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Original Research Paper

Where is the politics? E-bike mobility in urban China and civilizational government[1]

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ABSTRACT

In this study we look at everyday politics of electric bike mobility by exploring the social practices of e-bike users in order to understand the role of e-bikes in emerging low-carbon mobility system in China, asking 'where is the politics of the E2W in contemporary China?' We explore the underlying political tensions in electric two-wheeler mobility by examining family and informal e-bike journeys. We argue that 'civilizational' government perspective provides a new way of thinking about politics of mobility and system transition in China.

1. Introduction: the surprising political sensitivity of e-bikes in China

The politics of low-carbon innovation, indigenous innovation and sustainable urban mobility in China received a new level of attention in April 2016, when international media reported about the bans of electric two-wheelers (E2Ws) in several major Chinese cities. In Shenzhen, a major city in the southern Guangdong Province, several thousand e-bikes were confiscated by the city police and a few hundred users (mostly working in express delivery companies and in informal ride provision) were detained. An express delivery service (*kuaidi*) responsible for around 6 million parcels a day in Shenzhen and relying primarily on electric two-wheelers (E2Ws) stalled (Global Times, 2016). Since 2011 the city authorities had demonstrated that e-bikes were not welcome on the city streets. Only light e-bikes powered by Li-Ion batteries were allowed in the city centre(s). In addition to that, e-bikes were thriving in a few enclaves such as Shekou and urban villages[2] (Wang, 2016). The April 2016 campaign, entitled "*Prohibit the motorcycle and limit e-bike use*"[3], manifested that the authorities were prepared for more radical and arm-twisting moves to ban them. Meanwhile, similar clampdowns on the E2W were seen across the country, including Beijing, Guangzhou, Xiamen and several other big cities (Forbes, 2016).

Electric two-wheelers appear at first relatively anodyne and unthreatening technologies, especially compared to the cars that increasingly clog Chinese roads. Because of their light weight and efficient drive train e-bikes are among the most energy efficient modes of motorized transport existing today, consuming about 1.8 kW h per 100 km, one tenth as much as an electric vehicle (Cherry et al., 2016). So why would government act against e-bikes in such a repressive manner? The puzzle seems all the greater if we consider the potential importance of the E2W in sociotechnical transition and future mobilities – and to China's industrial strength for 'indigenous innovation' and urban liveability or 'ecological civilization' (Pan, 2015), both absolutely top priorities for the current government.

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Regarding urban mobility, arguably 'the hardest case' (Geels et al., 2012), the E2W, as a compact, light, easily charged, inexpensive and 'low-carbon' mode of auto-mobility, appears to offer clear advantages for expedited low-carbon transition; and especially in a 'middle-income' country as densely populated as China. Moreover, the E2W appears to offer significant advantages vis-a-vis Chinese governmental priorities for innovation upgrade of the economy, from 'made in China' to 'designed in China'; i.e. when the products are not only manufactured but also conceived, created, designed in China and consumed around the world. This aspect of indigenous design also relates to goals of leadership specifically in technologies and ideas that contribute to sustainable development and sustainable urban lifestyle.

The situation with E2Ws in China and their role in low-carbon transition is still not very clear (Ling et al., 2015) but the relationship between the ever-increasing number of cars and e-bikes in Chinese urban and suburban space is becoming more and more conflictual on the road, in the parking lots and in the family space, where everyday mobility decisions have to be made. These growing tensions require attention of social scientists trying to understand the current state of mobility politics in China, not only in terms of transport policy but also multiple social dimensions that include issues of identity politics, social status, emotions of being on the move and social change associated with a particular mode of mobility.

Two-wheeled propelled mobilities (with the exception of cycling) and their role in informal transportation have been largely ignored by researchers of mobilities, who have long privileged the car-based automobility system, despite the fact that they are extremely prominent and crucial for lifestyles in many developing countries and/or the Global South (Brunson, 2014; Hansen, 2017; Parsons and Lawreniuk, 2017; Sengers and Raven, 2014; Sopranzetti, 2014; Truitt, 2008). The social and cultural dimensions of (car) mobilities were also long ignored, until the 2000s when key studies began to appear (Dennis and Urry, 2009; Featherstone et al., 2005; Miller, 2011; Dant, 2004; Paterson, 2007). And only recently informal transportation and two-wheeler mobilities have been included in the agenda for mobility and transitions studies, primarily in developing countries. As Sengers and Raven (2014) affirm, informal transportation provides mobility researchers with a new set of questions and, in particular, whether there is a future for these systems in rapidly modernizing – and motorizing – cities in the developing world.

Currently, China is the site of significant government and corporate innovation efforts focused on opportunities for 'catch-up' and eventual leadership in a key industry of the 21 st century, namely electric vehicles (EV) (Tyfield and Zuev, 2016). At the same time, the much lower-technology electric two-wheeler (E2W) has emerged as globally significant and dominated by small Chinese firms and their Chinese customers. Manufacturing of E2Ws is a growing, although highly fragmented, domestic industrial sector – the largest e-bike industry in the world. There are over 200 million on China's roads, though growth is forecast to slow down (Navigant research, 2016); a decline partially attributed to the growth of low speed electric vehicles manufacturing and the bans of E2Ws in some Chinese cities (see Fig.1).

Since 2016, e-bike mobility regulation and politics surrounding it has been beyond the radar of the media, as the development of public bike-sharing schemes and issues related to the use of public space came into the foreground. While there was already ongoing contestation of public space between two-wheelers and cars, the issues of the right of the road and access to parking became more acute with bike-sharing schemes occupying the space, previously used by e-bike riders.

Although the resilience of two-wheeler was present in many recent scenarios for future mobility in China (Ecola et al., 2015; Tyfield et al., 2016) the wave of over seventy bike-sharing schemes on Chinese cities (Xinhuanet, 2017) and "return" of the bicycle has been unexpected, even as some bike-sharing programs failed, stagnated or eventually became more of a single city achievement. Chinese cities have shown their infrastructural fragility, specifically regarding the use of public space in central areas, now often barricaded by rows of bikes, which have become the iconic representation of aberration and "oversharing" in mobility transition. The cities have had an extra level of complexity added in the game of governing mobility, as the public space and road space were not capable of accommodating the existing road users. The images of disorder in public space, generated by the profusion of bikes, were recently dramatized further by the photographs circulated in the Western media of bike "graveyards" in Xiamen and Hangzhou, pointing at the unattractive *backstage* (Goffman, 1959) of the "oversharing" economy in China. But even in the midst of this bike-sharing frenzy, e-bike use and diffusions have not been pushed to the margins. Several Chinese e-bike manufacturers have headed towards European markets with their models of smart e-scooters (Vodafone, 2017), e-bike sharing schemes (*Xiangqi*) were established and new models of e-bikes for the domestic market were put into production (China Daily, 2017). The e-bike has manifested its resilience and potential for further development as a unique form of low-carbon innovation.

While bike-sharing marked the emergence of a new "urban lifestyle" in China (Wired, 2017), the electric two-wheeler as a "frugal

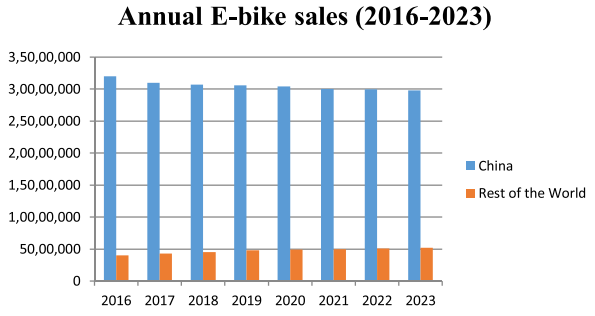

Fig. 1. E-bike sales to increase in the rest of the world and to slow down in China. Based on data from Navigant Research (2016).

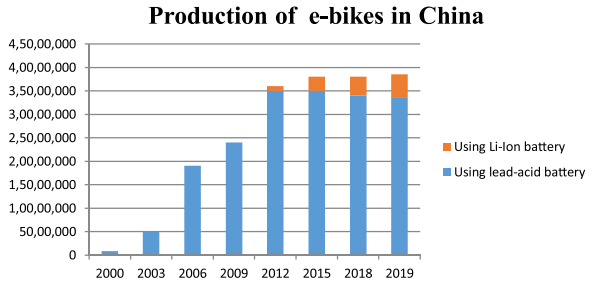

Fig. 2. Production of e-bikes in China with different types of batteries. Based on data from International Lead and Zinc Study group (Meng, 2017).

innovation" (Interim report, 2016) has long become a normal feature of everyday urban mobility culture in China. It is taken for granted and stands in stark contrast with the Western urban context where the e-bike is a desired, fashionable low-carbon mobility solution. Included in some countries' national programs for increasing the percentage of two-wheeler urban mobility, their sales are surging on the background of falling bike sales. Several European countries (e.g. Austria, Belgium, France, Netherlands) and Taiwan have been actively providing subsidies for its citizens to purchase e-bikes, promoting two-wheeler commuting (ECF, 2016).

Figures from Lead and Zinc association (Fig. 2) suggest that the demand from e-bike manufacturing may have peaked, with peak production of e-bike in China in 2016 and eventual decrease of manufacturing and sales of lead-acid battery powered e-bikes. However, even this output in China remains unreachable by other nations (Navigant Research, 2016): see Fig. 1. Although the cost of buying an e-bike has remained quite high in Europe in comparison to traditional gasoline two-wheelers, the prices for battery modules for electric vehicles have been falling faster than expected (see Fig. 3), along with the rising capacity of the batteries themselves. The price of e-bikes has also been decreasing worldwide, albeit still remaining in the category where a purchase of a cheaper second-hand car is a preferred option. In China, however, the prices for E2Ws can satisfy different categories of customers, with the prices ranging from a few hundred euros to several thousand for a smart e-scooter.

As Weiss et al. (2015) suggest, battery costs will have to decline substantially before mid-size and large electric two-wheelers will penetrate the market at large scale. China has been the top supplier of e-bikes to the European Union (see Table 1) and the leader in pedelecs (pedal-assisted e-bikes). However, with the new anti-dumping tensions between China and EU, the diffusion of pedelecs and mid-size e-bikes is likely to experience slow if steady adoption (see Table 2). Meanwhile, two of the major recent trends have been the upscale in design and appeal of "smart" e-scooters at a price comparable to other mainstream Chinese brands (TailG, Aima, Luyuan, Sunra), and competition of e-bikes in sales and use of public space with the increasingly popular public bike-sharing schemes, such as Ofo and Mobike.

As such, finally, the E2W as 'low-carbon vehicle' and potential core of a new urban mobility model also would seem to resonate with China's key high-level policy of ecological civilization. The narrative of eco-civilization (Geall and Ely, 2015) appeared in 2007 and aimed at signalling the need for change in environmental governance, the call for reform through new standards, systems and expanded public participation, thus with the government as one of many actors. Ecological civilization, as a development paradigm, is aimed at harmony between human and nature, environmental sustainability, ecological and social prosperity (Pan, 2015) and is the vital part of the strategy of Chinese modernization and increasing social well-being (UNEP, 2016). Perhaps more importantly still, 'ecological civilization' also captures the national project of the moment, for Government and citizenry alike, of reclaiming the high status of Chinese civilization, in the eyes of both the world and itself, after more than a century of great turbulence and comparative lowliness (Tyfield, 2017b). Again, therefore, the E2W would seem at first glance to be an indigenous innovation that one would expect would be strongly supported within this development paradigm, which is itself of such intense political importance.

Yet, as the 2016 clampdown in cities across the country demonstrates, the E2W is, to the contrary, highly politically sensitive. Indeed, going beyond this headline-grabbing overspill of E2W politics, our research encountered this political sensitivity in multiple ways. Manufacturers, even those who have their customers abroad, are unwilling to meet for any discussions of e-bike futures. Similarly, dealers who know the market, but are in the situation of balancing between the demand of customers and enforcement

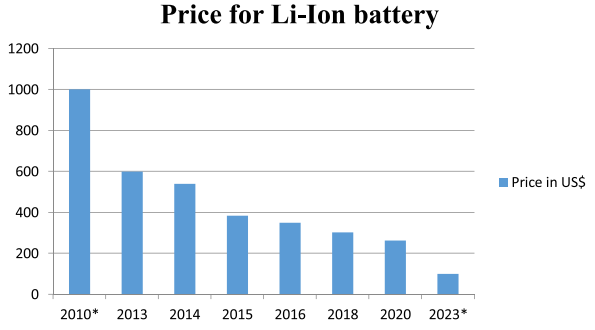

Fig. 3. Li-Ion battery prices forecast for electric vehicles. Based on Bloomberg New Energy Finance (2017) and McKinsey&Company (2017)*.

Table 1
Top ten e-bike suppliers to European Union, 2015–2016.
Source: Eurostat.

Position 2016	Country	Import 2016	Import 2015	2016 vs 2015
1	China	932,043	547,373	+70.27%
2	Vietnam	91,468	74,259	+23.17%
3	Taiwan	79,316	43,095	+84.05%
4	Hong Kong	36,932	37,854	−2.43%
5	Switzerland	30,265	14,310	+111.49%
6	United Arab Emirates	9,396	2,899	+224.11%
7	United States	4,194	835	+402.27%
8	Japan	1,825	4,217	−56.72%
9	Canada	710	91	+680.21%
10	Indonesia	600	286	+109.79%

Table 2
Forecast of sales for pedal assisted e-bikes (pedelecs) in million. Source: Allianz, 2015.

Markets for Pedelecs	2014	2023
China	28.8	34.3
EU	1.2	3.3
USA	0.1	0.3
Total in the world	31.7	40.3

from authorities, have to dodge inquisitive researchers and unlikely customers, thus showing only approved models and implying that the business has become almost illegal, similar to the drug trade.

Meanwhile, E2Ws are ubiquitous and essential to many people on a day-to-day basis, even as essential elements of earning a living (see below). Compounding the confusion about Chinese E2W politics further, then, there was no evidence after the clampdowns of protests organized by the express delivery companies or couriers, let alone the hundreds of millions of individual users.

Hence, the key question regarding electric mobility innovation of the E2W in China is thus "*where is the politics of the e-bike*?", both regarding their surprising political sensitivity for the authorities, and the seeming absence thereafter of any public contestation of their punitive expulsion from urban areas. In raising this question as the crucial issue to understand the prospects of the E2W in urban mobility transition, we are already focusing on issues that have been noted as particular gaps and challenges in current transitions studies, namely regarding power and politics. But, going further, the challenge of 'locating' and then understanding the 'missing' politics of the E2W in China also compels a deeper and different perspective on this question to that which has been adopted to date in Western-based and -focused literature on power and politics in systems transitions. In particular, it involves exploring the changing power relations, and contestation thereof, as manifest in everyday practices of mobility (and demand for mobility), where these quotidian, humdrum and 'street-level' exercises of agency are, in turn, constitutive moments in the ongoing process of system transition.

In what follows, therefore, we set out an alternative approach to study of low-carbon innovations and their prospects regarding system transition, illustrating it with insights on the role, nature and place of politics by looking at everyday practices of e-bike use and how these are changing power relations. This leads us through four steps, which we explore in turn, section by section (See Fig. 4).

First, we explore what is understood to be really at stake in the top-down government of the E2W, in terms of control of the forms and social identities of 'acceptable' circulation in the fast-changing market society of contemporary China. Secondly, though, this in turn points to the need to explore the constitutive and inter-relational connections of the state (at different levels, from central to

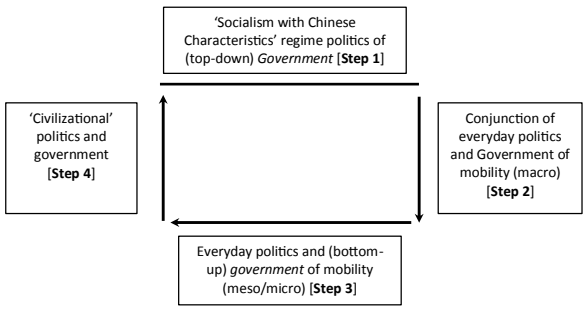

Fig. 4. Structure of the Argument: from politics-as-control to civilizational government of mobility.

local, i.e. *'Government'*) and the citizenry in its everyday bottom-up exercise of its agency and conduct of itself (i.e. '*government*'). Here, then, attention is drawn to how Chinese citizens constantly engage in e-mobility politics, but in pragmatic, everyday and 'micro' ways that are too easily overlooked, or missed entirely, from a dominant Western perspective that searches for 'politics' in top-down regulation and explicit contestation thereof in the public sphere. This point is illustrated with qualitative evidence regarding the contested use of illegal e-bike taxis in Shenzhen, thereby also highlighting issues of social stratification in E2W politics.

With our attention drawn down below that surface story, though, we must also then, thirdly, explore the constitutive jostling amongst agencies at the level of everyday practices. We do this by focusing on further qualitative evidence regarding the contested use of E2Ws by families for the school run, where this also brings out dynamic issues of gender.

Finally, though, with our understanding of the politics of E2W adoption and use thus illuminated by this rich, emic and dynamic picture, we can also return back 'up', from issues of 'government' to 'Government'. We thus conclude that the 'politics' of E2W in China are not only pragmatic and everyday; but also fundamentally a new form of politics that we call '*civilizational*' government, regarding who gets to define what forms of (urban) mobility count as 'civilized', for whom and how. This civilizational politics is set amidst the increasingly explicit top-down 'civilizational' project in China, of 'ecological civilization', rendering it particularly striking and salient. But perhaps its key significance for transition studies is that it alerts us to a different and more productive way to understand transition itself, and how it may be studied and, possibly, optimised and expedited more generally, not just in China, but around the world in the diverse, geographically situated places where transition must actually occur (Hansen and Coenen, 2015).

Before we turn to the first step of our analysis we will provide a description of data collection for this study followed by literature review contextualizing the study on urban mobility transitions in China.

2. Method and data collection

In the course of two years (2014–2016) approximately forty users and dealers in Shanghai, Shenzhen and Beijing were interviewed in Chinese while visiting e-bike shops and during encounters on the streets. Interviews were also conducted with over fifty experts from NGOs, academia, domestic and international industrial firms, mobility entrepreneurs (start-up managers or CEOs), urban planning (foreign and Chinese) experts, policy-makers from municipal government covering broader issues of low-carbon mobility transitions, e-mobility and the prospects of E2W. Interviews are a standard method of collecting data, but in the Chinese context they are also more reliable and time-effective as the collection of survey data would require considerably more time not least in overcoming bureaucratic obstacles.

In order to reach a higher level of rapport and anonymity, the interviews were not recorded, and final transcripts were used only by the members of the research package. The absence of the recorder allowed interviewees to express themselves freely, without being distracted or affected by the fact of being recorded. We used snowball sampling for the individual expert interviews as a purposive sampling technique (Gobo, 2004). The collection of data, however, included re-exploration of the data set after each of the four fieldwork sessions. Focus-group recruitment also considered providing a wide demographic scope aiming to engage people of different occupations, educational background and income. We were also aware, that the experiences of e-bike users and attitudes to e-bike mobility would differ depending on the geographic and regulatory context of e-bike use.

Several focus-groups were conducted, with one of them focusing on experiences of informal e-bike taxi drivers (*heiche*) in Shenzhen, and three focus-groups focused on car-owners in Beijing and Shenzhen where e-bikes were discussed as a part of e-mobility transition in China. Each focus-group consisted of six to seven participants involving people of different social, educational, economic and professional background. All focus-groups, except informal e-bike taxi drivers, had a mixed gender composition. Efforts were made to minimize the sample bias through random sampling, neutral questions and minimization of the dominance bias. Chinese sociologists helped to recruit participants together with the non-Chinese member of the team and were present during the focus-groups. Several focus-groups were organized after establishing a certain level of trust between moderator and the interviewees, and participants were invited to participate after several weeks of informal conversations.

Focus-groups organized in Shenzhen and Beijing aimed at demographically diverse groups of people and stimulated group discussion between the participants, where insights were generated with less influence from the mediator but rather as a result of the "group effect". In a dedicated focus-group we gathered members of one informal work community, that is affected by the "irregular" status of their work (e-bike informal rides provision) - the participants could discover a common language and similar experiences, which enabled the capture of a form of "emic concepts" and "insider experience" to understand their situation. Focus-groups also provided an ethical venue to study voices of the occupational grievances of the marginalized group involved in informal economies.

The interview data was supplemented by fieldwork notes, which consisted of informal conversations, diary notes, visual ethnography and observations in nine different locations in China visited during the two years of the project. The main intensive fieldwork sessions were carried out in Shanghai (June-July 2014 and December 2015) and Shenzhen (March 2015 and March 2016).

Shanghai and Shenzhen were selected on the ground of being the pioneering cities in terms of experimentation with e-mobility. They also represent two poles of tolerance towards e-bike mobility and historically have developed different sociospatial layouts and e-mobility infrastructure. Shanghai, being largely a product of colonial politics, has maintained the city core similar to European cities, more adapted for the use of bikes and e-bikes. Shenzhen being the product of the reform era and a city much owing to the influx of migrant population, has a much less developed cycling infrastructure and is less oriented to two-wheeler mobility. Shanghai still holds a very tolerant position towards E2W mobility, while Shenzhen is actively forcing the model of high-tech capital of China. Apart from these two major fieldwork sites, considerable work was also conducted in the capital, Beijing, the place of many transport- and environment-related NGOs and academic institutions, which were official and unofficial partners of this project. An organized fieldtrip in Shandong province in December 2015 also aimed at having a view at diffusion and use of another indigenous innovation,

a potential competitor of E2W – the micro- or 'low speed' electric vehicle (LSEV). The fieldtrip was organized in the rural area of Shandong - near city of Liaocheng and enabled examination of the actual practices of LSEV users in contrast to E2Ws dominating in other cities.

One of the shortcomings, however, was the lack of data from e-bike manufacturers. Despite the efforts to include them in the original sampling, it was either difficult to access the actual companies or when the contacts were obtained there was no response to the request for interview. However, this seems to be a common problem in e-bike research even for natives (Lin et al., 2017). In order to overcome this obstacle, future research would have to allow more time for establishing connections with relevant manufacturers and perhaps relying on establishing connections via participation in networking events (association meetings, conferences, stakeholder meetings, industrial and trade exhibitions in China and abroad). There is always a chance, however, that interviews organized via official contacts (embassy, associations or informal networks) will turn into "presentations" rather than productive interviews generating reliable data.

Despite several requests for interviews, all of them were ignored (no response) and only one direct visit to a factory succeeded in a conversation with the senior manager and sales manager. The e-bike start-ups also proved to be extremely elusive or rather working in "stealth mode", as the information about their location was often outdated and their location could not be determined. Both the abortive attempts to interview e-bike industry representatives and the few that were successful again stressed the high degree of political sensitivity of the E2W in China today; a striking difference to the comparative ease of organizing interviews with representatives of EV sector, or even the LSEV sector. Simultaneously, and something of a compensation for this, the users of e-bikes were more accessible and available, in contrast to the users of EVs.

3. Power and politics in e-bike mobility in urban China

As the case of e-bikes in China demonstrates, the systems on the margin are not at the receiving end of government support but are on the receiving end of Government scorn and repression, including as Government concern for "public safety". Perhaps for this reason, we are dealing with a unique situation of a large niche peculiar for Chinese urban mobility, almost completely ignored by urban geographers or sociologists of China.

Yet the gap of the two-wheeler is all the more significant for our understanding of contemporary socio-technical change in these countries when we acknowledge how important mobility per se is to contemporary urban politics (of development) in marketizing societies (Baerenholdt, 2013) and indeed to the politics of 'civilization' (Elias, 1995), an explicit and high-level government slogan today in China. With market societies dependent upon individually autonomous but disciplined and dependable circulation for day-to-day functioning (Foucault, 2010; Rajan, 2006), mobility and its government (both top-down and bottom-up) becomes a key locus of politics and power. Which forms of mobility are accepted, actively adopted and/or legitimated and which penalized, neglected and/or rejected is thus a key element of the trajectory of socio-technical change.

These reflections on power, government and mobility are also, therefore, of great significance for studies of mobility transitions. In particular, they speak directly to central questions for transition studies regarding the need to incorporate issues of power, and how to do this. The lack of attention to power and politics in transition studies is perhaps one of the most important points of critique of early transition research (Avelino and Grin, 2016) and in particular in its application to non-western contexts of sociotechnical transitions (Ahlborg, 2017). There has been ongoing debate on the questions of agency, power struggle and politics in some of the theories of middle range, such as the multi-level perspective (MLP).

The MLP perspective, a heuristic which aims at explaining the process of substitution of a technological paradigm, has been criticized for underplaying the role of agency and cultural dynamics in transitions. Multilevel perspective ('MLP') scholars have agreed that a power relational perspective is crucial in understanding regime resistance to low-carbon transitions (Geels, 2014), but this approach focuses on power relations as a hindrance or lock-in and thus a problem. For instance, Geels provides a useful typology of three types of power in terms of where resistance to sociotechnical transition can occur: organizational, material and discursive (*ibid*). Indeed, discursive power is extremely relevant in understanding of the current dominant framing of e-bike mobility system as a "high risk" mobility and issue of public concern.

Nonetheless, what remains undertheorized in even the most sophisticated sociotechnical transition literature (Geels, 2012; Smith et al., 2010; van Bree et al., 2010) – while it goes beyond the persistent and inadequate techno-centric policy orthodoxy that characterizes most policy in China and elsewhere – is the central role of power in the *construction, constitution, shaping, and driving* of low-carbon transitions (Tyfield and Zuev, 2018; Tyfield et al., 2014).

This point is illuminated through a deeper engagement with Foucault's later work on power and government, with the former conceptualized as dynamic, constitutive, particular and dispersed relations of power/knowledge, and the latter understood as the 'conduct of conduct'. 'Power' is then that which *constitutes* socio-technical systems and changes thereof, and always in particular situated ways, and not just that which hinders or resists such change, 'locking-in' existing ways of doing things (Avelino and Rotmans, 2009).

The corollary of this is that the everyday, practice and pragmatic adoption of innovations is inseparable from parallel changes in these power/knowledge relations (Tyfield, 2014). Low-carbon system transition is thus best understood as a *power* transition, whereby the complex, contingent and contested assemblage of novel socio-technologies into new 'systems' takes place in inseparable parallel with changing everyday practices, social identities, communities and institutions. The latter thus take shape precisely *through* and *as* the (changing) power/knowledge relations constitutive of the system at any given point in time.

This approach thus also enables empirical exploration of *how* low-carbon innovations are actually being adopted, or not, that focuses on the parallel developments of the changing material forms, firms and regulations – on the production/supply side – of

specific innovations and the evolving everyday practices and identities that they enable or disable – on the user/demand side (*Cf* Shove and Walker, 2007) –, where *both* of these must be explored empirically. Shove and Walker remind us about considering "multiple, complex and contested commitments that go into making future visions towards which transitions are directed". They also suggest, that the fossilized or decayed practices merit equal attention, as transitions require the loss or abandonments of some previously important sociotechnical systems (a point arguably taken up in more recent MLP work (e.g. Geels et al., 2017)). In this respect, we can add that practices regarded as "fossilizing" (e.g. cycling in China) can be effectively revived due to impact of alliances of economic, political and cultural agents – as can be seen in the recent explosion of public bike-sharing schemes in big cities, from 2016 (see above) or the announced regulation of the low-speed electric vehicle industry in 2016 (Zuev, 2016).

This approach also opens up the inadequate attention to the cultural dimensions in the politics of low-carbon mobility transitions (Zuev, 2018). This again, emerges as particularly important in the context of understanding e-bike mobility, in terms of the process of 'civilizing' it. Norbert Elias (1995) identified the process of related socio-technical advances with the concomitant civilization of the population, where the related processes of technization and civilizing are learning processes, in terms of self-regulation, but also where what *counts* as 'civilized' is also thereby defined and socio-culturally settled.

Today in China, this is clearly in process, as high death and injury rates are eliciting changes in personal identity. A civilized person thus becomes (defined as) one who knows how to drive or manoeuvre through the new urban environment and follow the traffic rules, while the uncivilized 'bumpkin' is the person who puts themselves and others in danger through undisciplined movement (Tyfield et al., 2014). Again, therefore, we see the fast moving vehicle, whether car or an E2W, as crucial elements of changing social relations of the 'conduct of conduct' within contemporary Chinese society (Dean, 2010), where E2W users' behaviour is described as "uncivilized" and undermining of public safety, and in need of regulation from the municipality, government or traffic police. At the same time, the harsh measures demonstrated during the 2016 campaign in Shenzhen raised questions in the public and the media about the legitimacy of such harsh treatment of "unregulated" e-bike riders[4] and demand for a more civilized reaction to the people who by occupation are reliant on e-bikes, including the need for improvement of the urban socio-spatial layout that would include e-bikes as legitimate road users.

The findings from several studies in Chinese cities demonstrate a common lack of good safety practices among e-bike riders, which include the absence of protective gear (helmets), common practice of carrying other adults, running red lights, riding in the opposite direction and mobile phone use while riding (Du et al., 2013). However, there is a lack of reliable data on road accidents in China (Qiu et al., 2015) and specifically it is hard to identify when e-bikes were the cause of the accident, particularly due to their specific properties of being faster and heavier than traditional bicycles. Available statistic reports from traffic police in Shenzhen suggest that in 2016 and 2017 e-bikes were involved in 25% of fatality traffic accidents (Shenzhen Jiaojing, 2016). In general, e-bike related fatalities on the road are on a par with those involving traditional bicycles and have risen approximately six-fold from 2004 to 2015, even as overall traffic fatalities in China have decreased over the same period (Jiang et al., 2017).

Although there is documented research about the high number of fatalities caused by e-bikes (Zeng, 2016), the car-crash fatalities are not superseded by e-bikes, even though there are comparable numbers on China's roads. There is little consensus if e-bikes are intrinsically less safe than other modes of transportation (see Cherry et al., 2016; ITDP, 2017) and there is little data distinguishing different forms of two-wheeler mobility that contribute to road accidents (Wu et al., 2012). High accident rates, however, also have to be considered in relation to the fact that e-bikes can be one of the measures to reduce the air pollution and health problems caused by motorized transportation, which cost seven million lives a year according to the World Health organization (WHO, 2016).

These issues play out in terms of political debates, as e-bike bans in Guangzhou vividly demonstrated, with the Government of e-bike mobility was comprised of two opposing relational coalitions. The coalition supporting the e-bike bans consisted of several government bodies (provincial, municipal and Traffic Police department of PSB), as well as Guangzhou Municipal People's Congress (MPC), importantly with car dealers and car manufacturers behind the support of e-bike bans, favouring the further automobilization of the population (Su and Feng, 2016). The coalition against the bans also consisted of several actors: e-bike dependent businesses (express delivery companies) and manufacturers, media and bike associations. Citizens were on both sides, with car-owners and pedestrians strongly favouring e-bike bans and e-bike users and buyers against them. The main rationale for implementation of e-bike ban policies, however, was not government concern for environmental issues regarding the lead pollution, since a number of lead-acid battery production has been reduced since 2011 (Ruan et al., 2014), but increasing public safety due to the heightened traffic rules breaches. The main beneficiaries, however, of the civilizing e-bike bans in Guangzhou and Shenzhen were the car manufacturers and car dealers (Su and Feng, 2016).

Moreover, these debates regarding the civilizing of e-bike mobility has been taking different shape in Chinese cities, reflecting their diversity. While the civilizing mission of the government in the abovementioned cities imposed a draconian ban, the cities in the interior provinces also imposed regulation on e-bike use with less repression and aiming at safety education and making the e-bike population more accountable. The public convenience charging stations[5] are becoming more common in the interior provinces, which helps to reduce the risks of fire accidents due to the lack of safe charging infrastructure for e-bikes. In Nanning, the capital of Guanxi-Zhuang Autonomous Region, where the e-bike is regarded the most important transport mode of transportation (ITDP, 2017), it became a famous case for the local "management through education" campaign[6], with over 100,000 e-bike riders caught in traffic rule violations obliged to attend a mandatory three hours traffic-safety course on the spot. Although the local e-bike governance

[4] http://blog.163.com/special/001264QF/jinmoxiandian.html?1459908901886?touping
[5] 便民充电站 *bianminchongdianzhan*
[6] 以学促管 - *yixuecuguan*

model did not spread across China, the case of Nanning demonstrates that the power of the sheer number of e-bikes on the streets has forced authorities to think of coping strategies and civilizing government responsive to their concrete geographic setting (Zuev, 2018). Similarly, the city of Chengdu in Sichuan Province required all e-bike owners (regardless of technical specifications) to receive a compulsory license plate (*shangpai*), a disciplining policy not seen in any other Chinese city.

Such differences and contestation signal the broader debate in China on which mobility technology is more civilizing, which tends to favour the car as it is seen as a 'next stage' (of development) after the bicycle. These socio-cultural issues thus highlight a key barrier for further adoption of two-wheelers. In China a car is still seen as the second-most important family investment (after the house) and E2Ws are often associated with low *suzhi* (personal quality, educational level) of population (i.e. associated with the status (display) of lower income, uneducated, rural migrants or workers). As such, the broader impact of the E2W on low-carbon system transition depends to a great extent on its capacity to move 'up' market and challenge these social associations. Yet, following the argument above, its capacity to do so hinges on the power relational conditions with which its socio-technical development is being co-produced. We thus now turn to exploration of precisely those conditions.

4. Step one: top-down mobility politics

The first step is to explore tensions at the level of party-state Government (including industry dominated by state-owned-enterprises (SOEs)), the most obvious manifestation and site of 'politics'. Here there is an essential tension of 'Socialism with Chinese characteristics'. Regime legitimacy rests primarily on economic growth, which is dependent upon continual liberalization and individualization, but this is primarily enabled in order to preserve ever-stronger control of society by the Chinese Communist Party (CCP). This tension manifests differently across the country due to "fragmented authoritarianism" (Lieberthal, 1992; Mertha, 2009) and regional differences of priority. To provide a brief comparison regarding the mobility sector: Shandong province has a strong emphasis of the production of low-speed electric vehicles, and manufacturing is highly supported by the provincial government as the massive demand for the vehicles boosts economic growth; while Shanghai and Shenzhen government frown upon this kind of sector as low-tech and impose strict restrictions and bans.

This key tension plays out in mobility systems as 'governmobility' (Baerenholdt, 2013). Here it is essential to consider a broader picture of (e-bike) "mobility" and not simply consider it from the point of transportation studies. With the increasing urbanization and flows of rural population to mid-tier cities and megacities, mobility is obviously a party-state priority at the macro-level in terms of regulation and government of rural-urban and interregional flows of people.

Electric two wheelers in this case cannot be ignored from above since they are indispensable in salvaging the suburbs, which are populated by commuter-workers upon whom continuity of the economic miracle is dependent. In many cities, urban sprawl has made e-bikes essential transportation, saving the large residential districts outside of these big cities (including Shanghai) that were designed for car-users but where actual house residents cannot afford a car (China Daily, 2016). Without e-bikes these residential areas would remain ghost-towns, while e-bikes allowed new migrants to deal with the increased commuting distance from suburban areas to city centres (Zhang et al., 2014). Moreover, e-bikes are an informal economy in itself, as well as an important source and form of self-employment, thus alleviating the burden of the state in terms of economic dependency, unemployment and lumpenization. E-bikes are also essential in logistics, especially boosting e-commerce, as an integral part of the internal consumption growth and economic growth strategy for China and its ongoing bid to be global leader in the emerging digital economy. In other words, no matter how disruptive or dangerous they may be officially deemed, Government policy regarding E2Ws is thus fundamentally constrained by the essential role these vehicles play in managing other key socio-political priorities.

Amidst the causal indeterminacy of these macro-level tensions, understanding of how these high-level dynamics and their effects regarding E2Ws actually play out demands attention to the detailed processes affecting actual personal decisions regarding E2W use. At the level of individual adoption, study of e-bike diffusion in Beijing (Ben Dror, 2012) has revealed that with congestion growing ever worse, a large number of people owning cars were joining the e-bike fleet, possibly as a result of dissatisfaction related to private-vehicle use. One participant in one of the focus groups in Beijing in 2016 mentioned that she had to deal with an identity problem being a car-driver who hated e-bikes, and e-bike rider who hated cars: an apt analogy for China's (essentially?) conflicted attitude to contemporary urban mobility more generally.

Several studies of e-bikes in China agree that E2Ws have a future in second and third tier cities, as a form of private transport, while large cities that have resources to construct efficient public transit systems may benefit from reducing motorized two-wheeler use (Ben Dror, 2012; Weinert et al., 2008). Moreover, even in the biggest cities, the 'last mile problem' persists for a great many. However, the forces required to create a new mobility regime are not present and economic and political power of traditional ICE car mobility remains substantial (Wells and Lin, 2015). This creates a policy stalemate in which the bottom-up 'mushrooms' of E2W automobility may spread amongst the interstices between contending policies and between legislation and policy implementation, in classic fashion of Chinese 'disruptive innovation' (Breznitz and Murphree, 2011).

Perhaps of most importance here, though, is how this dependence on the E2W and its contestation by many layers of Government shows how E2W adoption is an intrinsically *political* phenomenon, as argued above, shaping the co-evolution of changing power relations and socio-technical systems. Yet this simply compounds the quandary of why attempts by Government to clamp down on the E2W elicited so little public reaction. Or rather it counsels a search for different *forms* of contestation – i.e. regarding persistent use, and not just initial adoption, of E2Ws – that are possible in the high-stakes, authoritarian and yet pragmatic political context of contemporary China.

Seeing the power dynamics in the workings of authority may be possible if we look at subtle forms of resistance, which, according to James Scott, can be found in "hidden transcripts" of hegemonic public conduct and "unspoken" discourse (Scott, 1990). A very

vivid example of such hidden transcripts is the practice of speeding: it is announced as the main threat to public safety, and to conform to this all the e-bikes have an odometer that shows the officially allowed limit of 20 km/h. However, the backstage discourse is that no e-bike user would ride at this speed and can speed up to 40 km/h, despite the fact that the dashboard shows the allowed speed.

We identify similar the user practices where resistance is not obvious so as to gain insights into dynamics of power relations between the dominating pattern of modernizing automobility – as in the existing discourse of e-bike mobility as unsafe mode of transportation – and the contrasting discourse of e-bike mobility as convenient and superior in its everyday practical use in Chinese cities.

If the politics and resistance of Chinese e-bikes resides at the level of this everyday, 'hidden', private and pragmatic resistance, however, it follows that our analytical gaze must be focused here to get a fuller picture of the politics of e-mobility transition. Yet this is precisely to focus on the habitual, quotidian and micro practices of mobility and demand thereof that we argued above are crucial empirical foci for transitions studies. Turning to this issue, however, we find that literature on the perspective of social practices employed by e-bike users is, perhaps unsurprisingly, underdeveloped. With exception of a few transportation geography studies (Feng et al., 2013; Naess, 2013) there is a significant gap in knowledge of everyday geographies related to e-bike mobility and, in particular, social practices of the users or their routine behavior (Lin et al., 2017).

This also applies to specific aspects of everyday mobility politics. Mobility scholars point out that routine events in everyday mobility and work and home journeys cannot be gender blind (Uteng and Cresswell, 2008). But gendered practices in everyday life and everyday geographies in China, apart from some anthropological studies (Judd, 2005), have received very little attention. The predominant focus is on macroanalysis of migration and mobility of Chinese men and women within China (Fan, 2008) but rarely pausing to look at how family logistics are managed on the everyday level and how family decisions regarding everyday mobilities are made. Indeed, poor understanding of this key aspect of E2W adoption has already to some extent fed into misunderstanding and clumsy regulation on the part of the authorities (Wells and Lin, 2015). Our goal here, therefore, is to open up this important research field with initial evidence that focuses precisely on these issues.

In the following sections, evidence from fieldwork is used to demonstrate that a whole range of diverse groups of people are dependent on e-bikes for performing different kinds of journeys or depend on them in performing professional (vocational) tasks – altogether constructing the complex, dispersed everyday politics and government of e-bike mobility: first in terms of a politics of implicit resistance to top-down Government and legalistic regulation; and secondly in terms of contestation amongst individuals themselves.

5. Step two: *Heiche* and the everyday politics of the 'last mile'

Shenzhen is famous for being a rather successful example in adopting EVs for its taxi fleet and e-buses for its public transportation, but also for enforcing the ban of e-bikes as a part of its low-carbon, high-tech and modern city image management. Indeed, any form of informal transportation is considered illegal despite its social benefits, as it compromises public safety and is regarded as an undesirable object on the streets, as in many Asian cities (Tiwari, 2014) – sporadic policing and "periodic harassment of the informal sector" has become a norm in many developing countries (Norcliffe, 2011, 240). Nevertheless, informal mobility provision remains part of the Chinese urban landscape and often helps to resolve the "last-mile" problem.

As a widespread mode of transportation, the informal mobility provided by e-bikes is a normalized part of the local mobility assemblage in many cities, varying from district to district. Most importantly, it has been one of the most visible elements of the informal economy in China. In some cities and districts up to 15% of the mobility services were provided by the informal sector (Pan et al., 2013), which includes two-wheelers and cars. E-bike informal transportation or feeder services are nothing new in a Chinese city and only a few years ago all the two-wheeled taxis were gasoline motorcycles. With imposed motorcycle bans in many cities (Wells and Lin, 2015), the practice of informal two-wheeled taxi service did not disappear. Instead, they simply shifted to informal *e-bike* taxis. The persistence and resilience of such informal taxis illustrate the politics of E2Ws in terms of relations between citizenry and an unsympathetic Government.

There are not so many e-bikes to be seen on the streets of Shenzhen as one would see in Shanghai, Hangzhou or in the interior provinces. But in 2015 the informal e-bike taxis were a part of a common traffic scene, similar to any other "normal" Chinese city. Every metro exit would often have a line or a group of e-bikers who would offer rides to all the people coming out, especially in the late evening hours. This kind of informal motorized taxi is considered illegal (*heiche*, or 'black vehicle') but despite the nearby presence of police, rarely was there marked tension between the two.

E-bikes are strictly prohibited in the city centre(s) of Shenzhen, but not in the fringe areas. Apart from the specialized "*zhuanyexing*" e-bike taxis, there is another group, which does this kind of e-bike taxiing to supplement their more stable income (as express delivery or securities). The specialized ones, mostly young men in their twenties or thirties, said the main reason for doing this kind of job was 'freedom': no schedules to follow, no supervision, reliance on yourself. For many male migrants with little education, work as a courier or a taxi driver is chosen as a job that allows improving personal economic situation and often having a flexible working schedule. The freedom of such occupation is held in high esteem by the professional e-bike taxi drivers. But what is "freedom" for an e-bike rickshaw?

> *It is easy to find a job in Shenzhen; factories have a lot of jobs. But there you have to work for somebody, the schedule is set for you, here I have freedom. Many of us had stable jobs, but many quit them. Here you depend on yourself; you go out when you want, because if you don't go to work you don't eat. You can't really earn a lot and save, but you can earn enough, eat meat, eat well, you understand?* (Focus group, male, 32, Shenzhen)

Yet freedom is relatively limited in Shenzhen, as rickshaws and expresses delivery couriers have to look out for traffic police, e-bike thieves, reckless taxi-drivers, trucks and buses. Traffic police can expropriate the bike if they catch the rider with the scooter in "no-go" areas (close to city centres). It is easy to identify "no-go" areas in central districts where no e-bikes can be seen. The police, however, are not very active in the evening, so informal transportation is synchronized with the darkness and lack of formal transport.

Yet this legally liminal existence of the E2W also exposes them and their drivers to specific risks, thereby exacerbating their 'shadowy' image. E-bike theft is ubiquitous, for instance, generating several practices for e-bike users to safeguard their possession. One measure is not to park the bike with many other bikes, but rather in an isolated place, so it is visible. A second is not to have a flashy new bike – "as long as it can ride, it is OK" – so the e-bike often is seen as a pragmatic mobility tool, not a tool for making a personal statement. And finally another danger is the roads themselves, especially main roads that are unavoidable on most journeys. As our interviewees noted, on this score they face a double risk: not just of an accident that will likely be worse for them, but also of default blame for it, thereby compounding deep-seated prejudice towards e-bikes. In Shenzhen, this prejudice is enforced by the avowed position of car drivers and taxi-drivers that these are low quality people (low *suzhi* migrants), who need affordable transportation but at the risk of themselves and other road-users.

Perhaps most importantly, though, is how the instance of *heiche* informal e-bike transportation illuminates the key issue of macro-politics as it merges with the everyday politics of E2W; namely, use by non-registered users who are often rural migrants, finding themselves in a contested relationship with the Government. As such, the everyday practices, capacities and risk exposure of *heiche* riders feeds into and is co-produced with broader political discourses and concerns regarding Government of the economically essentially, but politically and socially 'problematic', huge population of rural migrants, and how they may be shaped and disciplined into new citizens (Nyiri, 2010) who may be 'reliably' governed at a distance (Ren, 2013).

Yet, ironically, the appeal of the e-bike is precisely that it may be pragmatically used for everyday needs, including extending one's economic autonomy and "freedom" beyond the model of a paid official job – i.e. precisely to enable the kind of self-starting economic individual presupposed by Government projects of increasing marketization and economic growth. It is for this reason, then, that the pragmatic use and adoption of the E2W is usually, but unpredictably and uneasily, matched by a pragmatic toleration of its use by city authorities. Resistance to clamp downs thus takes place not through protests, by a population of users already asymmetrically disempowered within Chinese power relations, but rather simply through continued use where and when it proves possible, constantly pushing at the unclear boundaries between 'tolerated' and 'actively policed and proscribed'. This is thus an *intrinsically* contested politics of the E2W that is nonetheless easily missed if we look only for a default and explicit 'politics' of coercion and explicit, vocal resistance.

This discussion of everyday politics as key arena of contemporary mobility transition in the 'vertical' relations between (Party-) state and citizenry, however, points to a further step. In the following section we will enhance this understanding of taken-for-granted everyday politics by looking at a tension within and constitutive of the 'horizontal' everyday politics of E2W itself, exemplified by constant wrestling in the arena of everyday family mobility, facilitated by the e-bike.

6. Step three: *Fangbian* or *huanbao* and everyday politics of family journeys

In this section we address everyday politics related to government of mobility, looking at Chinese family dynamics and their everyday mobility strategies, especially those regarding management of parental mobilities. It is essential for the family to have a range of transportation tools, effective time management and division of transportation duties. In rural settings it is common for families to use electric tricycles or low speed electric vehicles, as was discovered during a fieldtrip to Shandong province. In a more conventional family in a big city, a family often has an e-bike and a car, at the same time resorting to bike-sharing and public transportation (metro).

One of the interviewees, a working mother in Beijing, had both a driver's license and often used an e-bike. She preferred to use the e-bike for taking children to and from school as the distances of the journey were manageable by e-bike and allowed her to save time on parking and traffic jams. There was, however, a conflict between her husband and herself, where the father considered it unsafe and unhealthy to expose child to pollution while travelling by e-bike, but the mother was more considerate of time in her family logistics.

Although the mobility duties were shared in this family, the father used only the family car and disdained the use of e-bike, while the mother was more versatile in using car, e-bike and metro. However, she was eventually forced not to use e-bike for transporting her child.

> *I use e-bike for anything within 10 km. With more than 10 km. I use other transport means. With a child – I don't use it anymore, my husband objects; he says I don't care about my child. We quarrelled once. But going by car is even worse, so I take metro. (Focus group interview, female from Guangdong province, 38, Beijing).*

Two of the dominating discourses for the use of e-bikes are their environmental friendliness (*huanbao*)[7] and that they are convenient (*fangbian*). While *fangbian* represents immediate, practical value of e-bike use, *huanbao* represents an additional value, which is associated with a discourse of "ecological civilization". Indeed, the identified meanings of e-bike mobility of *fangbian* and *huanbao*

[7] The status of e-bike as low-carbon is discussed elsewhere (Tyfield et al., 2014; Weiss et al., 2015), where the point of lead-acid battery and lead pollution is discussed.

in family journeys, as well as that of freedom for young e-bike taxi drivers (*heiche*), both 'support Governmental priorities, albeit in opposing ways. *Fangbian* supports the project of the citizen of 'liveable urbanism'; while *huanbao,* of course, supports green transition and ecological civilization. This thus sets up a domestic politics of the E2W that is not clearly for or against its further adoption, setting the scene for ongoing contestation to contingent and uncertain outcomes.

The following interview excerpt shows that *huanbao*, as a part of the discourse of ecological civilization, is present in the practitioners' motivation for using the vehicle:

> *I am buying e-bike because it is huanbao, and I don't want to use a car – it makes no sense to take kids to school by car or to go to the business districts by car or e-bike - I go by public transport. I also use Uber and Didi*[8] *a lot. But Didi charges you for traffic jams, while Uber does not. If the distance is very long, Uber is more practical, you pay less. For long trips on weekends we mostly use our car.*

Here, car-ownership and access to driving a family car does not change the perception of e-bike as a convenient tool for a certain type of family journeys. In this case, a female user does not associate e-bike use with migrants, "low *suzhi*" and hence e-bike is not seen as a mobility tool, that marks a social distinction. Yet one of the findings recurrent in the interview and focus-group data was the description of e-bike users by car-owners as "low *suzhi*" population. In the interview with an e-bike producer, the CEO of a leading e-bike manufacturer in Shanghai suggested that, although the link between e-bike and "*low suzhi"* existed, but that it was likely to change in the future as e-bike is gradually becoming a mobility tool for middle class and white-collar workers, who could use folded e-bikes for circulating in the city centre and transporting them in the car-boot back to their suburban apartment.

> Soon, in some 10 years also at home here in China, our technologies will be more in demand. We need patience, which is why now we are working for external markets, and not for home market where our specific product is still not so much in demand. Gradually it will also be popular here, but now it is not very good time for our product, we hope China will also accept it, but at present we do not work for our local market. In China people who ride e-bikes might not have a lot of money, but it does not mean their suzhi is low. They need e-bikes to live and provide for the family. (CEO of e-bike company, Shanghai).

As it also becomes evident with the growing popularity of smart scooters, such as designed and produced by Niu Technologies, the link of e-bike with low *suzhi* is being reclassified and the meaning of e-bike as "low-tech" is being redefined (see the case of Niu in Zuev, 2018).

Notwithstanding this changing status, though, it still seems that opting for e-bike mobility for transporting children is gendered. A more detailed and comprehensive statistical data analysis would be necessary to explore to which extent e-bike use is gendered for parental mobility. Field observations in diverse settings (rural and urban) revealed that men play a great role in children mobility in China (unlike in some western countries, Dowling et al., 2015). Yet, there is a dearth of reliable data regarding father's share in parental mobility and modality of mobility provision. In well-off families e-bikes provide an additional tool for women with driver's license, while male car-owners rarely reported their use of e-bikes, often stating that they preferred to use normal bicycles rather than to be associated with *"pizza or express delivery e-bike riders"(Interviewee, Beijing, 2016)*.

Another finding regarding the gendered use of e-bikes was the assertion of e-bike retailers, that women preferred lighter versions of e-bikes (citing their preference for Li-Ion pedelecs). One of the female interviewee in the bike shop admitted that after several years of e-bike use she chose to buy a heavier version of e-bike because transporting children during the rainy season could be more dangerous on a light e-bike. A heavier scooter was thus more stable, reliable and *safer,* than a light e-bike. *Here there are too many e-bikes; public transportation is not very good so police does not really bother. And I decided to upgrade my e-bike – I want a heavier one, because the light one is not very stable on a slippery surface like a wet winter road. (Female user, 30 years, Shenzhen)*

E-bikes play an important role in empowering women as they do not have to contest the right to use family's single car and can alleviate their burden of mobility by resorting to e-bike. As Brunson similarly noted in her analysis of scooter mobility in Nepal, scooters allowed women to move from the back of a motorbike to the driver's seat and occupy the seat designed specifically for her" feminine needs" (Brunson, 2014). Yet the predilection for cars and not e-bikes, despite their *huanbao* component, remains. with 'micro'-level gender and family dynamics in tense co-production with significant 'macro' dynamics of contemporary Chinese society. As a taxi drier interviewed in Beijing put it, reiterating the opinion of the expert quoted above:

> *I will tell you one thing. China started reforms, but for 60 years people were poor, and now they became rich. We have been on two wheels for too long. And many always had a wish to have a car, so all other wishes are put aside, including environmental protection (huanbao). That is why people want to drive a car, not an e-bike. But slowly it will change; it will definitely change, as in the US.* (Male, 30, Beijing).

In this section we have examined the case of everyday politics of e-bike mobility from the perspective of gender and identity dynamics in the family. E-bikes serve as an empowering tool for Chinese women and facilitating family mobilities, but at the same time create internal contestation regarding its use between husband and wife. Women interviewed demonstrated a very different identity in readiness to use different mobility tools aside the dominating car. And as in the case of informal e-bike transport, they had to jockey between the rules and practical disobedience, choosing e-bike for its convenience and autonomy. Middle-class women also demonstrated that they were capable of incorporating different types of mobilities in their everyday life (e-bike, car, and bus, metro and taxi-hailing apps).

The instance of family journeys propelled by e-bike use provides an additional angle for understanding the constitution and shaping of everyday politics of E2Ws from the 'bottom-up', as a key aspect of the dynamic interplay of power/knowledge relations constitutive of government and governmobility.

[8] The interview was conducted before Uber China was acquired by Didi Chuxing in August 2016.

7. Step four: conclusions - what does everyday politics have to do with government?

Starting with the observation of the surprising political sensitivity of the E2W in China, in this article we have set out to track down, illuminate and explain precisely '*where* is the politics' in this key global case of mobility transition; and, hence, *why* the political response of Chinese Government (at national and local levels) is so intense and draconian, on the one hand, and yet there seems so little public reaction, on the other. At the heart of unpicking the first part of this conundrum is what is at stake, and understood to be so by Government and citizenry alike, namely "who gets to define what counts as 'civilized' urban mobility (and all that entails, in terms of the differential empowerment and/or disablement in day-to-day life and longer life projects) in early 21st century China, and for whose benefit?" Moreover, in a globally rising and fast-developing country, the 'conclusions' of this ongoing material-discursive contestation are likely to be of enduring significance, raising the stakes yet higher.

In arguing thus, however, we have also thereby illuminated *what* the 'politics' of e-bikes are in China, and hence what politics of low-carbon transition more generally consists of – which illuminates the second part of the conundrum. This perspective goes against prevailing approaches in transition studies that are alert to the need to incorporate issues of power, but define it as that which, subsisting at 'regime' (and/or 'landscape') level(s), constrains the desired expedited growth of sustainable niches. Instead, politics and government is re-framed here in Foucauldian terms as the *constitutive, relational*, *situated and cultural* process through which new socio-technical systems of power/knowledge relations are shaped into being and become progressively empowered by, through and as changing everyday social practices, subjectivities and institutions. The politics of the E2W, therefore, also takes place and is contested through practices that emerge from and in everyday life and the multiple, complex and concrete encounters of diverse Chinese people and institutions all actively pursuing their own aspirations for, and definitions of, civilized existence.

Progressing from the level of tensions at the level of 'Government' (step 1), to the inter-relation of (Party-)state and citizenry (step 2), to daily contestation amongst the latter as mobility users (step 3), therefore, the final section above on family journeys may elicit the question: "What does this have to do with politics and Government? Or, "how does everyday politics at that level feed up into Government?" Completing the square of our argument (see Fig. 4 – here, step 4), however, the answer lies in, and is to illuminate, the essential project of the Party-state of cultivating an explicitly "*civilized*" 21st century Chinese citizen(ry) as 'ecological (urban) civilization'.

The politics of the E2W is so intense and yet seemingly invisible in China, in other words, because it sits at the very heart of contemporary political contestation in that society, in both substance and form, regarding "*Who* (i.e. which sociological characteristics) is or counts as the 'civilized' citizen? And, inseparably, *who gets to decide this*? And *how*?" In this way, the ongoing, and now apparently accelerating (Tyfield and Zuev, 2018), socio-technical transformation of urban mobility serves as a crucial arena and vehicle for both a specific political project and mode of politics in China that is unfamiliar to Western thought but of great significance to global low-carbon transition in the 21 st century; what we may call "*civilizational government*", i.e. (Foucauldian) government of and through contested projects of civilization and civilizing.

The politics of E2W is thus *government* in the everyday performances on the roads, behind the wheels, at the kitchen table, in the parking lot, as gender, classes, personal quality (*suzhi*), ethnicity and identity politics come into play and make decisions regarding everyday movement; but where each of these are enacting and transforming the 'bigger' picture of dynamic, contested definition of '*civilization*', amidst the epochal national project of rejuvenating China's standing, both in the world and to itself, as *the* ecological civilization of the 21st century.

In short, exploring e-bike mobility in China not only illuminates the need for changes in conceptualization of power and politics for transition studies, but also the need for opening up a whole new agenda exploring that which politics is about, i.e. not merely 'socio-technical systems' but 'civilization(s)' itself. This would reframe sustainable transition itself as a question of ongoing, unending civilizational politics and government (Tyfield, 2017a). And this, in turn, opens up a deeper engagement with new but urgent agendas for transition studies concerning questions of 'civilization'; whether from cultural geography, contemporary (geo-)politics, 'big' history, or broader initiatives in the social sciences towards engaging anew with 'grand narratives' but in ways that do not forget or reproduce the problems with the old ones. As such, further exploration of system transition as civilizational government promises to illuminate global efforts at low-carbon innovation more generally over the medium-term, not just those within China; even as China, and its fast-developing cities in particular, are increasingly likely to be of pivotal significance themselves.

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