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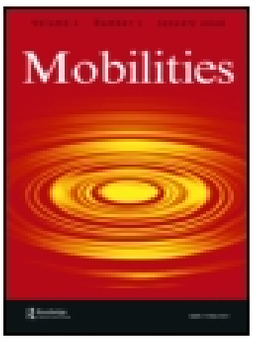

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Mundane intermodality: a comparative analysis of bike-renting practices

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ABSTRACT

Bike rental systems have been introduced as a sustainable urban mobility alternative. This paper analyses the social practices that emerge as part of these systems. We specifically focus on the interactions and street-level performances at a bike rental station. We argue that the bike-sharing service is a pivotal device that enables its users to transform (to re-configure from pedestrians to cyclists and vice versa), hence creating intermodality. The bike rental system ensures the technical standardization of behaviour while simultaneously revealing differences between those familiar with the system and those who are not. Thus, competences and meanings of the station are not subordinate to materials – they are interdependent, entwined and *enacted* in and through the practice itself.

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Self-service bicycle; transportation; intermodality; bike rental system; bicyclist; pedestrian

Introduction

The recent introduction of electric bikes (Behrendt 2013; Cherry and Cervero 2007) and bike-sharing systems (Fishman, Washington, and Haworth 2013; García-Palomares, Gutiérrez, and Latorre 2012; Jäppinen, Toivonen, and Salonen 2013; Raviv and Kolka 2013; Tironi 2013; Vidalis et al. 2010) has contributed additional types of bicycles and cycling practices to investigate. Studies focused on particular types of bikes present, at least implicitly, the hypothesis that these variations in technological characteristics are important (see Cox 2013 in particular). Similar to public transport, these bike rental systems become extensive mobile advertising systems within the city (López-Pumarejo 2011), but they also enable pedestrians to transform into cyclists, thereby creating bike rental practices.

Simultaneously, the tendency to compartmentalize different modes of transport into studies of cars, cyclists or walking patterns is a weakness of mobility studies, as such modes of transport are often interrelated. This connection between modes becomes even more critical when, for example, cycling and walking are interrelated in the practice of transporting things. The etymological origin of transport refers not only to mobility (i.e. trans meaning 'across') but also to carrying, which is the meaning of 'portare'. Carrying practices of mobility have only recently become a topic of investigation (Calvignac and Cochoy 2016; Hansson 2015), but they create challenges that we find particularly interesting to investigate at transitory sites of mooring (on mooring, see Hannam, Sheller, and Urry 2006; Larsen 2017; Urry 2007).

We propose examining this 'modal shift'[1] between pedestrian and cyclist citizenship – a practice we call mundane intermodality – through an international comparison of bicycle logistics practices

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employed in Toulouse and Gothenburg, two similarly sized European cities. The contribution is theoretical, insofar as this study aims to show, in the spirit of generalized symmetry (Callon 1986a; Latour 1992), the fruitfulness of balanced attention to humans (cyclists) and objects (bicycles, accessories and transported loads), avoiding the double reductionism of sociologism and technologism (Latour 1996) and examining how social factors and technical factors combine to shift behaviour (here, cyclist logistics). More specifically, we will focus on the practices staged at bike rental stations and discover how these systems are specifically designed (Jensen 2013) to enable this transformation – whether planned or not. Every transportation device has its own agency, but bike sharing presents a somewhat unique combination of affordances and limits. On the one hand, it enables individuals to carry goods with a bike basket and to easily shift from travelling as a pedestrian to travelling as a cyclist and vice versa; on the other hand, this shift is dependent on spatial constraints (one can only access the system at a station) and technical burdens (several survey-based studies of bike sharing have shown that individuals are afraid of using terminals incorrectly; see McNeil, Broach, and Dill 2018).

After a presentation of the chosen methodology and its challenges, we successively present the qualitative aspects of the study. We will thus be better able to outline both the interest of our investigational device and the results that such a method conveys and thus its more general interest with respect to the conduct of sociological inquiry.

A stereoscopic video for a qualitative analysis of cycling logistics

The generalized symmetry postulate has been one of the most apparent contributions of actor-network theory since the mid-1980s (Callon 1986a, 1986b; Latour 1991, 1992). This approach recommends accounting for the contributions of human and non-human entities to social life. Following this perspective, the term co(a)gency introduced by Michael is used as a conceptual tool that guides the reader to simultaneously consider 'on the one hand, distributed, exploded agency and on the other, concentrated, imploded, agency' (2000; 42, see also Calvignac and Cochoy 2016; Cochoy 2008). While we assume the existence of distributed agency or co-agency, we must simultaneously (or rather, ambiguously) address assemblage cogency (e.g. the acting potential of the hybrid entity created by a rider and her bicycle) (Michael 2000, 42). Hence, the aim of this paper is to document both the distributed co-agency of humans and non-humans, in our case, bicycles, cyclists, loads, container technologies, streets and bike rental stations, as well as the cogency of the human-and-non-human co(a)gent, in our case, different combinations of loads, cyclists and bicycles.

Different sites encourage or inhibit the transfiguration of these co(a)gents; pedestrians can become public transport passengers at bus stop, and bikers transform into pedestrians at bike stands. These stations are important social reconfigurators that are needed for the city (and consumer logistics) to work.

Video recordings have become a common methodological tool in social science (Heath, Hindmarsh, and Luff 2010; Pink 2007) and especially in mobilities studies (Büscher and Urry 2009; Büscher, Urry, and Witchger 2011; see also Laurier 2014). By carefully examining fleeting, distributed, and mobile yet local ordered practices, visual ethnographies of cycling have been able to elucidate movement as methodologically generative from within members' practices (Büscher & Urry 2009). These studies emphasize and expand classical understanding of means of sensing the city through motion (Jones 2005; Spinney 2010), the learning process (McIlvenny 2014) and mobile emotions (Lloyd 2016) by capitalizing on the portability of cameras. While inspired by these studies, we decided for methodological reasons[2] to use two static cameras to emulate classical camera-focused studies (cf. Whyte and Underhill 2009). Two cameras enabled the comparison of places that are far away from each other at both a micro-material and local level, a level located on a down-to-earth scale, and even, in our case, at the pavement level. Despite sacrificing information regarding mobility while using this method, the approach enabled us to develop the first visual ethnography of the reconfiguration of bike rental schemes.

Hence, we adhere to the notion of 'every next first time' as it is described in ethnomethodology (Garfinkel 2002). Within a situation, or from a situation 'within', participants only have what is observable to make that specific situation accountable as something; thus, any situation from 'within' is a first time (this ethnomethodological approach has many similarities with Goffman's (1971) 'with' or, more specifically, Jensen's 'mobile with' (2013)). However, every situation is similar or different from previous situations; observables are 'documents of' previous situations, and a future case with a resemblance makes it rendered similar. 'Every first next time' is therefore the ethnomethodological way of acknowledging both the resemblance in situations and their novelty. In this paper, we push this double identification to be valid not only with similar situations in different times but also with similar situations taking place at different locations. We begin by showing the similarities and differences between these pavement-level sites.

We also focused on what we could see rather than hear to emphasize the directly observable physical behaviours as a way to strengthen the role of the body, the flesh and things rather than tracking down 'representations' and more abstract and uncertain patterns.[3] In these situations where practices occur along incorporated routines (Lahire 2011) or physical interactions with the environment (Norman 1993), people act rather than speak. As we will see, the script or corporeal scheme is applied both as a pattern shaped by the environment and as the development of a social practice.

We filmed two stations, one at Vasagatan, Gothenburg, and one on rue du Languedoc, Toulouse,[4] for 12 consecutive hours during the same 2 days in 2011: Thursday, May 5, and Saturday, May 7, for a total of 48 h of video recording starting at 7:30 am and interrupting the film at 8 pm. Furthermore, both rental stations use the bike-sharing system provided by the multinational corporation, JCDecaux. The terminals and rental bicycles are thus strictly identical except for the colour difference: the bicycles are blue in Gothenburg and red in Toulouse. Finally, weather conditions were similar. During the 2 days, it rained in neither Gothenburg nor Toulouse; the only difference was that of the temperature, which varied over the observation period between 6°C and 12°C in Göteborg, 10°C and 24°C in Toulouse (but with a strong wind in the latter case).

We carefully observed the bike rental process. The approach involves a long series of gestures, hesitations, interactions and reconfigurations with the rental device, the bike and the other users. More specifically, we extracted three separate sets of film, which are divided into two subassemblies, each corresponding to a city. The first series consists of sequences of bikes returned to their locks (16 sequences in Gothenburg and 51 in Toulouse). In each such sequence, a cyclist enters the station, secures the bike to the bike rack and then walks away. The second film gathers the opposite situation: it begins with the arrival of a pedestrian who borrows a bike and becomes a cyclist, ending with the cyclist's departure (14 sequences in Gothenburg and 50 in Toulouse). A final film gathers more atypical behaviours such as dropouts, playful use of bicycles, curious passers-by, etc. (79 sequences in Gothenburg and 21 in Toulouse).

A qualitative ethnography of bike-sharing systems

Before indulging in the bike-sharing practices, it might be worth noting a few quantitative aspects of the observations. Using the same film, we conducted a quantitative study.[5] We could observe that only 1% of bikes passing the bike rental station were rental bikes in Gothenburg compared to 19% in Toulouse. Rental bike cyclists also differ from the average cycling population; rental bikes tend to bring a much more male audience (66%) than ordinary bicycles (56%), and they bring an estimated younger population with an average age of 30 years compared to 34 years for other types of cyclists. Finally, the number of loads per rental bike is 0.95 against 0.90 for the remainder of the population. These findings designate the fragile necessity of this object: the rental bike certainly merges private cycling and public transportation, but the two elements it combines are also those that compete against it. The rental bike is certainly used but in different proportions depending on location, age and gender; it fulfils logistical expectations, especially the unforeseen ones, but these expectations face the technical uncertainties inherent in a self-service system, such as the risk of encountering empty stations when departing or full

stations when arriving, not to mention the risks of failure or fall. The stations are part of a larger bike rental system that users take into account. The system used in Gothenburg is modest, including 68 stations (40 at the time of observation) and 924 bikes, whereas the system used in Toulouse includes 276 stations (253 at the time of observation) and over 2500 rental bikes, rendering one system large and the other small even though the components of each system are similar. The system is also connected to banking systems; urban structures and road/pavement/cycleway systems in the cities as well as other forms of transportations systems influence particular conditions observed at each station, only partially revealing the complexity of aspects at play. Documenting the rental bike station within the cycling population only provides a partial understanding of the system; the practices of embarking and disembarking onto these semi-public objects by accessing the rental bike stations are equally important. However, how does a pedestrian or a citizen become part of the bike rental cohort?

A strong technical standardization that does not tolerate significant upstream and downstream differences

These differences among cyclists make a massive and spectacular fact even more salient. This fact is the ability of the self-service device to impose the adoption of the same behavioural and corporeal scheme accomplished along non-negotiable steps and order – a set sequence or schema – on all users regardless of their identity, their origin, their trajectories, their cultures and their previous socialization. This type of sequence that can be described by the following excerpt in which a woman, who we can call Jane, acquires a bicycle in Toulouse.

1	A woman (Jane) walks towards the terminal with both hands raised, looking at something
2	that she holds in her hand (a smartphone).
3	Jane raises her head, moves her hands back to reach the personal shoulder bag on her
4	right shoulder and the back of her body. While slowing down the pace, Jane moves the
5	bag from her back to her right side and over to the front of her body.
6	Jane stops, lifts the bag with her left hand, puts something that she holds in her right
7	hand (a smartphone) in the right-hand pocket of the bag.
8	Jane opens the top of the bag and puts her left hand in the bag to search. She re-
9	balances, carrying the bag, and takes a new grip on the bag with her left hand instead
10	and continues to search with her right hand. The shift makes the opening of the bag
11	bigger, and she looks into the bag with concentration.
12	Jane temporarily raises her head looks around and refocuses on the contents of the bag.
13	Slowly, Jane shifts the direction of her body to the left, towards the terminal. She takes
14	small steps over to the terminal, still with one hand in the bag and still looking down. She
15	stops when she reaches the terminal and looks up at the screen while holding something
16	in her right hand (credit card) that she puts into the terminal.
17	She then continues to look for something in her bag and moves her body back by taking
18	a step back with her left leg lifting the bag even more, lowering the head (as if she is
19	going to dive into the bag). Then, she moves forward again while lowering the bag.
20	Jane moves her right hand to the screen (as if using her hand as temporary sun
21	protection for the screen). She arranges something over her eyes (eyeglasses).
22	Jane stands still for 10 seconds with her right hand by the screen and her left hand raised
23	closely over her eyes. During this interaction, she is keeping a very short distance
24	between her face and the small screen by the terminal.
25	Jane presses a button (or more on the screen) during the ten-second-long interaction.

Excerpt 1: A detailed excerpt of the bike-renting sequence. This excerpt describes how Jane engaged with the bike rental system – transforming the method of participation in urban mobility. Jane is a pseudonym created by the authors

This example illustrates a sequence, or script, in which a bike is acquired at the bike rental stand. First, the woman must *identify oneself and pay* (Figure 1:2–3, Exc.1 lines 13–16, 20–25). We can see that even before Jane acquired a bike, she was a human-non-human composition, or cluster, with clothes, a personal shoulder bag (Exc.1 line 3), a smartphone (Exc.1 line 2), a

credit card (Exc.1 lines 15–16), eyeglasses (Exc.1 line 21), etc. This cluster is then assembled in a way that interacts with the terminal. More specifically, on the terminal side, the system requires that the user presents his or her credit or subscription card and then releases at least one of his or her hands to interact with the touchscreen. The succession of these two requirements obliges users to find a practical solution to handling their bags, or at least of their portfolio, simultaneously. In this excerpt, this task is initiated through Jane's search in her bag, probably a place where she keeps her credit card or subscription card. At the same time, she also places herself in front of the terminal (Exc.1 lines 13–15) to be first in line when she is the only one waiting in an orderly queue (Garfinkel and Livingston 2003).

After the last button is pressed, she turns around with her body by taking a step backwards with her left leg and rotating the body 180 degrees while holding the shoulder bag with her right hand. Jane moves from the terminal towards one of the bikes. During this walk, she lifts the bag from her shoulder in her right hand so that the bag moves away from her torso. Jane adjusts the bag with both hands while walking and moves the bag from her right to her left hand and places the bag into the basket in the front of the bike.
Jane puts her left hand on the handlebar and leans forward with her right hand to press the button by the bike rack on the bike rental location. She then moves her right hand to the handlebar and draws the bike towards herself twice (and with some force).
The bike moves away from the rack the second time.
Jane relocates her right hand to the seat, followed by the movement of her left hand to the front of the seat. With her left hand, Jane adjusts the lever underneath the seat. She then uses both hands on the seat, swivelling the seat back and forth so that it is lowered to a suitable level.
Jane briefly looks up and moves her left hand to the lever again to lock down and fix the seat. Her right hand is moved slightly on the seat and her left hand over to the handlebar. Holding the bike with her two hands, Jane starts to walk forward to the left with one bike rack (empty) in-between the space where she moves her bike and where she moves her legs (body).
After passing the bike rack (poles), Jane shifts direction to the right. Her pace slows, and her right hand is moved over to the handlebar. Jane stops and lifts her right leg over the bar and onto the pedal. She looks to the right and takes off by moving her weight forward.
The bike is initially unsteady, but Jane sits up on the bike with a foot on each pedal, looks to the right and removes into the street, keeping her focus on a white car that is driving on the right-hand side towards the city. After the car passes, Jane speeds up and removes into the street.

Excerpt 2: A detailed excerpt of the bike-renting sequence, continued. This excerpt describes how Jane engaged with the bike rental system – transforming the method of participation in urban mobility

The identification (or paying) sequence is ended with *choosing a bike*, which is conducted by pressing the touch screen at the terminal. In the excerpt, selection is conducted with Jane's face and with the screen in close proximity, and movement from the terminal to the bike stand more involves a process of identifying which bike was selected (Figure 1:3, Exc. 2 lines 26–27). The bikes at the bike rental stand are organized in a numerical, spatial order that repeats a way of organizing things that is familiar to the pedestrian from rooms (Latour and Hermant 1998) and libraries (Crabtree 2000) to petrol stations (Normark 2006).

Hence, after selecting and then identifying a bike (or identifying and then selecting), the user has to *detach the bike within a fixed delay*. Jane is illustrative in the way she must a) press a button and b) use both hands to remove the bike from the bike stand (Exc.2 lines 32–35). Once the borrowing stage at the terminal is completed, then the new 'tenant' must choose a bike and arrange his or her belongings to free both hands, which are almost always required to remove the bicycle from its fixed position and position it to ride. Placing her shoulder bag into the basket (Exc. 2 lines 28–31) enables Jane to use both of her hands. The short walk from the terminal to the bike (Exc. 2 lines 28–31) affords the pedestrian a chance to re-configure himself or herself, preparing for her transformation into a cyclist. In practice, after pressing the button to detach the bike from the lock, most tenants use both

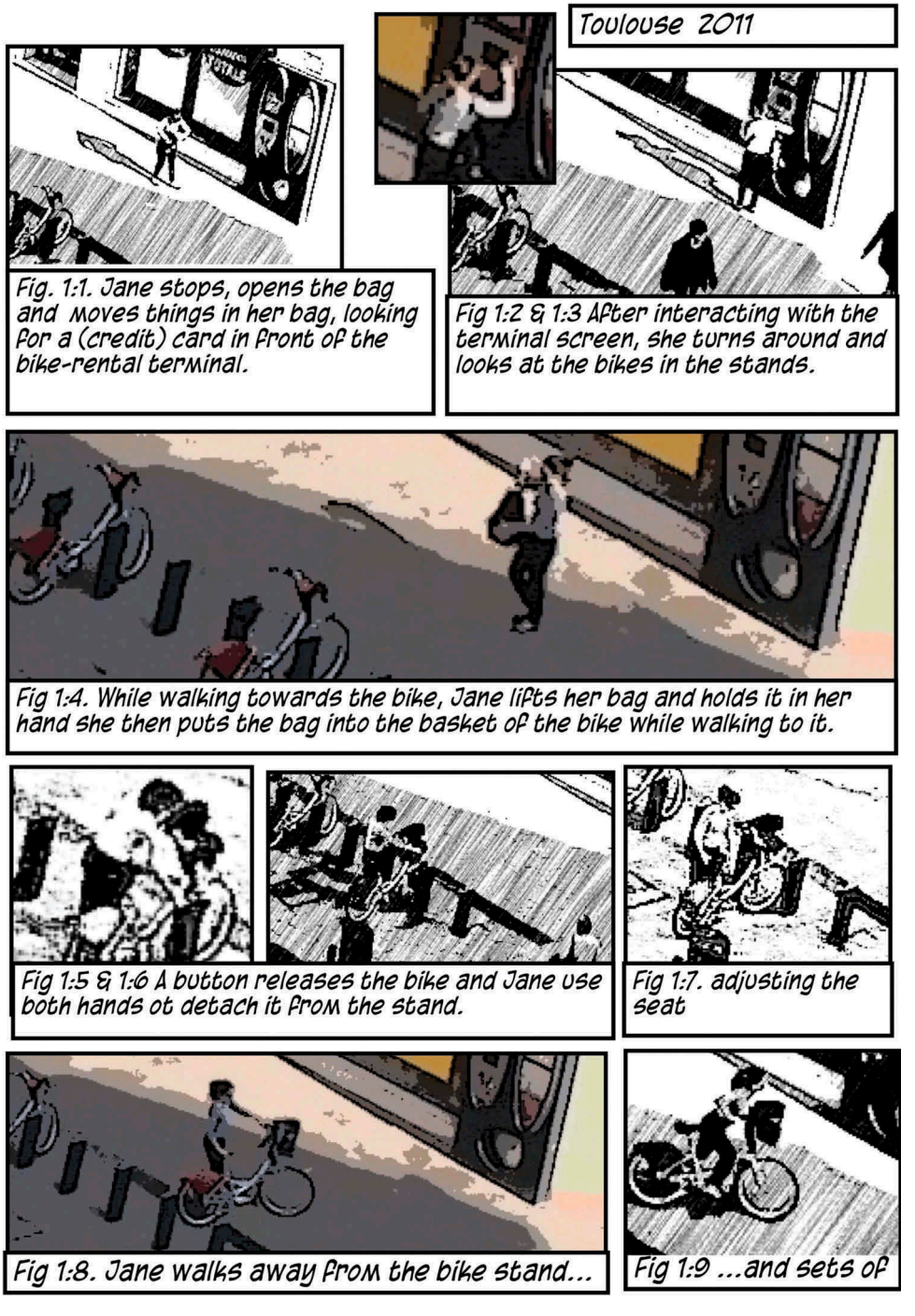

Figure 1. 1–9 A bike-renting sequence unfolding in Toulouse.

hands either on the handlebars, like Jane, or with one hand on the handlebar and one on the saddle (more frequently). Then, the user pulls the bike to detach it from its lock.

The imposition of a quick release is not very convenient for users. Indeed, once detached, the two-wheeler must be kept balanced, and this constraint complicates the adjustment of the seat

and the loading of the basket, two operations that require the use of both hands. In the excerpt (Exc. 2 lines 36–39), Jane adjusts the seat; the rental bikes are not one size fits all, and saddles have to be adjusted from time to time to fit each new next user. Having detached the bike, this *adjustment*, or calibration, has to be made as one simultaneously maintains the balance of the bike by pressing it against the side of his or her body or by using the stand and first placing the items in their hands in the front basket. Then, he or she can adjust the saddle when it is deemed necessary. The cluster that initiated the interaction with the terminal has been reconfigured – transformed – and is now a human-non-human composition consisting of the cyclist, (rental) bike, basket, personal bag in basket, etc. This reconfiguration of a cluster has also mobilized other motion for the acting unit.

The bike can finally be put into motion only after all these sequences have been completed. Once the bike is detached, the cyclist leaves the parking space by pushing the bike. Only then does he or she stop again to complete the loading activity and eventually ride the bike. Of course, when returning the bike, the person must behave in reverse: slow down, get off the bike, approach, engage the vehicle on the lock, possibly check the quality of the connection, again take his or her belongings, and leave. Hence, a series of actions, performances, practices, sequences, scripts or unfoldings must occur to accomplish the bike rental practice. Jane and all other identified rental bike cyclists must do the following:

(1) identify himself or herself and pay (Figure 1:2–3),
(2) select a bike (Figure 1:2–3),
(3) remove the bike from the stand over a fixed delay (Figure 1:4–6),
(4) leave (Figure 1:7–9) and then
(5) return the bike (which we return to below; see Figure 4:1–3).

This amazing ability of the technical device to 'bend' the diversity of people towards the achievement of a universal corporeal scheme reaches its maximum intensity in the interval between the validation of the lease at the terminal and the withdrawal of the bike. Indeed, even if everyone could act freely and take his or her time when renting a bike or when leaving the station, everybody would still be obliged to follow the same temporality once started. In the same cognitive and physical sequence, the countdown of the few seconds allows a person to engage at

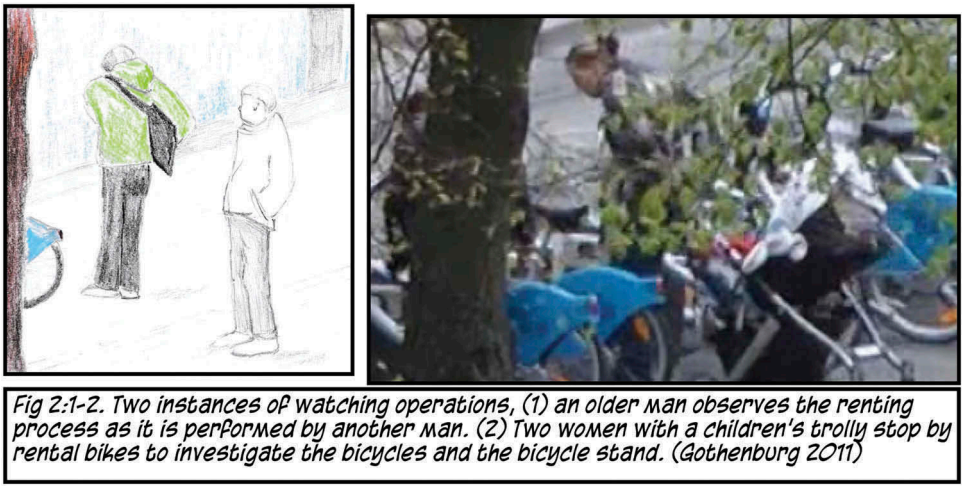

Figure 2. 1–2: Watching operations. Curious loiterers and potential users based on the seemingly similar and yet different object referred to as the bike-sharing bike.

the risk of penalty or failure. This constraint, which is made particularly noticeable through the continuous viewing of borrowing sequences, evidences a greater number of variants; differences are observed rather downstream of the location and, of course, upstream as well. In fact, the more one moves upstream towards the success of the lease, the more we find a strong variation in the unfolding of sequences surrounding the bike rental stand – a variation in which we can observe different renters depending on their personal relationships to the system. This relationship varies along two dimensions: being a novice or regular user on one hand and being a casual user or subscriber on the other. For example, the script that Jane follows is that of a casual user, as a subscriber would not have to use a bank card. That said, a novice subscriber cannot be observed (a subscription is made at home and not in front of the station). For this reason, most observable cases involve simple opposition between regulars and novices.

Regulars and novices

Regulars can be met in both cities, but they appear in greater numbers in Toulouse, where it is common to observe the anticipation of future operations; these regulars prepare their credit or subscription card to accomplish the next step, a bit like the fast-food clients who contribute to the service by preparing to be ready to recite their order once their turn comes after queuing obediently (Dujarier 2008). In the previous excerpt, Jane displays such experience, starting to search for something in her bag prior to her arrival to the terminal. These people are often alone and burdened – with backpacks, personal bags, shopping bags. For the 'experienced' people, the sequence of gestures is smooth, uniform and automatic.

Among the novices, who are observed almost exclusively in Gothenburg, we discover a surprising variety of practices. First, our observations show that a number of borrowings are actually only attempts to borrow. Incredibly long borrowing gestures are observed. Sometimes, people interact with the terminal for more than a quarter of an hour, remaining motionless the entire time, stoic, calm, focused, reading the instructions very slowly and tapping the screen again and again for a result that usually ends in failure. People then leave quietly without being able to rent a bike but not showing the slightest sign of anger, disappointment or excitement despite their failure. We can also observe a set of behaviours that are as surprisingly atypical. The first type of practices is 'watching operations'.

We frequently noted the presence of a passer-by who observed a cyclist borrowing a bike, stopped, scrutinized all actions of the candidate for rent very carefully, and then remained immobile and often far from the scene (as in Figure 2:1). Only after the departure of the observed person did the observer continue moving; in some cases, he just took the vacant place in front of the terminal and inspected the machine before leaving, as if the spectacle of rental had given him the desire to learn a little more, maybe for further testing. Others approached the bikes and the bike stands looking at how the bike was locked to the bike stand, how the bikes were constructed, etc. Several of these passers-by touched the bikes, tacitly seeing if they were the real deal. For example, the two women illustrated in Figure 2:2 above stopped beside the bikes. The older woman walked between two bikes to take a closer look at the bikes and the bike stand. The other woman, who had a pram, subsequently followed to look more closely at the rental system (but did not return to the rental terminal). The two women were not accountable as potential bike renters considering the baby pram, yet the walk afforded them the ability of stopping and looking at the bikes for some length of time.

Another unexpected use, a priori less oriented towards borrowing, is introduced by children who transform the station into a playground, encouraged by its height and the fixedness of the bikes, which promote climbing just as those individual coin operated merry-go-rounds placed in supermarkets that children love to ride so much and often for free.

This same activity is extended by groups of teenagers who seem to take the bikes as an original and fun means to pursue their interactions, such as sitting side by side on bikes as though they

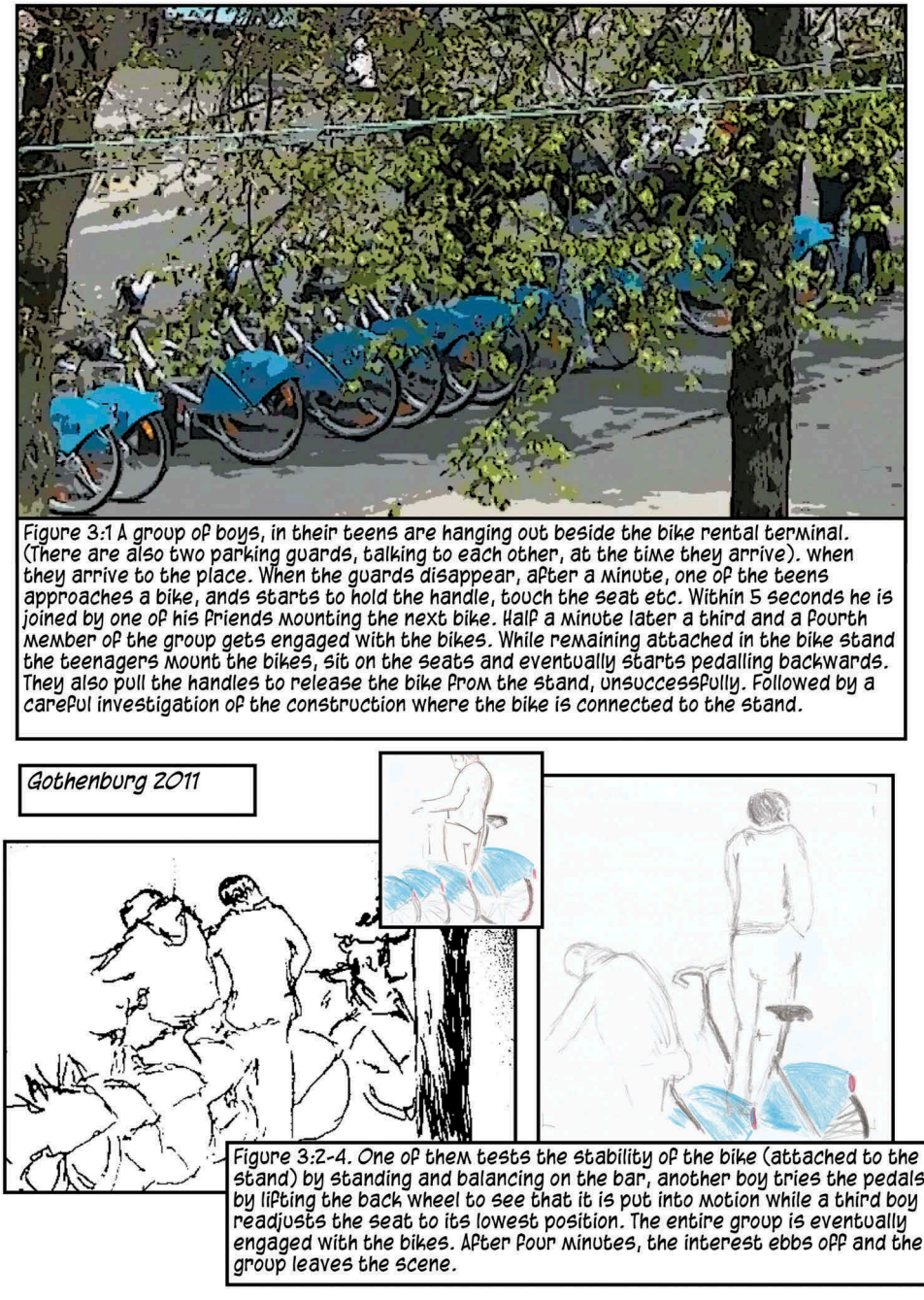

Figure 3. 1–4 The bike rental place – a playground or spinning exercise – as a playful way of appropriating the similarities and differences between bikes and bike rental bikes.

were on street furniture or pedalling backwards. The teenagers shown in Figure 3 know how to ride a bicycle; they know how the pedals work. There can be no doubt that these a priori parasitic practices, whether foreign or opposed to the borrowing function, play a role in familiarizing people with the device, as they find a place in their lives when positioned within the whole spectrum of

urban practices. However, the way in which the place is appropriated also explains something about the types of unfamiliarity associated with the bike rental practice. The teenagers experiment with the rental bikes in a way that also highlights the ways in which they are not similar to an ordinary bicycle. They check the robustness, they inspect the seats, they see if the bicycles are firmly attached to the stand, which are all things and practices connected to the 'first next time' when encountering a bicycle. While all these practices surpass the rental bikes' projected use, they function a bit such as a child who is examining how to get a thread through the eye of a needle: of course, they miss their aim, but these side-gestures are the necessary steps one must endure in order to achieve the desired objective.

All these practices also explain something about the deeper meaning of the observed differences. At first glance, these differences are clearly geographically located; as noted, above, novice practices, long attempts, observational and recreational uses are found almost exclusively in Gothenburg, while in Toulouse, we observe the most expert and most incorporated behaviours. When borrowing and returning rental bikes are excluded, the scenes of 'deviant' uses of the terminal represent 72% of the observed sequences in Gothenburg compared to 17% in Toulouse. However, the geographical difference also reflects a time difference. Gothenburg is just discovering a device that was opened the previous year but remained closed during the long winter months because of the cold climate. By contrast, Toulouse has been using the system regularly for 3 years. Thus, the comparison of our cases paradoxically presents less of an opportunity to move into a space, as we observe social and cultural differences; instead of going back in time and capturing the different stages of a generic dynamic of adoption. By studying Gothenburg, we observe the first steps towards taming the device, and by observing Toulouse (as well as considering some expert uses already present in Gothenburg), we measure how quickly this service falls within the skills and manners of the people. The differences between Gothenburg and Toulouse also indicate the appropriateness of discovering a public (or semi-public) system. The population in Gothenburg could be accountable for discovering the bike rental systems, while these achievements were less appropriate in a setting such as Toulouse, as the bike rental system was a mundane part of the urban texture there.

However, we should note that whatever the observational situation, whether we are facing novice or expert contexts, the lease transaction often takes considerable time. Sometimes, a person must learn more how to use a device that is more complex than one might think. Sometimes, the need to queue to choose between several options of usage and payment, to read a contract, or to coordinate the information on the screen and that on the payment terminal then succeed to unlock the bike and rearrange one's belonging to be ready to ride. In other situations, people encounter unexpected problems, such as selecting a defective bike and then having to return for another turn at the terminal and to start the rental process over (see below).

Regardless of the circumstances and the cities in which they occur, one of the most remarkable results of our comparative ethnography is the discovery of extraordinary patience, tenacity, calm, cultural goodwill, desire for success and tolerance of failure, as expressed by almost all our users when facing the many difficulties and major delays imposed by the device, whether due to a lack of ability or a defective bike. Contrary to what was long believed by the classical sociology of technology, it is not the users who resist techniques; instead, the techniques resist people. The bike rental stations are ungrateful, take advantage of the amazing benevolence of subjects, impose complex gestures of an unreasonable length and fail to pay back the amazing techie orientation of today's users (Cochoy 2011).

The 'routine rituals:' welcome and farewell

Using a bicycle to carry personal effects may appear to be an essentially functional practice devoid of any emotional sense, especially for a bike that does not belong to us and that we use only for a fleeting moment. In this regard, the vehicle should have no other value for its user than its contribution to the transportation task at hand, all the more so since it is a generic object that

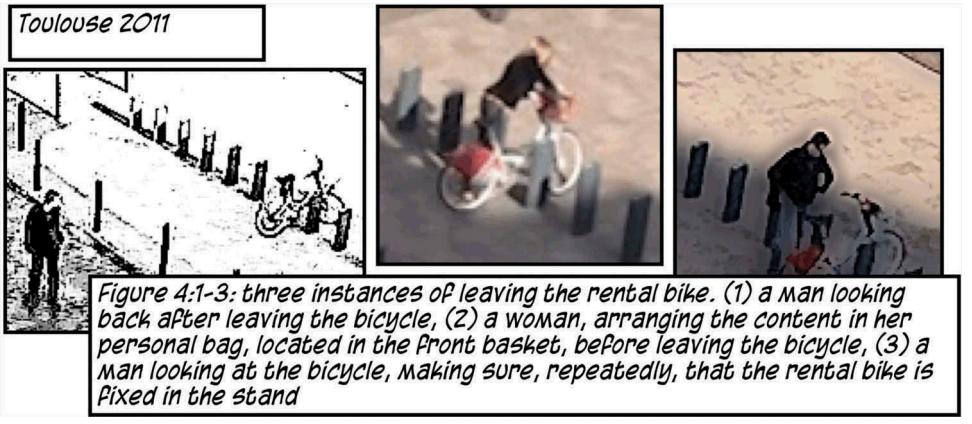

Figure 4. 1–3. Returning rental bikes to the stand. Three instances of leaving and adjusting bikes at the rental station.

one is certain to find again in the future. However, the observation of rental practices partially contradicts this view. People do not just use the bikes; they subtly develop relationships with them. These practices begin with the meeting of the machine, but they also last surprisingly long after its abandonment, at least for a few seconds. These relationships are manifested through welcome and farewell rituals see figure 4:1-3.

The welcome rituals are the most obvious. Long ago, classical anthropology revealed that an encounter with strangers is a potentially risky enterprise and therefore demands smooth operation, instituting special ceremonials intended to focus on knowledge and test a new partner's aggressiveness or goodwill in order to determine whether one should flee, fight or trade (Mauss 2002). What is true for anthropological encounters is also true in the case of hybrid meetings between a pedestrian and a bicycle. In the same way that foreign and indigenous people engage in a series of exploratory actions prior to stabilizing their relationships, the bike tenant often performs a series of specific actions when renting a new vehicle. These actions are ambivalent because they are both relational and functional – half rituals, half routines.

If welcome rituals are rare, one might think that farewell rituals simply do not exist; why should people worry about a bike they leave and which is not theirs anymore? Of course, many people undertake at least a farewell ritual guided by rational and functional imperatives. In particular, before leaving a bike, users often check the quality of fixation either by trying to take the bike again, by watching the colour of the light or by later marking a pause until the beep is heard that confirms the successful performance of the bike return. In both countries, any bad connection is actually determined by the technical system as a continuation of the contractual relationship. This determination is made before that system triggers the imposition of additional billing after the first half hour is over (in the best case) or the payment of the deposit fee is lost due to the loss or theft of the bicycle (in worst in case). Although the identification of the user's bank account facilitates leasing activities, such identification can also turn against users, who are clearly aware of that. In this type of situation, the users' concern for the successful attachment of the bike is inseparable from their own detachment; the strength of the technical linkage between the bike and the lock is a measure of the dissolution of any 'social' relationship between the bike and the user.

However, leaving a bike is also an opportunity to perform many more gestures than just the functional verification of attachment (of the bike) and detachment (of the cyclist). Before giving the first pedal stroke and finding their balance, several users make a final stop, for instance, by searching for an object in their bag, readjusting their hair or tucking in their shirts. Bike return scenes are symmetrical

to the analogous scenes that we witnessed earlier: they are ambivalent, both functional and symbolic. On the one hand, utilitarian imperatives are very present. Cycling 'messes up' clothes and hairstyle, which must then be readjusted to ensure the transformation back into a 'presentable' pedestrian. The rental station also seems to be an appropriate place to take a break, as if the reconfiguration of the cyclist into a pedestrian was a transformation that requires a specific place and time, or people felt the need for a moment of transition to engage some last 'interobjections' with or around their bikes, acclimatizing to the abandonment of the vehicle or preparing for their new pedestrian state. Here, we find the 'domestic' dimension of bikes encountered earlier. People take possession of their vehicles just as they enter their home, and they take off their bikes as they leave home; they prosaically check that the door is locked and that they have not forgotten anything, but they also leave a private and relaxed state to transition to the public space in which appearances matter more. Therefore, they ensure that their bodies have an appropriate appearance, adapted to meeting the public in terms of makeup, dress, presentation, etc the images in figure 4 all illustrate different stages of farwell rituals.

The borrowing and returning operations are thus possible means of identifying the value of rental bikes as 'transient mobile homes.' Beyond its anecdotal appearance, this observation conveys important issues. The 'domestic' dimension of bikes, probably unbeknownst to the players, helps to reduce the mental distance between one's 'home' and the city. More than any other means of transportation, especially in cities where parking near a targeted location is a challenge, the use of a bicycle and its ability to bring us closer to visited places offers the special feeling of being closer to the place that we want to reach, of living just in front of the proverbial store, and thus we may promote favourable conditions for urban 'sustainable' behaviour.

Understanding the rental bike station – an operator of sociotechnical reconfiguration

The rental station is an operation of transformation, metamorphosis and reconfiguration of all the involved elements: the bicycle (which oscillates between public service and private vehicle), the person (who turns from cyclist to pedestrian and vice versa) and objects (which often shift places, sliding from the body of the pedestrian to the ground, facing the terminal, or into the basket, facing the bicycle, and, of course, vice versa). In this respect, the rental station is a powerful device for social reconfiguration; it is able to change the appearance, the constitution and, more significantly, the cognitive state and behaviour of the people who interact with it.

The terminal emphasizes the strong ties between people and things and the concern that the former not become detached from the latter. Thus, it is rare that a pedestrian deposits his or her belongings in the basket of a bike before moving to the terminal. The pedestrian's solution depends on the type of load. For pedestrians equipped with commercial bags or bags with handles and without straps, the most common way for pedestrians to handle their bags is to drop the bags on the ground between the pedestrian's legs, leaving him with no free the hands. This solution has the advantage of not only limiting the chances of loss of control and theft of personal belongings (keeping them close to oneself) but also preventing their overthrow, deterioration or unveiling (the legs act as guardians and thus enable the maintenance of one's property rights). People carrying backpacks or shoulder bags are at a greater risk of having these loads pulled from their torso to the front of their body. People thus manage to keep their hands free to interact with the terminal, but they also keep their ID, payment means and belongings within reach. Overall, everything occurs as though invisible elastic was linking the individual to his or her equipment and preventing this assemblage from dissociation either by fear of theft.

On the bicycle side, everything is reversed: the device is more prescriptive while reversing the direction of the effects. The rental bicycle introduces a weak a priori prescription mode for the allocation of objects, which is halfway to what is observed on the side of pedestrians and automobiles. Pedestrian transportation offers no other choice than carrying one's objects on one's body, and auto transportation leads people to the opposite behaviour since people have to systematically drop their belongings either beside them or in another part of the vehicle.

However, the rental bike basket provides a choice for some objects that lies between the 'body logistics' and the logistics delegated to the technical device. We are surprised to find that many women who we might assume to be 'attached' (literally and figuratively) to their handbags (Kaufmann 2011) remove this valuable accessory without hesitation to place it into the basket without even trying to secure it (for example, by linking the belt to the handlebars).[6] This type of behaviour confirms that the bicycle seems to work well from its loan as a mobile home. Rather, while operations at the terminal incite a sense of ownership, enhanced vigilance, and tightened bonds between people and their things, bicycle borrowing introduces symmetric relaxation and protection close enough to the enclosure that is offered by the walls of one's home in the form of an immaterial and weakened version.

The front basket of rental bicycles complements the supply chain by providing a vehicle that extends the shopping bag and its ability to overcome the lack of anticipation regardless of whether we have taken a car or a bike or forgotten to bring a suitable container. In this sense, the rental bike is one of the privileged medium towards the establishment of more sustainable urban logistics finally extended to collective issues. Here, we meet one of the key strengths of rental bicycles: their ability to assist the improvised logistics of people who prefer the freedom of a personal journey 'without discontinuity' and without being drawn to the more demanding solutions offered by public transportation. Only retailers had truly thus far bothered to help with the unforeseen logistical needs of consumers by offering more or less ergonomic shopping bags (Cochoy, Hagberg, and Canu 2015; Hagberg and Normark 2015).

In this respect, the rental station is a powerful device for social reconfiguration; it is able to change the appearance, the constitution, and the cognitive state and behaviour of the people who interact with it. That said, it is important to note that technologies should not be thought of in general terms but should be rather developed based on practical and behavioural information that emerges from their use (for a brilliant plea for such an approach, see Suchman 1987).

Conclusion

In this article, we specifically focused on the activities revolving around the bike rental station. The bike-sharing service is a pivotal device in more than one way. This vehicle offers a transitional compromise between private and public property, and it helps convert pedestrians into cyclists and vice versa. This service opens a gateway to more sustainable urban transportation and most importantly, it manages to finally achieve the utopia of a public transportation system without any break in continuity, a system about which the promoters of the Aramis Metro had dreamed but were unable to achieve (Latour 1992). Around this pivotal point occurs the acclimation of pedestrians to the practice of cycling and the conversion of former cyclists to more spontaneous, casual and freer bike behaviour. Unlike personal bikes, these vehicles can be taken or abandoned at any time and almost at any place within the limits of the available stations. Hence, rental bikes are not only the vehicles observed as a feature in the biking cohort, so are their terminals, just as the public transport system would not exist without its stations and bus stops.

Inspired by scholars such as Mike Michael, we can see mobility as accomplished by co(a)gents – combinations of humans and non-humans that act, combined and detached, sutured and sundered – as part of everyday life. The moorings of mobility systems reveal the production and recognition work of making these co(a)gents – seeing how these combinations and re-combinations are negotiated by the order-productive cohort.

The bike rental station is a social reconfigurator at which these co(a)gents transform or transfigure from pedestrians to cyclists or vice versa. Again, suturing and sundering two wheels to and from the assemblage/cluster is production and recognition work that is far from straightforward. The assemblage/cluster of bags, goods and bodies is detached and reconfigured with the vehicle in ways in which *all* these parts participate. These reconfigurations are not only a question

of utility; combinations and recombination as well as departures and detachments are created with welcome and farewell rituals.

Studying moorings more closely enables us to examine the practice of engaging in mobility and entities that move. Far from being human cyclists and human pedestrians, these little monsters consist of carried practices and container technologies that participate in the act of trans-*portare*. Moorings are transistors that transfigure within transport systems. They inhibit and enable, and as such, they play a pivotal role in mobility. Ultimately, bike rental, far from being an equivalent of other means of transportation (pedestrian, car, bus or even personal bike), seems to have the ability to reshape significantly observable behaviours of urban logistics.

One of the most apparent dimensions regarding the practices of renting bicycles is the technical standardization of behaviour. Following Latour, one could argue that pedestrians (aspiring to become cyclists) were strictly formatted following a prescribed script (Akrich 1992). The system bends the population of pedestrians towards a corporeal scheme that they are obliged to follow if they want to become cyclists. Hence, there was a significant inclusion/exclusion of the population of who could become a rental bike cyclist. While the system (the terminal and the bike) prescribed certain features for the pedestrian to cycle – such as two legs and two arms, a credit card, ability to see, etc. – the human also deemed certain features of the bicycle as necessary for a successful merger (such as ability to use the pedals, working tyres, etc.). Therefore, a strong technical standardization without downstream differences was coupled with a limited assessment of technical similarities and utility assessed by the cyclist onto the cycle.

Despite this standardization of human and non-human entities, a limited level of adjustment and variation was also part of the performances of bike rental practices. After renting a bicycle, cyclists could adjust parts of the rental bike, such as the height of the seat and the amount of goods that the bicycle could take, but the co-present order-productive cohort also differentiated the population into novices and regulars through production and recognition work.

The existence and persistence of novices and regulars was further understood through the comparative ethnography made possible by filming two locations. The observations in Toulouse were different from the observations in Gothenburg. However, instead of finding cultural variation (a French and a Swedish cycling practice), we found substantial variation in how novel and mundane technologies were approached within an urban setting. Rental bikes, identical in technology and appearance (apart from a colour difference), are approached very differently when they are perceived as novel or mundane. The way humans approach the rental bikes in a causal manner in Toulouse while curiously watching and testing the system in Gothenburg was by far the most significant difference within the study. This variation showed not only that certain practices develop around a setting such as the bike rental station but also that these practices change over time. Without interpreting diffusion from France to Sweden, we can still observe different layers of accountable practices. While the differences were interesting, they also reveal that the implementation of systems are locally routed rather than globally diffused.

Part of the difference between the two settings was the specific 'watching operations' and playful transformation of the rental station into a playground, which occurred in Gothenburg. As such, these practices and playful transformations reveal an often ignored part in the translation process of doing and becoming users. Instead of speaking of early adopters in accordance to the diffusion model as the first users of technology, we have to acknowledge the importance of playing and watching as initial 'use' that pre-empts the configuration of scripted behaviour in technology use (on configuration, see Woolgar 1990). Further studies of this issue could highlight how meanings are configured in relation to the competences as they evolve and re-configure the practice.

Bike rental practices ultimately appear to be far from being equivalent to other means of transportation (pedestrian, car, bus or even personal bike), but they seem to have the ability to reshape significantly observable behaviours of urban logistics. Thus, we have added insights into the variation and heterogeneousness of various cycling practices by elaborating on the practices of becoming rental bike cyclists. However, further investigations into the practices in motion of being

rental bike cyclists still remain; we have only scratched the surface. With the introduction of dockless rental bikes, further rental bike practices are currently emerging, with the terminal interaction displaced into the users smartphones (see Spinney and Lin 2018).

At a more general level, all these results lead us to wonder whether thoughts and actions aimed at converting cities into more sustainable models should not focus on these small sociotechnical arrangements that are largely neglected, even if they are clearly building our everyday urban experiences. Indeed, as our study shows, minor details matter. Rather, our observations show that any individual interaction between users and bike rental stations creates, depending on elements involved, comfort or discomfort, fluid gestures or technical failures, and creative practices or aborted attempts. All these micro interactions accumulate to shape preferences and thus ultimately favour or impair the emergence of more sustainable practices.

Notes

1. The term modal shift is commonly used in mobility studies and refers to the possibility of replacing one mode of transport (such as driving a car) with another (such as cycling or public transport) to thus enhance sustainability from a system perspective. However, this paper instead focuses on the everyday accomplishment of an integrated shift from one mode of transport (using one's feet) to another (using a bicycle).
2. We account for these considerations at length in another article by showing similarities between techniques researchers adopt and techniques of regular filmmaking, Cochoy et al. (2016).
3. In human geography this is sometimes described as 'non-representational' theory or 'more than representational theory;' cf. Dewsbury et al. (2002), Thrift (2011) or Wylie (2002).
4. In both cases the selected streets are at the core of shopping areas in city centres and of transport systems (the tram in Gothenburg and the subway in Toulouse). However, an important difference should be noted. Gothenburg's artery includes a double exclusive cycle path while Toulouse's street is devoid of this type of pathway. This difference constitutes a major difference between the two cities, particularly in terms of their city centres.
5. This study is published in Cochoy et al. (2017).
6. Note that this was a trend that, while not the majority, was often observed among female cyclists, all bikes considered, as among the handbags identified in our statistical observations, 41% were placed on the bike rather than on the body and mainly in a bike basket when one existed.

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