



## Original Research Paper

# Why do companies' institutional strategies differ across cities? A cross-case analysis of bike sharing in Shanghai & Amsterdam

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## ABSTRACT

Bike sharing has the potential to contribute to more sustainable urban mobility. Companies providing this service need to generate legitimacy for their venture when entering new cities. They may have to change formal and informal institutions in cities they want to operate. In this paper we explore how and why companies' institutional strategies differ across cities. We compare strategies of emerging free-floating bike sharing companies in Shanghai and Amsterdam. These cities provide a counterintuitive starting point: Shanghai is a car-dominant city which has embraced bike sharing, whereas in Amsterdam – a typical cycling city – it was banned soon after its introduction. We find that companies use similar launching strategies, but different institutional strategies as they respond to varying spatial conditions consisting of local institutions (e.g. rules, norms and cultures) physical place specific elements (e.g. infrastructures and urban mobility challenges) and issues of power (e.g. support and resistance).

## 1. Introduction

Bike sharing systems are increasingly spreading around the world (Fishman, 2019). Shaheen et al. (2010) reported over 139,000 shared bikes in an estimated 125 cities in 2010, while Nikitas (2019) now estimates a global bike sharing fleet of 15 million. Bike sharing can be seen as part of the 'Sharing Economy' and is a relatively new addition to urban mobility systems. Bike sharing can make urban mobility more sustainable depending on ridership and the modal shifts it may induce. Originally many systems were publicly funded or sponsored by city authorities, mainly because of expensive necessary docking stations. However, combining smart locks, GPS and smartphone apps makes it possible to have a bike sharing system without such costly infrastructure. These so-called free-floating bike sharing (FFBS) systems can operate without public financial support. Chinese companies Ofo and Mobike, with millions of bikes in over 200 cities (Mobike and WRI, 2018; Ofo, 2018) are examples responsible for the fast growth of bike sharing worldwide. This development also led to new urban and institutional challenges such as oversupply of bikes, nuisance, conflicts with parking regulations and a lack of public acceptance in some places (Van Waes et al., 2018a).

The introduction of FFBS in cities can – in a way – be compared to the introduction of platform-based business models like AirBnB and Uber. These digital platforms allow for relatively easy introduction across cities worldwide because they work with existing physical assets. When they launch their service in a city, they may conflict with local regulations or user habits and successful continuation may become difficult because of these local institutions. For such companies it is then necessary to legitimize their business, either by adapting their business model to the local situation or by trying to change local formal and informal institutions. The latter strategies have been studied in the literature on institutional entrepreneurship and institutional work (Battilana et al.,

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2009; Lawrence and Suddaby, 2006). In the case of FFBS, unlike pure platform-based initiatives, there is a need to put assets, i.e. bikes, into the city. Because these assets are not extremely expensive, fleets of bikes are launched into cities overnight. The idea is then to quickly attract a large user base, which could socially legitimize the venture even before it is legally accepted (Pelzer et al., 2019).

This paper focuses on cycling, and especially bike sharing as an exciting development that may challenge complex urban mobility regimes. Bike sharing can contribute to the growing global niche of non-motorized transport including private bikes and diverse assisted vehicles (e.g. e-scooters, e-bikes, often referred to as *micromobility*). The combination of digital technologies, distributed access and non-motorised transport can potentially transform individual, motorized transport that we see in most cities today. By closely focusing on strategies that niche actors deploy, we can unveil current developments that may change urban mobility regimes all over the world.

This study investigates FFBS companies' institutional strategies across different geographical contexts by comparing the development and implementation of FFBS in Shanghai (China) and Amsterdam (Netherlands). The starting point is the counterintuitive outcome of this new form of urban mobility in these two cities. In Shanghai – a car-dominated city – FFBS was widely adopted, while in Amsterdam, often referred to as the global cycling capital, it was banned by the municipality soon after its introduction. This suggests that the idea that a business model in one city can simply be replicated in another city is naïve. Globally operating companies have to finetune their operations to each new city where they want to launch. However, there is still much to be learned about how space-specific institutional strategies are related to the local circumstances in different cities. This leads to our research question: *How and why do companies' institutional strategies differ across cities?*

To answer this question two lines of inquiry are mobilized. The first is concerned with better understanding how place-based distinctiveness influences innovation processes and the second with the role of companies' institutional strategies. Both literatures have become increasingly visible in the sustainability transitions literature.

The first body of research is drawing on economic geography and urban studies concerned with the question how particular geographies enable or constrain sustainability transitions (Hansen and Coenen, 2015). A part of this scholarly work is pointing at cities as a particular site for sustainability transitions and the ways in which differences in urban institutional arrangements are important (Raven et al., 2019). A general insight from this field is that transitions occur differently across places, i.e. there is a particular place-based distinctiveness to urban sustainability transitions. However, there is still more to be known about *how* place-specificity matters for urban transitions.

The second line of enquiry is drawing on neo-institutional literature to explore dynamics of institutional change, particularly in relation to the role of agency therein (Battilana et al., 2009; Lawrence and Suddaby, 2006). A general insight from this literature is that the ability of actors to change institutions depends on the range of regulatory, normative and cultural-cognitive strategies that actors deploy (e.g. Fuenfschilling and Truffer, 2016; Jolly and Raven, 2015; Van Waes et al., 2018a, b). Companies' institutional strategies and struggles for legitimacy have been recognized as an important avenue for research in the sustainability transitions field (Köhler et al., 2019).

Combining both lines of research enables an improved understanding of the spatial conditions that influence companies' institutional strategies across different urban contexts. Hence, the purpose of this paper is to explore and understand spatial variety in companies' institutional strategies by investigating and comparing FFBS across cities. Because of the rich empirical data in this case study our ambition is to inductively propose possible relations and mechanisms that link institutional strategies to place-specific elements on the basis of a framework derived from the literature.

In Section 2 we develop a framework to understand institutional strategies across cities. Section 3 outlines the research design and cases. Institutional strategies are analysed in Section 4 and compared in Section 5. In Sections 6 and 7 we respectively discuss our findings and conclude this paper.

## 2. Theoretical background

### 2.1. Bike sharing and institutional strategies

Bike sharing research has mostly focused on station-based systems, the traditional model available in cities across the world including Paris, London, New York, Berlin and Beijing (Barquet et al., 2016; Fishman, 2016; Lihong et al., 2015; Mátrai and Tóth, 2016; Shaheen et al., 2010). Only recently – in par with its rapid emergence – researchers started investigating FFBS. So far, this new form of urban mobility has been explored through user, governance, business model, upscaling and socio-technical transition perspectives (e.g. Du and Cheng, 2018; Ma et al., 2020, 2018; Nikitas, 2019; Petzer et al., 2019; Van Waes et al., 2018a, b). An institutional perspective, however, is missing, which could provide better understanding in processes of implementing new forms of urban mobility.

Because when introduced to cities, FFBS is a radically new model for bike sharing. Therefore, FFBS companies have to create legitimacy for their new venture and they have to change formal and informal institutions in the city where they want to operate. Here we define institutions as highly routinized actions that have become more durable structures, which provide stability and create recognizable patterns in social interactions (Scott, 2014). Institutions can be distinguished into regulative, normative and cultural-cognitive institutions (Scott, 2014). Regulative institutions refer to formal rules, policies or laws; normative institutions consist of common norms, habits, roles and responsibilities; and cultural-cognitive institutions are based on shared values, beliefs and assumptions. Actors who initiate changes that contribute to transforming existing or creating new institutions have been termed *institutional entrepreneurs* (DiMaggio, 1988). They are agents who purposefully work towards changing existing or creating novel

institutions (Perkmann and Spicer, 2008).

The *institutional work* literature more specifically explains *how* actors engage in institutional entrepreneurship. Scholars have identified a variety of institutional strategies aimed at creating, maintaining or disrupting institutions (e.g. Lawrence and Suddaby (2006); Pacheco et al. (2010); Klein et al. (2013), Fuenfschilling and Truffer (2016)). Following Scott (2014), such strategies can target regulative, normative or socio-cognitive institutions. Strategies that focus on influencing the regulatory institutional setting include lobbying, negotiating defining, advocating, litigating, policing and delimiting organizational fields. Strategies that focus on influencing the normative setting include framing by creating identities and constructing images, challenging prevalent norms, forming normative networks and altering traditional meanings. Strategies that focus on influencing the cultural-cognitive settings include mimicry – associating a new practice with existing ones; isomorphism – mimic successful models for own legitimacy; developing new meaning systems; theorizing; educating and spreading knowledge.

Relevant for our work is a pioneering paper by Winslow and Mont (2019) that also takes an institutional work perspective on bike sharing but focuses on a single city. They examined strategies of bike sharing companies in Barcelona. They show that companies deployed regulative strategies such as lobbying to influence policy makers and regulatory frameworks, collaborating with other bike sharing companies and local authorities, and defining boundaries of the bike sharing field. Normative strategies included creating identities to appeal to users and governments, challenging traditional consumption norms (e.g. bike sharing as alternative to cars or private bikes), forming normative networks with other companies (e.g. creating a common identity) and altering traditional meanings (e.g. sharing between strangers instead of an activity in the private sphere). Cultural-cognitive strategies included developing new meaning systems (e.g. creating own vocabulary) and educating (e.g. creating and spreading knowledge about bike sharing).

As bike sharing can be seen as part of the sharing economy, relevant insights are also provided literature on sharing platforms. Uzunca et al. (2018) show that existing institutional structures matter. By comparing sharing economy platforms (Airbnb & Uber) in different institutional settings, they found that Uber with its disruptive strategies could transform institutions and gain legitimacy in countries with weak institutional structures. In more institutionalized economies, the company struggled with old institutions such as taxi-unions. In line with this, Pelzer et al. (2019) showed that Uber failed to get legitimacy in a highly institutionalized taxi-regime. Uzunca et al. (ibid) also highlight the importance of local community acceptance and distinguishing between different institutional levels. Getting local legitimacy also depends on whether national governments leave the regulation of an innovation to local authorities or establishes standards nationwide. Studying Airbnb in New York, Amsterdam and London, Boon et al. (2019) found that both users and non-users play an important role as they deploy institutional strategies (users theorize and educate about benefits of home sharing whereas non-users demonize it by pointing to risks and impacts).

## 2.2. Geography and institutional strategies

Several studies have emphasized the importance of place-specific elements for processes of innovation and sustainability transitions. Hansen and Coenen (2015) point out that formal and informal institutions as key constituting factors of space are related to geographical differences in economic activity and performance. They identified five place-specific elements that may influence sustainability transitions: 1) urban and regional visions and policies; 2) informal localized institutions; 3) local natural resource endowment; 4) local technological and industrial specialization and 5) consumers and local market formation. Truffer et al. (2015), describe three main dimensions which a geography of transitions should address: socio-spatial embedding, multi-scalarity and issues of power. Socio-spatial embedding relates to the conditions in specific places, like cultures, institutions, political systems or networks, which enable actors to promote new technologies, new lifestyles or new policies. Multi-scalarity points at the ways in which innovations emerge in particular places in relation to other innovations and developments within and across different spatial scales, often through the work of individual and organizational actors that work across those scales. The concept of power relates to the possible imbalance of who controls, wins and loses in transition processes.

Some pioneering work on spatial dimensions of institutional work is also available. Marquis and Battilana (2009) argue that with globalization the local has still remained important, and local particularities have even become more visible and salient. They show that organizations are simultaneously embedded in local communities and in broader global environments. And they point out that some mechanisms behind variation across places may be related to physical geography, such as climate and distance. In their study they pay attention to understanding the importance of regulative, socio-normative and cultural-cognitive institutional influences of local communities on organizations. Lawrence and Dover (2015) also explore the roles that places play in institutional work. Places may motivate actors to affect institutions, as well as provide material and symbolic resources used in those efforts. They found that places contained, mediated, or complicated institutional work, depending on how place is conceptualised.

We conclude that despite these pioneering publications, further work is necessary to understand spatial variety in institutional strategies across different geographical contexts. A geographical perspective on institutional strategies could show an uneven landscape of these strategies. A focus on place suggests the importance of location as both a background for action (enabling/constraining) and as a target for institutional strategies. As such, we investigate the recursive relations between institutional strategies and place-specific conditions through which sustainable innovations may emerge differently across places.

## 3. Research design

Based on the theoretical notions that we identified in the literature we developed an analytical framework for our research to combine the two lines of inquiry discussed above. We worked with a framework that primarily distinguishes between regulative,

**Table 1**  
 Framework of geographical and institutional elements and descriptions of what to look for in the data.

| Dimension               | Element                          | Description  |
|-------------------------|----------------------------------|--|
| Socio-spatial embedding | Regulatory                       | <i>Setting</i><br>Policies and formal rules for the mobility system and for bikes and bike sharing; rules regarding bike parking and bike infrastructures<br><i>Strategies</i><br>Lobbying for regulations related to bike sharing; proposing measures to organize bike sharing; negotiating and collaborating with authorities; delimiting organizational fields  |
|                         | Normative                        | <i>Setting</i><br>Urban vision, common expectations, norms, roles and responsibilities in the urban mobility system related to bikes and bike sharing; how are bikes part of the urban mobility system?<br><i>Strategies</i><br>Creating identities and constructing images around bike sharing; challenging prevalent norms by promoting bicycles (sharing) as an alternative to cars and bicycle ownership; forming normative networks, altering traditional meanings; standardization |
|                         | Cultural-cognitive               | <i>Setting</i><br>Cultural meaning, shared values and ideas about bicycles and bike sharing; existing practices related to bikes; cycling culture(s); what is the impact of FFBS?<br><i>Strategies</i><br>Associating and linking bike sharing with existing practices or institutions (mimicry); isomorphism; developing new meaning systems such as vocabulary or currency; educating and spreading knowledge about cycling and bike sharing   |
|                         | Physical place-specific elements | Elements related to the geography of a city and related to the physical transport infrastructures; natural resource endowment  |
| Multi-scalarity         | Networks, knowledge              | The networks and knowledge links that connect innovation locally and organizations across different spatial scales (e.g. regional, national, global)   |
| Issues of power         | Support and resistance           | Who wins and who loses when innovations scale up? Whose voices and concerns are heard?   |

normative and cultural-cognitive institutions, and inductively identifies strategies that the FFBS companies applied across city contexts. The scheme is meant to be used as a starting point for the interpretation and identification of meaningful relationships in our data.

We started out with the three main dimensions by Truffer et al. (2015). Within the dimension of socio-spatial embedding we place the three institutional pillars by Scott (2014); these local institutional elements enable or constrain actors to promote innovations. We distinguish between local institutional settings and strategies. We added physical place-specific elements (as non-institutional elements) to the factors that may enable or constrain innovation in a specific place, as indicated by Marquis and Battilana (2009). The element ‘natural resource endowment’ that Hansen and Coenen (2015) indicated was also added here. The dimension of multi-scalarity helps us identifying the relations across different spatial scales. Here we may find how globally operating FFBS companies engage in local urban projects. This dimension also reminds us of the local-global model of niches (Geels and Raven, 2006). Sengers and Raven (2015) showed that knowledge and networks can be the media for multi-scalar links. The final dimension of power sensitizes us to support for and resistance against FFBS, which may point to specific groups (users, citizens, tourists) winning or losing because of bike sharing (cf. Table 1).

The research was designed following conventional comparative case study methodologies and following traditions in interpretive and qualitative research (Yin, 1994). The main data used were interviews, newspaper articles and policy documents. The qualitative case analysis investigated the ways in which FFBS is discursively presented, contested, rejected and implemented. This type of analysis is a common research strategy in institutional analysis, because discourses as expressed in texts, speech, visuals and so on, form a critical part of institutional change (Phillips et al., 2004). Data was triangulated as the combination of different sources helped to reconstruct the development process of FFBS in each city. A detailed reconstruction and structured analysis of events and strategies was built into an explanatory narrative around the spatially-informed analysis of institutional strategies. Next to this, four public meetings about FFBS and regulations were attended in the Netherlands.<sup>1</sup>

Semi-structured interviews were conducted with FFBS companies (founders or local managers) in each city in the period of January 2017 to April 2018 including fieldwork and site visits in Shanghai. See Table 2 for an overview and characteristics of the companies. In Amsterdam also policy-makers were interviewed. Interviewing these actors in Shanghai was more difficult: despite repeated attempts it proved difficult to reach governments. The interviews ranged between roughly 30 min and 1.5 h, were conducted face-to-face and were recorded with permission from the interviewee (see Table A1 in the Appendix for an overview). In this article, interviews are referred to by R1-R8. One interview was conducted in Chinese and one interview was partly in Chinese and partly in English. A local researcher provided support with the translation between Chinese and English Table 2.

The elements shown in Table 1 functioned as sensitizing concepts for the empirical analysis (Blumer, 1954). These descriptions of key concepts from the literature focused our attention to particular empirical phenomena, which enabled a further conceptualization of the nexus between place-specific institutions and other elements and institutional strategies. The interview transcripts were

<sup>1</sup> Deelfiets maakt doorstart, (29 January 2018, Pakhuis de Zwijger, Amsterdam), Inspiratiedag Tour de Force (23 November 2017, Ede-Wageningen), Deelfietsbijeekomst CROW Fietsberaad (2 November 2017 and 2 February 2018).

**Table 2**  
Company characteristics and operation in Amsterdam and Shanghai.

| Companies       | Established        | Markets                                     | Amsterdam ** | Shanghai |
|-----------------|--------------------|---|--------------|----------|
| Hellobike       | 2016 in Amsterdam  | Netherlands                                 | ●            | –        |
| Flickbike       | 2017 in Amsterdam  | Netherlands                                 | ●            | –        |
| Obike           | 2017 in Singapore  | Asia, Europe                                | ●            | –        |
| Donkey Republic | 2016 in Copenhagen | Europe                                      | ●            | –        |
| Mobike          | 2016 in Beijing    | Asia, Europe, North America, South America* | ●            | ●        |
| Ofo             | 2014 in Beijing    | Asia, Europe, North America, South America* | ●            | ●        |
| Hello Chuxing   | 2016 in China      | China                                       | –            | ●        |

\* In 2019, both Ofo and Mobike ceased all international operations and put sole focus on the Chinese market (Liao, 2019; Moore, 2020). However, Mobike is still active in the Netherlands, but since 2020 operating independently from the Chinese mother company Meituan-Daiping.

\*\* In Amsterdam FFBS is temporarily banned. Some companies (e.g. Mobike and Ofo) planned but did not operate due to the municipal ban. In response, most companies relocated to other cities in the Randstad region such as Rotterdam, Delft and Utrecht. Other companies that were operating in Amsterdam.

analyzed with coding-software Nvivo. Coding helped to structure interview data and group and compare institutional strategies in relation to spatial factors. Per case we also coded websites of FFBS companies, newspaper articles, research articles and policy documents as additional data sources.

## 4. Case study results

### 4.1. Settings and strategies in Shanghai

#### 4.1.1. A welcoming introduction of FFBS in Shanghai

FFBS was invented in 2016 in Beijing and Shanghai. China is the largest bike sharing market and Shanghai is estimated to be the largest bike sharing city worldwide with approximately 1.7 million bikes in September 2017 (Jiang Hui, 2018). The Chinese government estimates that there are more than 23 million shared bikes in China in 2018 (Ministry of Communications, 2018). At the time of its introduction in Shanghai, FFBS was both welcomed and criticized. It was welcomed because it offered potential solutions for some of the urban challenges in Chinese cities, e.g. congestion, last mile problem, illegal auto rickshaws and air quality. Mobike was the first company to launch with approximately 100.000 bikes (Lan et al., 2017). No specific regulations were in place for FFBS and the company got oral permission to launch. As the first player in the market, Mobike sought government support, mainly for bike parking space and infrastructure (Lan et al., 2017). Initially, the city supported Mobike because FFBS provided an opportunity to solve the first and last mile problem (Lan et al., 2017). Local governments even invited the company to place bikes in their districts (Shanghai Municipality, 2016) and endorsed the company as the official partner for low-carbon city development: “FFBS enables the city’s transformation to sustainability and breaks the locked-in transport structure in Shanghai, which combines the feature of tech and sharing. The main goal of Shanghai 2035 is to achieve more than 85 % green transport in all travelling. In this way, FFBS gives direction to the Shanghai planners and officers.” (Ma et al., 2018).

The initial support for Mobike in 2016 led to a massive influx of other FFBS companies backed by venture capital investors. Many different FFBS companies (including Mobike, Ofo and Hello Chuxing) put bikes overnight on the streets of Shanghai, based on oral permissions by the city. At its peak the market consisted of approximately 70 companies. Soon after, criticism was voiced because the abundance of bikes had a negative impact on public order. In this early stage, different companies aimed to attract a large base of users in a short time period. They provided large quantities of bikes, some of low-quality, which led to oversupply and low usage rates. Broken bikes were often left abandoned on streets. Additionally, some companies went bankrupt which resulted in ‘bike-share graveyards’ and large quantities of unused bikes scattered along streets (Haas, 2017). In 2018 the market showed signs of consolidation and three main players, all established in China, are left in Shanghai: Mobike<sup>2</sup>, Ofo and Hello Chuxing (formerly named Hellobike).

#### 4.1.2. Framing and aligning with local urban challenges

These main players actively promoted FFBS as a potential solution to solve urban problems, and in particular those caused by the existing transportation system. Shanghai has a strong demand for last-mile transportation. Rapid urbanization and geographical expansion leads to traffic congestion and to increasing travel demand (Shen, 2002). Also, the construction of public transport infrastructure lags behind, especially in new districts, where people live a long distance from a metro station (Chu et al., 2018). Before the advent of FFBS, illegal auto-rickshaws fulfilled the need for last-mile transport. However, there is a desire to remove these and it appears that FFBS has reduced this problem by 53 % (Mobike and WRI, 2018). FFBS companies promote FFBS as a solution to these challenges: “Ofo is created in the university with the aim to meet the needs of students. In 2016, we entered the cities because of the call for solving the last mile issue, promoting low carbon transport, and reducing traffic congestion.” (R5). By tackling urban challenges and actively

<sup>2</sup> In 2018, Mobike was renamed Meituan Bike in China, as the company was acquired by Meituan-Dianping, China’s largest provider of on-demand online services, such as food-delivery.



responding to the needs of the city, FFBS gained legitimacy.

#### 4.1.3. Promoting FFBS and cycling over car-ownership

In particular, the prevalent norm of car use is perceived as a challenge among companies. Cycling as a practice is underdeveloped in today's Shanghai. Car ownership is a status symbol in Shanghai (Zhu et al., 2012), but the shift in user behavior from car to bike is promoted by governments and companies. Before the advent of FFBS, Shanghai was a car-dominated city and the bike played a small role in urban transport. Most major Chinese cities operated public bike sharing systems with varying rates of success (Lihong et al., 2015). In the '80s and '90s China was viewed as 'the kingdom of bicycles' with one bike per person. After the car-era (2000s) Mobike claims to have the mission to introduce cycling again. *"In China, in the 80s, bikes were popular among the people. Due to rapid economic development, right now people buy cars. Also now we can choose buses and the subway. Not really a large number of people use the bike anymore. Currently, also air pollution is becoming a serious problem. Therefore, we want to bring bikes back to cities."* (R7). Companies also engage in cultural-cognitive activities, such as the initiation of a 'World Cycling Day' together with the United Nations, and educate about sustainability and health benefits of cycling.

To appeal to new audiences, companies create an identity around bike sharing by promoting FFBS as a fashionable, high-tech, convenient and eco-friendly product, rather than transport for the poor. Also images around bike sharing are constructed. Companies often refer to the notion of 'innovation from China', i.e. FFBS is one of 'the four new great inventions from China', which have reached a large scale and should be supported to expand overseas (next to high-speed rail, mobile payment and e-commerce). Emphasizing this helps to gain support for FFBS among cities and users.

#### 4.1.4. National guidelines and local regulations

On a national level, the FFBS market developed rapidly and the national government tried to keep control of its growth and impact on cities by providing guidelines in August 2017 (China Ministry of Transport, 2017). The guidelines acknowledge the role that FFBS plays in satisfying travel demand, effectively solving the 'last mile' problem, alleviating traffic congestion, establishing a green transport system, and promoting the development of a sharing economy. As such, the guidelines show a positive attitude of the national government towards FFBS (Yang, 2018). The government wants users to register to FFBS systems with real names and children under 12 cannot use shared bikes (after a fatal accident with a child in Shanghai). Since the interference of the national government approximately 30 cities, including Shanghai, drafted local regulations to guide the operation and maintenance of bike sharing (WRI blog, 2018).

At a city level, despite flaws of FFBS, the Shanghai municipality views bike sharing as a "a convenient transportation service for the public to travel short distances" (Shanghai Municipality, 2017a). The municipality has also been supportive to FFBS companies, for example by providing office space. Both Mobike and Hellobike were based in government supported offices (R7, R8).

Companies also realized that collaboration and regulations were a necessity, for example about parking space: *"In the beginning, as a private company, we thought we could provide FFBS alone because we had the technology. We wanted to showcase that start-ups can make a contribution to the public good. But as FFBS developed, we realized that we could not solve a lot of problems without the government. For example, in many parts of the city there is no bike parking space! We have to get the government on board to make FFBS work."* (CTO, Mobike in Ma et al., 2018). Companies complained about the lack of bike infrastructure in downtown areas (R7). Hence, they lobby for and participate in the creation of cycling and parking infrastructure.

In 2018, the municipality introduced rules for FFBS. All bikes need to be registered (with a number plate) and the number of licenses for shared bikes is limited to avoid excessive supply.<sup>3</sup> Also the areas where bikes can be used are restricted. Mobike and Ofo are allowed to operate in the central district, whereas Hello Chuxing operates in a suburban district. Designated parking spaces are marked along streets to avoid clogging the pavements and bikes must be equipped with GPS in order to enable geo-fenced parking in the future. The municipality furthermore aims to reduce the risk of illegal use of deposits by companies (Shanghai Municipality, 2017b). Also, the municipality builds cycling infrastructure in response to increased use of FFBS and in line with their sustainability ambitions. The government allocated bike lanes and provided space for Mobike to build parking spaces at central locations, so-called Mobike Preferred Locations (Techweb, 2017). Also companies are involved in cycling infrastructure investments (R5).

#### 4.1.5. Data sharing

Given the young field of FFBS, there is limited understanding and knowledge about its potential impact. For governments collaboration with companies helps to understand the market and how to govern FFBS (Ma et al., 2018). Companies in Shanghai are motivated to share data with urban planners and local governments as this can assist them to make better decisions in cycling infrastructure development (R5, R7). On the other hand, by positioning themselves as providers of valuable data for urban transport planning and engaging in (and funding) research collaborations with established institutes helps to legitimize FFBS. For example, Ofo worked on a report about FFBS on a national level with the Research Institute of China's Ministry of Transport, and for a study on the impact of FFBS on cities, Mobike collaborated with Urban Planning & Design Institute of Tsinghua University (Mobike, 2017; Spinney and Lin, 2018).

<sup>3</sup> Although companies got initially oral permission, the introduction of these new regulations did not refrain companies to illegally put more bikes on the streets.

#### 4.1.6. Self-regulation

To show good behaviour, companies also engage in self-regulation. For example, Mobike mobilized users (“Mobike-Hunters”) that help solve illegal parking problems by fixing misplaced bikes and to tackle vandalism or theft (R7). In rewards, they receive credits that can be used for bike sharing. By creating new vocabulary and currencies, companies engage in developing new meaning systems. For example, Donkey Republic calls their bikes “Donkeys,” referring to a past, before the introduction of motorised vehicles (Winslow and Mont, 2019).

FFBS companies influenced the regulatory process by collectively lobbying for specific rules and by developing industry standards. For example, Mobike played an active role in the development of guidelines and sector regulations for the quality of the bike. Many players in the market catch up by offering a large number of low-quality bikes. According to the company, such “*cheap and crappy bikes are not sustainable*” (R7) and they could damage the reputation of the FFBS industry. Hence, Mobike assisted the government to set a *standard* that shared bikes should be designed to last at least three years.

#### 4.1.7. Platform integration

A strategy by companies is to integrate their service or app into broader existing platforms such as social credit-rating systems, supported by the Chinese national government.<sup>4</sup> This allows users with a good credit score to join a FFBS platform without paying a deposit. Companies can use it to verify the user’s identity. The promotion of this non-deposit model helps the companies gain public support and trust from the government (R5, R8). New meaning systems are also deployed, such as rating systems to influence user behavior related to the use and parking of bikes. Bad behavior is penalized by the provider (R8).

FFBS builds on common practices such as the wide spread use of on-demand mobility platforms (e.g. ride hailing service Didi), that were already widely used before bike sharing took off. FFBS is also integrated in existing social media and mobile payment platforms such as WeChat (multipurpose social media app) and Alipay (mobile payment platform). Partnerships with these platforms have been important for adoption of FFBS because of three reasons. First, WeChat and Alipay are popular platforms in China with a large customer base. Both are owned by companies who have a stake in FFBS companies. These apps are embedded in everyday practices. For example, mobile payments are very common in daily life. Second, collaboration with these platforms helps FFBS companies to gain legitimacy. FFBS companies are relatively new and have little social recognition, thus partnerships with well-known platforms increases customers’ trust. Third, integration allows for easy access as users do not need to download new apps but can open a shared bike using a social media app they already use (Yu, 2017).

Another cultural cognitive strategy is to associate with successful business models of digital platform companies (isomorphism) like Didi, Uber and Airbnb. An Ofo manager highlighted: “*We are doing bike rental, but we never call ourselves a bike rental business. Just like Uber never called themselves a taxi business. They call themselves an internet company. The business model of an internet company is based on volumes. The bigger volumes we get, the bigger the profit we will earn in the future.*” (R4).

### 4.2. Settings and strategies in Amsterdam

#### 4.2.1. Contested introduction of FFBS in Amsterdam

Amsterdam was the first Dutch city in which FFBS companies introduced their service in 2017. In a short period of time over 5000 bikes were put on the streets by multiple companies (including Flickbike, Donkey Republic, oBike). Before, bike sharing was mainly provided by OV-fiets, a 2-way station-based system focused on last-mile commuting, and by traditional bike rental shops focusing on tourists. When FFBS was introduced in Amsterdam, there were no clear rules for bike sharing. This rapid introduction led to public resistance. An oversupply of bikes led to full bike parking facilities, clogged up sidewalks and a low user rate relative to the supply of bikes. Within 3 months after companies launched in the summer of 2017, the municipality banned FFBS. The municipality stated that “*the introduction of bike sharing in Amsterdam has shown that public support quickly disappears when the needs of target groups (citizens and commuters) and existing urban problems (bike parking) are not taken into account.*” (Gemeente Amsterdam, 2017a). Bike sharing lacked legitimacy and public acceptance among parts of the citizens. For companies this is a major challenge: “*Public acceptance is a big challenge. Debates are dominated by people who probably won’t use bike sharing, but they determine the course of development rather than the ones that potentially benefit the most from bike sharing*” (R1).

#### 4.2.2. FFBS as a problem or solution for public space

A key issue in relation to FFBS in Amsterdam is scarce public parking space. The city representative explained: “*We don’t want the shared bikes to take up scarce public space. The goal of the bike sharing concepts should be that they lead to less bikes in the city. But now it seems that they lead to more bikes*” (Gemeente Amsterdam, 2017a). Shared bikes are mentioned as one of the causes of problems in ‘Meerjarenplan Fiets’ (2017–2022), a vision document stating: “*People from Amsterdam together own almost one million bikes. Add the shared and rental bikes and it becomes clear that this enormous amount of bikes also leads to problems and challenges*” (Gemeente Amsterdam, 2017b). Another local problem are abandoned private bikes: in 2017, more than 80.000 bikes were removed from public space by the municipality. Because of increased bike use, pressure on bike and parking infrastructure is increasing, which has been identified as one of the main challenges for the city. Companies challenge the city’s view as they promote bike sharing as a potential solution to scarce public space and abandoned bikes. “*Only a riding bike creates societal benefits. Bike parking*

<sup>4</sup> There are two social credit systems: the National Citizenship Information System and the private Sesame Credit Platform. The latter is owned by Ant finance, a company that supports Ofo and Hellobike.

facilities are often filled with abandoned bikes or bikes that are just used once a week by commuters. This is unnecessary when you match demand and supply, which is possible with bike sharing. Bike sharing is a good solution for full bike parking facilities” (R6). Some companies indicate they want to re-use abandoned bikes in their bike sharing system and thereby solve this problem (R1, R4).

#### 4.2.3. Lobby for regulation and pilots

From October 2016, when FFBS was temporary banned, an institutional vacuum appeared. The municipality announced to develop a regulatory framework. In the meantime, companies continued to attempt to get foot on the ground in Amsterdam by deploying different institutional strategies. Companies aim to influence the regulatory process by advocating rules for FFBS and proposing concrete measures (e.g. caps on the total amount of bikes, caps on bikes per rack, define designated parking areas and minimum use rates per bike per day). In response to concerns about data use and privacy, all companies state they are willing to provide and share their data. Besides advocating regulation of bike sharing, companies were seeking for collaborations and lobbying for FFBS pilots. In other Dutch cities like Utrecht, Rotterdam, Delft and The Hague pilots are set up to learn from practice instead of strictly regulating FFBS beforehand (R1, R6). Input from pilots can be used to develop regulatory frameworks.<sup>5</sup> In this light, companies engage with researchers and policymakers to learn about the impact of FFBS on urban mobility and user characteristics, which could feed policy decisions (Van Waes et al., 2018b).

To inform development of a regulatory framework, both the public and companies were consulted, resulting in an initial proposal published in December 2017. This entailed a two-year pilot with maximum three companies with each a maximum fleet of 3000 bikes, a minimum use of four trips per bike per day and designated parking places (Gemeente Amsterdam, 2017a). However, the majority of FFBS companies disagreed with these plans as too strict conditions and requirements might hamper profitability of FFBS (R1, R2, R6). In 2019 these plans were canceled as, according to the municipality, there is little public support for a city wide bike sharing system. Only small-scale local experiments, where bike sharing could contribute to a mobility challenge will be supported (Gemeente Amsterdam, 2019).

#### 4.2.4. Competition and cooperation

FFBS in Amsterdam was contested and the market was characterized by fierce competition. Some companies delimited the bike sharing field by de-legitimizing (competing) business models publicly and thus legitimizing their own model. Local companies advocate and promote a business model that involves local communities with attention for the local urban context. They publicly disapprove models by Asian companies that would focus only on tourists and accused them of not taking into account local values (R2).

A strategy by various companies was to collectively develop an interoperability bike sharing standard. Due to the introduction of different bike sharing companies in different cities (besides already existing systems), national and local governments are concerned that the availability of different systems goes at the expense of user-friendliness. Therefore, governments support the development of a system that enables users to access different systems in different cities with one single account. Such a standardized system commuters to use a shared bike in their home and work city without subscribing to multiple systems. In addition, for companies it would allow allocating scarce parking place amongst each other. For major Dutch cities, including Amsterdam, this interoperability is a requirement for allowing shared bikes in the city. It was expected that local government would need to enforce interoperability on FFBS companies (Tour de Force, 2017). However, in January 2018, ten (competing) companies formed a network and signed a letter of intent to develop *OpenBike* – one account for bikes sharing in different cities (Duursma, 2019). “Eventually we want you to be able to access a bike everywhere with one account, whether this is an station-based bike, a free-floating bike or a lease bike” (Van Tongeren, 2018).

#### 4.2.5. Attracting local users and changing bike ownership

In Amsterdam bike use and ownership are high. A crucial challenge is to attract local citizens as users of FFBS. The municipality explicitly emphasized that it prefers bike sharing for locals rather than for tourists. This is informed by an ongoing debate in Amsterdam about how mass tourism causes overcrowded areas, making these parts unattractive to live. An assumption was that only tourists would use FFBS and the problems of FFBS were associated with mass tourism.<sup>6</sup> Exploiting public space to make profit was perceived as unacceptable (and also the legal basis on which it was eventually banned). The city prefers that traditional rental services rather than FFBS serve the tourist market. Bike sharing companies should target locals with private bikes (parked in public space), non-cycling citizens and frequent visitors (commuters). “For inhabitants of Amsterdam it can be an interesting alternative to their own bike” (Gemeente Amsterdam, 2017a).

In response to the city’s ambition to attract citizens rather than tourists as target users, companies argue that they see opportunities to attract locals, but emphasize that socio-cultural change is needed. As such they challenge existing commuting practices and a strong cultural norm of bike ownership. “We believe that behavioural change is needed for people who commute to Amsterdam and use their own bicycle parked at a train station. You will have to provide an alternative which provides a similar experience compared to using their own bike. You’ll want to use it as your own bike.” (R2). “Access to a bike should be more attractive than owning one in the future. Because [...] you don’t need to own a bike to cycle” (R1). Particular strategies aim at attracting citizens over tourists. For example, that by riding a shared bike, local users can redeem a voucher, which can be used in shops or bars (R4).

<sup>5</sup> This call for FFBS pilots also resonates with broader debates about experimentation with digital innovation in public policy in the Netherlands (Maas et al., 2017).

<sup>6</sup> However, a user survey of one provider showed that merely locals rather than tourists were using the shared bike (Van Waes et al., 2018a, b).



**Table 3**  
Summary of differences and similarities between the Shanghai and Amsterdam cases.

|   | Shanghai   | Amsterdam  |
|---|--|--|
| <b>Regulatory</b>                       | <p>Setting</p> <ul style="list-style-type: none"> <li>- Initially no formal rules for FFBS; companies launch with large numbers of bikes without formal consent</li> <li>- City has laissez-faire and supportive attitude</li> <li>- City government develops regulations, cycling and parking infrastructure</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>- Companies emphasize cooperating with city</li> <li>- Companies lobby and negotiate rules concerning cycling and parking infrastructure and quality of bikes</li> <li>- Official partnerships for low-carbon city development between city and companies</li> </ul>   | <p>Setting</p> <ul style="list-style-type: none"> <li>- Initially no formal rules for FFBS; companies launch with large numbers of bikes without formal consent</li> <li>- City bans FFBS three months after introduction</li> <li>- Concerns about public space, mass tourism and privacy</li> <li>- FFBS in future only on small scale</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>- Companies lobby for pilots, cooperation and propose new regulations (incl. caps on number of bikes, parking spaces and minimum use rate per day)</li> <li>- Companies delimit field and delegitimize (foreign) competitors due to unsustainable model and strategies</li> </ul>   |
| <b>Normative</b>                        | <p>Setting</p> <ul style="list-style-type: none"> <li>- City aims to stimulate clean transport, alleviate congestion and solve the last-mile problem</li> <li>- Car causes urban problems</li> <li>- Car ownership is a status symbol whereas bikes were generally seen as transportation for the poor</li> <li>- Car and public transport are the norm</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>- Companies challenge prevalent norms of car use and ownership by promoting bike sharing as an alternative</li> <li>- Companies frame FFBS as a solution to urban challenges: congestion, last mile problem, illegal auto-rickshaws and air quality</li> <li>- Company mobilizes users to fix parking problems</li> <li>- Companies build network to safeguard reputation of FFBS</li> <li>- Companies create identities by framing FFBS as fashionable, high-tech, convenient and eco-friendly</li> <li>- Companies construct image of FFBS as ‘innovation from China’</li> </ul> | <p>Setting</p> <ul style="list-style-type: none"> <li>- City’s view is that bike sharing should lead to less and not more bikes on the streets</li> <li>- Bikes (including FFBS) cause urban problems (e.g. parking)</li> <li>- Bike is the norm: wide spread bicycle use and ownership among inhabitants</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>- Companies challenge prevalent norm of bike ownership by promoting bike sharing as an alternative. They do recognize that changing Dutch culture of bike ownership is a huge challenge</li> <li>- Companies frame FFBS as a solution to bike related problems such as the abundance of parked bikes</li> <li>- Companies propose to reuse abandoned bikes for FFBS</li> <li>- Formed network of companies to promote and develop interoperability standard</li> </ul> |
| <b>Cultural-cognitive</b>               | <p>Setting</p> <ul style="list-style-type: none"> <li>- Cycling not embedded in daily life</li> <li>- Use of digital services (payments, social media, ride-hailing, food delivery) embedded in daily life</li> <li>- Limited knowledge about impact of FFBS</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>- Companies integrate and associate bike sharing with existing practices, business models and often used services such as ride-hailing, social media &amp; payments to ease adoption and gain legitimacy</li> <li>- Companies develop credit and rating systems</li> <li>- Companies stimulate cycling in general and engage in educating cycling and impacts of bike sharing</li> <li>- Companies stimulate research, collaborate with established research institutes and share data to generate knowledge about bike sharing</li> </ul>  | <p>Setting</p> <ul style="list-style-type: none"> <li>- Cycling is embedded in daily life and part of culture</li> <li>- Limited public support for FFBS: fear of hinder and that bikes are mostly used by tourists and concerns about privacy</li> <li>- Limited knowledge about impact of FFBS</li> <li>- FFBS is associated with other digital platforms that serve the tourist market such as Airbnb and Uber</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>- Companies focus on local users rather than tourists</li> <li>- Companies offer to share data and engage in research collaborations / create knowledge</li> </ul>   |
| <b>Physical place-specific elements</b> | <ul style="list-style-type: none"> <li>- Car-dominated city</li> <li>- Widespread network of metro stations</li> <li>- Prominent last-mile problem</li> <li>- No extensive cycling infrastructure</li> <li>- Public space available to park bikes; limited use of private bikes</li> </ul>   | <ul style="list-style-type: none"> <li>- More than 1 million bikes in Amsterdam</li> <li>- Cycling infrastructure widely available</li> <li>- Scarce public space for bike parking</li> <li>- Abandoned bike problem</li> <li>- Mass tourism causes overcrowded areas</li> </ul>   |
| <b>Multi-scalarity</b>                  | <ul style="list-style-type: none"> <li>- National guidelines show the government’s positive stance towards FFBS</li> <li>- National government involvement leads to local rules to guide operation and maintenance of bike sharing</li> <li>- Image ‘innovation from China’</li> </ul>   | <ul style="list-style-type: none"> <li>- National government advocates an interoperability standard for bike sharing to enhance use in different cities</li> </ul>   |
| <b>Issues of power</b>                  | <ul style="list-style-type: none"> <li>- Users quickly adopt bike sharing, legitimizing FFBS</li> <li>- Companies strategically aligned incumbent digital businesses and authorities</li> </ul>  | <ul style="list-style-type: none"> <li>- Citizens complain about shared bikes on the streets</li> <li>- Municipality bans bike sharing</li> </ul>  |

## 5. Cross-case comparison

Table 3 shows the main differences and similarities between the Shanghai and Amsterdam case.

In both cities, FFBS was introduced in an unregulated market. Companies launched without formal consent. The business model of FFBS depends on a dense network of bikes available on the streets. As different competing companies put large numbers of bikes on the streets, without some form of coordination or collaboration among companies (e.g. systems were not interoperable), the excessive numbers of bikes led to immediate problems. In response to this setting, in both cities companies deployed strategies such as lobbying, negotiating and collaborating with the aim of influencing regulatory frameworks in favour of FFBS.

Differences appear when looking at local normative and cultural-cognitive settings and strategies and place-specific physical aspects. At first sight, FFBS seems to better match with the setting in Amsterdam than Shanghai. In Shanghai there was no bicycle culture and limited cycling infrastructure, while both elements were amply available in Amsterdam.

In response, for FFBS to become adopted in Shanghai, cycling in general had to be promoted. Hence, companies attempted to create bike institutions, illustrated by a variety of strategies. Companies deployed normative strategies that challenged prevalent norms such as car use. Companies promoted FFBS as a solution to traffic congestion, last mile problems, illegal auto-rickshaws and air quality. Cycling used to be transport for the poor, but to appeal to new audiences and generate legitimacy, new identities and images were constructed: cycling and FFBS was (re)branded as a cool and innovative way of transport, invented in China. Cultural-cognitive strategies aimed at building (elements of) a cycling culture by trying to make FFBS part of daily practices. Associating and integrating their service with existing platforms and practices helped to ease adoption, and being available and visible on important social media environments enhanced access and legitimacy among an enormous user potential. Companies also developed new meaning systems such as a credits and rating systems. This highlights cultural-cognitive differences between the two cases as for example, linking a bike sharing service to a government credit rating systems would be unacceptable in the Netherlands. Additionally, companies engaged in knowledge production and published reports about FFBS in collaboration with established (government related) research institutes. Trusted by governments generated legitimacy among users.

This case shows that companies in Shanghai could rely on existing practices and digital infrastructures. However, they could not rely on extensive physical infrastructures that support cycling and bike sharing. Because of the good match with transport problems in Shanghai, authorities welcomed FFBS and started to work together with the companies in building cycling infrastructure. In sum, the widespread adoption of FFBS can be viewed as a contributor to reviving a cycling culture in Shanghai, as companies actively engaged in building physical and institutional elements of a cycling system.

In contrast, Amsterdam already had an established cycling system with a strong (private) cycling culture in which cycling is the norm and infrastructure amply available. Looking at the institutional and physical setting, the strategies of companies were putting existing institutions under pressure. The Dutch cycling system is based on high bike ownership, extensive bike infrastructure and its own rules. FFBS challenges this system in different ways because it is based on sharing and depends on using public parking space.

Thus, the challenge for companies in Amsterdam was to promote bike sharing as an alternative to bike ownership, rather than promoting bike sharing as an alternative to cars. High private bike ownership hindered the adoption of FFBS. Also, there was no clear match between FFBS and local urban problems. Pressing transport problems were related to the existing cycling system: abandoned bikes and scarcity of bike parking spaces. According to the city, adding FFBS to Amsterdam would make these problems bigger instead of solving them. Hence, normative strategies aimed at reframing FFBS as a solution rather than a problem by focusing on parking issues, orphan bikes and avoiding tourists as users. The latter was necessary as FFBS was associated with problems of mass tourism. Also there were broader concerns about privacy. Foreign companies using public space (allocated for private bikes) to make a profit was perceived to be at odds with local cycling culture. In the end, companies did not get the opportunity to show the potential positive impact of FFBS. Limited public support stood in the way and companies failed to convince local authorities. This response shows emphasis on maintaining the cycling system as it is, and that FFBS in its current form was not perceived to fit this system.

In sum, comparing the cases, the cultural-cognitive setting enabled FFBS in Shanghai as it helped ease adoption (mobilizing practices and integrating in existing platforms), whereas the cultural-cognitive setting in Amsterdam was constraining (FFBS associated with problems of mass tourism and conflicts around privacy).

## 6. Discussion

In this section we discuss our main findings. First, we observed similar launching strategies in both cities, followed by diverging institutional strategies. In addition to Winslow and Mont (2019), who also observe that companies use regulative, normative and socio-cognitive strategies to institutionalize bike sharing, we provide a comparative analysis of how these strategies differ across urban geographies. We show how institutional strategies differ as companies adapt to place-specific elements. The types of strategies are strongly influenced by local physical and institutional settings. In line with Winslow and Mont (2019), the lack of regulations enabled rapid growth of FFBS in Shanghai and Amsterdam. In both cities similar types of regulatory strategies are deployed in response to a lack of regulatory frameworks. FFBS is dependent on infrastructure for cycling and parking which makes agreements with authorities a must. With regards to normative strategies, we see that companies target different prevalent norms that are shaped by different settings. In Shanghai car use was challenged whereas in Amsterdam it was bike ownership. With regards to cultural-cognitive strategies, we show that these can lead to different outcomes depending on the place. Associating and linking a novel business model with a successful existing business can create support and legitimacy in one setting, whereas it may lead to controversy in another. For example, associating FFBS with companies like Uber, Airbnb and Didi or integrating FFBS in social media or payment platforms helped ease adoption in China, but would raise criticism in the Netherlands. This finding aligns with earlier

research showing that culture, values and social norms matter in the adoption by users of bike sharing systems (Yin et al., 2018).

The comparison between Shanghai and Amsterdam shows that mobility ‘regimes’ differ across urban contexts. Institutional strategies that challenge existing ‘regimes’ thus may have to differ across places. A company that operates in different cities may have to challenge different prevalent norms and cultures or mobilize different existing practices that are part of spatially different ‘regimes’.

Second, we observe that the degree of cycling institutionalization affects the types of strategies deployed by companies. In less institutionalized settings it is easier to build bike institutions. In highly institutionalized settings it is more difficult because existing institutions will be actively maintained. Companies in Shanghai had less problems in creating bike institutions, and were supported by and collaborating with governments. In Amsterdam, companies were putting existing bike institutions under pressure and as a result they were not supported by authorities and the community – actors maintaining these institutions. This corresponds with Pelzer et al. (2019) and Uzunca et al. (2018) who show that it is easier for a company to influence institutions and gain legitimacy in weak institutional settings than in more strong environments, where they may struggle with existing institutions. This also aligns with Boon et al. (2019), as non-users were influential in maintaining existing institutions by demonizing FFBS.

This relates to our third observation about the role of power. It is argued that transitions theory should better account for the role power plays in transition processes by more carefully considering how power is mobilized and who are winners and losers (Lawhon and Murphy, 2012). Our study shows how power in the form of support and resistance has played a critical role in shaping the outcomes. In Shanghai, companies navigated power constellations by strategically aligning with major incumbent digital businesses and authorities. These relational strategies to align with the powers-that-be failed to be successful in Amsterdam, where authorities took the side of communities and local business owners that successfully complained about how FFBS reinforced existing problems of the bike system.

Fourth, regarding multi-scalarity, and as called for by Binz et al. (2020), our framework accounted for how place-specific processes are influenced by ‘distanciated’ developments and institutional arrangements. Our case shows how dynamics at different scales influence institutional strategies locally. For example, experiences of globally operating companies inform local strategies. Yet these companies adapt their strategies as they learn about local conditions. For instance, in Amsterdam companies promised to solve bike related problems (e.g. parking capacity, abandoned bikes) instead of problems stemming from car mobility (e.g. traffic congestion, pollution). In addition, FFBS companies not only respond to local conditions, but also to institutional developments, constraints and opportunities at the national level to institutionalize their venture at a local level. In Shanghai this was e.g. seen in relation to the social credit-rating system. In the Netherlands, the national ambition to develop an interoperability standard led to joint initiatives at a local level.

## 7. Conclusion

We aimed to answer the question *how and why do companies’ institutional strategies differ across urban environments?* To this end, and as our contribution to the field of sustainability transitions, we developed a framework that combines literature on institutional strategies and geography of innovation that allows to better understand processes of transformation. It is of course not surprising that differences appear when examining strategies in two different environments. However, with this study we intended to unravel the underlying mechanisms of interactions between institutional strategies and place-specific aspects. The framework was applied on FFBS companies’ institutional strategies in two different spatial and institutional contexts: the cities of Shanghai and Amsterdam. We conclude that this framework was useful as it improved our understanding of how companies respond and adapt their institutional strategies to local urban conditions. For future research we suggest applying, testing and refining the framework on other cases in other contexts.

By investigating FFBS, we presented a case that unfolds in a complex transition context which consists of a heterogeneous urban mobility regime of multiple transport modes (e.g. car, public transport, cycling, walking); multiple niches competing for the future (e.g. autonomous vehicles, electric vehicles, mobility as a service, cycling) and complex geographies (i.e. globally connected niches competing with a consolidated global regime around car dominance but with distinct local variations).

To answer the research question: we find that companies use different institutional strategies as they respond to local institutions such as regulations, prevalent norms around urban mobility and existing cultures and practices, physical place specific elements such as infrastructures and urban mobility challenges and issues of power such as support and resistance. Empirically, this study corroborates earlier work that shows how physical and institutional place based aspects matter in sustainability transitions. Our contribution to this field is a case that focuses on how cycling innovations challenge urban mobility regimes in different contexts. Hence, we call for more systematic research into the (im)possibilities of achieving urban sustainability through cycling innovations.

This brings us to the practical implications. For businesses who enter new markets, a unified strategy deployed in different environments is likely not to be effective. To succeed, strategies must be attuned to local spatial and institutional settings. A key message to these businesses is to be aware of place specific regulations, normative and cultural-cognitive institutions as well as place-specific physical elements and actors that may potentially lose because of the innovation. It may seem attractive to focus on launching in places with a supportive physical infrastructure or supportive regulations, however, prevalent norms, local cultures and issues of power may be as important for success. Similarly, for public organizations, potential implications for governance include the need to develop place-based sensitivity in urban transitions, as well as the need to understand linkages across scales. Depending on whether an urban innovation may support or oppose local sustainability goals, public organizations may decide how to deal with local actors that win or lose because of this innovation.

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## Appendix A

**Table A1**

Overview of interviewees.

| Interview reference | Actor                          | Interviewee  | Date      |
|---------------------|--------------------------------|--|-----------|
| R1                  | Flickbike (Amsterdam)          | Founder  | 7-2-2018  |
| R2                  | Donkey Republic (Amsterdam)    | Founder & Local manager  | 8-2-2018  |
| R3                  | Obike (Amsterdam)              | Local manager  | 13-2-2018 |
| R4                  | Ofo (Amsterdam)                | Local manager  | 24-8-2017 |
| R5                  | Ofo (Shanghai)                 | Local manager  | 23-4-2018 |
| R6                  | Mobike (Amsterdam)             | Local manager  | 15-2-2018 |
| R7                  | Mobike (Shanghai)              | Local manager  | 30-3-2018 |
| R8                  | Hello Chuxing (Shanghai)       | Local manager  | 24-4-2018 |
| R9                  | World Resource Institute China | Sustainable Cities Program Director and China Transport Program Director       | 23-4-2018 |
| R10                 | Researcher Urban Mobility      | Department of Urban Planning and Design<br>Xi'an Jiaotong-Liverpool University | 23-4-2018 |

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