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## Planners as middle actors in facilitating for city cycling

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### ABSTRACT

The paper explores the knowledge-making and efforts of planners in facilitating cycling in two Norwegian cities with high ambitions for developing more sustainable mobility modes through cycling. Building on empirical data from shadowing local planning agencies in the two cities, semi-structured interviews, and document analysis, we argue that studying planners and their mediation work is crucial to understand how to transition to more sustainable mobility modes. We find that one reason for Trondheim's success was that planners made continual efforts to mobilize a variety of people, ideas, and experiences. They developed new arenas for mediating meanings, co-creating of knowledge, and decision-making together with other actors, such as politicians and cyclists, while in Bergen planners operated with a clearer boundary between planning and politicians and use. Trondheim was thereby more successful in normalizing cycling in decision-making arenas and among citizens compared to Bergen. We, therefore, argue that mediation practices of planners is crucial in shaping planning cultures and governance regimes which can foster more sustainable mobility solutions.

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Cycling; planners; sustainable mobility; mediation; middle actors

## Introduction

Decarbonization of the transport sector plays a key role within energy demand scenarios that aim at reaching goals of 1.5- or 2-degrees global warming (e.g. Grubler et al. 2018; Rogelj et al. 2018). The European Commission's Sustainable and Smart Mobility Strategies aim to develop 'an irreversible shift to zero-emission mobility' where improving the modal share of cycling plays a key role (EC 2020). Fostering cycling is thus one way to change everyday mobility to be more sustainable and reduce emissions (Banister 2019; Cox 2010; Koglin 2015).

While some European cities, such as Amsterdam and Copenhagen have been recognized for their well-established cycling culture (Pelzer 2010; Stoffers 2012; Freudendal-Pedersen 2015b), more and more cities have started to focus on planning more cycling-friendly cities (Pucher and Buehler 2017). Cycling is also recognized as having an even more significant growth potential than before because of the spread of bike-sharing services, electric bicycles, and the need for

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cultural shifts away from motorized vehicles (Pucher and Buehler 2017; Rérat 2021). Cycling has thus gained importance in urban transport planning as a strategic means to reduce greenhouse gas emissions, local pollution from road transport, and land use in urban areas (Sengers 2017). However, despite these potentials and ambitious goals, many cities struggle to increase the modal share of cycling.

Making successful cycling policies is not straightforward. Scholars' studying the governance of cycling highlight several features necessary for successful cycling planning, such as the importance of making cycling a central national policy priority (Aldred 2012), integrating soft measures and acknowledging cyclists' needs, such as safety, speed, and comfort (Gössling 2013), 'bundling' health, transport, and environmental concerns into cycling policy (Larsen 2016), and adapting solutions to local needs (Sheldrick, Evans, and Schliwa 2017). Research, however, shows that many complexities and challenges with fostering cycling futures prevail (Cox 2015; Parkin 2012; Psarikidou, Zuev, and Popan 2020). It also shows that ambitious cycling policies or new cycling infrastructures do not necessarily lead to increased cycling (Latham and Wood 2015; Jungnickel and Aldred 2014; Barnfield and Plyushteva 2016). Cycling may also be met with opposition (Wild et al. 2018), leading to conflicts between various groups and mobility modes in everyday use (Balkmar 2018, 2020; Longhurst 2015; Suboticki and Sørensen 2021). In addition, it must almost always compete for money, space, and political attention with the system of automobility (Freudendal-Pedersen 2015a; Petzer et al. 2021).

Fostering cycling is thus not only a matter of crafting new policies or individual behavioural change. One also needs to consider the conditions for policymaking and the professional practices and knowledge-production processes shaping the way cycling-oriented transport planning is conducted (Banister 2008; Tschöerner-Budde 2020). The daily work of those expected to develop and implement such cycling policies while navigating both demands for and contestation of cycling, the bicycle planners, have nonetheless received limited empirical attention in the literature (Strand, Nenseth, and Christiansen 2015).

This paper, therefore, puts cycling planners in focus and studies their efforts in fostering cycling as a sustainable mobility mode in cities. By zooming in on the professional practices and mediation work of bicycle planners, we show how new planning practices that promote cycling may be achieved (Freudendal-Pedersen 2020). In the following analysis, we compare two Norwegian cities—Trondheim and Bergen—where city planners have tried to foster cycling to reach national targets for sustainable mobility. By comparing these cases, we identify strategies of cycling planners in shaping cycling-friendly environments.

However, before delving into the empirical data, we revisit what the scholarly literature says about the role of planners in developing and planning for cycling, as well as shortly describe the data and methods used for this research.

## **The role of planners in transitions toward the cycling city**

Planners are vital actors in the provision of cycling solutions and infrastructures. They are, however, not autonomous in their daily work. Rather, they are at the center of political negotiations involved in developing cycling infrastructures and practices (Tennøy 2019; Zhao et al. 2018). Such negotiations revolve around different meanings attached to cycling and knowledges and needs. Still, planners' daily work contribute to inscribing politics into infrastructures because the outcome of their work produces particular types of mobility practice (Koglin 2017) and connections (Shove, Pantzar, and Watson 2012). Development of cycling is thus highly political, not only at the policy level but also in the daily micro-political negotiations and decision-making processes (Feddes, de Lange, and Te Brömmelstroet 2020; Plyushteva and Barnfield 2020), and the relationships formed between official municipal institutions and citizens or mobility users (Cox and Koglin 2020). Therefore, understanding how planners navigate this landscape is central to

understanding how the relationships between mobility modes can shift in favour of cycling and cyclists.

Modernist urban transport planning has long marginalized active mobility modes, such as cycling (Koglin and Rye 2014; Pucher and Buehler 2012, 2017). So have sustainability transition research with its historical innovation-bias focusing on technological systems of production (e.g. McMeekin and Southerton 2012; Bruno 2022) and technological solutions, such as electric vehicles. There is, however, a renewed interest in understanding how vélomobility may be advanced (Cox 2019). Vélomobility refers not only to the practice of cycling but to the whole system which makes such practices possible, including infrastructures and technologies, meanings and competencies (Cox 2019). Understanding the development of cycling then also needs to account for a broad range of knowledges, from technical traffic flows to cycling cultures.

From this broad perspective, there is no universal best practice or blueprint to develop good cycling cities successfully (Cox and Koglin 2020; Zhao et al. 2018). It will always be rooted in specific social, political and material conditions and localities. For instance, in some places with very high shares of bicycling, like in the Dutch context, Bruno and Nikolaeva (2020) argue that the focus should be on maintaining existing sustainable transportation practices rather than encouraging a mode shift in favour of cycling.

Historically, urban planning in many European cities did not consider cyclists integral to the city in the 1960s and '70s after the private car started to dominate city planning (Freudental-Pedersen 2015a). Previous research has shown that this paradigm still dominates existing planning practices and that it is often difficult for planners to give cycling an equal position as other modal means (Petzer et al. 2021; Alm and Koglin 2022). Some aspects that make it difficult for planners to change this tradition and prioritize cycling over automobility in their everyday work include lack of time, political support, financial support and local capacity to implement cycling measures (Koglin and Rye 2014; Koglin 2020). Moreover, they lack power over the planning process as the process itself has become more complex involving a myriad of private and public actors (Koglin and Pettersson 2017), and because cycling planning still has a limited role in most transport planning and urban planning traditions (Alm and Koglin 2022). Planning traditions are known to be based on rationalist automobility approaches which marginalize cycling interventions which require different types of knowledge and approaches (Koglin 2020). This includes the knowledge that should be developed locally about how to maintain and operate bicycle infrastructures (Alm and Koglin 2022). Increasing cycling is also often much easier when it does not interfere with car traffic (Henderson and Gulsrud 2019; Koglin 2020; Freudental-Pedersen 2015a, 2015b; Alm and Koglin 2022).

Lack of awareness of the potential for cycling is often prevailing (Bicalho et al. 2019), as well as mental barriers in imagining or providing alternative infrastructures even when guidelines and new expertise exists (Brezina, Leth, and Lemmerer 2020). Tennøy (2010) argues that planners must reframe how transport problems are defined to seek new avenues to reduce road traffic volumes. Scholars also argue that such reframing needs to give more room for bicycle planning cultures, including locally shared knowledge and understanding of cycling (Wang 2020; Zhao et al. 2018). Redefining the sociocultural understandings of mobility is crucial for transforming car-centric planning cultures towards approaches that create opportunities for cycling (Tschoerner-Budde 2020).

Previous studies thus contend that planners' ability to foster cycling development is connected to planning traditions and expertise, meanings attached to mobility, and the negotiations and actors involved in cycling-related decision-making processes. However, cycling development and governance have been mainly explored at the interface between top-down state-led interventions and non-state bottom-up cycling advocacy groups (Psarikidou, Zuev, and Popan 2020, 227). One example is Balkmar's (2020) study that shows contesting views between policy-makers and activists on Sweden's national cycling strategy, and how governance works differently at

different levels. Less attention has been put on how planners mediate and possibly connect such interventions.

To better understand how planners navigate such fields, this paper focuses on cycling planners as ‘middle actors’ (Parag and Janda 2010, 2014). Middle actors or intermediaries have the agency to enable and facilitate the actions of other actors (Parag and Janda 2010, 2014) and can also work to connect actors, accelerate transitions and destabilize incumbent or dominant regimes, such as automobility (see also Ingram 2015; Bush et al. 2017; Kivimaa et al. 2019). The middle actor perspective is valuable when mobility is seen as socio-technical configurations consisting of social and technical elements, such as infrastructures, technology, culture and social meanings, regulations, and policies (Canitez 2019), which cycling planners mediate through their work.

Considering the previous literature on cycling planning, planners have the potential to be middle-actors and influence mobility transitions. Still, they are also limited by various knowledges and actors that need to be mediated. In this paper, we, therefore, aim to contribute to the literature on sustainable mobility transitions by providing insight into how ‘middle-out work’ (Janda and Parag 2013) is locally performed by cycling planners: towards governments and regulations, towards cyclists and potential cyclists and towards other planners. Cycling planners work systematically to link actors and elements. For example, they might connect the idea of cycling friendliness to insights into how bicycle lanes affect urban cyclists (Emanuel 2019) or facilitate policy learning between cities (Cook and Ward 2011; McCann 2011; Peck and Theodore 2015; Wood 2016). Thus, the planner’s work may be seen as middle-out work as they interpret and adopt policies and planning principles to local settings.

In this paper, we investigate how bicycle planners mediate between local cycling realities on the ground, local policymaking and ideas about best planning practices in Trondheim and Bergen. This creates different vélomobility models in the two cities, including ways of doing bicycle planning, the role of varying governance regimes and institutional settings, and methods of accounting for local cycling cultures.

## Case and methods

The most important policy goal for sustainable mobility in Norway is the so-called ‘zero-growth target’, which means that all transport growth in Norwegian cities should be done with public transport, walking and cycling (White Paper 33 2016–2017). This is a challenging goal, considering that there is both a continuing growth in road transport and expectations of population growth within and around Norwegian cities (Kolbenstvedt and Ruud 2017). Thus, reaching the zero-growth target requires putting together ‘policy mixes’ or ‘packages’ combining different types of measures and policies (Creutzig, Mühlhoff, and Römer 2012; Fridstrøm and Alfsen 2014). The idea is that policy measures that support cycling will strengthen and complement each other at the same time as ‘destabilizing measures’ are used to curb road traffic (Kivimaa and Kern 2016). The largest Norwegian cities have therefore organized their efforts to reduce road transport emissions through such transport packages or programs.

Trondheim and Bergen are the second and third largest cities in Norway. They have several similarities and differences which makes such a comparison interesting. Both are student-dense university cities. Trondheim has a population of 210,000 (Statistics Norway 2021a), and Bergen has a population slightly below 290,000 (Statistics Norway 2021b). They both have a lot of rainfall and a topography where the city center is close to the fjord on sea level, surrounded by hills and mountains, which may impact personal transport. Private car ownership is common in both cities, and car use constituted 50% of the modal share in Trondheim’s transport system and 54% in Bergen in 2018 (National Travelling Survey 2018/2019). Moreover, both cities have organized their sustainable urban transport efforts in a three-party public sector collaboration between the

Norwegian Public Roads Administration, the County, and the Municipality. The Green Partnership Agreement (GPA) in Trondheim and the Bergen Program for Transport (BPT) have given leeway for investments in cycling, and the programs are also important for improving the communication and coordination across local government bodies (Bardal, Gjertsen, and Reinar 2019).

Despite similarities, Trondheim and Bergen have long had different modal shares of cycling: In Trondheim, it varied between 8 and 10% from 1992 to 2019; in Bergen, the share of cycling was only 3% from 1992 to 2018, rising to 4% in 2019. The modal share of cycling in Norway was 5% in 2013/2014 and 2018 and 4% in 2019 (National Travelling Survey 2018/2019). The difference made us assume that Bergen and Trondheim have different strategies for cycling facilitation. Comparison can thus help explicate the types of planning practices which foster cycling.

We employed a qualitative case study design to capture in-depth accounts of these strategies and practices of planners. Our primary data source is observation inspired by shadowing technique (Czarniawska 2007), carried out over 1 month in the local planning agency of Bergen in May–June 2015, and in Trondheim in November–December 2015. Shadowing has been described as a ‘fieldwork on the move’ (Czarniawska 2007) because the researcher follows the informants throughout their working day, acting almost as a trainee. The first author shadowed bicycle planners in both agencies and observed internal and public meetings and on-site inspections. The observations were recorded in a written diary, on an audio recorder and with a go-pro camera. To get more insight into how bicycle planners exchanged knowledge and learned between cities in Norway, three days were spent observing two different events in the cycling city network: a gathering for planners and other relevant actors from the largest cities in Norway in 2015, and planners from the area around Trondheim gathering in 2019. Both events took place in Trondheim and included site visits and inspections by bike.

The second data source is interviews with planners working in the local planning agencies where the shadowing took place. Regional governments play a crucial role in the GPA and BPT, and we included five interviews with regional transport actors, including politicians. In addition, one interview was conducted with a representative from the National Public Roads Administration, which is also part of the GPA collaboration. In total, twelve semi-structured in-depth interviews with key informants were conducted between May 2015 and January 2016. Each interview was recorded, transcribed, and anonymized. The combination of shadowing and interviewing allowed learning more about ideas, interpretations, practices, and controversies in bicycle planning than what one would gain from only using one source of data.

The third source of data is official documents from national and local authorities. This includes the National Transport Plan for 2018–2029, the websites of the GPA and the BPT, the national travelling survey from 2013/2014 and 2018/2019 and the cycling strategies for Trondheim and Bergen. These documents were reviewed to search for national and local goals for cycling, including ideas and interpretations of a local cycling city.

The data were analyzed in a systematic and iterative coding procedure inspired by grounded theory (Charmaz 2006). This included making open analytic codes of pieces of text and grouping these codes into categories to be compared and explored further. The data were analyzed as a unit to give insight into the strategies and practices involved in transforming Bergen and Trondheim into cycling cities.

## **The Trondheim model of bicycle planning**

The conditions for bicycle planning in Trondheim were for a long time unfavourable. In the middle of the 1970s, the local road plan committee stated that bicycle traffic was of little importance due to Trondheim’s challenging topography and harsh climate (Strand, Nenseth, and Christiansen 2015). At the time, there was a lack of knowledge and exemplary projects on facilitating cycling (Bardal, Gjertsen, and Reinar 2019). This changed from the 70s onward, and

Trondheim got a comprehensive plan for bicycle roads in 1981 (Trondheim Municipality 1981). In 1989, the Norwegian Parliament started a transport program called 'The Trondheim Packet', from which Trondheim municipality could use 15% on public transport, safety, cycling and other environmental measures. With this funding, Trondheim built the first bicycle lanes and started promoting cycling. The Trondheim Packet was followed by the Green Partnership Agreement (GPA) in 2008, aiming to further sustainable mobility in the Trondheim area.

### ***Close cooperation between planners and politicians***

From the outset of the GPA, politicians in Trondheim were instigators of a sustainable mobility agenda in the city. They took the initiative and invited the local administration for professional support because they knew it was necessary to make unpopular decisions regarding personal mobility. Two administrative employees developed the main goals of the GPA. This was particular because it was a task usually carried out by the National Public Roads Administration (NPR). Anchoring the strategy among local experts resulted in a plan that did not 'play by the book', which normally would utilize formal transport models and detailed calculations when deciding what measures to implement. Instead, they adapted their methodologies following different planning issues using experience-based knowledge.

Another unusual strategy was that the planners invited the local politicians into planning discussions and decisions, resulting in close collaboration. According to a planner from Trondheim municipality, this allowed the opportunity to '... enlighten the politicians, and to make visible gains from the planning proposals'. This close collaboration within the GPA departed from the standard practice in other cities and usual practice in the Municipality, where professionals would first develop cycling solutions and related transport calculations before presenting them to the politicians and making decisions.

At the cycling city network in 2015, most bicycle planners agreed that a lack of political support and enactment of cycling policy was one of the most significant barriers in bicycle planning in all the larger Norwegian cities. The unique collaboration within the GPA was thus an anomaly as the goals of the GPA became leading for all those working in the Municipality and considered '... the big star within the system' (interviewee County Administration). Its success was not merely attributed to the unique organisational set-up but also the effort of some key actors in creating and nurturing the close collaboration.

From a velomobility perspective, this case illustrates how politics and knowledge production were, quite literally, integrated into the development of cycling. This allowed for shared meaning-making about what sustainable transport planning should achieve and, consequently, political support for such goals, often lacking in cycling planning (Koglin 2020; Alm and Koglin 2022). Some critical voices were concerned with this arrangement and feared political micromanagement of planning. They also feared that planners and the GPA would be perceived as political actors and damage the planners' status as professionals. Still, most planners were very proud of and enthusiastic about the GPA and talked about it as an important tool for coordinating cycling facilitation. They saw it as a positive outcome of their mediation between political and professional goals and expertise.

### ***Mobilizing ideas and solutions***

When the GPA was established, Trondheim lacked an overarching national bicycle strategy and exemplary projects. Therefore, the planners conducted site visits to the Netherlands for inspiration, as Dutch planners were considered knowledgeable of successful cycling facilitation. The planners pointed to the importance of knowledge exchange between cities. They stressed how field visits gave a much broader understanding of mobility cultures and practices compared to



only reading about other cities' experiences. There was a clear understanding among the planners that such knowledge could not be 'copy-pasted' to Trondheim but needed to reinterpret and adapted to fit within the local context. Planners transformed the policies and technologies in line with their local interpretation and appropriation (Hård and Misa 2008; Peck and Theodore 2015). In result, the bicycle strategy for Trondheim (Green Partnership Agreement 2014) aimed to make the bicycle recognized as a safe and natural choice of transport for all inhabitants all year round, including children and youths, elderly, recreational cyclists, and commuter cyclists.

National cycling city networks were another important arena for sharing knowledge. For instance, in 2015, Trondheim hosted a two-day seminar for bicycle actors from the largest cities in Norway. A central part of the seminar was a 15 km site inspection, in which participants could get direct experience of moving around the city by bike. Sharing their experiences and interpretations allowed professional exchange and new experiential knowledge development. Participants also expressed that the professional network contributed to building a sense of community among bicycle planners in Norway. This illustrates how the communal cycling culture is essential for cyclists (Freudental-Pedersen 2015b) and in creating good cycling planning environments.

The blurring of lines between cycling planners and cyclists was further strengthened by the necessity to develop local-specific knowledge through local inspections and hands-on experience with different infrastructures. The planners were therefore given the responsibility to bike along a specific bicycle route regularly. This was thought to boost the planners' commitment towards their dedicated path. As 'regular' bicycle users, planners observed and took notice of technical details, such as malfunctioning curb stones or dangerous intersections. They brought these observations into the development of cycling solutions with colleagues. It was thus acknowledged that the embodiment of movement as cyclists was a necessary *condition* for planning (Banister 2008; Cresswell 2010; Tschoerner-Budde 2020).

In addition to cooperation with politicians, planners thus also mediated international and national policies and knowledge on cycling. This mediation work was mainly conducted by planners testing cycling infrastructures, sharing their experiences, and designing solutions accordingly.

### ***Involving and learning from different types of users***

Although the Trondheim planners sought to develop a cycling culture among themselves, they also tried to include experienced cyclists and their expertise in their work. One important collaborator was the Norwegian Cyclists' Association, a membership-based organization representing cycling interests. The planners agreed that the Cyclists' Association was good to have on board because they worked as a user intermediary (Kivimaa et al. 2019), translating planning perspectives and decisions from those working to facilitate cycling as part of the GPA to (potential) cyclists in Trondheim. The Cyclists' Association also assisted the Municipality in establishing a cyclist user group to give feedback on developing the bicycle infrastructure. This was considered to provide a better foundation for planning, although the planners were not entirely sure how to use the input as the group had quite similar cycling preferences. For example, they put much emphasis on high-speed cycling.

According to the planners a bicycle infrastructure was deemed successful if used by a variety of users. To achieve this, the GPA recruited a handful of mobility advisers tasked with promoting sustainable transport options, including cycling, to all inhabitants of Trondheim. Most advisers were eager to connect workplaces and companies and enroll them in facilitating cycling among their employees (with cycling parking, showers etc.). They also organized free trials of electric bikes for employees, followed by interviews about their experiences. Thus, the planners and the mobility advisers mediated by configuring the identity of potential users and experimenting with measures that could make people start cycling.



The planners thus worked to nurture and develop the meanings of cycling (Tschoerner-Budde 2020; Wang 2020;) among planners, cyclists, and potential future cyclists. They mainly focused on changing interpretations of the bicycle's role in the transport system. By contrast to Denmark and the Netherlands, where biking is more acknowledged as a means of transport (Bruno and Nikolaeva 2020; Freudental-Pedersen 2015b), Norway was described as an inexperienced cycling nation where cycling was predominantly seen as a sports activity. Norway has for example a long tradition of building combined walking and bicycle paths that reduce opportunities for commuter cycling and often cause conflicts with pedestrians. However, a growing number of commuter cyclists contributed to challenge this view, arguing for the need to change the story of cycling. In response, the planners started counting the numbers of cyclists and cycling trips, and Trondheim municipality also engaged communication workers marketing Trondheim as an actual cycling city.

In sum, the planners tried to promote cycling as a means of commuting to new user groups by enrolling employers in facilitating cycling, and learning from current cycling cultures and practices. As middle-actors, the planners worked as mediators of knowledge and ideas by facilitating cooperation between politicians, professionals, and cyclists. In the process, they transformed their practices, cycling plans, and solutions.

### **The Bergen model for bicycle planning**

Bergen was a relative latecomer in their efforts to improve the conditions for cycling compared to other Norwegian cities. From the mid-1970s to the mid-1990s, there was little attention, competence, and interest in improving the conditions for bicycle use. Although Bergen established a toll ring in 1986, the income was primarily spent on developing car infrastructure (Strand, Nenseth, and Christiansen 2015). However, the conditions for cycling changed during the 1990s, and in 1999, a working group called 'cycling in the city center' was established (Strand, Nenseth, and Christiansen 2015).

### ***Challenges of mediating between political conflicts***

As the GPA in Trondheim, the Bergen Program for Transport (BPT) was the central public sector program from 2002. Opposite to the GPA, however, the program's establishment did not involve the same close collaboration between the local politicians and the planners and followed a more traditional line of communication. For example, the political steering group in the BPT was described as relatively passive, and the planners viewed themselves as quite distanced from the politicians. Some planners did say that close contact between politicians and professionals was an advantage in planning. Some also reminisced about the direct collaboration before 2000 when a local parliamentary system was introduced. From then on, they found it challenging to get a political majority vote because of political polarisation in which the political parties often distanced themselves from previous planning politics. Conflicts surrounding cycling were thereby not only about struggles between mobility modes and users (Balkmar 2018; Longhurst 2015), but agonisms between political representatives.

Political polarization was seen as a severe problem for long-term planning, which required predictability. Moreover, it created a challenge for a shared understanding of problems and solutions for sustainable mobility in the city. Although some plans and projects for cycling were made within the BPT, there were extensive disagreements about how to deal with conflicts between transport users, technical solutions, and land use issues. Therefore, the planners' knowledge production activities also remained separate from politicians. Contrary to Trondheim, the planners' mediating role centred on balancing political oppositions instead of finding a good balance between political goals and professional expertise.

### ***Making local knowledge through testing and personal dedication***

Planners involved in bicycle planning in Bergen described it as a relatively new domain that gained little focus in educational programs, research, and with few standardized planning procedures. Still, they stressed that planning was not a knowledge-oriented field that could easily integrate new knowledge. The planners consulted other cities for advice and incorporated some recommendations into new plans. ‘Borrowing’ cycling solutions from other cities was not considered problematic, but most planners noted that bicycle planning was still rooted in local knowledge and expertise. As in Trondheim, site inspections were widely used to develop relevant ‘local knowledge’ (Sheldrick, Evans, and Schliwa 2017).

Hands-on experience with the cycling infrastructure was considered key to assessing its quality. Planners went on digital inspections, using google maps to navigate existing bicycle routes and make plans for new ones. Physical site inspections in the actual area, preferably by bike, were also common and considered to provide more solid knowledge. Planners would also cycle around the city in the afternoon to discover weaknesses in the infrastructure, stressing that it was important to be personally dedicated to be successful with bicycle facilitation. Learning in this field was described as challenging, as they had to plan and implement before they could assess the functionality of the facilities. Consequently, they always faced the risk of ‘learning the hard way’ and that people did not use the infrastructure.

The embodied experiences of cycling among the planners thus had a more functionalist role. It was more a means of testing existing solutions instead of creating a cycling culture among planners and mediating such experiences into their planning practice. Contrary to the research findings (Barnfield and Plyushteva 2016; Koglin 2015; Wild et al. 2018), many planners considered cycling culture as a product of cycling infrastructures and material conditions supporting cycling.

### ***Changing the travel behaviour of citizens***

As noted, the planners in Bergen regarded infrastructure as key to changing the travelling behaviour and, thus, the cycling culture among citizens. Even minor adjustments, such as painting a yellow dividing line in the cycling lane, were important to spur more people into cycling. However, cyclists did not always follow such guiding principles, and the planners often ended up in long discussions concerning how to influence user behaviour. The planners utilized sources, such as travelling surveys and the Norwegian Cyclists’ Association to learn about regular users. These sources, nonetheless, often painted a picture of the bicyclist as a male in his forties preferring long trips and high speed. Such attributes were difficult to integrate into existing cycling plans which aimed to normalize cycling. The planners also stressed the importance of observing how people used the infrastructure in real life and in social media. For the latter, they looked at digital forums like ‘Biking in Bergen’, where cyclists shared experiences and suggested changes. Sometimes planners also engaged directly with users in these forums.

User involvement in Bergen was not a central means to mediate cyclists’ knowledge into new cycling solutions. The focus in the communication with citizens was rather on changing the user’s travel behaviour. Thus, the relationship between cyclists and planners remained distanced.

### **Conclusion: facilitating cycling through mobilization of people, ideas, and experiences**

By studying cycling planning through a velomobility lens (Cox 2019), we have highlighted how planners are involved in numerous mediating practices which reach far beyond their technical expertise necessary for designing cycling lanes or commuter behaviour. In the previous two sections, we explored planners’ practices in Trondheim and Bergen, finding that the planners in Trondheim, to a greater extent than Bergen resembled middle actors as described by Parag and

Janda (2014). They had stronger agency and capacity to mobilize people, ideas and experiences into ambitious cycling solutions. Therefore, we argue, the velomobility model in Trondheim was better configured to support cycling.

First, although the GPA and BPT were quite similar in organisational set-up, the GPA had more support from local politicians. But the successful collaboration was not only due to political will, albeit necessary (Alm and Koglin 2022). It was also due to the planners' efforts to integrate politicians in creating a shared understanding of problems and solutions necessary for the development of sustainable mobility. Through these processes, they could challenge existing car-centric transport framings (Tschoerner-Budde 2020). The political negotiations central to cycling planning (Cox and Koglin 2020) were continuously conducted, ensuring the cycling policy's implementation, as opposed to Bergen, which was open to more contestation.

Second, both cities were determined to challenge existing car-centric planning traditions, which, as in other cities, were prevalent in planning arenas (Koglin and Rye 2014; Koglin 2020). They created arenas for learning and moving ideas (Cook and Ward 2011; McCann 2011) about cycling planning from other cities. And, both established practices for planners to gain experience with cycling. While Bergen focused on the planners' use of cycling infrastructures, Trondheim planners had a broader understanding of mobility which also centered on developing a cycling culture among planners. Bergen's planners were thus more optimistic that new infrastructure would improve cycling, while the Trondheim planners were more in line with scholars stressing the mutual shaping of, on the one side, cycling practices and culture, and on the other, cycling infrastructure and the built environment (e.g. Cox 2015; Aldred and Jungnickel 2014; Latham and Wood 2015).

Third, the planners' view on the mutual shaping of infrastructures and practices also influenced how they related to publics. Even though both cities aimed to normalize cycling as a daily means of transport for various groups by changing the cultural meaning of cycling, Trondheim planners were more active in seeking cooperation with cyclists and other actors in the city. In this way, negotiations regarding the cycling development were not limited to specific decision-making processes. The political divide between those producing and those using cycling infrastructure (Cox and Koglin 2020) was thereby narrowed.

By viewing cycling as a complex system of intersecting meanings, practice, cultures, knowledges and infrastructures, we find that planners have a big impact on how these features work together. They have a prominent role in connecting ideas about cycling, policies, and possible technological solutions among various actors (politicians, users, stakeholders) in the local setting. In Trondheim in particular, planners had the financial, political, and organisational capacity (Alm and Koglin 2022) to configure these relationships in a way that facilitated more cycling. Research on cycling governance can benefit in further exploring the different ways planners build such connections.

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All participants in this study were informed about the goals of the project and voluntarily gave written consent by email to take part in the research project. All participants have been fully anonymized.

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