro system, the 'butterfly model' never really managed to congeal into a completely unproblematic, mundane object in the case of the Transantiago buses. It remained foreign, difficult, in contention with pre-existent elements of everyday life. Materially rigid and narrow, the turnstile created issues of discomfort and physical exclusion from the bus system, as wheelchair users, people with buggies, children, older people, and fat people found it difficult or even impossible to navigate.

Our capacity (or lack thereof) to become a passenger of the Transantiago system is organised through the encounter of people and a great variety of objects – Bip cards, steps, sensors, doors, ramps, and so forth. The turnstile's controversial arrival as a new part of this assemblage was mainly aimed at solving the critical issue of fare-evasion. However, just as Weilenmann et al (2014) observe in the case of revolving doors, the turnstile solves some issues while bringing new problems along with it. Similarly, focusing on the 'groom' or hydraulic door-closer, Johnson (a.k.a. Latour, 1988) notes:

“This does not quite solve all the problems, though. To be sure the hydraulic door-closer does not bang the noses of those who are not aware of local conditions (...). But it still leaves aside segments of human populations. Neither my little nephews nor my grandmother could get in unaided because our groom needed the force of an able-bodied person to accumulate enough energy to close the door” (Latour a.k.a Johnson 1988: 302).

Latour notices that the very design that makes the door-closer to be an effective solution for some, also produces problematic forms of discrimination against other parts of the public¹⁴.

Less than two years after they were first implemented, and responding to political pressure from the general opinion and opposition parties, the Minister of Transport Gloria Hutt announced further turnstiles would not be installed. The existing turnstiles remain, and will be in Transantiago buses until these are taken out of rotation. However brief, this technology's biography offers an interesting opportunity to delve deeper into issues of transport policy and the place bodily discomfort is given among them.

The turnstile's design was aimed at enforcing payment and preventing dodging by means of producing a barrier that dramatically limits possibilities for Transantiago users – the user either pays and goes through, or is unable or unwilling to pay and cannot pass. The two following chapters, however, analyse in depth the vast number of ways in which this limited and strict script is either locally subverted or produces outcomes that are far worse than fare-evasion.

¹⁴ Interestingly, after reflecting on this, Latour acknowledges that he needs to put aside “the few sectors of population that are discriminated against” (234) in order for his argument to continue unfolding. It begs the question of what was the rationale he followed to conclude that such sectors of the population are, indeed, few.

Approaching this case in the two following chapters allows me to refer to the butterfly turnstile case in more than one register. In the Empirical Chapter 3: 'Becoming a passenger' I stay attentive to how the process of becoming a passenger is achieved as a social practice, while the Empirical Chapter 4: 'An uncomfortable turnstile' seeks to reflect on the felt dimension of social exclusion produced by this normalising device.

EMPIRICAL CHAPTER 3: BECOMING A PASSENGER

Santiago de Chile's public transport system has had a long-standing relationship with turnstiles, one that started a long time before Transantiago was even planned. Even though the previous bus service, with its *micros amarillos* [yellow buses], included turnstiles in few of its vehicles during the 1990s, it was Metro de Santiago's opening that, in the 1970s, brought in this device not only to Santiago, but to the Chilean technological landscape as a whole. At the time, the turnstile technology was such a novelty that representatives of Metro had to publicise it on television. One of the shows selected for this was the hugely popular *Sábados Gigantes* [Gigantic Saturdays], hosted by Mario Kreutzberger (better known as Don Francisco), nowadays a living legend of Chilean and Latin American television.

“The day for Santiago's big public transport project [Metro de Santiago] to start operating was drawing near. The opening date was 15th September, 1975.

- So I just stand here and let go of the ticket now? – said Don Francisco, as he went through the turnstile, pretending he got his hand stuck in the machine, and trying to free himself with all of his strength.

The audience in the set was laughing. Aníbal Mardones, chief of the Rolling Material Department back then, was in charge of making this new device known to the public, and patiently replied.

- Right – as he pointed to the ticket slot and the cardboard ticket with a magnetic band – You have to put the ticket with the little stripe in, and the machine will swallow it.

- Swallow it...? – the television host asked, pretending to be sad.” (Metro de Santiago 2017: 59)

Representatives from Metro showed up in *Sábados Gigantes* several times, in an attempt to make the turnstile known and approachable to the general public. This communication campaign was an explicit step taken toward making the turnstile become an acceptable part of Santiago's constellation of everyday technologies. Much in the vein of Callon's (1991: 153) concept of punctualisation, which “converts an entire network into a single point or node in another network”, a mundane technology (Woolgar & Neyland 2013) that would eventually be used by thousands of passengers without a second thought. More than 40 years later, as the opening of the new Metro lines 3 and 6 in 2017 grew closer, one of its most underscored features was that these new lines would replace the “classic” turnstiles (Zalaquett 2017) for accessible automatized doors. Whether it was thanks to Metro's campaign back in the 1970s or due to decades of continuous usage, the turnstile has become an iconic component of Metro de Santiago, to the point that its replacement in 2017 made it into the news.

While strongly associated with the underground system, turnstiles would not make an appearance in buses until the 1990s, where just a small number of *micros amarillos* used them as a way of automatizing their fare collection process, otherwise the responsibility of the driver or an assistant. When Transantiago started

operating in 2007, just one of the ten bus companies had turnstiles in their vehicles. These devices were generally absent until unexpectedly high fare-evasion rates led some bus companies to install turnstiles in some of their services. However, turnstiles would remain an exceptional feature in specific bus routes, and Transantiago's buses would still be regarded as a 'turnstile-free' transport mode up until 2016. It was that year that the 'butterfly model' turnstile was installed across a growing number of Transantiago buses. Less than two years later, the butterfly turnstile was decommissioned as a policy and no further devices were installed.

This chapter draws on this device's brief existence in order to better understand the underlying complexities of becoming a bus passenger. In encountering the turnstile and other technological devices like contactless cards, sensors, lights, and doors, people work their way through (or around) the bus's admittance system in a variety of ways. We will see that people do this by locally organising their interactions with the technical system and with other human members, like other passengers and the driver, while remaining attentive to other social tasks like parenting, managing personal objects, and caring for others. This is accomplished by mobilising locally relevant categories through speech and glances, but also by drawing upon personal bodily capacities and available material features. An attentive analysis of these interactions – between people boarding the bus and the turnstile – underlines the embodied variety of Transantiago users as opposed to the restricted view of the human body inscribed in the device (Akrich 1992). People attempting to become passengers travel with luggage, pets, and partners; they offer each other assistance and respond to each other's impatience; and all this while they stay engaged in seemingly unrelated tasks like being a mother, a friend, or a husband. The cases that follow explore the resources that members mobilise in order to 'bridge the gap' between the turnstile's limited script and the actual complexity of the bus setting.

Following Lee & Watson's (1993) perspective, I draw on Membership Categorisation Analysis (MCA) and Conversation Analysis (CA), and explore the 'visibility arrangements' of boarding practices in Transantiago by focusing on "local sequential and/or categorial relevances" (Watson 2005: 218). In their analysis of queues and pedestrian flow-files, the authors' approach is both attentive to the sequential formation of certain arrangements, like queues, and also to the categories locally relevant to those formations. They highlight the importance of being attentive to sequentially-realised categories, that is, categories that are made relevant in and throughout a certain sequence.

This chapter will follow their approach and will pay close attention to the process of becoming a passenger both as a sequence and as a category-oriented activity. The boarding process can be understood as a sequence throughout which categories are used – and some new ones are produced – with an orientation toward being recognised as a passenger by the technical system and/or by other human members. As we will see, certain ways of doing this may make paying the fare become a comparably less crucial feature. The argument will unfold in two parts. In the first section I will explore how people boarding the bus pay and go through the turnstile, drawing on bodily gestures, timing, and objects in order to organise the process as a sequence with pacing and moral restrictions. We will see how the material qualities of the turnstile itself

are relevant here. In the second section we will see how category-bound obligations outline a local moral order that is nevertheless shifting and under constant readjustment. By focusing on dodging practices, I will describe how people in Transantiago can become passengers without paying, by producing locally-relevant categories (Clifton 2009) that may challenge and overflow the abstract and fixed categories the turnstile has been inscribed with.

In describing these cases, my aim is to underscore how the process of becoming a passenger is organised through everyday practices rather than prefigured by technologies in a fixed and pre-established manner. These practices, albeit mundane, are crucially important for Transantiago to 'hold together' as a system of which human beings, technologies, and infrastructures take part. In this sense, the turnstile does not deterministically regulate the boarding process, dictating who becomes or not a passenger. Rather, it becomes part of the locally available resources people draw upon in order to organise this – some aspects of its originally intended design might take hold, while others may be subverted or reinterpreted. As Mol (2002:54) reminds us, "nothing ever 'is' alone. To be is to be related". Similarly, the existence of the turnstile as part of Transantiago is partial and nuanced, the character and impact of its presence in the assemblage, the result of continuous encounters in everyday life.

Working the turnstile

In this section I describe the ways in which Transantiago users successfully interact with the butterfly turnstile and the payment system it is part of. Even though these users might be described as merely complying with a certain designed path, the ways in which they do so are diverse and entail unexpected complexity. Passengers who pay for their fare organise their compliant practices through a variety of resources and skills. These resources, both bodily and environmental, permit us to understand compliance as a relational achievement (Woolgar & Neyland 2013) as complex and worthy of analysis as dodging practices.

Figure 6.1 shows the basic configuration of a Transantiago bus entrance. The presence of the turnstile separates the boarding passenger from the rest of the vehicle's inner space, effectively configuring a sort of 'foyer' where fare payment needs to be completed in order to proceed further. The space is big enough that queueing of passengers may take place there, as well as other tasks that require the passengers to interact with the driver. The doorway is usually flanked by two electronic sensors (circled yellow) which users need to tap their Bip cards against. In the case that the card has not enough remaining credit, a red light (circled red) will turn on as a repeated beeping sound goes off. If the card has enough credit, a green light will turn on and a single 'beep' will announce the unlocking of the turnstile.

This payment system based on card sensors was one of Transantiago's most salient features as a system aimed at modernising urban public transport in Chile. Their installation was part of a broader attempt at



Figure 6.1. Establishing shot from the camera angle.

‘professionalising’ the role of the bus driver, who prior to Transantiago was paid in proportion to each ticket paid, and was also in charge of collecting fares, in cash. This usually meant that the driver had to bargain with users, enforce payment, and handle cash money which not only made his¹⁵ driving task slower and more complex, but also rendered him more vulnerable to being assaulted and robbed. This problematic elements, which were seen as undesirable within the modern aspiration of Transantiago, were dealt with by delegating the payment collection task to an automated system based on the Bip card – which needs to be topped-up in advance – and card sensors. As Ureta (2015: 126) has noted, this technical arrangement “is the one that gives ‘user’ status to the human beings who want to use the system”. In fact, the original call for tenders for Transantiago bus companies defined a ‘user’ as a “person who accesses the transport services of the system through the payment of the corresponding fare, using the payment form defined in this contract” (ibid). Hence, a person who accesses the service through some other means would not have user status, as far as the technical system is concerned.

Ureta goes on to note the difference between this technical arrangement and the previous payment system run by the driver. While prior to Transantiago someone could negotiate a reduced fare with the driver, under the current regime “no passenger with less than the full fare amount in credit on her card *could be considered a user*” (ibid, emphasis added). Thus, the turnstile would join and reinforce a payment system that relied on a binary logic: payment/non-payment. There is no category in between.

¹⁵ In the bus system prior to Transantiago, drivers were always male (Ureta 2015).

All of these material features are part of the available collection of resources that members interact with in the boarding and payment process. In this sense, it is relevant to return to Watson's (2005: 205) use of the concept of 'visibility arrangements': "We may treat these visible dimensions of settings as part of a 'local texture of relevances' in terms of which settings are apperceived by parties as sensible, coherent, recognisable, familiar, etc.". Thus, sounds, lights, and other materialities are readable as part of particular meaningful instances in the process of becoming a passenger. To this we may add other elements like bodily orientation and queue formations. As Lee & Watson (1993) argue, queues serve as visually available environments that produce a context for the queue and those around it, "a context which is normatively pertinent and which is displayed as to how the context is being produced" (Lee & Watson 1993: 49, original emphasis). In this sense, embodied practices relevant to becoming a passenger (e.g. queuing) are constitutive, that is, they make visible their own order as they are being done.

Figure 6.1 depicts several relevant aspects of fare payment as an embodied practice done in relation to visibility arrangements¹⁶. In the image, we can see a man boarding the bus, in the middle of a fare payment sequence. He is holding his Bip card, which was already in hand at the moment of stepping into the bus. Among the more than 70 interactions I was able to video record, having the card at the ready while boarding was something an overwhelming majority of paying passengers did. Dodgers, on the other hand, usually had their cards put away in pockets or bags. Such gesture of display – card in hand – can be seen as a way of conveying an intention ("I will pay for my ride"). Thus the Bip card can be interpreted as a practical resource that is used and considered when producing compliant practices; something that Woolgar & Neyland (2013) have called "entities of compliance". The person boarding the bus displays himself as a specific category of prospective passenger – one who intends, and is ready, to pay. Category-incumbency in this sense can be made visible by holding the card, but also through other embodied resources like bodily orientation, gaze, and so forth.

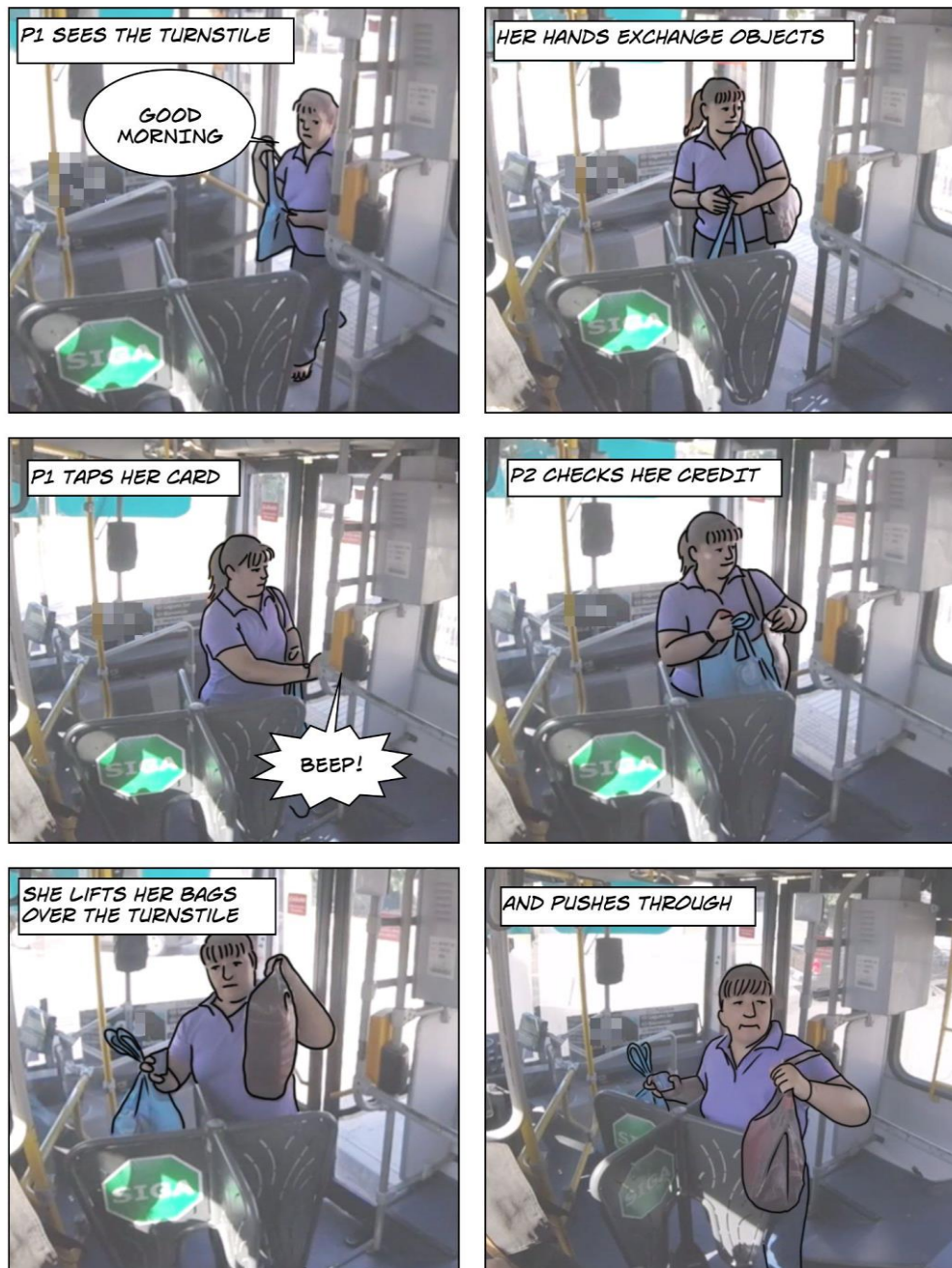
To greet the driver while boarding the bus is also a very common practice among Transantiago users. The greeting may be initiated by either the driver or the passenger, and can be produced with a sentence ("Buenos días") or gesture (e.g. a nod). The man in Figure 6.1 has just greeted the driver and now turns to tap his card. His lingering smile shows that the greeting is not completely over before a new task (i.e. tapping the card) is initiated. This example shows how several tasks – not all of which are directly linked to fare-payment – are pursued and can overlap throughout the boarding sequence.

Simultaneous attention to more than one task is achieved in this passenger's case through a body torque. While the man's pelvis and legs are still oriented in a particular direction (as his physical entrance into the bus is still underway), his torso and arms are already turning to his left, toward the card reader. Thanks to

¹⁶ Note that, in this particular case, the sensor to our left is out of order and covered with a black bag, and the green light of the sensor to our right is malfunctioning. Only the red light works. Also visible in the corner of the image is me, who was seating behind the driver that day, joined by a representative of the bus company who gave me permission to install a camera in one of their buses.

the body torque's "capacity to display engagement with multiple courses of action and interactional involvements" (Schegloff 1998: 536), the passenger can be simultaneously stepping into the vehicle; greeting the driver; and preparing to tap his card. Just as the torque, people's gaze is also relevant in this regard as it is usually directed toward primary objects of attention. Thus a combination of gaze and body torque operates as a way of projecting one's next step in a certain course of action, while still being engaged in a different task. An assessment of gaze orientation throughout this corpus of interactions shows that passengers usually direct their gaze toward the sensor and turnstile first, which is highly relevant as not every Transantiago bus has a turnstile. Quickly identifying whether there is one or not is crucial to adjust following actions, as we shall see in the cases below.

Case 1: Managing personal objects



Transcript 3.1

In this first case, the prospective passenger P1 steps into the bus while greeting the driver (Transcript 3.1). Her “good morning” does not seem to require visual contact. Her gaze, rather, is focused on the turnstile. We can see her left hand holds her Bip card, while she takes off a bag from her shoulder with her right hand. This is a gesture in preparation for subsequent actions within the boarding process (panel 1). P1 turns toward the sensor to her left, a gesture done mainly with her torso and gaze, which as discussed earlier projects her course of action. As she does so, her hands exchange objects. The right hand takes the card, while the left takes the bag (panel 2). *Beep!*. Her hand taps the card, and her body torque allows for her

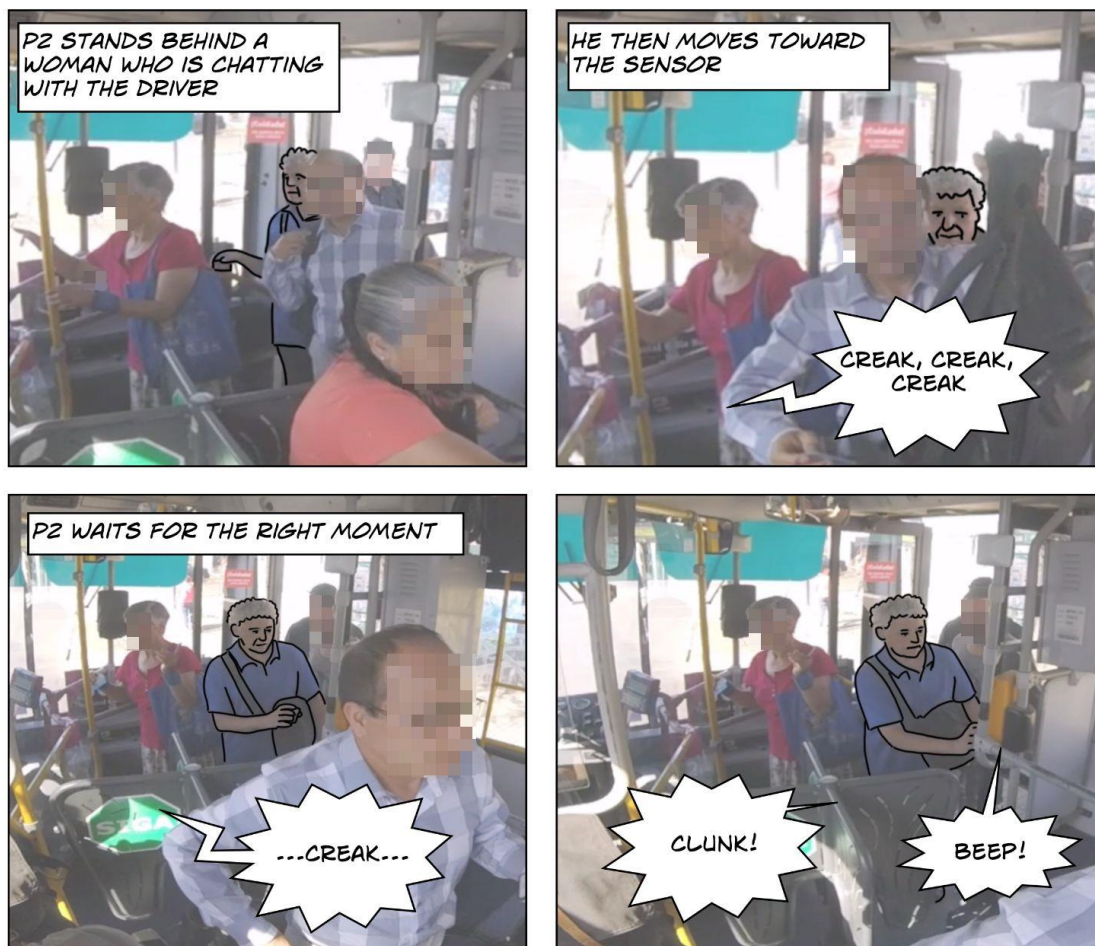
lower body to be already partially oriented toward the turnstile (panel 3). Now that she has paid and the turnstile has unlocked, both lower and upper body are oriented toward it. While still holding the card, the right hand also grabs the blue bag. Her left hand is now free and starts moving in order to grab a second bag hanging from her left shoulder. Her gaze is still fixed on the screen of the sensor. This is usually done by passengers with the intention to check their remaining credit (panel 4). To this point, we have seen how several things are done simultaneously thanks to body torque and gaze orientation. Now P1's body is fully engaged in going through the turnstile. Both her hands hold a bag. While she has placed the blue bag in a turnstile slot to her right, she lifts the other bag up and over the turnstile with her left hand (panel 5). She is now almost through, her gaze focused on the inner space of the bus (panel 6), presumably oriented toward locating a free seat. Her body has effectively fragmented into three smaller units, each of which occupy a different slot in the turnstile.

This sequence illustrates a crucial first element that is routinely assessed by people as part of the 'local texture of relevances' (Watson 2005) when boarding the bus. Turnstiles are not present in *every* Transantiago bus, so identifying whether there is one becomes important in order to adjust the course of action. In this case, as P1 sees the turnstile, she begins to prepare for a complex operation of disassembling into smaller units. This is done by taking a bag off her shoulder, while also handling her Bip card in preparation for payment. Later, as she prepares her bags to go through the turnstile, P1 checks her remaining credit at the same time. We see here how different, albeit related, tasks can be done simultaneously by people boarding the bus. The ability to overlap these tasks can be important in instances when there is time pressure, of which we will see an example below.

This case also makes clear that becoming a passenger entails more than just paying the fare. Travelling with objects like bags or other forms of luggage requires skilled forms of adaptation to *materially* work their way through the turnstile. Much more than an abstract admittance system, this piece of infrastructure will not cease to be a barrier to someone who has paid. People need to physically engage with it as part of the process of becoming a passenger, and the task can be of such complexity that requires preparing for it way before even paying the fare.

Case 2: Timing and queue progression

In this case we see our protagonist, P2 (Transcript 3.2, panel 1), who has just stepped into the bus. Realising there are people already there, he takes position in the queue. Initially, he stands behind a woman who is having a conversation with the driver. After an instant, he moves away from the woman and moves behind the current user of the turnstile, getting closer to the card sensor (panel 2). This 'jumping the queue' is seen as legitimate in the context of there being a passenger who will not be taking their turn yet, and seems to indicate there is an imperative not to waste time while boarding the bus. This resonates with Lee & Watson's (1993: 47-48) observation that "Owned turns [in a queue] involve loci of rights and obligations, e.g. the obligation to 'move up' when appropriate, such that if some turn-incumbent does not move up at once, s/he may be construed as ceding his/her 'ownership' of the turn". Indeed it takes just a second for



Transcript 3.2

P2 to stop treating the woman as ‘second-in-line’ and move up in the queue. This shows clearly how category-bound activities (see Stokoe 2012) of the queue are dynamic as they change in real time (Lee & Watson 1993), and even though joining the queue in the bus can be based on the order of entrance into the vehicle, what people do in relation to the queue also determines their membership of the queue dynamically. Thus, as the man first in line moves through the turnstile, the woman is seen by P2 as not performing the expected category-bound activity of the person who is supposed to be next (we will look into her case in more detail in a future section). She thereby loses/forfeits her turn, and P2 becomes ‘second-in-line’ by moving past her. In a similar manner as customers entering shops, who depending on how they are received they may initiate different next actions (Harjunpää, Mondada & Svinhufvud 2018), we see P2 evaluating the queue composition as he enters the bus, and adjusting his place within it by self-categorising as second-in-line.

The turnstile, being activated by its current user, produces a creaking sound that conveys the cumulative force needed to make it turn. While the creaking sound reflects a building anticipation, the device will produce a distinct *clunk* sound when a whole cycle has been completed and the turnstile is again in a neutral position, locked. Members of the queue respond to this sound, treating it as a cue for when the system is ready to receive a new payment. We can see this reflected in panel 3, with P2’s right hand already

poised, card ready in front of the sensor in a waiting stance. His gaze is focused on the sensor rather than the turnstile, which indicates that the cue signalling his turn won't be visual. The previous passenger is already through, but the turnstile is not yet back to 'neutral'. It is just after the turnstile produces the *clunk* (panel 4) that P2 extends his hand and taps his card.

Lee & Watson (1993) have noted that queue progression tends to revolve around cues that mark the end of one turn and the instigation of the next one. We see here that attention to the sounds the turnstile makes is highly important, using the *clunk* sound as an aural mark that triggers the next turn to be taken. Note that not only the behaviour of members, but also the material qualities of the turnstile itself are drawn on to organise the queue.

This skilfully enacted turn-taking practice is organised here around an orientation toward minimising waiting times. This can be another practical reason why Bip cards are usually ready in hand when boarding the bus. Having to take them out of pockets or purses would have a significant impact on the queue's progression pace. The interest in keeping the time between one passenger and the next to a minimum seems heightened when there is a queue behind the current user. While avoiding paying 'too soon' is highly relevant, it is also important not to take 'too long' of a turn. Thus the *clunk* sound the turnstile produces when it can admit a new payment is used as a signal to tap the card. Being ready to take their turn with the turnstile without wasting time seems to be an expected activity bound to the 'second-in-line' category.

This case shows that the queue for paying and its dynamics are part of the local texture of relevances to becoming a (paying) passenger. Queuing, as a practice that makes visible its own order (Lee & Watson 1993; Garfinkel & Livingston 2003), is made to progress by means of members showing where they are in the queue and their engagement with it. However, other material resources are also drawn upon to organise the queue. Albeit possibly not intended by design, the turnstile provides a relevant signal for queue progression. The 'card-in-hand' gesture does not only make visually available a categorial membership as potential passenger ('prepared to pay', and particularly so as the card needs to be pre-paid), but also enables the swiftness of a sequence that revolves around the moral imperative of being quick about it. Again, the card in hand operates as a relevant element in both sequential and categorial terms.

Case 3: A nudging mother – Managing 'objects of attention'

We can see the child P3 who has already climbed into the bus, turning back to his mother, P4 (Transcript 3.3, panel 1). She steps into the bus with her gaze oriented toward the driver, and greeting him. The driver (out of shot) replies with a nod. While still boarding the vehicle, the mother's gaze is redirected to her left, locating the sensor and turnstile. We can see now that P4 has her card ready in her left hand. Apparently awaiting for instructions from his mother, P3 stands still, looking at her (panel 2). With a hand gesture, a quick encouraging nod, and a verbal instruction ("go on"), the mother nudges her son to go through (panel 3). He then proceeds to circumvent the turnstile as showed in panel 4. The strength of the mother's gesture seems to convey a sense of urgency, hurrying her son up.

As P3 takes advantage of his small size to find a way to squeeze through without using the turnstile, the mother relocates her gaze. This time she looks at me and the bus company representative (panel 4). Even though children under 8 years old are not required to pay, her looking at us is perhaps a way of monitoring our reaction to the situation and making sure that we are not visibly displaying a moral judgement. P3's need to circumvent the turnstile in order to become a passenger is undignified, but could also be misinterpreted as it looks very similar to certain forms of physical dodging (see Figure 6.2). P4's gaze returns to her son, and monitors his progression underneath the device (panel 5). She then takes position in front of the turnstile, ready to take her turn. Now that P3 is on the other side of the turnstile, her left arm and gaze are oriented toward the sensor in order to pay (panel 6).



Transcript 3.3

This case shows how interactions with the turnstile throughout the boarding sequence can be particularly complex as other seemingly unrelated tasks still require attention. In this example, the fare payment process intertwines with courtesy practices (greeting the driver) and, most importantly, with parenting responsibilities. This may not only include giving directions to small children in terms of how to deal with the turnstile, but also monitoring the moral space such a practice occupies.

While the child's attention is mostly directed to his mother, she alternates her orientation between her son, the payment system and other members of the bus (briefly the driver, and us). By visibly displaying her attention as being focused on several relevant elements, she manages to 'nudge' her son through the system while also becoming a passenger herself. As Watson (2005: 212) describes from a similar case in his own research,

“As each [person] approached the first step of the bus, s/he focused their gaze particularly intently or fixedly towards the person(s) in front and the driver, readying themselves for the upcoming transaction: as a practical-moral matter, they were visually orientating towards a ‘proper object of attention’ and visibly manifesting that orientation”.

This case, too, portrays a person who becomes a passenger by making her objects of attention visually available. However, in this case, she goes back and forth between objects of attention relevant to being a paying passenger (turnstile, card sensor), and to being a mother (giving her child an instruction, monitoring his way around the turnstile, and other people's potential reaction to this). P3 and P4 organise their boarding process as accountable both as 'bus passengers' and as a standard relational pair (i.e. mother-son, Sacks 1995). Thus, they are able to find their way into the bus in both practical and moral terms.

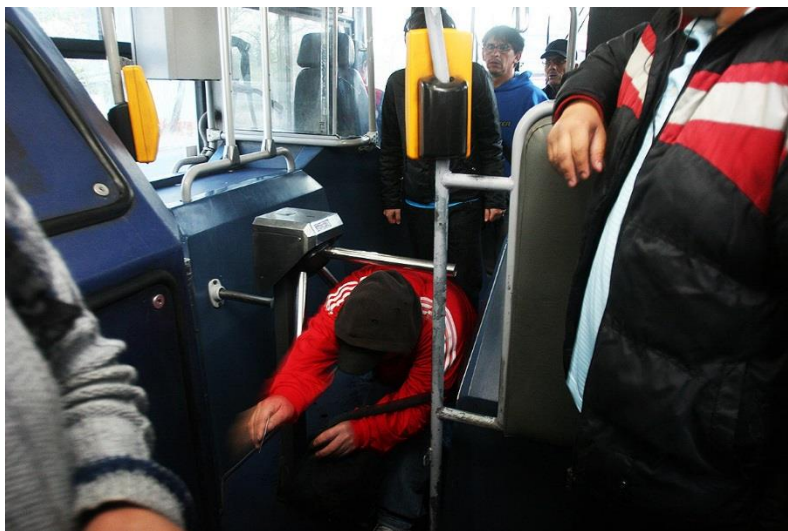


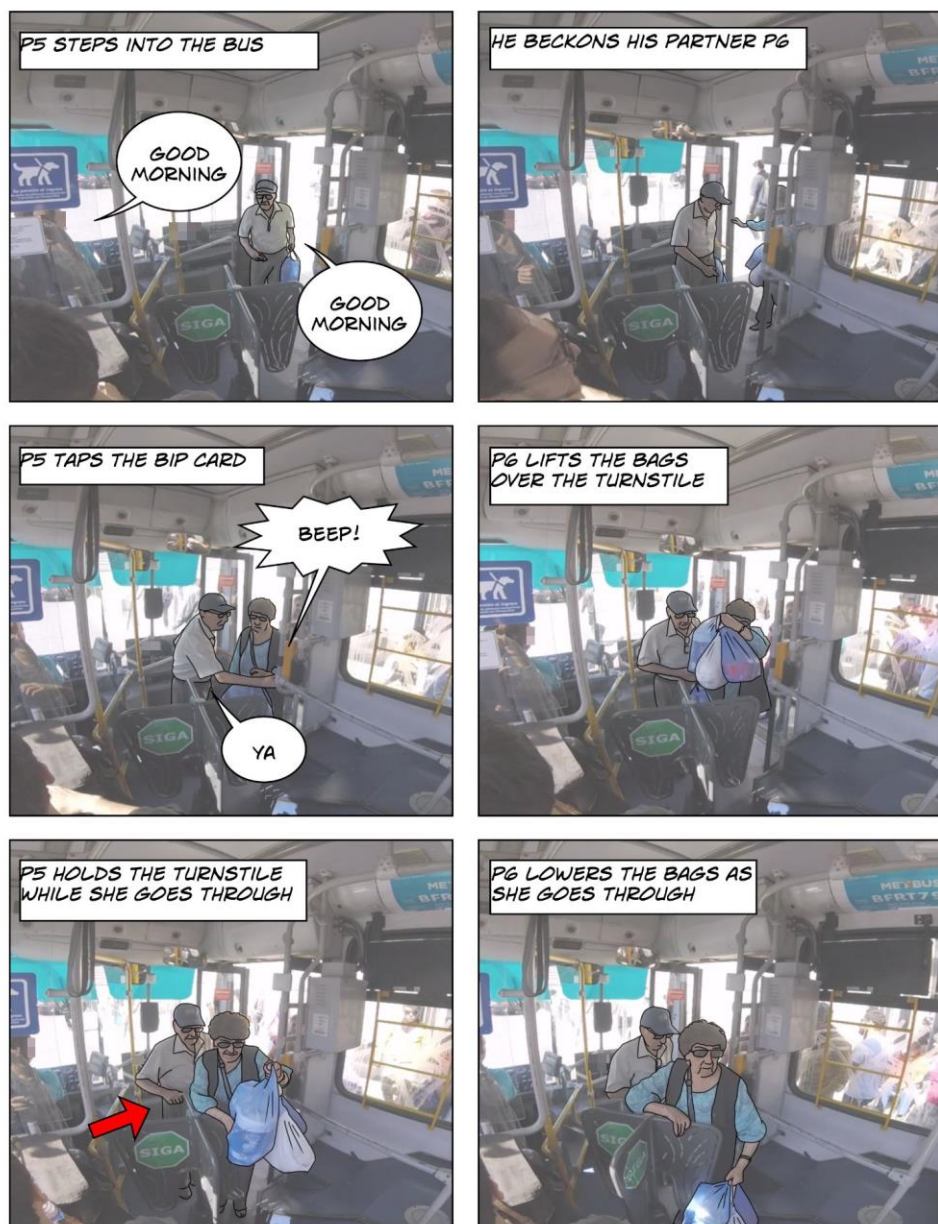
Figure 6.2 A former turnstile model being dodged by a user. Retrieved 24th January 2019, <https://www.radiozero.cl/opina-desde-zero/2016/08/crisis-en-transantiago-crees-que-la-instalacion-de-torniquetes-en-los-buses-reducira-la-evasion/>

Watson (2005) highlights how practices of attention in public spaces are treated as morally-accountable, and that exhibitory and monitoring practices are inseparable as part of a local texture of relevances. So P4 shows an awareness that she and her son might be monitored by others in the bus, not only in terms of a child circumventing the turnstile – which could be misinterpreted by others – but also as a mother nudging her son onward. These dynamics of

attention are, I argue, particularly relevant in instances of people becoming passengers *together*. The following case explores this further.

Case 4: Boarding together

This final case brings forward several elements already presented in the previous three instances, while portraying a case of people becoming passengers not by complying to, but subverting the scripted sequence of the queue and the interaction with the turnstile. Transcript 3.4 shows an older couple boarding the bus, carrying several shopping bags. The older man (P5) steps into the bus first, with his Bip card in hand. He responds to the driver's greeting. However, rather than approaching the card sensor, he remains standing to one side of the path (panel 1). He then turns and makes a beckoning gesture with his hand. The older woman (P6) steps into the bus carrying several plastic bags in one hand. With the other hand she grabs the bus' doors. P5 remains close to her and attentive to her steps throughout the process (panel 2). She then stops by the sensor, but looking at the turnstile. It is P5 who extends his hand and taps the card against the



Transcript 3.4

sensor. Just after the beep, he gives his partner a signal: “ya” [okay/ready] (panel 3). P5 steps away from the card sensor and monitors P6 as she then approaches the turnstile while lifting the bags over the turnstile (panel 4). She is now in the turnstile ‘box’ and lowers the handful of bags on the other side of the device using both hands. Simultaneously, P5 stands behind her and grabs the turnstile’s blade with his right hand (panel 5). P6 finally pushes through the turnstile, using her torso and right hand while holding the bags with her left. P5 provides assistance by holding the turnstile behind her, slowing down its rotation and preventing that the blade will hit P6’s back.

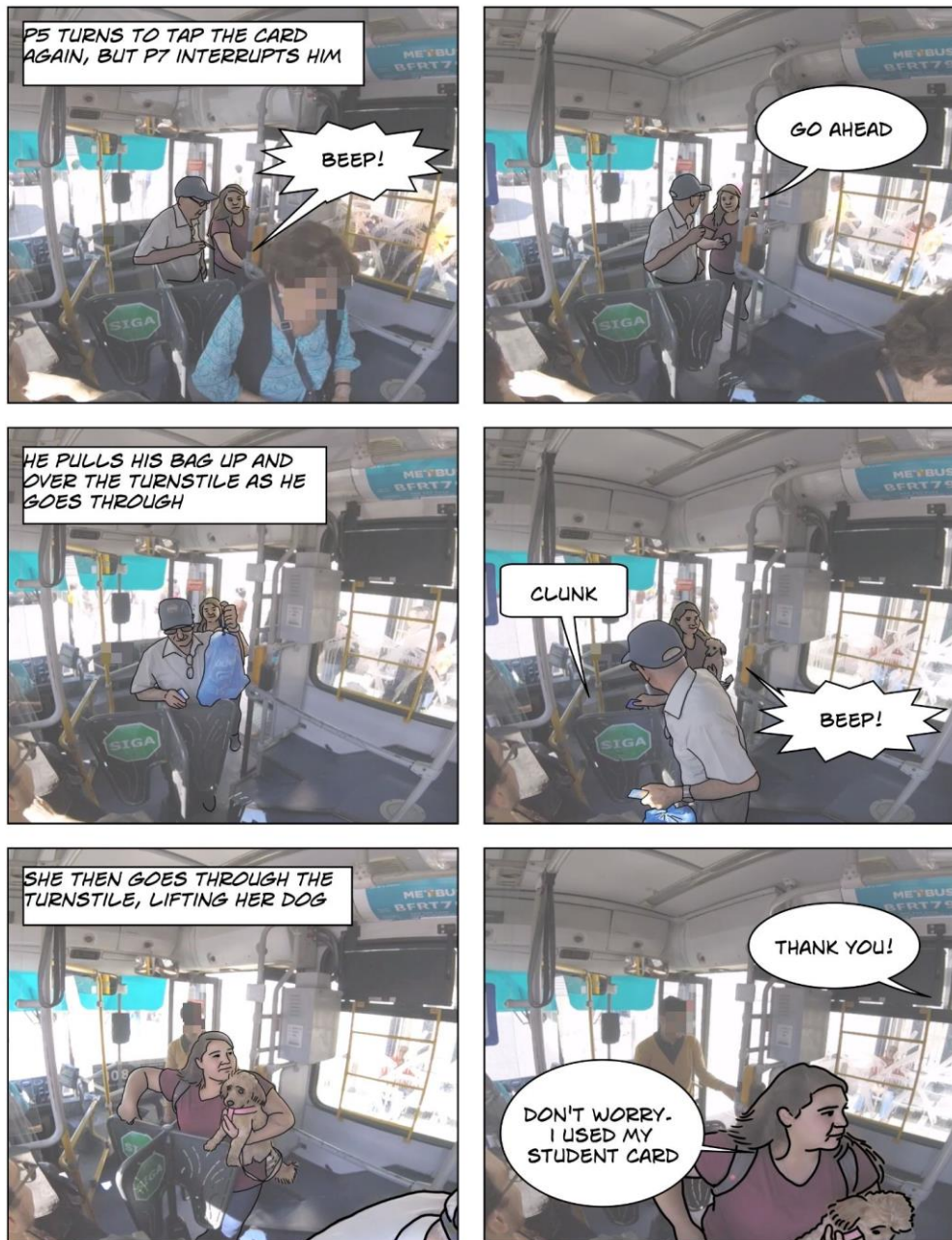
This fragment shows an instance (not all that uncommon) of sharing a Bip card by more than one person. In this case, the older couple travel as a ‘together’ or mobile formation (McIlvenny, Broth & Haddington 2014) and adapt their interaction with the turnstile – who only deals with individual bodies as units – so as to complete the sequence without stopping being together. The authors note that “people traveling or moving together have to work, sometimes intensely, to maintain alignment, a sense of presence, mutual awareness, frameworks of co-participation, and to coordinate transitions between modes of mobility while maintaining togetherness, pace, and flow” (McIlvenny, Broth & Haddington 2014, p. 105). Comparable instances have been analysed by Weilenmann, Normark & Laurier (2014) in looking at how ‘togethers’ are reorganised in their interaction with revolving doors.

The ‘togetherness’ of the couple is manifest in the fact that both people share the same Bip card, which in turn is reflected in their own version of the person-turnstile interaction sequence. The card cannot go through the turnstile with the first person crossing, as it also needs to allow the second person to pay their fare. Hence the subversion of the sequence shifts the category-bound predicates we have seen at work until now in this chapter. While P5 is ‘first in line’ and taps his card, is P6 who crosses the threshold.

Similar to Collinson’s (2006) account of people doing ‘running-together’ as a joint accomplishment organised by various cues, this case shows P5 and P6 boarding the bus together by means of visual and aural cues that allow them to coordinate their actions. We see this at work in panel 2 with P5 beckoning P6 into the bus, and then again in panel 3 with P5’s “ya” indicating to his partner that payment has been made and it is now the time for her to go through the turnstile. Note that even though these cues are also present in the environment (e.g. the card sensor beeps when payment has been completed), the couple’s signals for coordination are still produced, making visually and aurally available that P5 and P6 are ‘together’.

Other elements underpinning this joint accomplishment are forms of bodily coordination like the one we see in panel 3, with P6 waiting for her partner to tap the card. Note how his arm extends in front of P6’s projected trajectory toward the turnstile, effectively cutting her off. This is not seen as a problem as they both understand that he is paying for her turn going through the turnstile. Another instance of bodily coordination is present in panel 5, when P5 holds the turnstile during P6’s progression. Mediating between his partner’s body and the turnstile’s rigid materiality, the older man ‘eases up’ her interaction with the device.

Still, this is not the end of this interesting scene. Transcript 3.5 shows how P5's second payment is unexpectedly interrupted. Just as he is extending his right hand to tap the Bip card again, a young woman P7 (who had been standing by the bus' doors observing them) interrupts him and taps her own card against the reading device (panel 1). The movement is swift and precise. In just an instant, she steps inside the bus and reaches out to the sensor, before P5 can do anything. He then looks at P7, who waves her hand in an inviting gesture, and offers a clarifying "go ahead" (panel 2). P5 does not waste time and engages the turnstile by pulling his bags up and above the device, and pushing with his torso. In the back, P7 observes his progression (panel 3). Similar to previous cases analysed, she waits for the turnstile to produce its distinctive *clunk* sound before tapping her card again. We can now see that she carries a small dog in her



Transcript 3.5

left arm (panel 4). Keeping the dog close to her chest, she lifts the animal above the height of the turnstile's blade, and pushes it with her torso while also making it rotate with her right hand. Behind her, a man with dark glasses waits for his turn (panel 5). It is only after P7 is through the turnstile that a more extended conversation takes place. The older man thanks the young woman, and she then downgrades her giving of assistance: she has used her student card, therefore paying far less than what the older couple would have paid (panel 6).

The reasons for P7's unrequested intervention are not made explicit in the course of the interaction, but hinted at by her last utterance. While students who use Transantiago benefit from a reduced fare, there is no special fare for older people who travel by bus. This has been at the centre of political controversy and social demands in several occasions, particularly as part of the broader ongoing political discussion about the shortcomings of Chile's pension scheme.

Leaving P7's motivations aside, we can see how her intervention draws upon very similar sequential resources than those employed by P5 and P6 in the previous case. She dislocates the turn order by 'jumping the queue' and paying the fare before P5, who was first in line, did. The payment is not used in this case to claim a slot in the turn order, but rather to yield it to the older man. This is clarified by her saying 'you go' in panel 2. Thus, what could have been seen as a rude disregard for the sequentially-realised categories (Watson 2005) ordinarily associated to queueing, is turned into a vivid form of altruism instead. By paying first, she does not necessarily become 'head of the queue'. This makes evident the flexible character of sequentially-realised categories, which can in turn be used as a resource to produce altered forms of a standard sequence.

She does not produce an offer, but rather delivers the assistance without asking. This hijacking of the sequence can only be achieved by a detailed understanding of its dynamics, as well as of the 'modified' version of the sequence P5 and P6 were producing. Bodily ability and readiness are also key for jumping into action at the precise time, thus circumventing any instance of verbal negotiation with the person receiving help. In a sense, P7 produces her intervention in such a way that any chances of P5 rejecting the assistance are minimised. Given that the payment has already been made – before P5 can even react – rejecting P7's help would require a complete restructuring of the queue, having the young woman to become the 'head of the queue' and the older man 'next in line'. Admittedly, this would be a complicated manoeuvre given the limited space available and the fact that the queue has already a third member – the man in dark glasses – who is also waiting his turn.

Then a second form of 'sequential dislocation' takes place. The man goes through the turnstile, effectively accepting P7's gesture. It is not until she and her dog have traversed the turnstile that then a thanking instance ensues, including additional information provided by her. Rather than immediately thanking an offer or delivery of help, P5 and P7 finalise the process of becoming passengers before doing this. This reasserts the sense of urgency we had seen at work in previous instances analysed throughout this chapter. It is also an eloquent example of how certain tasks can be done alongside a sequence to become a passenger

(e.g. parenting, or being a dog-owner), while others can be suspended and completed after paying the fare and interacting with the turnstile.

Overall, both parts of this scene highlight how, despite the rigid script of the butterfly turnstile – which only admits one payment, one body, and one ‘new passenger’ at a time – public transport users can still become passengers together. This is accomplished by subverting certain conventions of the queue sequence and the category-bound predicates that come with being, for instance, ‘next-in-line’. Such subversion makes sense as part of a broader, relevant, and shared knowledge – the difference in fare cost for students and pensioners, as well as the widespread indignation regarding that inequality contextualise *in situ* displays of contestation that are locally treated as legitimate.

By presenting these cases of passenger-turnstile interaction, I have aimed at outlining the highly nuanced and complex ways in which becoming a passenger is done through fare-payment in Transantiago. The turnstile’s presence does not only elicit specific modes of turn-taking in terms of pacing, but also poses challenging tasks when it comes to managing one’s own progression and that of other (non)humans. Such tasks, as we have seen, are usually pursued simultaneously and express a certain sense of urgency, enacted by highly skilled passengers who are attuned to the materialities with which they interact. In this sense the turnstile does not become a mere barrier that imposes itself upon an already existing array of quotidian practices. The device’s features are not only accounted for, but also drawn on in order to organise courses of action, like the sound it makes when it comes back to neutral position. Similarly, some practices by the bus users are oriented toward minimising the inconveniences of the turnstile and its rigid design, like holding it so it does not hit others.

Contrary to the idea of user compliance being a passive outcome of effective governance, Woolgar & Neyland (2013) describe it as an accomplishment, achieved by the articulation of habits and material objects. These cases illustrate how embodied practices like gestures and gazes are also part of this set of resources, which allows for the emergence of a ‘way of doing things’ within which paying for fares is enacted. Such organisation does not purely arise from the turnstile’s script or the original payment system based on cards and lights. Rather, it emerges as an accomplishment of those technologies in interaction with passengers and drivers – who queue together, greet and monitor each other, and sometimes help one another – conforming visibility arrangements that make the setting legible and navigable to members. We become passengers in relation to others and, sometimes, *with* others. Rather than the turnstile imposing its script upon the bus users, it becomes but a small part of the constellation of human and nonhuman interactions that compose the setting. In Shove’s (2003: 196) words; “new devices are positioned with respect to existing technologies and practices, (...) this positioning affects the meaning and status of the items in question”. The cases presented show the assemblage receiving the turnstile in an accommodating manner, so that the turnstile can become a mundane object in the Transantiago context. These actants effectively give the turnstile a space among them, making it ‘work’ together.

Finally, I have highlighted how becoming a passenger within this particular setting is enacted through instances of recognition of entitlements that make progression through the turnstile possible in different ways. Some of them make sense with just the resources locally available, like rearranging the order of the queue by means of recognising some members who are not ready to take their turn. Other instances rely on entitlements that are connected to broader political issues that are treated as known by the members, such as treating old age pensioners as appropriate targets of assistance with fare payment. But even in these cases, the assistance takes place by means of rearranging local elements of the sequence.

The following section explores instances of people becoming Transantiago passengers by actively finding a way *around* the turnstile and avoiding fare-payment. We will see how, nevertheless, dodging practices are also done by attending to locally relevant categories and sequential orders.

Localising the dodger

In early 2017, the renowned transport engineer Louis De Grange was interviewed by ADN Radio about his assessment of Transantiago's first ten years. On highlighting its problems, the first observation he made focused on dodging: "[Transantiago] is an industry where 30% of its client steal". When asked about the best solution for the high fare-evasion rates, he mentioned that investing in having more inspectors could actually be more expensive than the money recovered from dodging, and therefore a different strategy should be pursued: "We should decrease the size of the buses - with just two doors, as it used to be -, and they should have turnstiles". These measures would efficiently trump what he called "an 'if I don't like it I won't pay' ideology, or the idea that transport is a social right" (De Grange 2017).

It is no wonder that De Grange, a fierce critic of Transantiago, makes such an emphasis on fare-evasion as the system's main concern. Even among a wide variety of difficulties – lack of dedicated infrastructure, poor bus frequency, material decay etc. (Muñoz et al 2014), Transantiago's high fare-evasion rates stand out as a risk to the system's financial viability (Tirachini & Quiroz 2016), which was originally meant to internally balance its cost and revenue by tariff adjustment.

As mentioned earlier, Ureta (2015) provides a detailed account of the sociotechnical changes that Transantiago brought along back in 2007 which, in a way or another, paved the way for fare dodging to become a much more prevalent reality than it was before. One of such changes was the reconfiguration of the bus driver role (formerly known as *micrero*), into a professional driver with a stable salary. Whereas *micreros'* income used to be determined accordingly to how many passengers they took, Transantiago drivers would be paid a fixed amount and therefore would not have to worry about forcing passengers to pay the fare. As Ureta (2015) describes, Transantiago planners decided on a particular card sensor design with red and green lights, aiming at making dodgers as distinguishable as possible from paying users. If the user's Bip card had not enough credit, a bright red light would turn on, along with a loud beeping sound going off. The 'social punishment' enacted by publicly singling out dodgers would be, according to Transantiago designers back in 2007, enough to prevent fare-evasion from growing out of control.

Despite these technical arrangements, fare-evasion seemed to escalate as the years went by. While during the *micros amarillas* era fare dodging was relatively low (Ureta 2015), since Transantiago's launch it tended to grow at an alarmingly fast pace. According to Guarda et al (2016), dodging rates in 2007 ranged between 12% and 16%, and by 2012 it had already reached 27%. Recent estimations indicate that Transantiago's dodging is possibly the highest in the world (Delbosch & Currie 2018). From 2010 onwards, fare-evasion became one of Transantiago's main weaknesses, and numerous campaigns and dissuasion schemes were tried out by the authorities. Among these, several advertisement campaigns have been released over the years by the company Alto Evasión [Stop Evasion] (see Figure 6.3), which have been widely criticised because of their emphasis on portraying dodgers as criminals (BioBio 2014).

The ways in which political authorities and technical experts have addressed the issue of dodging form part of complex morality-making dynamics that constantly unfold in everyday life. Decision-makers have tended

to enact a “wicked evader” (Ureta 2015: 125) by depicting them as delinquents and relying on the feeling of shame to fight off this behaviour. However, the inconsistent levels of success of such deterrents seem to indicate that there is still much to be learned about dodging as a social phenomenon.

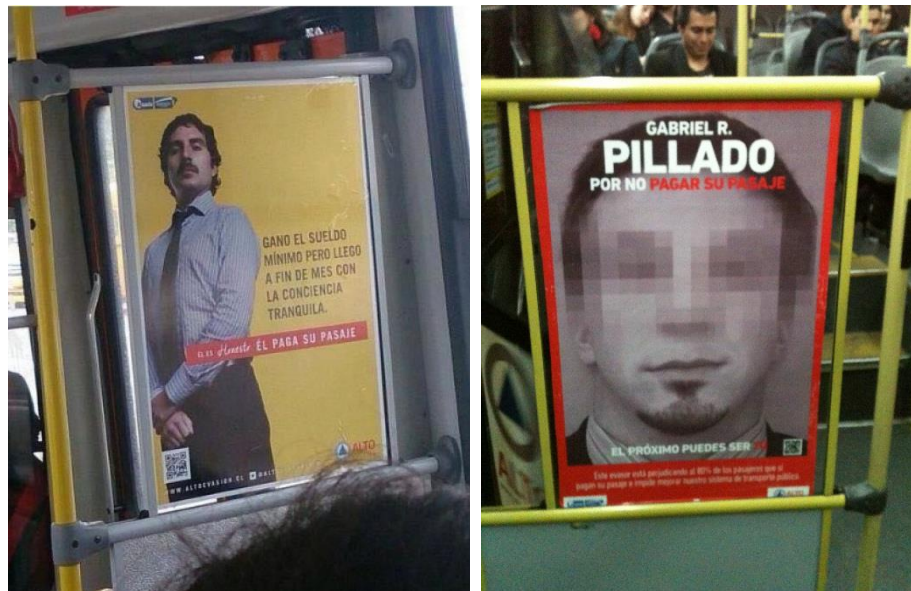


Figure 6.3 Anti-dodging advertising campaigns released in 2014 in Santiago. Left image reads: “I earn minimum wage, but at the end of the month my conscience is clear”. Right image reads: “Gabriel R. BUSTED. For not paying the fare. You may be next”. Retrieved 15th May 2017: <https://www.biobiochile.cl/NOTICIAS/2014/10/09/EMPRESA-ALTO-SE-DISculpA-POR-CAMPANA-DEL-TRANSANTIAGO-QUE-INDIGNO-A-USUARIOS.SHTML>

While fare dodging is critical to Transantiago, research on dodging has tended to focus on measuring it, rather than understanding why people evade fares. In this regard, a recent study from the Laboratory of Public Innovation (Laboratorio de Innovación Pública 2018) stands out as a positive example. This study focuses on assessing the causes and motivations behind dodging by means of identifying certain ‘dodger profiles’. However, the strategy of identifying such ‘profiles’ faces the limitation of paying too much attention to the *ex ante* causes of the phenomenon, portraying fare-evasion as the consequence of underlying structural elements (a critique put forward by Delbosc & Currie 2018). Thus, research focused on understanding dodging implicitly conceives it as individual behaviour that can be explained as the outcome of certain key factors (e.g. income, cultural background, age etc.) which outline a particular ‘dodger profile’. Conversely, less attention is given to the *local* organisation of dodging as an interactional practice, and to the resources mobilised by its participants in order to make dodging happen in everyday life.

As a way of providing a complementary perspective to these studies, in this section I aim at seeing dodging as an interactional achievement whose relevant elements are locally produced. As we will see, the practice of dodging is not the mere result of structural forces located elsewhere, but a complex, nuanced negotiation of entitlements, reprimands, and justifications done with bodies, objects, and words. With this interest in mind, in what follows I analyse *how dodging is attempted, recognised, and responded to*. For this I will focus on how relevant categories are produced in the interaction, enabling alternative moral orders that may frame dodging as a ‘more acceptable’ practice in some cases. The following analysis requires that the turnstile is

understood as a delegated set of actions (Johnson [Latour] 1988; Latour 1992; 2007) aimed at preventing fare-evasion. In this vein, Valderrama (2010: 126) suggests that “the task of designing an object necessarily implies a proposal for the setting in which than object will exist: a scenario”. To design a technology is to provide it with a certain script (Akrich 1992); a set of actions which outlines a particular organisation of the world. As Ureta (2015: 9) proposes from observing the Transantiago case, the power of scripts lays on their capacity to produce certain types of subject: “When functioning as expected, scripts end up properly producing *subjects*, or human devices emerging when human beings embody scripts in, more or less, exactly the ways a certain governmentality expected them to”.

Even before the butterfly turnstiles existed, Ureta had already noticed the limitations of the ‘shaming device’ built upon the card sensor and the lights – they “ended up performing two kinds of human devices: the payer and the *wicked* evader” (Ureta 2015: 134, original emphasis). Similarly, in the case of the turnstile, the script seems to propose an encounter where it is possible to establish a clear and unproblematic distinction between two categories: (1) users willing to pay the fare (thus becoming passengers), and (2) those unable or unwilling to pay the fare (staying out of the system because they are unable to go through the turnstile). Specifically, the elongated ‘butterfly’ design of the turnstile aims at minimising the existence of a third category; namely the user who becomes a passenger *despite* being unable/unwilling to pay: the dodger.

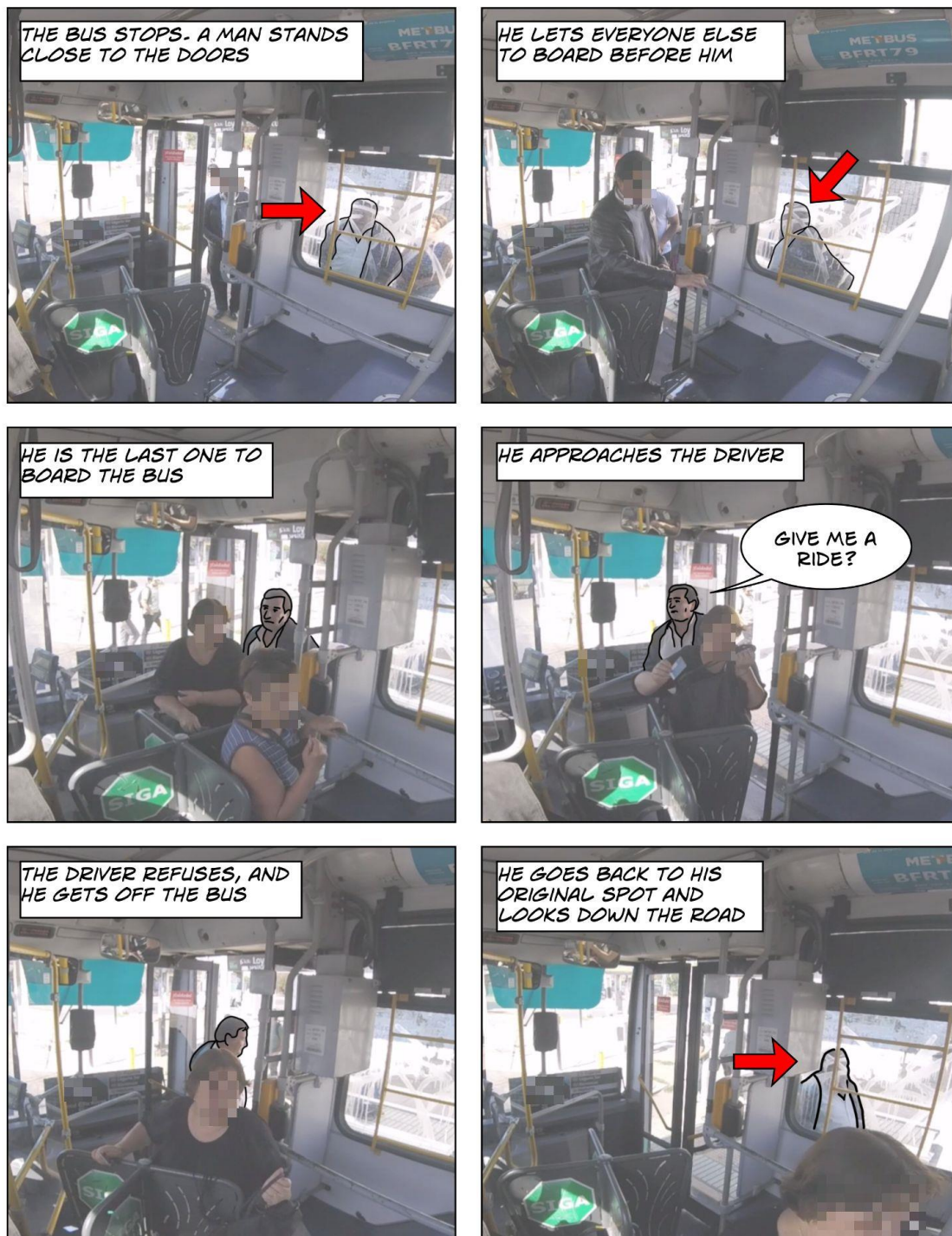
We may understand the turnstile as a device that brings a category-oriented script into Transantiago’s assemblage. We will see, however, that its aim as a membership categorisation device is routinely contested by people who mobilise varied resources and produce membership categorisation devices of their own. Within these dynamic moral orders, not all of fare-evaders are performed as ‘wicked’. As a locally organised practice, dodging is done in conjunction with locally-produced moral categories, which sometimes do not match those inscribed in the turnstile/payment system. In other words, even though people sometimes become Transantiago passengers without paying – effectively becoming ‘dodgers’ according to the turnstile’s script and the strict discourse of actors such as Louis De Grange – the ways in which they do so might produce alternative moral grounds that free them from moral judgement at a local level. In the following sections I will present an analysis that describes this in detail. Even though the turnstile is intended to operate as a device that neatly categorises users, its interaction with them remains complex and nuanced. Various forms of dodging emerge in the interaction of humans and non-humans, and they may exceed, override and/or subvert the turnstile’s fixed script.

Case 1: ‘Give me a ride?’

Transcript 3.6 presents the case of a failed attempt at fare-evasion. We can see that the bus has stopped and opened its doors to a group of people. A man (Q1) is standing at the bus stop, close to the bus doors (panel 1). As other people start boarding the bus and going through the turnstile, Q1 approaches the doors slightly but does not enter the bus. Rather, he lets everyone else go before him (panel 2). By doing this, he assigns himself the ‘tail-of-the-queue’ spot, and boards the vehicle the last (panel 3). As he does so, instead of approaching the card sensor or the turnstile, he gets closer to the driver and makes visual contact with him.

He then produces a request (panel 4). The driver's response is silent, but we may presume it was a refusal to the request, as Q1 turns around and gets off the bus without saying anything (panel 5). He then returns to his original position at the bus stop, and looks down the road (panel 6).

We see here how (an attempt at) dodging can be done with attention to the queue and its dynamics. Even though the man was closer to the bus doors than other people (in fact, some of them arrived to the bus stop while people were queueing to board), he positioned himself in a way that made clear to others that



Transcript 3.6

he was not getting into the bus just yet. 'Working the queue' (Brown 2004) in this fashion is functional to the person's intention of dodging fare-payment. He is the last to join the queue and, instead of engaging with the card sensor and turnstile, he orients himself toward the driver to request a free ride. Thus, he minimises his impact on the queue's progression as he does not intend to take part of it. In a way, he could be seen as removing himself from the queue altogether.

While the queue projects its member's progression toward the payment system – card sensor and turnstile – the man's target is the driver. Even though the turnstile's script remains rigid and impervious to any type of adaptation, the driver retains agency over alternative means into the bus, and therefore over becoming a passenger. Thus, despite the instalment of the butterfly turnstiles in Transantiago buses aimed at dealing with potential passengers and impeding the progression of dodgers, there are several instances that overflow this barrier and revert the responsibility back to the driver. Albeit the original intention behind the instalment of a technically-regulated payment system was to allow the driver to concentrate on operating the vehicle, we see here how sometimes people will go to the driver to initiate a negotiation regardless. The following case also highlights this notion, framing fare-evasion as a practice with a powerful social orientation, as it draws on locally relevant categories to 'make a case' for the potential dodger.

Case 2: 'You shouldn't treat older people like this'

Transcript 3.7 shows Q2 approaching the bus doors, and asking the driver to open the rear doors for her (panel 1). She hurries to the back of the bus, but after a few moments we see her coming back to the front door and boarding the vehicle. Looking at the driver with a serious expression, she takes her Bip card out of her pocket, while saying "let's see" (panel 2). This utterance is shaped as a reply to an unspoken question, implying that she sees the act of keeping the rear doors closed as full of communicative intent – i.e. as a negative to her original request – and not as a mere coincidence due to carelessness on the driver's part.

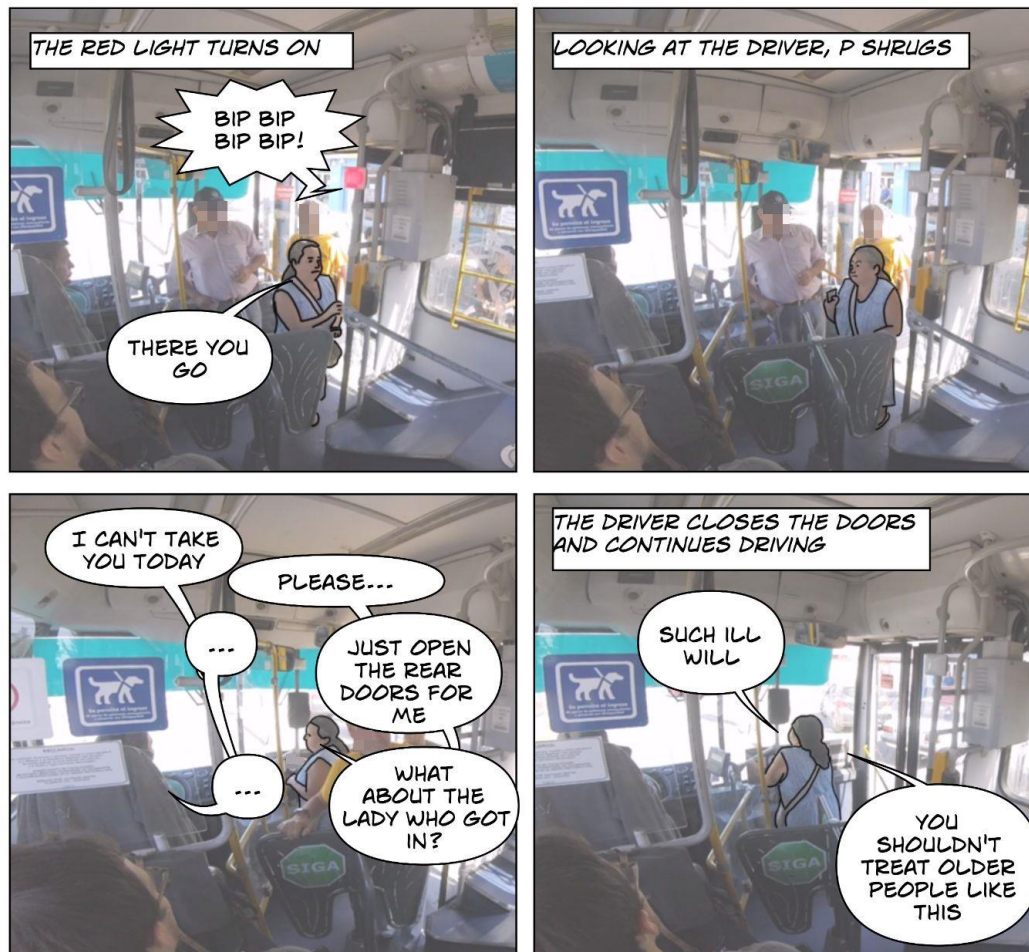


Transcript 3.7

As we have seen in previous sections, the fact of Q2's card having been put away in her pocket, and not ready in hand, is consistent with her original intention not to pay for her ride. Thus she is not only forced to step into the bus through the front doors, but also to engage in a payment procedure whose outcome is framed as uncertain by her saying: "let's see". Is there any credit left in Q2's Bip card? Even she might not know.

Q2 taps her card against the wrong side of the electronic sensor, producing no response from the device. She repeats the attempt several times while flipping the card, until she finally stops and turns to the driver. "It's broken", she says (panel 3). Another user intervenes, explaining that the correct section of the sensor is further below (panel 4). The user's slightly impatient tone while intervening might be seen as a reaction

to Q2's disruptive behaviour, although it is unclear whether his concern is aimed at her being a potential dodger, or the fact that she is significantly slowing down the boarding process in general. As the person first in the queue, Q2 is not conforming to the expected category-bound responsibility of taking as little time as possible. She is holding the queue, triggering impatient reactions from others.



Transcript 3.8

After having been assisted, Q2 taps her card, and the red light indicating not enough credit turns on with a series of ‘bips’. Q2 has been categorised as inadmissible by the technical device in a manner that is visually and audibly available to everyone present. The turnstile won’t turn for her. “There you go” Q2 says, as if the result was somehow expected (Transcript 3.8, panel 1). She then turns to the driver, and shrugs (panel 2). Both her choosing of words and shrugging gesture seem to outline the event as somehow out of her control. Meanwhile, the other users start paying and going through the turnstile themselves. They see the red light as signalling that Q2 has been rejected by the system and is no longer part of the queue.

Without losing eye-contact with the driver, she moves to the front and stands by him. Despite having been rejected by the technical system, Q2’s stays in the bus. She approaches the only interlocutor with whom she will be able to negotiate – the turnstile won’t be as open to conversation. The driver treats her approach as an unspoken request. He says: “I can’t take you today”. The driver’s lexical choice is quite telling here:

by saying that *he can't* take her appears to displace the responsibility of the situation from him to some other agency, similar to Q2's shrug. Additionally, the temporal specification "today" further relativises this, making the sentence be heard as less absolute.

Q2 then offers an alternative solution (entering through the rear doors, despite this idea having been denied by the driver in the first place), and then indicates a moral disparity ("the lady who got in", while Q2 was not allowed to do so). Thus she undermines the driver's argument that he cannot give her a ride by reframing the driver's negative from a factual incapacity ("I can't") to a matter of willingness ("you could"). The driver's response is again produced through materialities; by closing the doors and continue to drive without saying anything he displays his unwillingness to continue being part of the exchange. This prompts moral judgement from Q2: The driver has an "ill will", which is consistent with her implication that the driver's negative is an issue of willingness to give her a ride or not. The judgement continues with Q2 mentioning "older people" as a group who should not be treated like this, as she rests her body against the handrail and looks up ahead.

Q2's actions at the end of the exchange seem to work at various levels. First, they establish a moral reversal within the dodging situation, where the driver is held accountable for the result (Q2 remains in the bus, "trapped" between the front doors and the butterfly turnstile). The moral reversal is achieved with her mention of the older people, implicitly categorising herself as a member of this group, and clearly stating that they should not be treated "like this". In this way, Q2's dodging ceases to be the relevant object in the situation. Being deferential with older people is marked as the morally relevant imperative instead. This complaint is consistent with the accepted forms of assistance and special treatment routinely given to older people, an example of which we saw in the previous section.

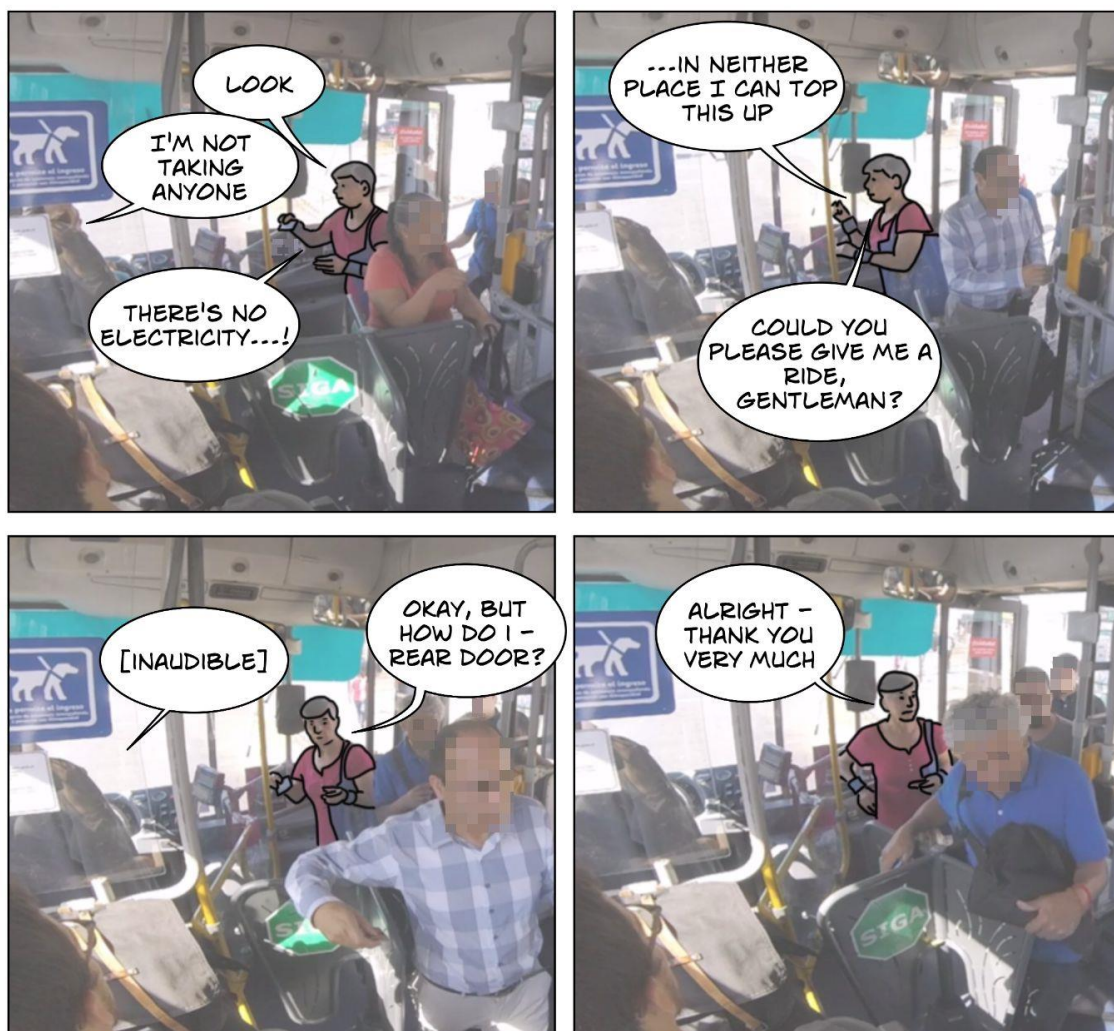
As Drew (1978: 3, cited in Housley & Fitzgerald 2002: 63) asserts, "[g]iven that a person, group etc., may be characterized in an indefinite number of ways, in someone's activity a speaker may depict that person with that category which is, conventionally, especially relevant to doing that activity". In this case, by establishing the category "older people" as more important than another implicitly relevant category for the situation (i.e. "dodger"), Q2 manages to reposition herself within an alternative moral structure. The driver's silence, as well as his decision to keep driving, can be seen in this case as desisting from challenging her stand, although he is still not willing to let her become a passenger by letting her through. Q2 is, then, stuck in an uncategorised liminal space that emerges in the interaction of the locked turnstile, her decision not to leave, and the driver's unwillingness to let her pass.

Q2's defiant bodily posture matches her moral stand. Her final assessment against the driver is done while breaking eye-contact with him, although maintaining their physical proximity. This situation is prolonged for several minutes until the bus finally reaches her destination and she steps out of the bus. The way in which Q2's body operates as a resource to mobilise affective states seems to fit Laurier's (2010b) observation of how bodies, materialities, and words can work in unison to make people feel things. In this

case, because of not having allowed Q2 (an ‘older person’) in the bus, the driver must now deal with the emotional cost of having her standing next to him for several minutes in awkward silence.

Case 3: The ‘good’ dodger

A different case (Transcript 3.9) can expand our understanding of how moral categories are produced despite of the ones inscribed in the turnstile. As opposed to Q2, the user Q3 decides to approach the driver immediately, holding her Bip card in front of her in a sign of display. Such gesture expresses Q3’s membership as a Transantiago user, while it also seems to communicate that the focus of the conversation will be Q3’s ability to pay the fare (Tuncer, Licoppe & Haddington 2019). This prompts an immediate and strong reply from the driver: “I’m not taking anyone [who does not pay]”. Q3 responds with a similarly strong argument: There is no electricity (panel 1). The driver remains silent, and she proceeds to offer more details about the situation. It is not only one, but two places where she has been unable to top up her card. This may be heard as Q3 not only justifying her inability to pay, but also showing that the situation is not her fault. She actively tried to do what is expected of Transantiago users – having credit in their cards – but it was the system, and not her, who has failed.



Transcript 3.9

She then verbalises the request the driver had already anticipated from her initial gesture. By closing the sentence with the label “gentleman” (panel 2), Q3 accomplishes a double function. On the one hand, she categorises the driver as a gentleman (and prompting the driver to act accordingly; Stokoe 2012). On the other hand, she reinforces the polite intent of the request, which is formulated in a very transparent and explicit way, as opposed to archetypical forms of dodging, which would take place without the driver’s consent or knowledge. In a very different outcome from Q2’s case, the sequence finalises with both members agreeing on Q3’s mode of entrance into the bus. It seems the driver agrees that Q3’s situation deserves an exemption to the turnstile’s rules. Moreover, he will open the rear doors for her, granting her passenger status by not forcing her to inhabit the liminal space between bus doors and turnstile. Quite differently from the ‘wicked evader’ (Ureta 2015) that the system produces, Q3 draws on several verbal, embodied, and material resources and manages, along with the driver, to perform a type of ‘good’ dodger that is seen as admissible as a passenger.

The scenes I have presented show how, in the face of several difficulties produced by a categorisation device like the turnstile, dodging is still done through an entanglement of embodied practices (staring, shrugging), materialities (doors closed, cards shown), and words (that establish alternative moralities, and assign relevancy to categories different from those contained in the turnstile’s script). Thus, people are able to establish membership categorisation devices of their own. This assemblage of agents mobilises shifting forms of categorisation in the interaction: from refusals ‘softened’ by temporal nuancing (“I can’t take you today”); to making dodging morally relative (the driver has “ill will”); to the shared agreement on exceptional situations in which dodging is treated as justified (“there’s no electricity”). Albeit not always successful in producing ‘acceptable’ forms of fare-evasion, they are nonetheless able to contest the fixed abstract categories that are usually utilised by planners, designers, and other representatives of the ‘expert sector’, like Louis De Grange. Crucially, the category ‘dodger’ – ever present among transport experts who appear in Chilean media – is never verbally invoked in the cases analysed. Other verbal forms take its place instead, either as euphemisms (‘giving a ride’) or alternative relevant categories altogether (‘older people’).

By presenting these data, I have examined fare-evasion as an interaction whose relevant categories are locally produced. This seeks to outline a complementary approach to the ones that aim at explaining fare-evasion by drawing on categories external to the situation. Membership Categorisation Analysis (MCA) and Conversation Analysis (CA) offer tools to describe the way in which participants establish and mobilise categories which, rather than underlie, *take part of* dodging. In Clifton’s (2009: 3) words:

“...categories do not reflect pre-discursive entities that are ‘out there somewhere’ and which members use to make sense of what is happening. Rather, what constitutes a category, and the predicates (i.e., expectable features, characteristics, behaviours, states of mind etc.) that accompany categories, are locally produced and are designed to ‘do’ social actions”.

Categories deemed as relevant may change from one situation to the next, but their emergence is produced in the interaction of passengers, drivers, and other actors made present through delegated actions on devices

(Latour 1992) like turnstiles and Bip cards. In this sense, it is worth noting that, despite the intention behind automatising the payment system in Transantiago aimed at freeing the bus driver from the responsibility of enforcing the process, everyday forms of social organisation still hold the driver as one highly relevant element. Reasoning with the driver, making requests, and even influencing what they feel is relevant for fare-evasion practices. The cases examined reflect how human and non-human actors in interaction are capable of generating collections of categories different from the ones the turnstile's script brings about. Rather than self-evident, stable resources, relevant categories in dodging widely vary from case to case, operating as dynamic resources for the interactional achievement that is boarding the bus and becoming a passenger (Housley & Fitzgerald 2002). A clear example of this is the members' capacity to relativise the moral judgement against dodging by configuring alternative morally-relevant categories. In this regard, Jayussi (1991, cited in Housley & Fitzgerald 2002) describes how the normativity or morality of a given situation is bounded to the set of categories made relevant by the members themselves. In other words, a dodging action's morality can be (or it even needs to be) locally produced.

The available resources for these interactional achievements are varied and emerge in the encounter of bodies, materialities and words. Nods, voice tones, silences, shrugs, cards, and beeping sounds come together and allow for the emergence of accusations, shaming, legitimate excuses, courtesy gestures, and so forth. Each of the different shapes dodging can take rise their own moral notions. The unfolding of the interaction can, for example, make the act of dodging more (or less) acceptable not only for the witnesses, but also for the dodgers themselves. Understanding this foregrounds the limitations underlying more deterministic approaches in, for example, Alto Evasión's advertising campaign, which aims at framing dodging as a homogeneous practice that is intrinsically bad or 'wicked'.

Finally, the turnstile as a categorisation device outlines the limitations of the script built around the payer/non-payer binary. Rather than operating as a judge that organises the mass of users into manageable, distinct flows drawing on pre-established fixed categories, the turnstile is but one part of an assemblage that deals with *locally-produced shifting categories*. Dodging as a social practice is enabled or restrained by these, and it does not merely submit to the designs and world-vision contained in a technical object that is, in the end, no more than a small part of a much larger and complex arrangement of entities.

Conclusion: The social work of becoming a passenger

Throughout this chapter I have focused on the issue of becoming a bus passenger by looking at how people interact with Transantiago's admittance system, composed of Bip cards, sensors, lights and, importantly, the butterfly turnstile. With this I attempted to outline the turnstile as much more than a self-evident, taken-for-granted technology. While similar to many other objects immersed in constant interaction with Transantiago passengers, the turnstile is also unique. Despite its brief existence as part of the system, it posed relevant questions about fare-evasion control, government intervention, and everyday life moral

organisation. From its launch in 2016 to the announcement that it would not be used anymore in 2018, it is possible to follow the rise and fall of a device whose biography left no one indifferent.

Despite having been presented as an effective solution to the incredibly high dodging rates besieging Transantiago, we have seen that the turnstile needed to find its way into the system as any other entity – human or nonhuman. Even as a policing device, its place as part of the system is not secured. By observing different instances of users interacting with it, we have been able to see the amount of local work required to give the turnstile a place as part of the Transantiago assemblage. And it is not necessarily the place the decision makers intended. This is a lesson to any other kind of governing device entering a complex and heterogeneously populated site such as this.

We have observed that the turnstile does not ‘work’ on its own. Rather, it is made to work together with several other resources that allow people to become passengers of the bus. Becoming a passenger, in this sense, is a social endeavour. Embodied and complex, it is a practice that is done with other humans and nonhumans. As they become passengers, people do not just deal with turnstiles and beeping sounds, but rather ‘work (with) them’. They become just one more element of the vast array of things that need to come together for a bus rider to emerge. In this sense, the turnstile’s capacities are enacted (Mol 2002) by the other components of the assemblage it is attempting to become part of. In its interactions with users, drivers, cards, doors, bags etc., the turnstile is enacted as something that might be more – or less – successful in fighting off fare-evasion, and governing the process of becoming a passenger.

The user-turnstile interactions analysed outline becoming a passenger as a highly complex social process. From this I would underline two main elements. First, the varied and shifting resources mobilised by members as they board the bus and become Transantiago passengers. These allow members to visually display their orientation throughout the process and coordinate their efforts with others. Second, the cases revised make visible the limitations of the turnstile design. Based on a binary script that assumes passengers will conform to very restrictive characteristics, the turnstile is routinely overflowed by different ways in which people attempt to become passengers as *togethers* or without paying their fare. Dodgers, in particular, find ways around the unyielding device and engage in diverse moral struggles that are locally dealt with, rather than governed by the turnstile in a standardised manner.

Myriad local resources

Faced by Transantiago’s admittance system, people boarding the bus become passengers by doing much more than just paying the fare and going through the turnstile. They draw upon a wealth of resources that help organise the process of becoming a passenger, which can take a wide variety of forms.

We have seen that these resources were *embodied*, *material*, and *verbal*. Firstly, body orientation and torque, glances, and gestures (beckoning, nudging) were used to organise the progression (or subversion) of the boarding process, while more elaborate embodied gestures were sometimes used to influence the emotional response of others (e.g. the driver). Secondly, the material qualities of the turnstile and the Bip card were

particularly important for people to become passengers. For example, rather than stopping being relevant once unlocked, the butterfly turnstile's mechanical sound was drawn upon to organise turn-taking when several people were part of the queue. Finally, verbal cues were also instrumental to organise negotiation, coordination, assistance, reprimand, and courtesy among members. Thus a verbal clarification ("go ahead") can be used to accompany an offer of assistance that could be misunderstood as jumping the queue.

In all of these cases, we may see that becoming a passenger is a socially-oriented practice. More than a swift and standardised transaction, it involves interacting with others at various levels. Embodied, material, and verbal resources are used to organise the members' attention to others' turns, reactions, and needs. Crucially, these interactions are underpinned by categories that are locally produced by the members of the interaction itself. So for example, categories produced in the queuing sequence were relevant to make the queue itself progress smoothly. Being 'next-in-line', for instance, carried the category-bound obligation of being ready to pay as soon as the turnstile produced the aural cue. Failing to do this carries a moral sanction for slowing down everyone, or can even make the person to be seen as not a member of the queue whatsoever.

Following Lee & Watson (1993: 55), "categorisation activities are, then, constituent features of the visibility arrangements which queues comprise; categories, too, can be visually displayed". Indeed, the cases analysed show how certain resources were relevant both in categorial and sequential terms. An example of this is having the Bip card ready in hand when boarding the bus; which operated both as a visible *display of membership* that projected the person's course of action (to pay the fare), while also made easier the queuing *sequence to progress quickly*.

The limitations of the turnstile's script

Following the turnstile and its interactions with Transantiago users has also allowed us to expand our understanding of dodging as an everyday struggle that is locally produced, as opposed to the delocalised categories the turnstile has been inscribed with. The fixed, binary-based categories delegated onto the object produce a stark contrast with the shifting, locally produced categories present in dodging practices. This shows how the conditions of failure or success of a technological intervention are always nuanced and subject to the agency of entities other than the technology itself. The turnstile comes to find a place in a tightly-knitted entanglement of embodied practices, habits, objects, and rhythms. Some of its aspects materialise according to the expectations of the decision-makers, but some other elements of its script are contested and do not take hold. By carefully untying this knot it is possible to see that a turnstile cannot be accessible and effective against dodging in and of itself:

"...we should resist the idea that there is anything obvious or 'natural', 'inherent' or 'given' about the capacities of the objects and technologies in question. We instead need to be alert to the processes whereby the capacities of these (and other) entities are contingently enacted" (Woolgar & Neyland 2013: 13-14).

These cases show that the categories inscribed in the turnstile are contested by local categories that allowed for alternative moral orders to emerge. By considering categories as produced through sequences, we are able to trace the production of alternative moralities that can make dodging ‘more acceptable’ in certain situations. Following Lee & Watson’s (1993) assertion that relevant categories are selected upon context, we have seen how people categorise themselves as members of groups (e.g. ‘older people’) in order to attempt dodging while navigating the shifting moral terrain of which the ‘shaming features’ of the technical system are a part of.

On a different level, we have seen how the turnstile’s design has been inscribed with the assumption of public transport users as individual entities. However, being a mother, or a couple, are categories that can permeate the process of becoming a passenger and therefore the members’ interaction with the device. We have observed how several resources can be used to *become passengers together*, or to facilitate the process for others. This depicts a kind of resistance to a limiting set of expectations inscribed in the turnstile – that people become members of the bus one by one, and in an isolated manner. In actuality, people boarding the bus seem to rely on the features of the queue and technical system to subvert, or compensate for, a rigid scripted order. Cards are shared, turns in the queue skipped, pets and bags lifted, and children nudged through.

The cases analysed indicate that the category of ‘passenger’ is not unilaterally assigned by the turnstile. On the contrary, the elements that allow people to become members of the bus far exceed the technical admittance system installed by Transantiago designers and decision makers. Embodied practices, local categories, and other materialities are as relevant as the turnstile, and in occasions even more. In this sense, it is particularly ironic that the implementation of the butterfly turnstile has not reduced the involvement of the bus driver in controlling fare-evasion. If anything, the drivers’ responsibilities have only grown, as they are one of the few agents capable of providing a way around the unyielding device.

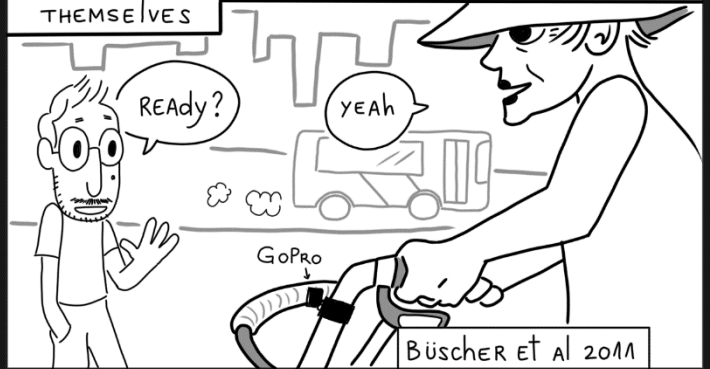
The cases explored in this chapter highlight the disjunctions between standardised and all-encompassing discourses about fare-evasion – sadly prevalent among transport planners and decision makers – and the actual practices of members in interaction among themselves and with the turnstile. While the criminalisation of dodging relies on the assumption that it is a homogeneous practice akin to stealing and that should be invariably shamed, its actual local organisation is underpinned by shifting moral categories that do not necessarily mirror those that the butterfly turnstile mobilises. The complex and nuanced character of the practices we have observed, in fact, indicate that this is seldom the case.

WHAT DO 'GO-ALONGS' OFFER

In the last decades, mobility scholars have pursued the study of the mobile by developing mobile methods



Authors like Monika Büscher have stressed the importance of researchers becoming mobilised themselves

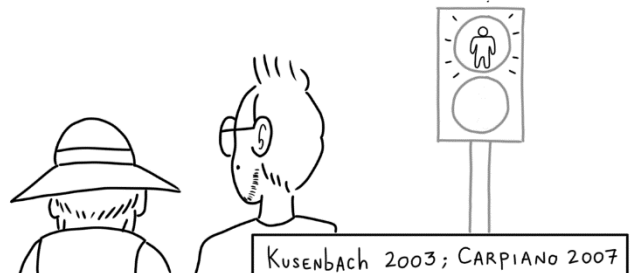


BÜSCHER ET AL 2011

In this sense, the research technique of the 'go-along' has become a sort of trademark of the field

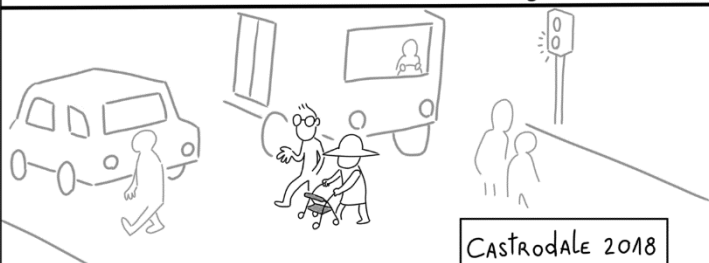


First described by Kusenbach, many others have kept using and reflecting upon it. Carpiano emphasises its capacity to build a more symmetrical researcher-participant relationship



KUSENBACH 2003; CARPIANO 2007

Castrodale stresses how go-alongs allow focusing on the person-place relationship. I think it also grants a means to explore our own encounter - two people drawn closer by means of doing something together



CASTRODALE 2018

This brings forward our differences, "as we attempt to live and move as others do"



LEE & INGOLD 2006:69

Especially when working with video, Pink has reflected on moving together as a way of producing a type of closeness. An empathy.



PINK 2007

Pursuing empathy in research is not without its criticisms. Some authors see empathy between researcher and participant as an 'easy assumption' that leads to complacency. Assuming empathy risks not acknowledging differences between us, glossing over structural forms of oppression.



LATHER 2008; WATSON 2009

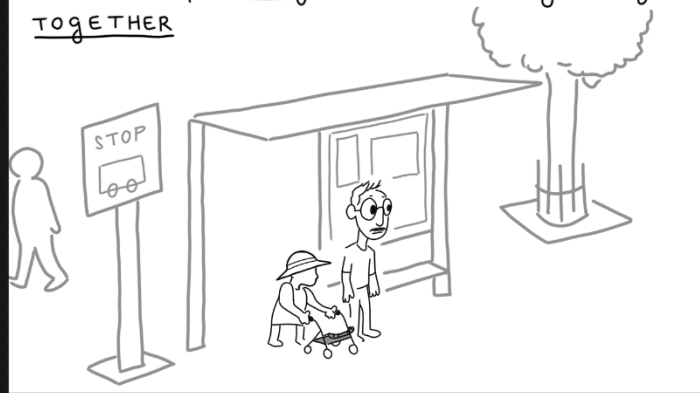
But of course, EMPATHY DOESN'T NEED TO BE AS A STATE OF THINGS. OTHER AUTHORS SEE IT AS A PRACTICE, SOMETHING WE STRIVE FOR RATHER THAN 'HAVE'.



IN OUR CASE, THIS WAS QUITE EVIDENT. WE WERE NOT IN A RELATIONSHIP IN WHICH OUR DIFFERENCES DISAPPEAR. IF ANYTHING, I BECAME MORE AWARE OF THEM.



My go-alongs with ANA WERE AN INSTANCE OF THIS, SLOWLY EMPATHISING BY MEANS OF DOING THINGS TOGETHER

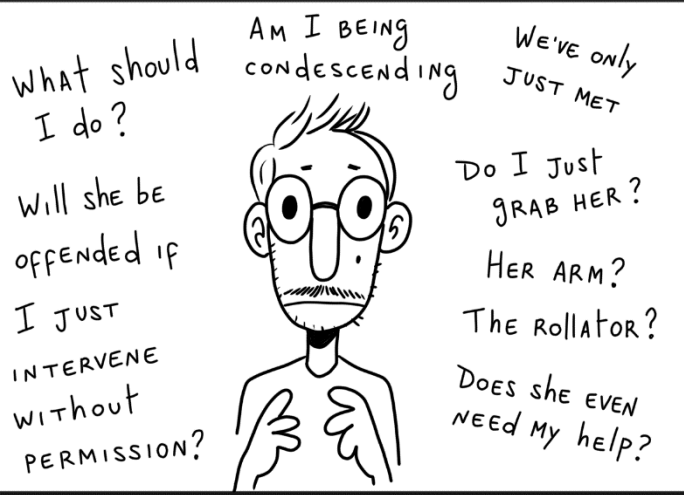
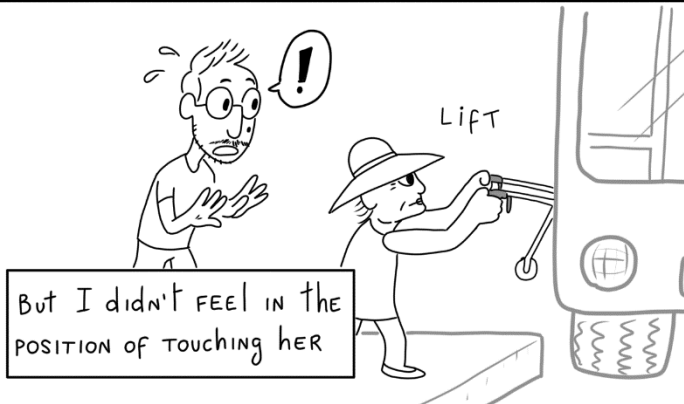


PRODUCING A SORT OF ATTUNEMENT THAT WAS NEVER QUITE COMPLETE, AND WAS FILLED WITH UNEXPECTED DIFFICULTIES

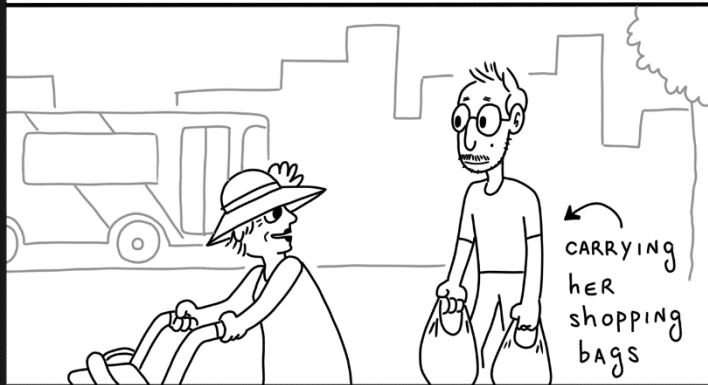


ESPECIALLY DURING OUR FIRST TRIPS TOGETHER, SHE WOULD SOMETIMES SEEM FRAIL TO ME, IN NEED OF ASSISTANCE

SHE DIDN'T GIVE ME ANY GUIDANCE ON THIS. WAS SHE USED TO DOING THESE THINGS ON HER OWN? OR WAS SHE ALSO HESITANT TO ASK FOR MY HELP?



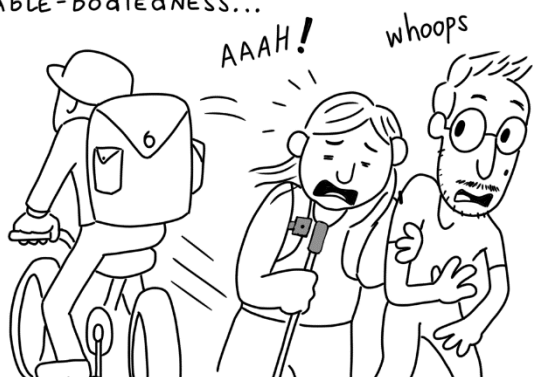
OVER TIME THINGS CHANGED. I FELT MORE CONFIDENT INTERVENING AS I GOT FAMILIAR WITH ANA'S NEEDS



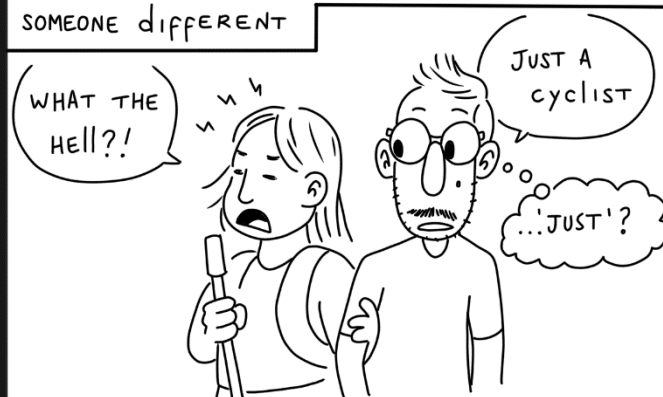
IN XIMENA'S CASE, IT WAS SHE WHO TAUGHT ME HOW TO LEAD HER BY THE ARM. IN THE WAY SHE PREFERENCES IT, AND ONCE SHE FELT COMFORTABLE WITH ME.



THIS PROGRESSIVE BUILDING OF EMBODIED TRUST CAUSED ME TO GROW MORE AWARE OF MY OWN ABLE-BODIEDNESS...



...OF THE THINGS THAT DON'T BOTHER ME, OR THAT I DON'T NOTICE UNTIL CLOSELY CONFRONTED WITH SOMEONE DIFFERENT



WE MAY GROW MORE BODILY ATTUNED, BUT OUR DIFFERENCES ARE STILL PATENT. NEGOTIATING THOSE DIFFERENCES WAS A BIG PART OF USING TRANSANTIAGO TOGETHER



I DON'T THINK EMPATHY HAS TO BE A NAIVE ASSUMPTION OF THE RESEARCHER. IT IS PURSUED WITH INVOLVEMENT ON EVERYONE'S PART



RATHER THAN AN ASPIRATION TO ERASE DIFFERENCE, EMPATHY CAN ARISE FROM A PRACTICE-BASED EXPLORATION OF OUR DISSIMILARITIES. THE GO-ALONG TRIPS THAT WE SHARED LENT THEMSELVES AS A SPACE FOR PROGRESSIVELY LEARNING EACH OTHER'S HABITS AND CAPABILITIES, AND FOR SLOWLY BUILDING UP A MORE RICH EMBODIED TRUST



EMPIRICAL CHAPTER 4: AN UNCOMFORTABLE TURNSTILE¹⁷

When Minister of Transport Gloria Hutt announced that no further butterfly turnstiles would be installed in Transantiago buses although those that already existed would remain in the vehicles. The TV news outlet '24 Horas' covered this under the title 'Una molestia menos para el transporte' [one less nuisance for transport], and circulated several snippets of interviews of public transport users giving their opinion on the decision of the minister. Among one of them, there was a woman sitting in the bus, holding a crutch, commenting on her experience of going through the turnstile. "So uncomfortable. Especially for us. The boobs get all squished in there". She smiles, and both the reporter and the person sitting next to her chuckle. Perhaps realising that her perspective is not being taken seriously, her expression changes. She opens her eyes wide, raises her eyebrows, and puts on a more serious face. Looking at the reporter she adds "It's true. It's true".

The daily experience of using public transport can be a physically demanding one. Authors like Bissell (2010a; 2014; 2018), Wilson (2011), and Jensen (2012) have explored the affective intensities that animate, constrain, shake, stress, or lull the commuters when they engage with the transit system. For public transport users, their body is a resource for engaging with the system, but it is also the focal point in which many events converge and are impressed upon. As we exert our bodies when catching the train, holding handles to keep our balance, and enduring long bus rides while standing, we also expose ourselves to exhaustion, anxiety, and discomfort.

Although usually seen as just one more of the many incidental costs of using public transport, bodily discomfort is still a crucial aspect of this everyday life experience. Be it jokingly thematised as unglamorous and inconvenient (Fortunati 2018), or presented in a romanticised fashion¹⁸, discomfort remains one of public transport's most commonplace features. Contributions from the social sciences that focus on the

¹⁷ Part of this chapter has been published in Muñoz (2020).

¹⁸ See Rao (2015) for an interesting read of Kiran Nagarkar's *Ravan & Eddie* in this regard.

issue of bodily discomfort in mobile settings are still few (see Bissell 2008 for a notable exception). Transportation studies have given more attention to this subject, usually quantitatively measuring discomfort in terms of crowding (Tirachini et al 2017; de Palma et al 2015).

In this chapter, I describe the ways in which discomfort emerges and is managed by Transantiago users as they bodily engage with the constraining governance technology that is the butterfly turnstile. By design, the turnstile operates as a sorting device that separates flows of people. For a non-paying passenger, the device is supposed to remain a barrier. Conversely, a paying passenger is to be treated as admissible by the turnstile. Meeting this requirement, however, does not necessarily make the device cooperate with the passenger. Narrow and heavy, the turnstile's design has ended up becoming a barrier that is a problem for more than fare-dodgers. Wheelchair users, older people, fat people, children, pregnant women, and many other bodily configurations find the turnstile to be an uncomfortable experience, if not a barrier impossible to overcome (González 2017). This uneven, arbitrary form of exclusion is the focus of this chapter.

My argument will focus on the position (dis)comfort occupies within transport policy and how it relates to broader issues of social injustice. I will contend that, albeit usually dismissed as a less relevant feature of experience – a 'less intense' form of affect, as Bissell (2008) has described it – feelings of discomfort and awkwardness are an embodied consequence of exclusion and ableist assumptions in transport policy. Being made to feel 'out of place' (Cresswell 1996) manifests here in the concrete form of some users experiencing discomfort when interacting with a governing device, while others do not. Unpacking this process reveals the importance of understanding public transport systems as having an impact on our everyday embodied experiences. While the previous chapter discussed becoming a passenger as a category-oriented sequential activity, in this chapter I will explore the felt dimension of such process – and the political elements at stake in the sensation of bodily discomfort. By revealing issues of exclusion and ableism inscribed in a device whose aim is to enforce fare-payment, I will return to an earlier discussion on accessibility as an imperative for public transport, and how it is treated as a secondary priority in the phase of policing dodging behaviour in Transantiago. Legitimate passengers who have a right to access the system are nevertheless subjected to a different, more uncomfortable experience than others, left to struggle their way through, and exposed to feelings of being treated differently in favour of preventing fare-evasion.

The cases I will present serve as a way of exploring the effects the turnstile has in the production of inequality, as it marks certain bodily configurations as more difficult to accommodate than others. By describing the resources and capacities put in motion by the users in order to ‘fit through’ or circumvent the turnstile, I intend to highlight discomfort as an embodied experience that is insensitively managed by transport policy. I will argue that this can carry particularly serious consequences when paired with mundane, seemingly innocuous governing technologies. In the Transantiago case, passengers encounter a materiality that imposes specific notions of normality upon their bodies, like the shape and size a ‘standard passenger’ is expected to have, thus creating an unjust distribution of bodily privilege (Criado Pérez 2019; McRuer 2006). Discomfort, in this case, denotes a geography of inadequacy by marking certain public transport users as problematic. A problem, as we will see, that is up to the passengers themselves to solve.

With the purpose of normalising (Ureta 2012; 2014a; 2015) the behaviour of members of the Transantiago system, the implementation of the butterfly turnstile has the effect of producing instances of discomfort among people who, for diverse reasons, do not conform to expectations of ‘normal bodies’ upon which the device was designed. Thus, the impact of the butterfly turnstile, understood as a sorting device, becomes relevant not only in terms of fare-payment but also as an artefact visibly producing what Hacking (2007) calls “kinds of people”. The author emphasises the potentially harmful effects of such dynamics, as categories imposed upon people inevitably *affect* how they experience themselves and interact with others – sometimes in undesired, exclusionary ways. Sibley (1995) unfolds a similar argument with a geographical emphasis. As certain groups are configured as ‘in place’ or ‘out of place’, their *self* is experienced as having positive or negative qualities. The imposition of such categories, in the butterfly turnstile case, are not nominally assigned, but bodily experienced. By describing key aspects of the material encounter between people and the turnstile, my intention is to outline a case of subtle reproduction of injustice, one that is enabled by the prevalence of ableist thinking and generalised assumptions of what should be prioritised in the governance of a public transport system.

According to a survey commissioned by the Directorate of Metropolitan Public Transport (DTPM) in 2017, the turnstile was frequently mentioned by respondents as a ‘negative aspect’ of the public transport service, particularly because of how uncomfortable it was to use (Brújula 2017). The majority of the respondents (90.7%) agreed that the turnstile ‘is uncomfortable’, and people agreed almost unanimously with the

contention that ‘it was not made for every type of person’ (98.1%). However, this seemingly had no correspondence with the respondents’ agreement with the turnstile as a governing measure; 50.1% were in favour of the butterfly turnstile, 45.2% were not. Interestingly, while the most commonly mentioned reason for accepting the device’s presence was ‘to make people pay’, the main reason for being against it was ‘it is cumbersome/uncomfortable to use’. Among the people who were against the turnstile, almost 60% were either women or over 65 years old, which might indicate that certain bodily configurations feel the negative impact of the turnstile more than others. Other spontaneously mentioned features of the device made reference to the actual experience of using it: ‘it is difficult for older people’, ‘it is difficult for children’, ‘it is difficult if you carry bags’, ‘it is difficult for persons with reduced mobility’.

Indeed, as reported by the same study, a wide variety of bodily configurations encounter difficulties when using the turnstile. Some of them, like wheelchair users, people with buggies, and sometimes fat people are incapable of going through and need to ask the driver to open the bus rear doors for them. Others, as we will see, mobilise different bodily resources to contort and adapt to the material constraints posed by the turnstile. Both types of instance make worth exploring the embodied, affective dimension of the uncomfortable encounters with this technology.

This chapter analyses the affective dimension of uncomfortable encounters with a turnstile by examining how passengers deal with the situation in practice. With this I aim at reflecting on bodily discomfort as a concern neglected by transport policy, particularly addressing the nuanced affective implications discomfort can bring forth when considering bodily diversity. Tolia-Kelly (2006) recognises the importance of exploring the affective intensities of everyday life while avoiding universalist understandings of bodies in space. The markedness that certain bodily configurations are subjected to “magnetize various capacities for being affected” (Tolia-Kelly 2006: 215), and such variedness can entail inequality. Different experiences of (dis)comfort can, at times, be at odds with one another, like the statistics I have presented hint at. It is necessary not to lose sight of these inequalities, which may remain hidden under seemingly inconsequential, uncomfortable passing encounters.

In the following section I reflect on discomfort as the result of experiencing a disjunction with the material environment. I will argue that such disjunctions can arise from certain assumptions about normality and

how these are inscribed in the design of technologies. I then analyse four cases of people encountering the butterfly turnstile, allowing me to explore how uncomfortable practices of ‘fitting’ into the turnstile’s set of expectations connect to issues of injustice. The chapter concludes by reflecting on the place (dis)comfort currently has within urban transport policy, and on how mundane devices can mobilise exclusionary ideas of what ‘normal’ passengers look like.

Being a misfit

As embodied beings, public transport passengers frequently engage in physically demanding tasks. Bissell (2010b: 479) emphasises the physical experiences “the body-in-transit has to endure in order to move” (see also Bissell 2014), as it is from them that multiple affects that enable or constrain bodily capacities emerge. Bissell (2008) presents (dis)comfort as one of these affectual intensities, one that is always corporally felt.

Such feelings – be they passing/fleeting moments or more permanent in time – resonate through embodied beings and affect what they can and cannot do. In this sense, affects are understood as forces or intensities that describe the *change* of our bodies’ capacity to act (Pile 2010) as they traverse from one experiential state to another. In that regard Deleuze has pointed out that a body “affects other bodies, or it is affected by other bodies; it is this capacity for affecting and being affected that also *defines a body individually*” (Deleuze 1988: 127, emphasis added). We may then wonder about the eventual consequences of everyday uncomfortable encounters upon specific, marked bodily configurations. If a body is defined by its capacity to affect and be affected, then the experiences emerging from uncomfortable encounters with barrier-like objects such as these are a crucial part of the process that defines the body’s limits and limitations. How it is felt – heavy, weak, cumbersome, unskilled – and the perceived place it has within a certain part of the world – unwelcome, unaccounted for, ill-fitting.

My contention is that, in the butterfly turnstile case, the affective dimension of an uncomfortable encounter marks the user’s bodies as unwelcome and outside of the norm. The disability studies field has made relevant contributions in this regard, describing how disabled bodies are felt as marked, particularly, as “the people concerned ‘notice’ their impaired bodies when seeking to go about their daily business” (Hansen & Philo 2007: 497). A similar idea has been developed by Evans (2006) on discussing normality making dynamics

that affect fat bodies enacted through policy instruments, legal devices, and scientific practices. In the same vein Colls & Evans (2014) have emphasised the importance of noticing particular features of the environment that enact life, as a fat body, a problematic one. These works of research have contributed to understanding how fat bodies are produced as pathological through specific forms of measurement, as well as by environments that design fat bodies out. Colls (2012) explores this further by focusing on a ‘size accepting’ nightlife space, which aside from enforcing a fat-friendly environment on a behavioural level, it is also materially designed to be physically unproblematic for fat bodies. Colls underscores the importance of physical comfort in order to constitute a space that is accepting of bodily diversity. Research focusing on transport is relatively scarce. A notable exception is Bias’ work, (2016; 2012), which presents a compelling description of the trouble fat people go through in planes and in buses.

Described as uncomfortable by a wide majority of the public, it is necessary to explore these experiences as arising from disjunctions between surrounding materialities and certain bodily configurations, what Garland-Thomson (2011) calls *misfits*. Relying on this concept, she provides a more grounded way of understanding exclusion. One that does not come from the person’s inherent characteristics, but from an incongruent encounter between people (as embodied beings) and world (populated by specific materialities). In her words, “[f]itting and misfitting denote an encounter in which two things come together in either harmony or disjunction” (Garland-Thomson 2011: 592). This way of engaging with the problem of exclusion and lack of access among disabled people, as the author herself asserts, emphasises materialities and their role in the production of injustice. The embodied experience of exclusion arising from the mismatch between certain bodily configurations, specific materialities, and “the awkward attempt to fit them together” (Garland-Thomson 2011: 592-593) is at the centre of the butterfly turnstile case.

Rather than supposing a binary state of fitting/not fitting, misfitting invites to reflect on the problem of those who fit – at a cost. The effort, adaptations, and compromises passengers make in order to fit in the turnstile have bodily and social repercussions.

Garland-Thomson also underscores that the misfit (as a person, situation, or experience) is seen as negative or undesirable; generally treated an inappropriate configuration, the result of a problem, or a problem itself. ‘Fitting’, on the other hand, is seen as generally positive, as a spatial experience in “absence of conflict”

(Garland Thomson 2011: 593). However, a different way of putting it would be to see the misfit as occasioned by a problem of expectations and, hence, of what is conceived of as normal. The misfit is then juxtaposed to another of Garland-Thomson's (1997) terms, the *normate*, which refers to privileged bodily configurations resembling an ideal standard. Treated as universal and neutral, "the normate template privileges a small group of individuals in mainstream design, giving these individuals the appearance of normalcy or universality due to their fit in the environment" (Hamraie 2012: 4). A number of different authors have also identified and criticised the prevalence of the 'unmarked category' treated as the default normal in everyday life, and the geographies of exclusion this gives way to (Criado Pérez 2019; Glassner 1992; Hughes 2009; Longhurst 1997; McRuer 2006; Rose 1993).

We might then wonder about how everyday technologies like the turnstile wield the capacity of distributing normalcy by treating some passenger's bodies without problem and giving trouble to others. In the specific case of the turnstile this distribution is made visually available to others, producing a mark that is now public.

Hamraie (2012: 4) reminds us that "[n]ormates are unremarkable and perhaps even impossible figures, yet their intended presence permeates the world". Indeed, very specific normate bodily configurations have been a template for the traditions of architecture and industrial design (Hosey 2001). Designers – particularly those in charge of governing bodies through materialities, like the butterfly turnstile – pursue the enforcement of the normal while sometimes ignoring the fact that *no one is truly normal*. In this sense, 'fitting' is never a complete given – we all have to efforts to 'fit' somewhere. The questions is about the practices we set in motion in order to accomplish this, and of how receptive certain materialities are to our efforts. Yet, the templates with which devices are created sometimes make the task of fitting unjustly uneven.

Woolgar (1991) presents interesting insights on how technologies and users are shaped together. He builds upon the concept of user configuration, which refers to the practice of the user's capacities being structured in the development process of a technology. In designing an object, the user of that object is being designed as well. This is an idea that Akrich (1992) explores further in her concept of *script*. As Akrich points out, "[a] large part of the work of innovators is that of '*inscribing*' this vision of (or prediction about) the world in the technical content of the new object" (1992: 207-208). Thus, there is a specific version of the world inscribed in the technological object. Historically, they have also assumed certain bodily configurations and ways of

being in space, which have the power of reinforcing notions of what 'being normal' is, by interacting with specific types of body with more ease than others. In this regard, Imrie's work (1996, 2000a, 2000b) has presented several examples of exclusionary design in urban environments, from doors that require a certain amount of strength to be opened, to signage with small fonts and low contrast that not everyone can easily read, to standardised kitchen appliances of modernistic design that require users of certain heights and capacities to function as intended.

As a technology's script defines 'normal' users and expected behaviours, it also becomes vulnerable to the unexpected. Ureta (2015) calls these instances 'strange things'; encounters and events that are disruptive to the technology's intended ordering function. While these disruptions can impact the functioning of a technical system like Transantiago, we may wonder whether these encounters also risk affecting people by marking them as inadequate, a framing all the more violent in the turnstile case because it would be experienced through the body itself.

As notions of normality and the expected are inscribed in technical systems, it is necessary to reflect on the role mundane technologies have in this process, even though they are usually regarded as inconsequential and taken-for-granted (Woolgar & Neyland 2013). Expectations of capabilities, behaviours, and bodily configurations are inscribed in common technological objects, and thus the power they exert in everyday life should be carefully analysed. In looking at devices like showers, freezers, and air-conditioning systems, Shove (2003) has observed these devices are crucial in the formulation and enforcing of specific conventions of normality and comfort. Mundane technologies have the power of setting normality through standards that affect people in everyday life (Hacking 2007), but are also vulnerable to failure due to relying on abstract idealisations of their users. In describing the problematic aspects of implementing biometric data as a form of governance, Woolgar & Neyland claim that "[v]isions of prospective governance, in other words, configure a specific imagined user, which, in these stories, is brought into *stark contrast* with actual users" (Woolgar & Neyland 2013: 12, emphasis added). However, while the authors highlight the problems these contrasts or disjunctions bring to the functioning of systems, little has been said about how such disjunctions affect the people experiencing them.

Encountering discomfort

The following cases show, in more concrete terms, how a mundane technology poses an exclusionary barrier to certain Transantiago users in their everyday life, and the embodied adaptations people unfold in order to *fit* the expectations inscribed in the device. The discomfort occasioned by the mismatch, I would argue, is the bodily experienced manifestation of exclusionary standards of normality. The cases illustrate four different aspects of the encounter between users and the butterfly turnstile, as well as the place that discomfort takes in them. The first case explores the encounter as an opposition of forces; a user who musters different sources of strength against an unyielding, heavy object. The second case underscores the troublesome dimension of not-quite-fitting within the scripted expectations of the turnstile, as well as some of the ways in which this is solved by the users. The third case reflects on the involvement of other parties (i.e. Transantiago staff) in producing alternatives to deal with the turnstile, which then becomes a practical problem for them as much as for the misfitting users. The final case describes political reactions to such events, reflecting upon how the taken-for-granted character of the turnstile can be unpacked and reframed as a matter of injustice.

Pushing through

Some of the survey responses examined earlier (Brújula 2017) already hinted at the heaviness of the turnstile as an object. An older person interviewed describes her experience with the butterfly turnstile: “It’s very narrow and besides, you need strength because, like, you need to have strength to push it. It’s difficult, at least for me” (Brújula 2017). Even though we cannot *feel* it by looking at the images¹⁹, its hard and heavy materiality



Figure 7.1 A passenger in the making.

¹⁹ Unless you have experienced the task of going through the turnstile first hand, in which case the images might trigger haptic memories of encumbrance and discomfort, as it happens to me.

can be seen in the strained and serious expressions of those traversing it. Even unlocked, the resistance that the turnstile poses to the passenger is reflected in the slowness of those going through it; the multiple sources of pulling strength the passengers need to muster as they do it; and, particularly, the loud ratchet-like sound the object makes while it is turning. The creaking sound marks the tempo of each passenger's own personal struggle. Finally, with a last push, the device is defeated. *Clunk*.

Transcript 4.1 shows the process of an older woman pushing through the turnstile. After having paid with her card (still in her hand), she shrinks her body and takes position inside the box-like space produced by two of the turnstile's blades. Showing some hesitation while finding a suitable position to initiate the push, she presses her right elbow against the metal device (panel 2). Her strength does not seem to be enough;



Transcript 4.1

the turnstile barely responds to her push. Her expression turns into a grimace while her left hand reaches out (panel 3). Her left hand is now part of the process, adding pulling force to the pushing being done with the rest of her body. The turnstile starts to give, producing a ratchet sound (panel 4). But she is still not through. The push needs not only to be strong enough, but actually increase in force when she moves forward. Her left arm flexes while her strained expression intensifies (panel 5). Now that the sequence is almost done, one last push requires repositioning her right arm. It is now lowered and held to her right, moving the turnstile blade aside while her torso expands with one last effort (panel 6).

Having this sequence broken down in smaller, specific moments allows us to appreciate, in detail, how bodily effort is produced here. Arms are repositioned, elbows push, and hands grab and pull. Various sources of pushing and pulling strength are needed, and the woman's facial expression shows that this physical task is strenuous for her. Using her elbows as a way of pushing through suggest that other parts of her body (e.g. her chest) may be experienced as vulnerable to pain. The repositioning of hands expresses a need to look for additional handholds throughout the process, which indicates that the body's capacity to push through is experienced as insufficient at several moments.

In practical terms this takes the form of varied subtle adaptations in order to 'squeeze through' the device, but we might also wonder how the body traversing the turnstile is affected by its encounter with it; its surface *being felt* while it folds around and pushes against the object. In contrast to Bissell's (2010b) take on vibration as a generative force that blurs the division between human and nonhuman materialities, the affective intensity of the encounter between passenger and turnstile seems to travel in a different direction. According to Bissell (2010b: 482), "Vibration complicates the very idea that objects have a surface", yet the passenger-turnstile encounter reasserts the feeling of different surfaces by means of having entities opposing one another.

The encounter is about conflicting entities opposing one another and producing resistance. The cumulative (although sometimes insufficient) force produced by the human who wants to become a passenger (particularly because they have already paid for it), and the stubborn stillness of a metal device which is experienced as hard, heavy, and difficult to move, can be seen as antagonistic. This case illustrates how, despite the turnstile having been designed to become an openable gate for a paying passenger, its nature is

closer to that of being a *double barrier*. Even after having been unlocked by fare payment, the turnstile remains an obstacle that refuses to acknowledge the bus-rider-in-the-making, who still needs to ‘earn’ their passenger status by means of bodily effort. The amount of effort required, however, varies depending on the person and their bodily capabilities. This form of struggle is not registered by the system, which operates based on the binary locked/unlocked.

Oddly-shaped ‘units’

In pragmatic terms, turnstiles could be described as ‘one-unit-at-a-time’ technologies, a concept that Weilenmann et al (2014) use to explain the functioning of revolving doors. Both designs are oriented toward managing the influx of people into a certain space by forcing them to go through ‘one unit at a time’. This brings the question as to what exactly the ‘unit’ is defined by, in each case. In the revolving doors case, the definition of ‘unit’ is given by the fit into the door quarter (the quarters allow for an influx of people into a building, without ever having a door left open). In the case of the turnstile, the action of chopping up groups of people into discrete units is given by the need of tying together their bodily ontologies and their passenger status. One payment, one body, one passenger.

The maxim that guides this functioning might seem reasonable, especially for a system affected by high fare-evasion rates such as Transantiago, yet this carries several problematic elements with it. For example, units are equated to single entities even though people can find it sometimes difficult to separate from each other. Such is the case of parents or caretakers with young children or babies, an example of which we have analysed in a previous chapter. Even though younger users of the system are not required to pay, they have no means of going through the turnstile on their own. They usually need to be carried by an adult or find an alternative way around the turnstile.

The problematic nature of the ‘unit’ inscribed in the turnstile technology, as argued earlier, is that it manifests as a standard, setting bodily criteria that are not easy to meet by all. The turnstile has been designed with the assumption of such standard at its very core, leaving the device with an extremely limited capacity to adaptively respond to a variety of bodily configurations. The plastic capacities that make a turnstile-passenger encounter feasible are, in the most part, provided by the human participants themselves. They display a great ability to reshape and rearrange in order to resemble the ‘standard unit’ inscribed in the

turnstile, although that does not mean it is an easy or comfortable experience. This discomfort is portrayed by a student's description of dealing with the multiple objects she travels with: "I go with my uniform, my case with studying tools, my handbag, my rucksack and it's an ordeal to go through [the turnstile]. Like, I have to do the impossible to go through" (Brújula 2017). The following sequence shows how, while managing objects is a practice regularly done in mobile settings, very specific adaptations become necessary when encountering the turnstile.

In Transcript 4.2 we see a user approaching the turnstile after having paid the fare. She has started to push the turnstile's blade with her left hand and torso. Behind her, another passenger has entered the bus and stays close to the sensor, waiting for his turn to pay (panel 1). The bus driver closes the doors and starts moving. The male passenger has taken position even closer to the sensor and looks at it, making evident that he is waiting for our protagonist to go through. Her progression however, suddenly stops. She turns slowly and in a jerky manner, appearing to be uncomfortably stuck. While maintaining the force that has



Transcript 4.2

taken her to that point against the turnstile's resistance, she needs to partially turn her torso and neck in order to identify the problem (panel 2). Her left hand extends back and grabs her bag, which had got caught in a different slot of the turnstile. She grabs it while also lifting her right shoulder, which the bag is attached to by a strap (panel 3). The raised right arm extends and grabs a handrail, which becomes a support to push and finish going through the turnstile. Only after the device comes back to neutral position the male user taps his card (panel 4).

Our protagonist's interrupted progression raises out of a bodily configuration that does not quite fit the standard 'expected body' inscribed in the turnstile. As Hosey (2001) asserts, mainstream standards in modern architecture and industrial design assume people as *single* bodies. They are not usually conceived of as composite beings, with companion humans, nonhumans, or things moving with them.

The case also shows how the compensating adaptations required of the user in order to continue the sequence visibly mark her as a slower passenger, meaning others have to wait for her. As described in the previous chapter, becoming an obstacle for smooth progression as part of a queue is treated as morally accountable, and thus is experienced as uncomfortable in itself. An older person describes her experience with the turnstile: "I pushed it with my shoulder and everyone was like 'hurry up!', and I couldn't go through. You know, I was ashamed, because I couldn't go through. It was too heavy" (Brújula 2017). Her words resonate with Hansen & Philo's (2007: 498) observations on the case of disabled people, who "are often treated as though their way of doing things is disruptive to the 'normal' speed, flow or circulation of people, commodities and capital because they 'waste' more time and space than they should...". Albeit much more prevalent in the case of disabled people, similar feelings of inadequacy can be triggered in the cases of other 'irregular' corporealities that do not perfectly fit the standard expected 'unit'.

As Garland-Thomson's (2011) notes: "When we fit harmoniously and properly into the world, we forget the truth of contingency because the world sustains us" (597). So, as certain encounters of embodied beings and surrounding materialities produce no friction or trouble, these are seen as taken for granted and the baseline of what constitutes 'the normal'. Garland-Thomson explains that experiencing no trouble in encountering the material environment produces a form of material anonymity; the unacknowledged privilege of going unnoticed by others in public life. Conversely, 'misfitting' marks us and makes us more

visible to others, playing against our efforts of “doing being ordinary” (Sacks 1995). There is an additional amount of work that participants have to do in order to retain or protect part of their material anonymity in the face of devices that mark them as ‘out of the norm’. Furthermore, that additional work is also oriented to minimising the impact their misfitting have in the practices of others (e.g. slowing down the queue), which expose certain people to the constant risk of visibly becoming problematic to the rest of the public.

Handling personal belongings in order to fit through, and take as little time as possible with the turnstile, can be seen as ways of minimising loss of anonymity. After getting stuck, the passenger in Transcript 4.2 deploys a rapid reaction that shows a proficiency in handling her companion object – a handbag – a capacity required of the passenger to traverse the threshold produced by the turnstile. In Bissell’s (2009: 190) terms, “...encumbrance might, to an extent, be managed or even alleviated by the development of knowledges for moving with prosthetic objects. These spaces are negotiated through practical tactics that can be developed, through repeated journeys, to form strategies for moving with mobile prosthetics”. We have seen examples of proficiency in managing prosthetic objects in a previous chapter. Detaching objects temporarily or minimising body size in order to squeeze through might be sufficient to grant the user passage through the turnstile, but it is the user, almost always, who compensates for the material and functional rigidity inscribed in the turnstile. The device does not respond in an unproblematic manner to all bodily (and body-object) configurations, which in turn reasserts the feeling that the turnstile was designed for ‘someone else’.

The mismatch occasioned by the encounter with the turnstile can be so extreme that the consequent loss of anonymity triggers reactions from others. This can be appreciated in a scene I witnessed while conducting the video recording of turnstile-passenger interactions:

*I saw an older woman board the bus. Small and thin, she stepped into the vehicle lifting her shopping buggy with one hand. I could see her other hand had her Bip card at the ready. Once inside, she looked around, apparently confused. She asked the driver “How do I pay?”. It took me a moment to realise she was referring to the card sensor covered in a black bag, which she interpreted as being out of order. The driver could not hear her clearly or did not understand the question, so she repeated it. “How do I pay?” she asked again, this time in a louder voice and showing her Bip card by rising her hand. *Beep!**

Her hand got close enough to the seemingly malfunctioning sensor, and the green light on top turned on. Neither the driver nor the lady seemed to notice that the card registered. The driver indicated the other sensor to the passenger, and she approached it to pay. "I think the lady already paid" I said, not sure who I was addressing. The bus started moving. The passenger's footing was insecure, it took her a couple of seconds to approach the other sensor. When she was about to tap her card (again), a man ran from the other side of the turnstile and interrupted her. The bus stopped again. The man who ran to the lady, reached over the turnstile and grabbed the shopping buggy. She let him lift the buggy over the turnstile to the other side, while preparing her card to pay the fare. The man quickly grabbed her hand, stopping her. "It [the card] already paid, just go through. It already paid". "Okay", she said, without questioning him further. He put her hand on the turnstile, and she started pushing. He helped her with the turnstile by grabbing one of its blades and slowly turning it as she progressed through. The other passengers observed this in silence. They then walked together down the bus aisle and she sat with her buggy. The driver started the bus again and continued the route (Field notes, 17th January, 2018).



Figure 7.2 The passenger taps her Bip card by accident.

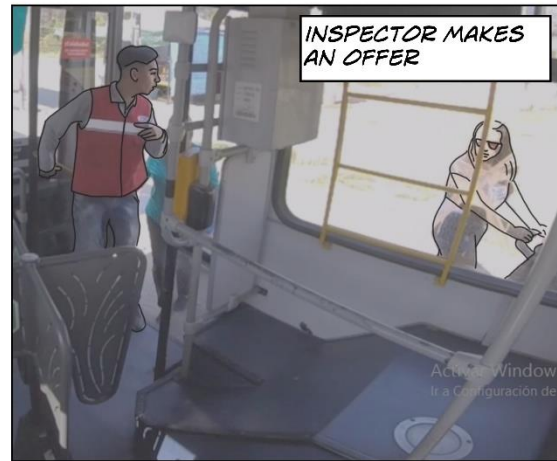
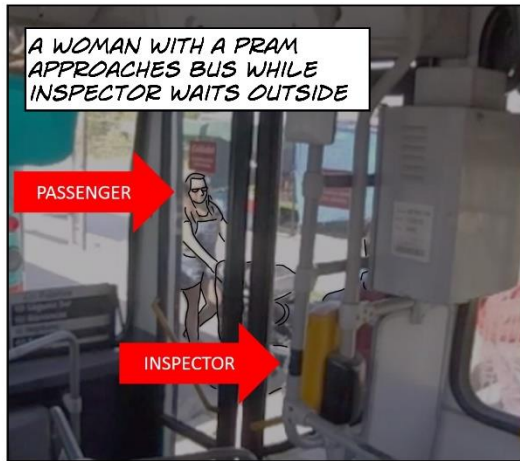
I had seen several cases of people experiencing difficulties with the butterfly turnstile that day. The older woman's case, however, was particularly interesting to me because she received aid from another passenger without requesting it. It seemed that her payment mix-up required some assistance, but another relevant trigger seemed to be the shopping buggy. In my eyes – and, apparently, to the man who intervened – there was no way she could

have taken the buggy through on her own. As noted by Garland-Thomson (2011), instances of misfitting trigger awareness and solidarity from others, and we see here that the man who intervened, took it upon himself to ‘ease’ her way through the turnstile. He explained that she did not need to pay again and, importantly, assisted her with the physical tasks of lifting the buggy over, while also helping with pushing the turnstile. He identified these as the things she would not be able to do on her own, and completed them for the woman. While his intervention was crucial for her to deal with the turnstile, this also had the bus stop for a long while and had everyone’s attention throughout. While at first the woman boarded the bus as ‘any other user’, more and more participants focused her attention on her. I noticed the problem with the card sensor, the bus driver stopped, the man ran to her, the rest of the passengers observed. Her anonymity faded away as she became marked by the awkward process of admitting her into the bus. She seemed to have no control over this – the man’s intervention took control of the process and left her with little choice but to follow his lead. The following section further explores the issue of others being affected by the problem of exclusion produced by the turnstile, and the types of reaction this may trigger.

A way around the turnstile

As we have seen, involvement of third parties in the passenger-turnstile encounter seems at times to be essential in order to make the boarding process feasible. Such passing forms of care can range from holding someone else’s belongings, to help pushing the turnstile for weaker persons, to taking care of their children as they go through.

Transcript 4.3 shows an example of this kind of practice. The first panel shows a woman pushing a pram and approaching the bus. Wearing a red jacket, a Transantiago inspector stands by the bus doors which are about to open. The woman seems to realise the bus has a turnstile, and continues walking (possibly going for the rear doors of the vehicle). The inspector, standing at the entrance of the bus, turns and says something to her (panel 2). His words are unintelligible, but it is possible to infer he has made an offer of assistance, as she responds by handing over her Bip card to him (panel 3). The inspector leans forward, taps the passenger’s card, and then walks to the rear doors, presumably to return the card (panels 4-5). The driver (not in the shot) looks through the rear mirror and just after he sees the inspector walking back to the front he closes the front doors.



Transcript 4.3

In this sequence the inspector, working in tandem with the bus driver, builds a situation where it is possible for the woman with the pram to become a passenger in a manner that resembles the formal procedure in some capacity. While the inspector comes up with an alternative way for the passenger to pay more comfortably, the driver cooperates by waiting with the doors open until the sequence has been completed. It is relevant to mention that the inspector's presence was an unplanned occurrence. They are rare in the

system, something that has, in fact, led to criticism of the authorities in charge of Transantiago (Emol 2016). These passing forms of care compensate for a system that does not account for everyone, but their occurrence is unpredictable and cannot be counted on. It is also worth noting how bus drivers and other Transantiago staff compensate for the turnstile in its interaction with the system's users. As established in the previous chapter, while the turnstile was installed, in part, with the goal of relieving the driver from the task of enforcing fare payment, in practice they remain involved in dealing with the consequences of the turnstile's material and functional rigidity.

The mother and the baby become passengers by circumventing the turnstile, which in this case is made easier thanks to the unexpected help received from other participants. This case exemplifies how the discomfort created by the unorthodox situation calls for means of amelioration produced by others, who recognise this as 'the right thing to do'. Forms of subversion like this one have been reflected upon by Latour (1992: 237), who has commented on the user's capacity to resist a technology's script, stating that "[n]othing in a given scene can prevent the inscribed reader or user from behaving differently from what was expected... The user of the traffic light may well cross on the red". It is nevertheless necessary to ask whether this is an expression of freedom, or resistance, when having to behave differently is required by not having been considered in the design process whatsoever. The sequence illustrates how being able to pay the fare does not necessarily grant access into the bus. Others may intervene to compensate for the shortcomings of the turnstile's exclusionary design. However, receiving assistance does not spare the affected participants from being marked as ill-fitting and "out of place" (Cresswell 1996; Kitchin 1998; Sibley 1995).

The acts of assistance by other people, as I have shown, function as a way of compensating for a rigid and binary-based device. These practices hint at the turnstile being perceived as an exclusionary technology – one that does not cater for everyone in the same manner. I will now explore in more detail the feelings of injustice mobilised by the misfitting of certain bodily configurations and the butterfly turnstile.

A shared discomfort

Since they were first installed in 2016, the presence of the butterfly turnstile continued to slowly expand throughout the bus network over the course of 2016 and 2017. More people became aware of them when

they started appearing in their own bus routes. In July of 2017 a Facebook user posted this photo (Figure 7.3), writing:

“In the buses arriving to PAC [Pedro Aguirre Cerda, a borough in Santiago] they’ve now installed this stupid turnstile thing in the small buses and it’s unbelievably cumbersome for the many older people who use them. They have a hard time going through, and since they sit at the front, they have to go all the way to the back in order to get off, which is dangerous because the drivers are not always watching. It’s not a positive thing, more like a nuisance”.

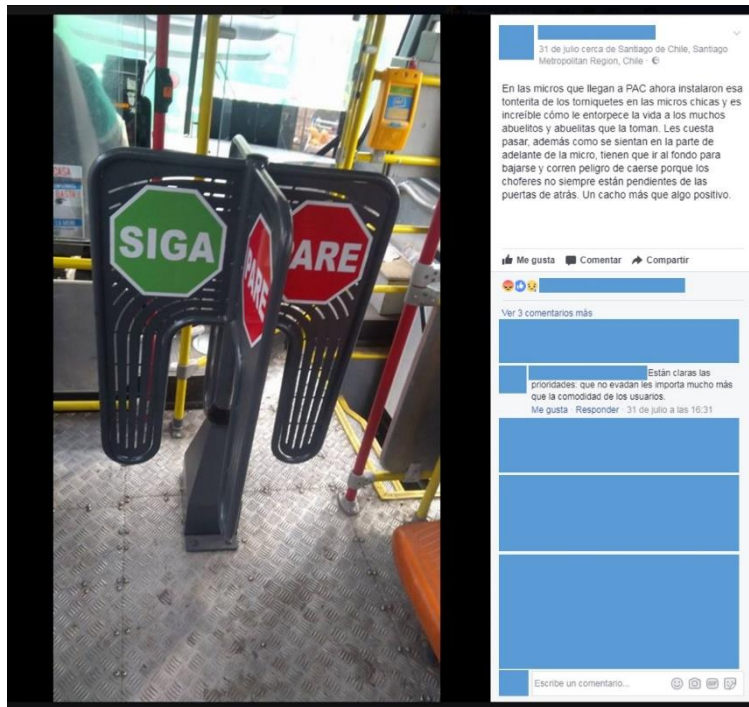


Figure 7.3 A Facebook post denouncing the exclusionary features of the butterfly turnstile. Retrieved July 2017, Facebook.

One of the commenters reacting to the post wrote: “Their priorities are clear, they care much more about stopping dodgers than the user’s comfort”.

Public displays of outrage and disapproval continued to appear as the turnstile became more ubiquitous throughout the system. The users publicly addressing the issue were not necessarily the ones who were being directly excluded by the device. Rather, they seemed to adopt the role of

denouncer on behalf of others. The photographs accompanying the complaint depicted the object of their frustration, but also hinted that the post was probably produced on site, just moments after the events took place. That seems to be the case in a different post, this time on Twitter (Figure 7.4), where the user makes explicit that she has just witnessed the situation triggering her incensed reaction. This specific form of denouncement, on behalf of other people, reasserts the idea that the turnstile creates dissimilar experiences for different bodily configurations. Discomfort, in these cases, seems to manifest as an affectual intensity that is shared and circulates between different users, triggering empathetic reactions to these everyday forms of injustice.

By reacting to the problematic disjunction between certain passengers and the butterfly turnstile, people enter the arena of public debate over what is and is not normal. As noted by Latour (2007), the political move is about reframing our view over an issue, from being treated as a given ('a matter of fact') to something that should be critically addressed ('a matter of concern'). In these cases, the issue is not about what is 'normal' in the sense of frequency (something that routinely happens), but rather about what is 'normal' in the normative sense – what ought to be (Hacking 1996) – or, more specifically, what should not be.

Forms of reaction against injustice are, as Barnett (2017) has noted, *particular* and *embodied*. They are particular in the sense that they do not pursue the restoration of an abstract notion of justice, but rather address the particular forms that injustice takes in everyday life. The story in Figure 7.3 is detailed in its description of how and for whom the turnstile becomes “a nuisance”: older people are physically hindered by the turnstile, and their habit of sitting near the front doors of the bus now backfires because they cannot use them to get off the vehicle. They now have to use the back doors, which is a more dangerous manoeuvre for them. Overall, the post describes an inconvenient experience that affects older people in

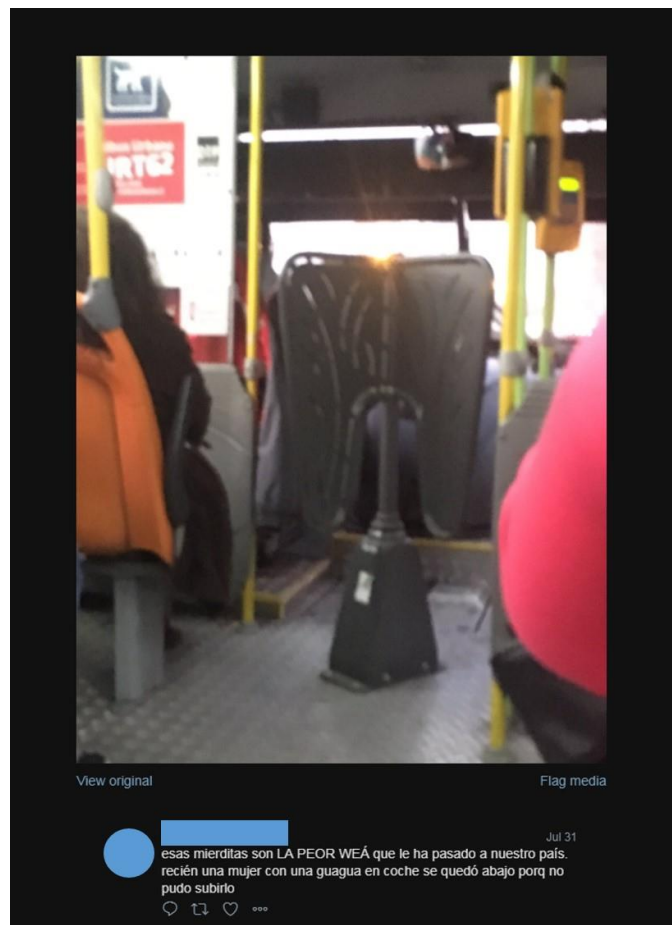


Figure 7.4 An effusive tweet: "These little shits are THE WORST FUCKING THING it has happened in this country. Just now a woman with a baby in a pram missed the bus because she couldn't get the pram in". Retrieved July 2017, Twitter.

particular. The sense of outrage against something that has just been witnessed is consistent with Barnett's view of injustice, as being much more than the mere 'absence of justice'. Grounded in practices and experiences, the sense of injustice operates as a reaction to issues in everyday life that call our attention to them. It is in this sense that the author invites to move away "from thinking of injustice as either an empirical

deficit measured against an ideal of justice or a conceptual derivative of such an ideal” (Barnett 2017: 238).

Rather, injustice affectively compromises those who are subjected to it, or witness it, in very real terms.

Similarly, the story in Figure 7.4 shows a strong reaction to a specific event – a woman and a baby who were unable to board the bus – rather than an abstract pursuit of an ideal of inclusion. The tone of the post is harsh, dyed with emotion. It is in this sense that, for Barnett, political reactions to injustice arise from things experienced by embodied beings. They are moved by emotion as much as by rational thought and, as Shklar (1990, cited in Barnett 2017: 243) expresses, “[n]o theory of either justice or injustice can be complete if it does not take account of the subjective sense of injustice and the sentiments that make us cry out for revenge”. In these cases, the reaction against injustice is triggered by witnessing situations of exclusion and discomfort that affect others. Drawing on affects, Barnett (2017) reflects on how being exposed to ‘the Other’ subjected to injustice, operates as a provocation of “passions that move subjects to action” (239). The affective impact of the turnstile, then, is not limited to the people bodily engaging with it, but also reaches out to others who empathetically experience the problems it brings forward.

Involvement of other people in the assessment of the turnstile as producing injustice extends further and can include those who are seen as responsible. “Their priorities are clear, they care much more about stopping dodgers than the user’s comfort”, someone comments on the Facebook post (Figure 7.3). Whoever ‘they’ are, dealing with fare-evasion and assuring comfort to the system’s users are seen as different, perhaps opposing, things. Such a contrast is also present in the results of the survey presented earlier, where a sizeable amount of respondents (mostly adult males), while acknowledging the discomfort the turnstile causes, justify it for its efficiency in controlling dodging behaviour.

Conclusion: The politics of enduring discomfort

By presenting these cases, I have explored the embodied dimension of exclusion, as Transantiago users engage in the uncomfortable task of interacting with the butterfly turnstile. We have seen a variety of bodily resources, practical adaptations, and political reactions emerging from the encounters with a device that physically challenges its users. Close analysis of these encounters reveals the unexpected complexities that this mundane governance device brings with it.

A salient aspect of the butterfly turnstile's case is that fighting off dodging and ensuring comfort for passengers appear as conflicting agendas. The conflict between efficiency and comfort has been highlighted by Ureta (2015: 148), who explains that while Transantiago was conceived under the assumption of passengers being *fare- and time-optimisers*, in practice they behaved as *comfort seekers*. An opposition between efficiency and physical comfort has been present and continuously enacted throughout Transantiago's history. We have seen a similar conflict in a previous chapter, in which I analysed the opposition between making the system efficient and making it accessible. Built into the system from its design stage, the prioritisation of optimising has led designers and decision makers to treat comfort as secondary. The technical-political decision of solving the fare-evasion problem via the instalment of a constraining and unwelcoming device is the materialisation of such prioritisation. However, the cases revised show that discomfort manifests together with, and not in opposition to, issues of efficiency. For example, the difficulties an older person might have 'pushing through' the turnstile also delay the boarding process; connecting aspects of physical discomfort with service speed and the shame associated with visibly slowing down others.

While comfort seems to enjoy more attention in settings where different passenger categories are more salient – for example by managing differences between 'economy' and 'first' class in airliners (Lin 2015) – in the context of mobility systems, that prioritise control and efficiency, issues of (dis)comfort are readily glossed over. This dismissiveness risks further reproducing underlying inequalities, because discomfort is not experienced in the same manner by different bodily configurations. In the Transantiago case, disregarding issues of (dis)comfort allows for ableist assumptions to go unchecked, mobilised by seemingly innocuous, but exclusionary, technologies (Goodley 2014). The challenge of turning comfort into a more central concern for designers and policy makers involved in public transport, has to do with deepening our understanding of how discomfort intersects with issues of exclusion and inequality. In order to address this, from the cases analysed I would highlight two main elements.

Mundane technologies and the making of normality

Tracing the discrepancies, or 'misfits', enacted by mundane technologies is of particular importance because these devices are deeply embedded in everyday life, as part of ubiquitous infrastructural networks. Their

mundane quality underpins their capacity to define what is normal, by means of engaging in smooth and unproblematic fashion with some bodies, and not with others.

Several accounts (Hacking 1996, 2007; Hamraie 2012; Hosey 2001) have observed how conceptions of normality circulate among and influence different forms of scientific measurement and design of objects. Less attention has been given to how the ‘normal’ is produced and contested through everyday interactions, to which this chapter has sought to be a contribution. I have followed the idea of normality as being produced and contested in interaction, which is nicely presented by Winance (2007: 633-634, ‘Being normally different?’). Drawing upon Harold Garfinkel’s work, she asserts:

“A person is not therefore defined as being normal or stigmatized simply by considering pre-existing social frameworks or normative expectations. A person is established as being normal or different or stigmatized through interaction, in accordance with the way in which the pre-existing normative expectations are worked upon during the interaction. Here the norm is resource and production, and may cause a change in identity... ‘Normality’ or ‘difference’ are no longer objective characteristics that depend on whether or not one has a given attribute, but are relative qualities, built through interaction”.

Thus, while a great deal of attention is given to how hegemonic notions of normality determine implementation of policy and certain forms of design, it is also relevant to explore how certain forms of design (e.g. mundane devices) determine experiences of normality (e.g. exclusion, feeling out of place, feeling disruptive). Normality remains dynamic, a concept open to political debate, not definitely established in the design process of a device such as the butterfly turnstile. The definition of the normal, then, remains open in the encounters we have observed, sometimes triggering reactions from those who are affectively involved. The social media posts on Facebook and Twitter that we have seen, evidence an active attempt to dismantle and contest the taken-for-granted quality of the turnstile, reframing it from being a ‘matter of fact’ into a ‘matter of concern’ (Latour 2007) by means of empathising with the problematic embodied experiences of others. A political dimension of affects (Barnett 2008) is manifest here; a struggle to contest the power of devices that are inscribed with certain expectations of what a normal body looks like for the Transantiago system. However, as Honneth (2007) expresses, not all feelings of injustice end up being publicly articulated.

Resources for being vocal or publicly addressing injustice are, too, unevenly distributed, and as most of these affectively negative experiences remain unsaid, they are routinely dealt with by merely adjusting to them.

As shown in this chapter, Transantiago users produce diverse forms of adjustment in order to become passengers, despite the limitations posed by the turnstile's design. Even though it is sometimes possible for them to challenge the script and adjust their bodies, 'tricking' the turnstile into thinking that they conform to the standard it was built upon, the process itself can entail a deeply uncomfortable experience that becomes trivialised by repetition. Having to resemble a particular bodily configuration in order to gain access to a public service is a form of oppression all the more pervasive as it is applied by an ordinary device – a passing moment of discomfort that subtly reproduces a distinction between bodies that experience friction in everyday life, and bodies that do not.

Experiencing the body as inadequate

Though its official aim is to separate fare payers from non-payers, in practice the turnstile also enacts a differentiation between 'types of bodies', marking a contrast that is up to the users to deal with. As different ways of becoming a passenger are manipulated and abstracted down into simplified, manageable forms by technological objects like the butterfly turnstile, the device's unyielding materiality refuses to negotiate with bodily configurations that deviate in size, strength or shape from a very constraining set of bodily expectations. The onus is on the passenger, then, to contort and adjust into an entity that is acceptable to the governing technology, however uncomfortable this might be.

By means of lifting purses, straining muscles, or finding alternative entryways, the turnstile may be circumvented, but as passengers' bodies (and some more than others) are pressured into adjustment, they are framed as inadequate. This inadequacy does not only mark bodies as 'strange' – it is *felt through them*. Discomfort, in the turnstile case, is intensified when people are forced to reshape their bodies into something else, however temporarily. Following Hacking's (2007) contention that classifications of people affect the very people being classified, we may acknowledge that practices of adjustment to the turnstile's script have an affective impact on the users, one that is bodily experienced. On exploring experiences of encumbrance, Bissell (2009: 178) describes travelling with luggage as uncomfortable: "...the station, through

the weight of luggage, *presses into* and temporarily debilitates the body”. We may, however, wonder about the lingering affective consequences of such an encounter, especially if it takes place on an everyday basis, unevenly distributing feelings of discomfort. Faced by the turnstile’s functional and material rigidity, the users might experience their own bodies as cumbersome and problematic, difficult to accommodate.

My interest, in this chapter, has been in how the butterfly turnstile has been designed as an object whose purpose hinges upon its physical interaction with the Transantiago users. An analysis of these interactions offered opportunities to further understand the risks of governing behaviour through bodies. Particularly, I have chosen to highlight the felt dimension of exclusion through the embodied sensation of discomfort, as a means to argue that the body is not merely the target of the exclusion, but also the medium through which that exclusion is experienced. These findings are useful to producing better and more inclusive passenger experiences in complex public transport systems, such as Transantiago, but they also open up opportunities to understand how diverse bodily configurations are affected by other mundane governing devices in different settings. By taking discomfort seriously and carefully tracing the interactions in which it emerges, we can identify other mundane devices routinely exposing certain people to instances of misfitting, reproducing a form of exclusion that is pressed upon the skin.

Finally, the recognition of mundane devices exerting discomfort upon certain people opens up the question of injustice, the forms it takes in everyday life, and how it is (or not) contested. Reflecting on the impacts and challenges posed by forms of misfitting, Garland-Thomson (2011: 597) says that “social justice and equal access should be achieved by changing the shape of the world, not changing the shape of our bodies”. While we might acknowledge that such an ideal is not fully achievable in practical terms – as all people bodily change and adapt constantly in their encounters with the world – it is a maxim that designers and policy makers should strive for. Everyday bodily adaptations should not elicit feelings of discomfort and contention with our own bodies. Even less so if this distribution is iniquitous. As discussed in this chapter, forms of exclusion that are silently dealt with through bodily adaptation, risk reinforcing a sense of normality that is sustained over feelings of encumbrance and discomfort that some experience more than others. Discomfort, implicitly dismissed as less important than system efficiency, or as an unavoidable characteristic of public transport, might hide deeper and more serious connections to injustice, understood as “an experience of harm, injury, or wrong” (Barnett 2017: 248). The relevant question, then, is not just

about how we deal with the practical problem of the turnstile, but the political challenge of seeing in it something that we will not accept as 'normal'. As "people are positioned differently in relation to structures of injustice; as victims, perpetrators, bystanders, beneficiaries" (Barnett 2017: 253), it is politically crucial to control the position we take, and not merely accept the place we are given.

CLOSING WORDS (And drawings)

So...



THAT'S... MORE OR LESS IT

HOPE YOU LIKED THE STRIPS

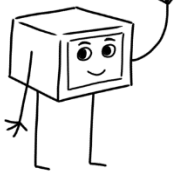


I THINK WORKING WITH COMICS WAS USEFUL FOR ME IN SEVERAL DIFFERENT WAYS



USING IMAGES TO TELL THESE STORIES ALLOWED ME TO GROUND MY IDEAS, STAYING WITH SOME DIMENSIONS OF ITS REALITY

MATERIAL OBJECTS



CHARACTERS



CONVERSATIONS



NARRATING MY RESEARCH LIKE THIS MADE AVAILABLE THE PATCHWORK OF MISTAKES, LEARNING, AND CHANCE THAT DOING ETHNOGRAPHIC FIELDWORK ACTUALLY IS



IT WASN'T A SERIES OF FLAWLESS AND WELL-PLANNED CHOICES THAT TOOK ME HERE, I CAN TELL YOU THAT

THE COMIC STRIPS' MODULAR STRUCTURE ALLOWED ME TO SCATTER THESE STORIES THROUGHOUT, GIVING CONTEXT TO THE OTHER CHAPTERS



AND WORKING WITH TEXT AND DRAWINGS MADE IT EASIER TO TIE TOGETHER CONCEPTS AND ACTUAL EVENTS



I'M VERY HAPPY WITH THE OPPORTUNITIES THAT WORKING WITH COMICS GRAMMAR GAVE ME



THANK YOU FOR TAGGING ALONG AND UHM...

TAKE CARE!



oh! And ONE MORE TH-



CONCLUSION: TRAVELLING TOGETHER

At the end of the journey this research has been, my connection to the fieldwork still lingers. Even though I inhabited its paths intending to analyse its dynamics, at the end of the day I remain a Transantiago user, and an embodied being too. My connection to this public transport system, in this sense, does not diminish because I might move along as a researcher. My travels in Transantiago are not over, and as a Santiaguino my connection to it is deeply personal.

I am a normal person to modern standards (Hacking 2007), but things are not back to 'normal' for me after completing this research. Following an ethnographic approach, I learned about the struggles of disabled people who use Transantiago by sharing journeys with them, learning to travel together. These experiences show that conducting ethnographic work with disabled people goes far beyond simply becoming aware of their struggles. As members of the same landscape of exclusion and privilege, I was made aware of my own advantages in a world populated by infrastructures designed for me. Gaps that I didn't mind were suddenly dangerous holes, informative signs turned into unreadably small text, convenient card sensors were now difficult to reach, and ordinary lift buttons unexpectedly became hard to push.

These transformations in perspective did not come about as an abstract, disembodied realisation. On the contrary, my awareness of this landscape of difficulties slowly emerged through the continuous practices that I shared with my research's participants in our travels together. Not merely witnessing, but taking an active role alongside disabled Transantiago users, I became bodily involved in routinely producing alternatives, circumventions, negotiations, and resistance in the face of different forms of infrastructural exclusion and privilege.

Having much in common with the experience of riding the public transport, the ethnographic work was, too, a form of 'travelling with'. This journey, shared between participant and researcher, was grounded in the practical work of using Transantiago together. As the researcher, I was never there 'just to observe'. I inevitably became involved in the practices of those whom I was joining. From having a conversation to holding or carrying things, to reading signs in small font, to calling the lift, I was quickly incorporated in the doings of these travellers. But more than just me adjusting to their travels, I became part of their expectations and concerns as well. From them having my rucksack when sitting, while I stood by them in the bus; to getting used to separate at the lift and meet back again at the underground platform; to finding a moment to adjust the GoPro camera before getting off the bus; we learned to travel together.

My presence there didn't make the participants' journeys better or worse. They just became something different, with an organisation of their own. So, for example, in certain walking parts of her trip to the university, Ximena would grab my arm and walk without her cane, changing her usual experience of that part of the street. Her metro stop also became our spot for saying goodbye, and thus took her slightly longer to exit. Even though my presence there transformed how the participants used the public transport,

there was much gained by that physical presence and embodied companionship. The ethnographic research I conducted enabled – or demanded from me – a form of involvement that put the bodies of my participants, as well as my own, at the forefront. As the body affects and is affected by encounters and experiences (Anderson 2006), the person learns and changes. As embodied beings, we incorporate new skills and refine what we know and do. In using the public transport together, we learned much of one another and produced a joint way of travelling that was unique to us.

As embodied beings, then, we are transformed by these experiences. The continuous work of travelling accumulates and sediments into a keener understanding of how it is to *travel with* those with vulnerable bodies, both as a companion and as a fellow passenger. The ongoing experience of sharing our travels with others enables us to develop a more refined awareness to the presence of diverse people in the bus, the platform, the train etc. By continuing to include each other in our journeys, we learn of other passengers' needs, expectations, and capacities, and how to fold our own abilities around theirs.

In this sense, research done as an ethnographic 'travelling with' proves to be adequate not just to portray, but to learn of these interactions by becoming involved in them. By exploring the ways in which disabled public transport users deal with the many barriers and difficulties they encounter every day, we may contribute to a shift in perspective that is taking place in the geographies of disabilities field – one that is less concentrated on the inherent characteristics of disabling/accessible environments, and more on the practices that produce arrangements for quotidian accessibility and functionality (Hall & Wilton 2017; Titchkosky 2011). Planners, designers, and engineers working on transport systems and infrastructures can benefit from this approach as well. As it has been discussed in previous chapters, rather than being a collection of lacking capacities to be compensated for, disabilities are indeed locally dealt with through embodied practices and interactions. Transport planners can enrich their material interventions by thinking through disabled people's ways of doing, rather than focusing on how to alleviate an alleged 'personal tragedy' (Oliver 1995, 2004). This includes understanding the doings of public transport users as composed of interactions between them. In this sense, and recalling the stories and people I have introduced, I would close this thesis by highlighting three elements.

Transantiago (and other big infrastructures) are not ever 'finished'

Historically, big infrastructures like Transantiago have been designed and implemented with aims at producing a spatial organisation of human life that is predictable, standardised, and overall 'rational' (Holston 1989; Jacobs 2006; Sandercock 1998). This perspective relies on an aspiration to provide solutions that operate efficiently regardless of context. The abstract form of rationality that this modernistic approach mobilises implies that it is possible to find definitive solutions to problems such as lack of accessibility in transport spaces.

It is often assumed that the barriers encountered by disabled people who navigate complex infrastructures are to be treated as problems to be fixed, rather than as practical struggles to which solutions are locally produced, enabled by the interactions of the very members of those difficult encounters. While I do not deny the obvious importance of planners taking an active role in such issues, the prevalent approach is to take the problem in terms as abstract and fixed as the reality of disabled people is predominantly assumed to be (Roulstone & Morgan 2014).

Aspiring to the design of *definitive* solutions to the transport and accessibility needs of people, implies that those very needs are unchanging over time, and that they are not also dependent on the practical actions of those who also participate, as users, of the system.

Designed and publicised as a ‘big reform’, Transantiago was conceived with little room for change. We have seen how this approach, still prevalent among the engineers and planners that I have interviewed, leads to believing that implementing adjustments and gradual change into parts of the system is a sign of failure. However, I have argued in favour of ‘plastic’ or more flexible material implementations whose value resides precisely in the fact that they can change over time.

The opposition between a more ‘definitive’ and abstract form of governing Transantiago and one that remains flexible and open-ended can be exemplified in the differences between two devices I have presented in this research: The butterfly turnstile and Metro de Santiago’s rubber band. The former was designed with a heavy reliance of *fixity*. The device’s script assumes and enforces fixed categories in which Transantiago users are meant to be sorted. We have seen how this rigidity has quickly led to overflowings of the script (Ureta 2015) – with passengers that turn to the driver to negotiate, or find ways of circumventing the object. The turnstile’s materiality itself is rigid, refusing to adjust and adapt to the diverse bodily sizes and shapes of users. The conclusion of the turnstile’s tale was, unsurprisingly, that it had to be completely eradicated from the system.

In contrast, we have the rubber band that Metro de Santiago implemented in some of its stations, in order to ‘fill’ the gap between the train and the platform. As opposed to the turnstile, the rubber band’s functionality revolves around its *plasticity*. Not only it is literally soft – therefore being able to bridge the passage of reduced mobility users without impeding the sway of the train – but it has been conceived to be adaptable and temporary. Easily replaceable, the rubber band admits continuous new versions of itself. Each new iteration can be of different dimensions or composition, allowing wiggle room to test a variety of formats. This device is then capable of being responsive to an ever-expanding understanding of reduced mobility people’s needs and doings, and can be updated with feedback and observations from the public itself. A constant prototype of its subsequent version, the rubber band is an exemplary case of a type of design that does not aspire to being ‘definitive’.

The advantages of a design oriented to being continuously adaptive, as I have described, resonate with notions that other researchers have presented. The notion of *tinkering*, for example, was developed in

looking at scientific practices (Knorr 1979; Mol, Moser & Pols 2010; Nutch 1996; Pickering 1995) as “a progressive *selection of what works* by using what *has worked* in the past and what *is likely to work* under the present, idiosyncratic circumstances” (Knorr 1979: 369). The emphasis of tinkering is on understanding human action as a process, rather than revolving around allegedly failed or successful states. Even though tinkering with the rubber band proves to be an efficient way of staying responsive to the dynamic practices and needs of underground travellers, it exists in contradiction with the prevalent aspiration to ultimately find a solution that will require no further change. As Nutch (1996: 217) as observed in his own studies on scientific practice, “[tinkerers] intimately struggle with the contradiction between the locally constituted and universalistic claims of scientific research”.

Grounded in actual practices, tinkering work eschews the aspiration to ‘optimal’ solutions (Pickering 1995). Similar perspectives have been developed by others studying transport settings (Bissell 2018; Latour 2002) and the practices of disabled people encountering barriers in public spaces (Sánchez-Criado 2019). In attending the actual practices entailed in processes of infrastructural change, these voices also highlight the importance of ‘making do’ and being able to make compromises as the original design of technologies and systems remains open to modification.

This research’s ethnomethodological orientation has highlighted how local changing circumstances exceed implementations that aspire to being ‘finished’. Neither accessibility ramps nor public transport systems have a definitive version. They are being continuously enacted by planners and users, materialities and bodies being adjusted, passengers minding each other, and so forth. Knowing that any given state of an infrastructure is provisional and requires effort to exist does two things. First, it opens up possibilities for constantly thinking of how a different version of the infrastructure may look like. Second, it moves our attention toward those who are involved in the organisation, maintenance, challenging, and critique of such shifting order. As I have strived to show, Transantiago users do much more than just being the receiving end of a public transport service.

Transantiago (and other big infrastructures) are held together by the work that users put into them

The deep connection between urban infrastructures and the embodied practices of their users has been an issue of attention for human geography and other related disciplines. Latour (2002: 91), for example, has observed that, for transport engineers, “the only way to adapt transportation supply to demand is to take advantage of the compressibility of the human body. During rush hours, you compress people; that way the relation of supply to demand remains elastic”. In this research I have shown that the place that Transantiago users occupy in its functioning is a much more active one. Functions of efficiency in transport – which are usually seen as abstract things relevant only to technical experts – are in fact grounded in material bodily formations and ordinary practices.

Actor-Network Theory has produced relevant contributions to understanding how technical infrastructures interact with human inhabitants of the city. Latour & Hermant's (1998) *Paris: Ville Invisible* is a magnificent example of this. This work describes how city dwellers are formatted through different 'regimes of action' that mobilise particular forms of being in space. In Latour & Hermant's description, Parisians 'subscribe' to regimes that are circulated by specific devices aimed at reducing chaos, like traffic lights. Much like the butterfly turnstile I have explored, traffic lights propose a form of conducting oneself in the city, inscribed (Akrich 1992) with particular categories with which we interact. And of course, even though they have been designed to govern the behaviour of people, "[n]othing in a given scene can prevent the inscribed reader or user from behaving differently from what was expected... The user of the traffic light may well cross on the red" (Latour 1992: 237).

But the cases analysed show that Transantiago users do more than just conform to or resist the script. The *actual* user (not the inscribed one) deals with the practicalities of encountering a device and incorporating its features in their practical actions, 'making do' with what is locally available. We have seen that, in their everyday encounters with the butterfly turnstile, passengers draw on available resources to making the technology work in a way that conforms to their local needs of being swift and queuing orderly. Or, by contrast, users that are unable to pay or easily traverse the turnstile generate unexpected ways through or around it. These alternatives, again, are produced by the users with an orientation to their own agendas: from travelling as 'togethers', to paying the fare for others, to not paying the fare at all.

Latour (1996) has criticised ethnomethodology for being excessively focused on locality and too little on what has been delegated to devices and infrastructures. While I agree that interaction does not start from scratch and deals in practice with scripts, this does not cause local interactions to require any less work. Scripts can propose, at times, paths of action that seem less effortful, just as they can also produce trouble and disjunction. Either in complying with or resisting – and all the other shades of grey in between – the regimes of action inscribed in devices like turnstiles, Bip cards, and ramps; members have to do a great deal of work regardless. This research has sought to provide a description of how that work takes place through embodied practices.

A similar move is required in looking at the ANT contributions to understanding disabilities. Moser & Law (1999) have explored how the relation between disabled users and surrounding materialities can produce instances of ability or disability. In their words, "if the networks are in place, if the prostheses are working, then there is ability. If they are not well then, as is obvious, there is dis/ability" (201). While this research's point of departure has also been to understand disabilities as enacted by diverse arrangements of humans and nonhumans, I have shown the relevance of tracing the nuanced and skilled ways in which people *work with* the prostheses, and the practices that contribute to the *holding together* of these networks.

More than just an issue of whether the networks are in place or not, the question for me has remained open-ended and focused on how exactly Transantiago users and staff contribute, through their embodied practices, to the production of public transport settings that are locally intelligible and contingently stable.

Similarly, as I have argued, the production of accessible infrastructures goes beyond a question of whether technologies are working. While nonhumans are undoubtedly a crucial part of the assemblages that may constitute themselves as accessible, accessibility is not an inherent property that can be universally inscribed in technologies through ‘good design’.

I have shown that accessibility and ability are made to emerge through skilled interactions between humans and nonhumans. We have seen an example of this in the case of Ximena and her cane. Involved in a continuous process of learning and specification, the Ximena-cane composite has learned to competently navigate transport spaces, while developing gestures and ways of walking that are an expression of the participant’s uniqueness. Here we may note two things. First, the cane has been inscribed with particular expectations of proper use – which are mobilised by entities such as the Special Education Teacher – a script that Ximena, as a specific embodied being, neither completely follows nor necessarily disobeys. Instead, Ximena and her cane are involved in an ever-unfolding process of producing their own way of doing things, which changes and becomes more specific over time (Winance 2006) and that is, at the same time, responsive to other entities around.

This brings us to our second thing to note. The stories we have seen of disabled people and their prosthetic devices make an emphasis on a relationship that exceeds the technology-user dyad. In public transport settings, prostheses accomplish social things, as they are also *encountered by other passengers*. Thus, Ximena’s cane contributes to her intelligibility as a VI person to others in the underground, and Natalia’s wheelchair prompts and shapes offers of assistance from other passengers. The importance of seeing prostheses as social things is also apparent in the case of Ana, whose rollator can remain difficult to understand to some and leads to everyday complications. The social dimension of prosthetic devices is apparent in the fact that a big portion of what the assistive device *does* takes place in relation to how other members of the setting respond to it. In turn, the effect that a prosthesis has in a given interaction is shaped by its user’s proficiency with it. Be it to make the most of it (as in the case of Natalia moving her wheelchair to produce certain reactions from others waiting for the same lift) or to repair misunderstandings (as with Ana having to clarify where her rollator should go), the person’s skilful use of the device is what enables these instances.

From Moser & Law’s (2003) perspective, disability arises when technologies are out of place. In this research I have explored the actual instances in which a technology’s place is at stake, and how practical action plays a role in that issue. Even in the case of technologies and infrastructures that do seem to be ‘in place’, an approach attentive to ordinary practices will reveal that there is constant local work keeping things somehow stable, being held together as part of the assemblage. If a ramp breaks, sometimes people will have to hold it up for others to use. If a turnstile is too rigid and stubborn, inspectors and drivers involve themselves in producing alternatives. These arrangements are sometimes impromptu, and in some other cases have become part of everyday expectations in Transantiago. Whatever the case, this research has shown that the holding together of a system – especially one as precarious as Transantiago – is a matter of

constant work that is done by its users, making clear that people are part of the infrastructure too (Simone 2004).

This reconsidered assumption may be useful in the design and management of large infrastructures, which ought to consider their users not as being passively served or formatted by regimes of action (Latour & Hermant 1998), but as active and crucial participants of the holding together of the system as a whole. However, being part of the same assemblage, infrastructures and embodied beings are deeply intertwined, and this can lead to risky circumstances for people – particularly for those historically excluded and disenfranchised, who are routinely exposed to the bodily challenges of navigating massive infrastructures like Transantiago. The butterfly turnstile is a dramatic example of this, in which users bodily adapting to the uncomfortable experience of going through it (or being unable to) were exposed to sensations of injustice and of being out place. Such is the importance of tracing the instances of local work that users of a given infrastructure put into adjusting to its standards. Locally organised practices are crucial for the functioning of a public transport system like Transantiago, but a careless or ableist approach on the decision-makers' part risks exposing its users, as embodied beings, to the injustice of having to experience arrangements that betray their right to access a public service in a dignified manner.

Transantiago users (and the users of other big infrastructures) are more than individual units

One *bip*, one turn of the turnstile, one passenger. According to Transantiago's original design, people travel as individuals, and can be governed as such. And yet, the participants of this research outline a very different scenario. While Transantiago as a system has made efforts to become accessible to diverse embodied beings, there is much to be gained to think of Transantiago as an infrastructure populated by diverse *relations*. Public transport users are constantly involved in relations with other humans and nonhumans that join or share their travels.

Throughout the chapters of this thesis, the importance of these relations between travellers (and things) has been made very clear. Public transport users are not to be understood as discrete, isolated units, but rather as composite beings that negotiate their way through the system with and alongside other entities. By tracing stories such as the butterfly turnstile's, or the different forms in which Ana interacts with others through her rollator, we are able to see that public transport users are never in isolation. It is through relations and interactions with humans and nonhumans, in fact, that people manage to board, pay the fare (or not), orient themselves, find a seating spot, and depart from the transport system. I have illustrated this notion in the analysis of people organising themselves around the butterfly turnstile. Drawing on resources provided by other members of the queue as well as by the turnstile itself – its *clunk* sound when a cycle has been completed – people boarding the bus are able to constitute themselves as part of the paying queue, and as legitimate passengers. While several infrastructural elements (e.g. the turnstile, the Bip card, the lights and sound system) have been deployed to organise the progression of boarding the bus and paying the fare,

the actual work organising the process is locally done in the interaction of users, staff and materialities coming together.

The amount of skilled work that people devote to drawing on from these relations, as well as in maintaining them throughout their journeys, should be a clear sign that public transport systems can benefit from thinking of their users as beings embedded in relations with one another. Rather than isolated individuals, passengers produce themselves as competent travellers through interactions with canes, phones, wheelchairs, bags, cards, and other passengers (acquainted or not). While these relations are present across all public transport users, the experience of disabled people in this respect is particularly enlightening. In this thesis I have shown how, for disabled people, the process of becoming competent public transport users is underpinned by continuous interactions with assistive devices, relatives and friends who provide orientation, and strangers that are able to assist.

I have described how disabled users skilfully draw on the affordances of their assistive devices not only to move through spaces, but also to adapt to the environment, and to steer social interaction. For example, Natalia has learned how to skilfully use her wheelchair as a device to move (e.g. in and out of a lift), but also to minimise the feeling of the sway of the train (by ‘anchoring’ the wheelchair to a pole), and to get the attention of others (by slightly moving toward a lift and closer to the person first in line). Sometimes, the relation someone has with an assistive device will produce trouble when encountering certain arrangements or generalised assumptions. Natalia encountered a particular organisation of the platform space by walking passengers, who left a gap through which a wheelchair couldn’t ‘squeeze through’. Ana was systematically misunderstood by other members of the bus who insisted in inviting her to take a seat. To be more precise, we may say that they misunderstood Ana’s relation to her rollator.

Similarly, Transantiago users are often assumed to travel alone, or as groups that can easily detach into smaller ‘units’. Certain key practices (paying, sitting, waiting, using the lift or stairs etc) are optimally designed for individuals, even though we have seen how people put much effort in doing these things together, and in maintaining their togetherness (McIlvenny, Broth & Haddington 2014, Weilenmann, Normark & Laurier 2014) by making it visually available to others throughout these sequences.

Regularly assigned the standardised category of ‘passenger’, public transport users are part of many other relational categories that involve other people. While traveling with others, we have seen how Transantiago users are also being parents, sons and daughters, friends, pet-owners etc, and their practices are oriented toward dealing with both sets of categories. In analysing the butterfly turnstile, I showed the case of a mother doing being a mother while also following the programme of a paying passenger. She was attentive and proficient in dealing with the material circumstances – a turnstile present in the bus – by adapting her paying sequence and, simultaneously, instructing her son to go underneath the device. Importantly, she also showed an awareness of other passengers’ gaze, treating not only her progression through the turnstile, but her son’s, as accountable action under her purview. Similarly, the case of a senior couple going through the

turnstile *together* showed an orientation not to break these relations, even throughout sequences that are designed to be performed by individuals.

And yet, my ethnographic experience with this research's participants was of a transport infrastructure that continuously separated us. Our functional differences meant that the system would categorise and assign us different paths. "I'll meet you down in the platform" was something I said at least once to each of the participants, when they were taking the lift down and I was not allowed in. Priority lifts, seating spaces and coaches, escalators, turnstiles and accessible doors, all enforced the sense that our travelling paths run parallel to one another. Being separated from your companions in the public transport does not only create further work to be done ("I'll meet you in..."), but can also produce more serious problems. Separated from humans and nonhumans that travel with them, disabled people might find their capacities diminished, thwarted. Designed around a view of accessibility that aspires for people not needing to rely on the intervention of others, Transantiago and other big infrastructures risk enforcing a lonely way of moving.

While the practices and experiences of disabled people convincingly show the importance of attending to the relations that they draw upon and care to maintain throughout their journeys, *all* public transport users are embedded in significant relations. Even among strangers who share little more than just the fact of being circumstantial co-passengers, being able to attend and understand what the others around us are up to is of crucial significance. In the public transport, we all benefit from passing forms of assistance and awareness to our needs. Conversely, all passengers – and able-bodied people especially – may categorise themselves as accountable to detect and engage with those who might benefit from assistance.

The challenge for big infrastructures, then, goes beyond recognising the bodily and functional diversity of the public. There is an unmet opportunity to facilitate that these relations – be they passing or more permanent – are more transparent, intelligible, and widely accepted by all. Planners, designers, and managers of big infrastructures can contribute greatly to this process, if they work under the premise that users will have pre-existent relations, and that they will seek to draw upon and maintain them through ordinary practices.

Such a shift in perspective opens up opportunities for designing and implementing urban infrastructures that remain attentive and responsive to the ways of doing of many different people. A perspective guided by an attention to relations and everyday embodied practices, in the case of public transport, requires that we recognise the simple but crucial fact that people do things together. These collective practices, I have strived to show, play an important role in the everyday becoming and holding together of Transantiago. More than an independent platform able to support and contain them, Transantiago is *made* by myriad embodied practices. It is, then, possible – even necessary – to think of these infrastructures made for people to *travel together*, as things that can be also *designed together*.

After all, Transantiago is already in the hands – and feet, and wheels – of its passengers. Their passing through the system shapes it continuously; propping up its gaps, folding around its barriers, calling out its

injustices, repurposing its features, activating its devices, and so on. Knowing that the embodied practices and experiences of the people inhabiting these infrastructures is already on the line, the call is to explore fertile ways of designing with, and not for, those who are entitled to become part of these essential infrastructures of urban life.

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