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## Between pace-making and pace-taking: Urban cycle logistics in an accelerated polity

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### ABSTRACT

The purpose of this study is to explore the concept of social acceleration by examining how cities are trying to speed up, maintain or slow down the pace of societal change. Through studies of cycle logistics policies and actions in cities in Denmark, Norway, the UK, the Netherlands, and Germany, we show how these balance between acting as pace-makers and pace-takers, as well as what the consequences of this balancing act are for enacting cycle logistics. By using acceleration as an overall theoretical concept, we show how transport planners, mobility policy advisors, and digitalization and innovation strategists understand and position themselves when setting the pace for cycle logistics as part of a broader transition toward sustainable transport. We conclude by discussing the implications of this for the general understanding of acceleration in transformations to urban sustainability.

### 1. Introduction

Cities have emerged as key actors in the transition to a sustainable future (Wolfram, 2016; Gorissen et al., 2018; Grainger-Brown et al., 2022). By placing sustainable transport high on the agenda, cities have taken the lead in transforming the transport system. While the reduction of fossil fuel is a crucial component for urban transport and logistics planners to achieve set sustainability goals (Tennøy et al., 2020; Vanhuysse et al., 2023), transport and logistics planners also work toward lessening congestion, increasing traffic safety, and reducing air pollution and energy use (de Oliveira et al., 2017; Schliwa et al., 2015). It is in this light that cycle logistics is often considered a sustainable alternative for the movement of goods and services in cities. Cycle logistics reduces pollution and congestion if it replaces last-mile freight transport, which otherwise would have been delivered by fossil-fueled trucks (de Oliveira et al., 2017; Schliwa et al., 2015). Although cycle logistics has been around for more than a century to varying degrees (cf. Maes & Vanelslander, 2012), it remains a niche within freight transport.

Being a niche, cycle logistics faces multiple challenges in becoming further established and widely used. This is also why its proponents want to facilitate its development and use (see Isaksson & Alm, 2022). Arguably, the growth of e-commerce and the increase in the number of

deliveries of packages, food, and groceries in the past few years has massively contributed to the rising number of cycle deliveries (Anderluh et al., 2017; Bosona, 2020; Marcucci et al., 2021). This increase in deliveries and consumption, and the increase in speed of delivery and consumption, have, inexorably it seems, created tensions with efforts to slow down consumption and cap resource use (Campbell, 2021).

Social acceleration remains an underexplored concept for understanding both the pace of urban sustainability transitions and the pace of policymaking (Fawcett, 2018a). One reason for this could be that acceleration is an ambiguous concept, imbued with moral connotations. While some tend to view “acceleration as potential” for urban sustainability transitions and new forms of policymaking, others perceive “acceleration as evil” as it causes stress and reproduces social hierarchies (Rosa, 2015; Wajcman, 2015) but also reduces policy actors' power to influence societal transformations (Fawcett, 2018b).

Our point of departure is that social acceleration is an overarching structural process, shaping life trajectories, cities, and industries (Rosa, 2015). We will discuss below what we mean by social acceleration, but at this point we want to stress that it also has implications for, policymaking and the agency of city administrations in their attempts to govern transport and logistics. We, therefore, introduce and use the notions of pace-making and pace-taking to show how cities relate to the

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prevailing acceleration: do they surrender to this structural process or do they try to intervene and influence it? We will elaborate on these concepts later on, but for now, it suffices to say that they will be used for exploring how city administrations work on speeding up, keeping up, or slowing down the pace of urban transitions. Indeed, we suggest that the re-emergence of cycle logistics is an intriguing case of social acceleration as it represents the dynamics between pace-making and pace-taking, a balancing act between being a slow mode of transport (often being a non-motorized mode) and a fast mode of transport (being able to make shortcuts, find parking spaces easily, delivery just-in-time, etc.). This balancing act also has to do with balancing the needs of motorized and non-motorized modes of transport, (Koglin & Rye, 2014) where motorized transport historically has been prioritized because of its higher speeds. Yet social acceleration is rarely discussed in the literature on cycle logistics. So far, only a few studies have explored cycle logistics and its interdependence with acceleration, time, and pace (see e.g. Chen & Sun, 2020; Popan, 2021; Zheng & Wu, 2022). The studies that do explore acceleration, time, and pace, however, typically look at urban cycle couriers, while our focus is rather on transport planners, mobility policy advisors, and digitalization and innovation strategists engaged in enacting cycle logistics policy.

Building on this insight, our purpose is to explore the concept of social acceleration in the context of cycle logistics. More specifically, we use acceleration as a framework and pace-making and pace-taking as analytical terms to explore how cities and regions work with, and toward, sustainable last-mile delivery in the form of cycle logistics. The structure of the paper is as follows. First, we discuss the concept of social acceleration as this makes up the theoretical framing for our study and then we move on to discuss pace-making and pace-taking as analytical terms. Second, we outline our method of gathering empirical material and how we analyzed our material, that is, through an interpretative process of iterating concepts and narrative accounts. Third come the accounts of the transport planners, mobility policy advisors, digitalization and innovation strategists.

Here we explain how these actors in different cities and regions plan and work with cycle logistics. This is followed by our conclusions, in which we revisit the concept of acceleration by discussing its value for understanding urban cycle logistics and the transition to sustainable transport.

## 2. Social acceleration

Acceleration, pace, and temporality have for decades been discussed within critically leaning social science. Marx and Simmel and later Luhmann included these concepts in their work to describe and analyze modern society (Rosa, 2015), although none of them discussed transport explicitly. Harvey (1981, 2001) discussed time and transport when analyzing spatial fixes and globalization, and thus indirectly referred to the acceleration of the production systems of capitalism.

Building upon this rich history of critical scholarship, we use Rosa and his conceptualization of social acceleration to understand cycle logistics in cities and regions in Northern and Western Europe. Rosa describes modernity through a threefold acceleration process. First, there is *technical acceleration*, which he defines as how speed is intentionally accelerated through new and innovative communication, transport, and production processes. This occurs, for instance, through the introduction and usage of faster cars, faster trains, or video calling (Rosa, 2014). With these technological innovations emerges the opportunity to travel through space at a faster pace, or to communicate more intensely across space. Echoing Harvey (2001), Rosa describes this as “the experience of a shrinkage or compression of space” (Rosa, 2015, 72). Second, Rosa outlines how the pace of *social change is accelerating*. Social change includes transformations in “practices and action orientations” as well as in “associational structures and patterns of relationship” (Rosa, 2015, 74). To illustrate this point as well as the increasing pace of social change, Rosa refers to the implementation of innovations – while it took

38 years from its invention for the radio to become a technology used daily in every household, it took only 13 years for the television, and only four years for the internet (Rosa, 2014). Third, and lastly, Rosa depicts how the individual experiences *the pace of life as accelerating*. He defines this acceleration of the pace of life as the “shortening or condensation of episodes of action” creating a subjective sense of being pressed for time due to decreasing time resources per action (Rosa, 2015, 78f).

While these three types of acceleration influence each other, they do so in what Rosa terms an acceleration circle. He succinctly states that the “more scarce time resources become, the greater is the need for techniques and technologies of acceleration and hence the faster the pace of life becomes too” (Rosa, 2015, 152). As the pace of social change accelerates, it may be described as constant change, whereby, Rosa argues, the present becomes harder to distinguish from the future. Subsequently, the future becomes more and more difficult to predict, plan and manage, which has severe implications for policy and formal political decision-making processes.

### 2.1. Acceleration between governability and ungovernability

Even though the acceleration process is abstract and structural, it is endemic to modern societies, not least cities and urban life. We take acceleration for granted, as part of modernity. For our purposes, it is crucial to keep in mind that the three forms of acceleration impact formal politics and policymaking, but in slightly different ways. Indeed, Rosa argues that formal political power is losing governing capacity (e.g., cf. Offe, 2013) and political processes risk losing their steering power, ending up only reacting to acceleration. Rosa explains this through three interlinked observations: (i) the pace of social change is accelerating, whereby more issues need to be considered, to make decisions on, regulate, or steer at once; (ii) the issues to act upon and make decisions about are becoming more complex, involving more stakeholders, and have more severe consequences. Taking these two observations together, Rosa suggests that the time needed for well-thought-through political decisions and policymaking is increasing. However, and this is his third critical observation, (iii) collective will-formation, political decision-making processes, and policymaking all need a certain amount of time, which, paradoxically, cannot be accelerated. In fact, the formal political decision-making processes in democracies may even need *more time* due to the increasing pace of social and technical acceleration. Or, from an opposite view, Rosa suggests that:

“the speed of change, or the dynamics of society, has to be *slow enough* for democratic and deliberative political processes of will-formation and decision-making to actually be effective, or for politics to actually control (or steer) social developments and set the pace. [...] Collective will-formation, deliberation, and action require a certain degree of centralization, public stability and political identity which might not be compatible with the most dynamic forms of society.”

(Rosa, 2006, 450)

Rosa is not alone in this observation. Also, Wolin (1997, 2) has argued that “acceleration has created a process of ‘temporal desynchronization’ in which ‘political time is out of sync with the temporalities, rhythms, and pace governing economy and culture’” (in Fawcett, 2018b, 368f). This suggests that there is a temporal desynchronization between policymaking and formal political decision-making processes on the one hand and social and technological acceleration on the other hand.

### 2.2. From social acceleration to fast policymaking in an ‘accelerated polity’

Social acceleration does not only have implications for urban life, it also impacts the city administrations working on transport planning and policymaking. Based on the above discussion, we, therefore, suggest that

social acceleration may be brought down to the level of city administrations and used for understanding their work. City administrations, the executive branches of urban government, are presented by Fawcett as the most flexible agents to adapt to the “compressed timescales” that social acceleration is causing, as opposed to more legislative and judicial branches on the national level, which work more slowly (Scheuerman, 2004, in Fawcett, 2018b, 551). While city administrations might have the ability to adapt to an increasing urban pace, the question is whether this is politically desirable and socially feasible. The fundamental question at stake is how city administrations, in our case urban transport policy and urban planning organizations, relate to the increasing pace of technological, economic, cultural, and societal change, and how, considering this, pursue they long-term policymaking toward a sustainable transition.

Fawcett (2018a,b) contrasts different types of slow and fast policymaking, as well as fast and slow politics. Like Rosa, Fawcett explores how an “accelerated polity” impacts the perception of what effective and legitimate policymaking means, as well as what this implies in terms of shifts in power in the policymaking process (Fawcett, 2018b, 548). While fast politics and acceleration are seen as a threat to well-informed policymaking, others argue that the pace of change is a “condition of contemporary governance” and simply a reality that authorities have to cope with and try to keep up with (Chesneau, 2000; Saward, 2015, in Fawcett, 2018b, 552).

While a slow policy process is perceived to imply a thorough understanding of the issue at stake (Fawcett, 2018b), time is also often required for building consensus and for establishing processes of collective will-formation, according to Rosa (2006). Indeed, the entry of speed, change, and disruption into governance, and emerging types of fast policymaking are seen as threats to decision-making processes and procedures in bureaucracies (Du Gay, 2016 in Fawcett, 2018b, 555). Fast policymaking is also perceived as the diametric opposite of “good” collaborative governance, as time is often needed for building up trust between actors (Ansell & Trondal, 2018, 21 in Fawcett, 2018b, 556).

Others argue that policy must be accelerated, and implementation periods shortened, for instance, through iterative processes, prototyping or pilots, and learning by doing (Sabel & Zeitlin, 2010; Peck & Theodore, 2015 in Fawcett, 2018b, 557). In a collaboration between different “dispersed policymaking sites”, policymaking can become a “polycentric and relational process in which ideas circulate at a much faster rate” (Fawcett, 2018b). Translating this to an urban setting, it is possible, we suggest, to talk about the politics of pacing. The politics of pacing focus on the automobile and its impact on urban life. As such, the politics of pacing signify “planning interventions focusing on ‘speeding up’ the circulation of private vehicles, [which in the past has] led to a ‘city center increasingly moving to the rhythms imposed by a bureaucratic elite’ (Hubbard & Lilley, 2004, 273)” (in Grandin, 2023, 166). For some households, the pace of life has increased as a consequence of this politics of pacing, while for others it has decreased, all depending on the household’s access to a car (Grandin, 2023, 166).

Using this as a point of departure, we will explore to what extent cities and regions, or more specifically transport planners, mobility policy advisors, digitalization, and innovation strategists slow down, speed up, or maintain the pace of acceleration when enacting cycle logistics policies. Are they merely subject to the acceleration already ongoing in society at large, or do they try to set the pace of acceleration, and if so, how? By introducing the terms ‘pace-making’ and ‘pace-taking’, we approach how civil servants work on accelerating cycle logistics in an accelerating world. Pace-taking denotes when civil servants accept or even surrender to the acceleration already occurring in society. This, we suggest, signifies some degree of resignation, as the city administrations then merely try to keep up with the pace ‘out there’. Most likely, this is because power is understood to be located elsewhere, for example in the market or at the national level. Therefore, it is rare to find visions or ambitions that actively seek to shape or influence the pace of urban life. But in those cities where such ambitions exist and have been

formulated into policies, they tend not to be backed up by resources. Pace-making, on the other hand, signifies a more proactive stance, where city administrations dynamically try to slow down or speed up acceleration depending on their long-term vision. Slowing down might be needed to adjust the pace of social change to the rhythms and times needed for thorough policymaking, while speeding up might be a proactive mode of policymaking, such as when governments try to steer technical and social acceleration toward making urban transport more sustainable. We will use the terms pace-taking and pace-making primarily to analytically systematize our observations in the context of social acceleration theory.

### 3. Method and materials

Between May 2022 and November 2022, we gathered most of the material for this study. Our methodological approach was based on a form of multi-sited strategy since we wanted to explore how the same phenomenon - cycle logistics - has emerged and been promoted in various urban settings. Following this, we laid out a two-step collection process.

First, we conducted e-interviews (Fritz & Vandermause, 2018). We included five broad questions on cycle logistics, touching on topics such as policy, practice, and visions of the future.<sup>1</sup> E-interviews are beneficial as they give the respondent time to think and consider how to respond to open-ended questions. They also allow for a prolonged and deeper conversation, possibly stretching over a longer period. Subsequently, between May and June 2022, we approached 77 urban and regional transport and logistics planning authorities in Denmark, Germany, the Netherlands, Norway, and the UK. We approached mid-sized cities and a handful of smaller regions in these countries with our e-interviews in an attempt to understand how cycle logistics are organized and which policies are enacted in different but somewhat similar settings. We received 33 answers in total, which provided us with rich source material.

Second, based on these e-interviews and in what sense cycle logistics were integrated in the city or regional administrations, we moved on to the next step and conducted thematic virtual face-to-face interviews, inspired by our theoretical framework. Between October and November 2022, we interviewed nine public officials from seven different places, including six cities and one region.<sup>2</sup> To be able to revisit the material for our analysis, we recorded the interviews and automatically transcribed them using the virtual conference device.

Seeking to foster a multi-sited analysis, we used our theoretical framework across the cases to sort the material. The outcome of this initial analysis was discussed among us authors and once we had agreed on the analytical categories, we moved on with the analysis through an iterative process. We subsequently had to calibrate the analytical categories as we revised and fine-tuned our theoretical framework.

### 4. Acceleration in urban last-mile logistics

In an accelerated world, more things need to be done in shorter periods. And those who can speed up their lives and accomplish more, acquire a higher status (Wajcman, 2015). This high status from being busy subsequently leads to the willingness to work more as well as to higher levels of consumption, especially in income-rich and time-poor households (Wajcman, 2015, 73). The increasing number of delivery services eases the demand and the pace of consumption. Autonomous delivery robots, drones, e-fueled vans, or smart bikes – the logistics industry is full of technological innovations which often aim at making fast deliveries to time-pressed individuals and households, but also cheaper

<sup>1</sup> The questions of our e-interviews are attached in the [Appendix](#).

<sup>2</sup> Municipalities in Denmark were excluded as so far they do not seem to have integrated cycle logistics in policy, practice or visions.



and more eco-friendly deliveries (Kostrzewski et al., 2022).

One of the latest innovations is so-called q-commerce (short for Quick commerce) which describes a new form of e-commerce with delivery often under 30 min (DaBlanc, 2019; Mukhopadhyay, 2022). In this development, quick cycle delivery has become an integral part of urban areas, as colorful bike delivery workers are visible in larger cities around the globe. Ordering food, groceries, or other goods by app, and having them delivered within the same day, sometimes within minutes, is now a daily experience for many. The Covid-19 pandemic has accelerated the emergence of cycle delivery, and cycle logistics, which come with the promise of being even more flexible than other transport modes, increasing the speed of delivery further.

However, the introduction of technological and economic innovations in all stages of the cycle and last-mile logistics is creating growing complexity. Some authors argue that municipalities, through policies within traffic management, urban planning, and enforcement, can influence the “consolidation of goods flows as well as architectural innovation for warehouses” and thereby the pace of goods flow within urban freight and quick delivery commerce (DaBlanc, 2019, 223). These actions could contribute to increasing the pace of consumption and life. Schliwa et al. (2015) argue that local authorities should “harness the potential of cycle logistics and provide conditions that incentivize private companies [...] to integrate cycle logistics into their supply chain”, to focus on sustainable transport modes in the growing logistics sector. Cycle logistics itself becomes thereby an illustration of the tensions between immanent acceleration and sustainability. These actions could contribute to increasing the pace of sustainability transitions.

While the cycle as a tool can reduce emissions and contribute to more sustainable transport, cycle logistics are simultaneously contributing to an increasing pace of delivery services and consumption. However, in the following we focus on how transport planners, mobility policy advisors, digitalization and innovation strategists promote cycle logistics for a sustainable transition.

#### 4.1. Emerging in cities

Cities are heterogeneous and complex. Food, materials, energy, and other resources are brought into and out of the urban metabolism through logistics. While logistics is at the very center of cities, it is often a marginalized political issue, delegated to transport planners and logistics companies to deal with. Even though low-emission zones have been implemented in some cities, effectively banning heavy fossil fuel trucks from the delivery system at certain times of the day, logistics is often still carried out using fossil fuel vehicles (Jones et al., 2020). At the same time, cycle logistics is being positioned as an emerging solution to the complex last-mile logistics in many European cities.

Of the 33 respondents in our e-interviews, many told us that they had logistics and delivery services, such as food delivery, courier, or postal services, at least partially, conducted by bike in their city or region. While cycle logistics is not a new phenomenon, civil servants in several of the cities explained to us that new cycle logistics services had been emerging lately, such as pharmacies and bookstores delivering parcels to their customers by bike. Only in one city in the Netherlands, Enschede, did respondents mention a broader variety of logistics services by bikes, including retail between shops, transfer from shops to warehouses and vice versa, as well as plumbers or painters using cargo bikes for their services. In several cities, bikes and cargo bikes are used for municipal operations such as passenger travel in preschool, employees within homecare moving between different homes, or urban planners cycling when conducting land use management.

#### 4.2. Emerging in policymaking

Although cycle logistics is an emerging phenomenon in urban life, it is less so in urban policies. Across all cities, cycling as a mode of transportation is framed as a solution to the climate crisis and is promoted

through policies. Cycle logistics, however, is not. However, it is slowly finding its way into plans and visions at the intersection of transport and environment policies. In several of our studied cities, long-term sustainability goals are mentioned as guiding daily planning. In their efforts to facilitate a transition and realize long-term goals, zero-emission zones and reductions in the total number of transports are important in several of the cities.

While the cities have established visions for sustainable transport, many of the measures targeting logistics have thus far merely translated into regulations concerning loading spaces and delivery time slots, as well as fuel and emission regulations. Cycle logistics is seldom mentioned in these visions and plans. It was only Oxfordshire that had a policy specifically on cycle logistics. In Stuttgart, cycle logistics only represent a minor share of urban logistics, and this will not change soon, the mobility officer there explained. Cycle logistics might be relevant for small package delivery, for example for grocery delivery and deliveries from local retailers to customers or within care services. In Sheffield, cycle logistics is not a priority, due to the prioritization of public transportation in the city's transport planning.

Administratively, urban cycle logistics fall between two stools. Cycle logistics does not have a given place in any of the urban or regional authorities. Indeed, many of our interview requests ended up in departments working with transport planning, which typically are responsible for cycle planning, but in quite a few cases, our requests ended up in departments or units responsible for innovation, digitalization, logistics, and internal transports. As there is no designated planner for cycle logistics, there are only a few initiatives to mobilize corporations or user groups to accelerate urban cycle logistics. While limited resources are a recurring trope, there are cases when there is simply not enough time. The civil servant in Bremerhaven told us that:

“Bremen, for example, had a cargo bike subsidy for private households, so they were able to apply for a subsidy and implemented it relatively quickly. I spoke to my colleague there and they said we had totally underestimated how time-consuming it was. [...] We would have had to create two positions to handle it [...] In the administrative structure, some things are not so easy to implement.”

In conclusion, cycle logistics is not something any of the people we talked to worked with as part of their ordinary job to any great extent. Our impression is that inexperienced planners together with cycle logistics being organizationally misplaced, have meant that the topic has been struggling to find a ‘home’ in city administrations. One issue is therefore finding the time and the resources for working with, promoting, and enacting cycle logistics. While time and resources are limited, the number of issues at stake that the city administrations need to handle is growing, which tends to lead to work overload and stress, as pointed out by Rosa (2015).

#### 4.3. Changing politics of pacing?

Even though cycle logistics is seldom targeted in formal policy, policies for enhancing cycling are common and they include changing the politics of pacing. Arguably, this may benefit cycle logistics as well, but that would be more of a random byproduct than anything else. These changing politics of pacing have two parallel ambitions. On the one hand, the ambition is to slow down car traffic and reduce car use. Many cities work with this as a form of pace-making strategy. On the other hand, the aim is at the same time to speed up the uptake and use of cycling and indirectly also cycle logistics. This dynamic is fraught with tension though, as cycling and cars are often pitted against each other and compete for space in cities (Koglin, 2013). Similarly, in Stuttgart, the commercial transport officer stressed the vision of a sustainable future with fewer emissions in the inner city and a greater focus on cycling and walking through applying several alternative solutions: digitalization, restrictions, and electrification. In the same efforts and drawing on these technological applications and regulatory instruments,

logistics, he suggested, could change from being based on fossil-fueled vehicles to vehicles fueled by either electricity or fuel cells. Speaking about how regulations are enhanced by new technology, the official from Stuttgart stated:

“Passage restrictions will be imposed, there will be speed reductions. And the areas that were available today for motor vehicle traffic and logistics traffic in public spaces will be converted into open spaces, green spaces. They will be expanded for pedestrians and cyclists, and the number of delivery zones and logistics zones will continue to increase. [...] In the future, these areas should be used intelligently and multifunctionally [...]”

As shown in this quote, there is a logic around the relative speed of different modes of transport and how they interact dynamically. By slowing down the speed at which motorized vehicles are moving, the relative speed of other modes of transport will increase, including cycle logistics, the logic goes. While this is a desired future state, it is a future that must be created, according to the representative from Stuttgart. This suggests that the pace is not set by corporations, consumers, or other actors, but by the city.

“Therefore, in the future, we will primarily focus on providing real-time data to record the occupancy of delivery areas, delivery zones, and packaging areas. The city will concentrate on gathering and providing this data through detection or other options. [...] So there will be smaller units. To conclude, these smaller units will predominantly be electrically operated, and space will be used intelligently. There will also be restrictions on availability and space, as well as potential time regulations concerning when and where deliveries can be made [...]”

In sum, the transport planners, mobility policy advisors, innovation and digitalization strategists are working on a politics of pacing that allows a broader variety and flexibility of active and slower transport modes, cycle logistics being one of them. However, while many of the interviewees mention that they want to speed up the transition, at the same time, they comment, the overall existing infrastructure has still inherited old patterns of the politics of pacing with the automobile in focus. Changing the overall physical transport infrastructure is key to resetting the politics of pacing and a challenge for several cities. After all, automobility is still the dominant form of mobility, which is also reflected in politics concerning urban transport planning and infrastructure. Automobility also sets the pace in the field of cycle logistics, say many of the city representatives (e.g. Koglin, 2020; Paterson, 2007; Psarikidou, 2020; te Brömmelstroet et al., 2020).

#### 4.4. Manifested in infrastructure

As many of the transport planners and mobility advisors mentioned, cycle logistics is dependent on infrastructure, some shared with other modes of transport, some only for cycling. In Sheffield, UK, the lack of infrastructure was perceived to be one the greatest challenges to increasing the share of urban cycle logistics. While the planners perceive cycling as a form of passenger transport considered to be pivotal for the future of sustainable transport, the transport of passengers and the transport of goods are entangled with one another in the case of cycling. If one is promoted, so is the other. As in many places, the cycling infrastructure in Bremerhaven needs to be adapted insofar that paths need to be developed and expanded, especially for cargo bikes, we were told. While cycle infrastructure was generally seen as the most demanding challenge, constructing infrastructure is a slow process. But there are differences. In the cities in the Netherlands, cycling infrastructure provides sufficient space for cycle logistics.

Yet some cities have taken additional steps toward creating the more sustainable conditions for commercial urban cycle logistics by building a common infrastructure for parking and loading, namely inner-city

logistics hubs. In Bremerhaven, Germany, the civil servant had the vision of developing existing logistics hubs further for the use of cycle logistics. Stuttgart highlighted the difficulty of finding space for so-called micro hubs. In Stuttgart, the real estate prices are too high for hubs to be economically feasible for logistics companies. While the city could influence the market by supporting the establishment of hubs, most politicians, the civil servant argued, are concerned with finding space for housing, not cycle logistics hubs.

Transforming, changing, or building new physical infrastructure is often a slow and expensive process and might also cause controversy. Cycle paths are a case in point. Small urban logistics hubs, on the other hand, are infrastructural elements that are faster and easier to put in place. By providing such logistics hubs in urban locations, the city administrations hope that cycle logistics companies will find them appealing, use them, and thereby speed up the building of a market for sustainable last-mile delivery.

#### 4.5. Facilitating the market

The city administrations face challenges of limited time and financial resources to make greater changes in policies, the politics of pacing, and infrastructure. In addition, as public authorities, they face legislative and regulatory restrictions (cf. [Treaty on the Functioning of the European Union, 2018, Article 107.1](#)) and this might be the key argument to explain why most of the people we talked to leaned toward facilitating and supporting common sustainable transport solutions, such as shared hubs and building infrastructure rather than creating their own cycle logistics service or supporting a specific company. For example, in Baerum, part of the metropolitan area of Oslo, Norway, the innovation strategist that we interviewed said: “We don't want to operate with logistics, but we want to be a facilitator for our logistics to go in a more sustainable direction”. This suggests that the traditional planning instruments are not enough to set the pace, but that urban strategists are actively trying to achieve long-term goals and set the pace by supporting commercial initiatives.

Across the cities, the most common policy to speed up cycle logistics was the use of capacity-building with and for local businesses. In Baerum, they wanted to accelerate sustainable small-scale logistics by supporting the establishment of a micro hub. In Stavanger, there was a desire to further develop a common logistics hub through increased collaboration with the incumbent logistics companies, although the funding for those activities had not yet been solved. Most active was Stuttgart, as it had launched a range of pilot projects, e.g., a trial of cargo bikes for companies; had converted public space into micro depots; and had implemented cargo bike information days. Several cities, such as Sheffield, financially supported cargo bikes to help smaller businesses to make a transition.

However, the challenge, the innovation strategist in Baerum stated, is to get the incumbent logistics companies on board. They are not interested in sustainability per se, or the common infrastructure. While speaking about the established logistics companies, the representative from Baerum stated that.

“They have been quite interested in utilizing [the hub] and marketing themselves as 100% sustainable suppliers. If they start to see such opportunities, they can use the hub as part of their marketing [strategy]. And then, we will be well on our way. However, they often claim, ‘Yes, we'll deliver a package to you within two hours in a sustainable way’, but then they only consider using an electric car. However, it's not sustainable to deliver a package to a person in a car. So, sustainability has become a somewhat overused term.”

So, while Baerum had the aim of establishing the hub to ensure possibilities of reloading, thereby reducing the number of vehicles in the city center, the companies using the hub saw it as an access point for speeding up and making delivery services faster. Another challenge,

stressed by the same innovation strategist, is the consumers. They are very passive as they habitually choose not only the fastest but also the cheapest delivery option. In that sense, she added, it is crucial that the common logistics infrastructure does not end up incurring greater costs for the consumers, but that the costs are imposed on other actors in the supply chain. However, other research has shown, when given information on economic and social sustainability, customers might choose not the fastest but more sustainable delivery options (cf. Ignat & Chankov, 2020; Viet et al., 2023).

Another way of speeding up the introduction of cycle logistics is networking. For example, Baerum and Stuttgart are tightly connected to logistics companies and other public authorities on these matters. Stuttgart is active in several networks supporting cycle logistics: the inter-municipal working group “intercity logistics” (includes the big delivery companies DHL, GLS, DPD, UPS), the convention of cities in the federal state Baden-Württemberg, as well as collaborations with the city of Karlsruhe and the industrial organization “carobike.jetzt” (cargobike now).

While these municipalities are actively trying to stimulate the growth of the market, Enschede takes a more passive stance:

“The government's role is, priority one, to set straight rules for everyone. Make those rules clear for everyone. And on the second level, to help people wherever possible to follow the rules. But we only try to work with those people who want to do something. Like if there is energy within a certain direction, people saying ‘Hey, we would like to do something like this, or we would like to explore that’, then we would say, ‘Okay, maybe we should help you and bring you into contact with other people or maybe we can do something that's a subsidy and a pilot project, things like that’. But we try to take on a rather reactive mode.”

Given that the national government in the Netherlands has provided a specific time frame and set the pace for a transition by implementing regulations for zero-emission zones in cities by 2025, it has become imperative for the market to respond and adjust accordingly. However, in contrast to other European municipalities, the role of Dutch cities in expediting the transition is primarily limited to facilitating support for those actively seeking assistance from the city administration.

In sum, facilitating ‘the market’ is a common trope among city administrations. This suggests that fast policymaking tools are used to stimulate the market, which can then act more quickly in an accelerated world. That said, the types of facilitation vary between the cities, depending on national support and available resources locally or nationally.

#### 4.6. Desynchronized transitions

Different levels of government work with different planning horizons and subsequently prioritize differently. Additionally, greater social and cultural diversity and increasing inequalities mean that collective will formation and deliberation generally take a longer time (Rosa, 2006). Democracy, as we know it, might even be out of sync with the “temporalities, rhythms, and pace governing economy and culture” (Wollin, 1997 in Fawcett, 2018b, 368f). However, the climate impact and the spatial issues that transport planning and mobility policy are tackling have become more urgent, which Rosa (2015) has touched upon. While conducting our interviews, we could also sense a feeling of inadequacy, not least among those who compared themselves to the Netherlands, as expressed by the civil servant in Sheffield:

“I've done study tours to the Netherlands and that's the dream, it felt like. Going there felt a bit like Disneyland, you know, like you're on your bike and it was just brilliant. Everything was just, you know, perfect. We probably won't get that for 2030, but that's the ideal – to have, half the city, you know, travel, traveling actively, kids being able to go to school actively without their parents having to worry

about them crossing the roads. That's the vision, integrated with public transport for those longer journeys. Where we'll be is nowhere near that just because of the time it takes in this country [England] to get anything done, and there's still a lot of learning to be done by designers and people like me about what works and what doesn't work.”

In Sheffield and Oxfordshire, there are ambitions for more cycle logistics, but both representatives said that they felt hindered by the national government, which does not have the same goals and is not providing enough funding. Also, the representative from Stuttgart mentioned the role of the national government: to amend legislation to allow digital management of delivery zones and thereby solve the challenge of finding space for loading goods. While in the Netherlands, the government decided on establishing zero-emission zones in the largest cities by 2025, the zero-emission goal is in Stavanger already driving planning.

Unlike the cities in the UK and Germany, the cities in Norway have, through city growth agreements (governance arrangements between the three principal levels of government), set goals and connected funding through congestion charges, and national and local funding to achieve zero-growth targets (Christiansen, 2022) and can thereby operate much more independently from the national government and do not have to wait for legislation or funding to the same extent.

However, when it comes to cycle logistics, all cities rely on external funding in one form or another. The two Stavanger representatives argued that without success in obtaining project or state grants, it is a challenge to set the pace and accelerate the development to increase cycle logistics. As funding often comes as part of bigger projects or policy packages, the funding focuses more often on clean air, zero emissions, and sustainable urban planning than cycling or cycle logistics. In Oxfordshire, the lack of funding was connected to the fact that the funding bodies in the UK demand instant results, which might be hard to deliver in the case of cycle logistics. Another concern linked to public funding is public acceptance of the efforts to promote cycle logistics. We heard from Oxfordshire that many people view these measures as restrictions of freedom, and it is not easy to change that view. The civil servant in Bremerhaven echoed this when stating that the lack of access to permanent financial resources makes it difficult to maintain and develop commercial services in urban cycle logistics:

“Exactly, to secure permanent financing, I believe that's what we basically have to struggle with [...] because as soon as it comes to somehow investing money, it's first of all difficult to determine where it should come from and it's difficult to make oneself heard or to make people understand that that [funding cycle logistics initiatives] is important and that it could ultimately mean a large part of CO<sub>2</sub> savings occur in our transport sector, if that [cycle logistics] is well positioned and if we really work with Mobility Hubs.”

While the cities have high ambitions and plans to increase the pace of sustainable transport and speed up the use of cycle logistics, they are unable to set the pace only by themselves. As the cities try to network and increase the pace of collaboration with commercial actors, those actors have their own interests, which are often not aligned with how the overarching sustainability goals are understood in the cities. Therefore, the national government emerges as crucial in supporting regional and local authorities in their pace-making processes. As the examples of the Netherlands and Norway show, national regulations have a significant impact on the process of pace-making.

While some cities have already displayed ambitions to slow down the pace of motorized vehicles, e.g. with time regulations and support the pace of active modes of mobility, major decisions concerning the politics of pacing, such as decisions on speed limits, are to be taken on the national level. Hence, the politics of automobility has an impact on cycle logistics. This suggests that cities nevertheless struggle with overcoming the desynchronization with the “slower” mode of decision-making, that

characterizes the national government, when shaping the transition toward sustainable transport.

## 5. Concluding discussion

We started this paper by exploring the concept of acceleration and how this plays out in the context of urban cycle logistics. By drawing on our theoretical framework, we now want to discuss the technical, social, and individual experiences of acceleration and how these impact cycle logistics in particular and transitions to sustainable urban transportation in general.

### 5.1. Pace-making and pace-taking in the transition toward sustainable logistics

How are the cities understanding the pace of acceleration and their own role in this? We will approach this question by drawing on the narrative accounts above, and will revisit Rosa's threefold understanding of acceleration.

First, digital applications and business models indicate novel forms of *technical acceleration*. Cycle logistics is understood as one sustainable, emission-free alternative to other innovations in urban freight transport. Yet cycle logistics compete with other alternative forms of transport, such as electrical vehicles and drones. In our studies, Stuttgart pointed to the role of technical acceleration for achieving a sustainable transition, for example by stressing the need for digital tools for booking delivery zones. However, to some extent, a social acceleration based on these technical solutions seems to be hindered by regulations at the national level, where movement is slower in terms of policymaking (Fawcett, 2018a,b). The city administrations we talked to wanted to move faster, set the pace, and strengthen the influence of technical acceleration on social acceleration.

Second, Rosa (2015) uses the example of innovations and their increasingly faster uptake among users to illustrate *social acceleration*. We noted, however, that cycle logistics – as a resurrected way of delivering goods – takes time to become attractive and widely used, although cities, or more precisely their transport planners and mobility advisors, try to speed up the application of cycles for last-mile delivery. While the incumbent logistics companies have displayed some interest in cycle logistics for last-mile delivery, the cycle is only one among many modes of delivery for them. The logistics market is rapidly changing, with a variety of new developments. Constructing new infrastructure or adapting existing ones takes time, though. Removing space for cars to the benefit of cyclists is also a highly sensitive issue in many cities. While repurposing road space is a relatively fast process, building new roads for cycles is not. After all, building new infrastructure is not only a slow and time-consuming process (cf. Fawcett, 2018a,b), but it also risks becoming obsolete once it is finished. Simultaneously, the lack of sufficient infrastructure might be a barrier that risks jeopardizing a transition to sustainable transport within the given timeframe of the global goals, as stressed by the civil servant in Sheffield. The prevailing politics of automobility, inherent in the physical infrastructure, are often a challenge for other, more sustainable transitions in the transport sector and thus can also be seen as a challenge for cycle logistics. If physical infrastructure is allocated to cycle logistics and not to motorized vehicles, much could be done for helping this new form of sustainable logistics. Only one city explicitly told us that they were working to accelerate (the) cycle (logistics) by redistributing urban space to cyclists at the expense of motorists. Most of the other cities were working instead on facilitating the market, as an opportunity to quickly achieve a transition. In the sense of Fawcett (2018b), this could be seen as a strategy for speeding up policymaking, to set the pace and steer the transition to sustainable transport, especially the efforts of testing and establishing the common hubs. However, as we showed above, the political objectives and the sustainability goals stand in contrast to the economic interests of the incumbent logistics companies.

Third, *the pace of life* (Rosa, 2015), is increased, prompted by pace-making actions promoting cycle logistics, in mainly two aspects. As seen in Baerum, cycle logistics is not only promoted as a means for a sustainable transition, but also leads to faster deliveries. On the one hand, quicker deliveries contribute to opportunities for faster consumption, meaning more can be consumed in a shorter time. On the other hand, there has been a push for delivery workers to adopt faster mobility practices (Zheng & Wu, 2022). Indeed, the implications of increased consumption of resources (Fan et al., 2017), greater transportation demands, and the resulting time pressure and speed of delivery have been critically examined by others in terms of their impact on the health, safety, and working conditions of delivery workers (Chen & Sun, 2020; Popan, 2021; Zheng & Wu, 2022).

Ironically, city administrations are trying to push social acceleration and thereby a transition to sustainable logistics forward, which in turn, has an increasing impact on the pace of life. Simultaneously, cities use a politics of pacing to decrease the pace of urban life by slowing down the pace of motorized traffic. According to Grandin (2023), the politics of pacing have been established in many cities, through for example time regulations, and prioritizing active modes of transport over motorized modes. Considering this, we suggest that transport planners, mobility policy advisors, and digitalization and innovation strategists take action to increase the pace of acceleration to promote cycle logistics as they simultaneously try to decrease the pace of urban life.

### 5.2. Implications for sustainable urban transitions in an accelerating world

What then are the implications of the above analysis for policy and policymaking? We have learned from Rosa (2015) that policy and policymaking risk becoming desynchronized from the pace of social change because collective will formation takes time, and because decision-making processes cannot, and perhaps should not, increase in pace. Building on this insight, is there a temporal desynchronization between policymaking and formal political decision-making processes on the one hand, and social acceleration on the other hand?

National governments were understood by the transport planners and mobility advisors as operating slowly, while the representatives from the different cities generally saw themselves as moving relatively fast as they were generally working on projects with a fixed budget and time frame. While the cities are often bounded by external financial resources, governed through political prioritizations and regulations on national and EU levels, a deeper synchronization of efforts and resources across these levels was perceived to be one of the major challenges to the cities being able to keep up with the acceleration. However, several municipalities stressed that classical planning tools, and for instance establishing or changing the physical infrastructure, as mentioned in Sheffield, are too slow and time-consuming. Accordingly, a desynchronization between traditional, slow planning and policy tools and acceleration also exists on the city level.

While fast politics and acceleration could be understood as material threats to well-informed policymaking, the planners and advisors we approached rather appeared to adapt to the pace of change as a “condition of contemporary governance” (e.g. Chesneaux, 2000; Saward, 2015, in Fawcett, 2018b, 552). After all, the entry of speed, change, and disruption into governance could be used as an argument for moving faster, finding new decision-making routes outside the formal ones. The references to obtaining external funding to speed up the use of cycle logistics point in this direction. Also, the references to collaboration to facilitate the market echoed this. As mentioned before, we interviewed people in different positions working with cycle logistics. Surprisingly, the transport planners, we talked to, had their hands tied, while innovation strategists had more freedom and resources to initiate short-term actions for cycle logistics. One reason could be their different responsibilities. While the tasks of many transport planners include slow and time-consuming planning of physical infrastructure, innovation



strategists possess faster ways of making policy.

Those city administrations with so-called ‘innovation strategists’ that worked on projects with new and fast policymaking tools, therefore seem to be at the forefront of accelerating the transition. However, limited funding and project time-frames have clearly been stated as challenges in the interviews. Sheffield pointed out that the limitation of funding for projects that need to lead within three years to significant results makes big changes nearly impossible. It is also questionable whether informational campaigns and single funding campaigns for cargo bikes will lead to a change toward sustainable logistics if the infrastructure, which is adapted for the automobile, is not tackled.

But does this mean that a transition toward sustainable logistics is ungovernable? Well, setting the pace and leading the transition is complex. While cities can quickly implement fast policymaking tools, these might have limited effects. Slow policymaking tools may have greater and long-term effects but are under constraint in times of acceleration and desynchronization between different levels of governance. The cities face difficulties in setting the pace and steering the transition and intake both, the role as pace-taker as well as pace-maker.

In sum, by using the concept of social acceleration, and introducing the terms ‘pace-making’ and ‘pace-taking’, we have tried to contribute a new perspective to understand transitions to sustainable transport and how the re-emergence of cycle logistics could be conceptualized. While our conceptual discussions have been limited to the relation between acceleration and cycle logistics, we think this could work as a source of inspiration for further studies on acceleration, sustainable transport, and cycling.

#### CRedit authorship contribution statement

**Annika Otto:** Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Writing – review & editing. **Alexander Paulsson:** Funding acquisition, Conceptualization, Methodology, Data curation, Writing – original draft, Writing – review & editing, Supervision. **Jens Alm:** Funding acquisition, Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Writing – review & editing, Supervision, Project administration. **Till Koglin:** Investigation, Data curation, Supervision, Writing – review & editing, Funding acquisition.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

The authors do not have permission to share data.

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#### Appendix A. E-interview questions

The following questions were sent out to municipalities in the UK, Denmark, Norway, the Netherlands, and Germany during the e-interview-process:

- 1 Do you have a policy on bicycle logistics in your municipality? For example, a policy for the procurement of bicycle logistics in municipal operations?
- 2 How are bicycles used for logistics and transportation of goods within the municipality as an organization?
- 3 To what extent is there a market for bicycle logistics in your municipality? Are there many companies that offer bicycles as a form of delivery? What kind of goods or services do they mainly deliver?
- 4 What challenges do you experience in the municipality linked to bicycle logistics? For example, is there sufficient infrastructure?
- 5 What visions for the future do you have in the municipality linked to bicycle logistics?

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