Chapter 1
Introduction: Has Cycling Got a Boost from the Pandemic?

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Abstract As the COVID-19 pandemic surged around the world at the beginning of 2020, all aspects of life were disrupted. This book looks back to spring 2020 and the end of the first lockdown, when many cities around the globe took measures to give cycling more space. It scrutinises the political and material responses to increase cycling during the pandemic. The introduction presents the 9 chapters as well as some of the lessons learned.

Keywords Tactical urbanism · Cycling · Infrastructure · Policy · COVID-19

As the COVID-19 pandemic surged around the world at the beginning of 2020, all aspects of life were disrupted. Since the virus spreads by passing from person to person, measures were taken to reduce mobility and social contact: border closures, limits on indoor gatherings, distance learning, and the requirement to work from home, among others. In the first stages of the pandemic, lockdowns led to a massive reduction in travel demand and showed how "authorities develop crisis regimes of (im)mobility to (re)define what is considered essential mobility" (Salazar 2021).

In parallel, people turned to individual modes of transport as these, unlike collective modes, guarantee physical distancing (Tirachini and Cats 2020; Basbas et al. 2021; Molloy et al. 2021). Cycling soon came to be portrayed as "benefitting" from the pandemic, and in spring 2020 it was debated whether COVID-19 would be "a turning point for active travel in cities" (Nurse and Dunning 2020).

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As one crisis succeeds another, war in Ukraine and the extreme temperatures of summer 2022 have replaced the pandemic—though it continues its insidious spread—as the focus of public attention. Soaring energy prices, heatwaves, droughts, wildfires, and floods have crystalised our dependence on energy and the devastating impacts of climate change, as well as the need for societies to implement strategies for adaptation (to existing and future climate change) and mitigation (reducing energy consumption and greenhouse gas emissions). As transport is an important source of CO_2 emissions, it is necessary to transition to low-carbon mobility (Givoni and Banister 2013) while taking into account the diversity of uses (Abram et al. 2022). A key measure of this transition is to foster cycling as it has a very small ecological footprint, even when electrically assisted (International Transport Forum 2020).

This book looks back to spring 2020 and the end of the first lockdown, when many cities around the globe took measures to give cycling more space. It scrutinises the political and material responses to increase cycling during the pandemic. The book's nine chapters, all based on empirical evidence, analyse the implementation of pop-up cycle lanes or "Covid cycle lanes" by examining public policies (the role of actors, governance processes, opposition) and the effect on cycling practices. Benefitting from a multidisciplinary approach and a variety of methodologies and fieldwork, the book identifies the main lessons learned across these nine chapters and outlines a future research agenda.

In doing so, the book not only sheds light on a specific, memorable period but also on the challenges of implementing a sustainable and low-carbon mobility. It provides important suggestions about how local authorities can act in a quicker and more agile way. While some decisions are specific to the context of the beginning of the pandemic, the analysis offers lessons on methods for implementing the transition towards a low-carbon mobility, on the importance of processes based on trial and error, and on the political stakes of reallocating road space.

1.1 The Disruptive Effects of the COVID-19 Pandemic[1]

The pandemic provoked a crisis in our everyday lives and our relationship to the world, adding a layer to the existing ecological, economic, and political crisis that has been part of our lives for several decades now and that is characterised by indecision, or even undecidability (Revault d'Allonnes 2012, 10). The crisis produced by the pandemic was unique in our recent collective history in being a moment of suspended time for those who had to stay at home, but a time of intensive action for the public authorities, who were forced to overcome their indecision. The urgent nature of the crisis required them to fast-track processes and create shortcuts (Caduff 2022), actions that seemed necessary and legitimate in the circumstances. The pandemic

[1] Some parts of this chapter were previously discussed in Rérat et al. (2022).

was thus a time in which new arrangements (Balandier 1960, 461) emerged, on either a temporary or permanent basis, making it the testing ground for a transition towards new ways of designing and doing urban planning, as well as new ways of life.

In crisis, the hegemonic framework is weakened, impacting what Taylor (2002, 106) has called the social imaginary, which "incorporates a sense of the normal expectations we have of each other, the kind of common understanding that enables us to carry out the collective practices that make up our social life." In other words, by altering representations of the world, practices, and society—such as it is or has been normalised in the hegemonic view—crisis reveals some of their contradictions. The disruption to the established order of family, education, and the world of work has made explicit what was previously seen as natural and inevitable.

By weakening our social imaginary, the pandemic has changed our relationship with our immediate environment and with other people. This is reflected in a set of public policies introduced in response to the new social context and by a change in our social practices and the way in which we travel, all of which have helped cycling take centre stage, as a mode of transport promoted for its health benefits (Götschi et al. 2016; Bourne et al. 2018; Buehler and Pucher 2021a) and as a way of ensuring social distancing.

Yet interest in cycling had been renewed prior to the surge that followed lockdowns in March 2020. Since the turn of the twenty-first century, cycling in Western countries has gradually evolved from a leisure or sport activity into a utilitarian means of transport (Aldred and Jungnickel 2012). It has become (once more) both an increasingly legitimate practice and a credible alternative to driving, public transport, and walking, particularly in metropolitan areas (Rérat 2019; Buehler and Pucher 2021a; Adam and Ortar 2022). Starting from generally very low levels, its modal share has risen sharply in many large cities (Buehler and Pucher 2021a).

Cycling is also a mode of transport that is presented by its advocates—who include elected officials, professionals from the public and private sectors, nonprofit and nongovernmental organisations, and academics—as a key solution to the environmental challenges of everyday mobility (Buehler and Pucher 2021a; Nikolaeva et al. 2019). Its small carbon footprint, absence of contribution to traffic congestion, and light, relatively inexpensive infrastructure put cycling in a strong position to embody the energy transition in the transport sector.

Several statistics reflect the increase in cycling during the pandemic, including the rise in bike sales, the shortage of spare parts, and the increased demand for repairs. Bike sales in the European Union (EU) reached 22 million units in 2020, up from 20 million in 2019 (Statista 2021). Data from automatic bicycle counters and bicycle sharing schemes enable the evolution of traffic to be analysed and usually highlight the resilience of cycling, which rebounded quickly after the first lockdowns (Bucsky 2020; Heydari et al. 2021; Teixeira et al. 2021; Kraus and Koch 2021).

A comparison of cycling traffic across time and space gives clues as to the factors behind this trend. Bicycle counters in eleven EU countries showed an 8% increase overall in cycling between 2019 and 2020 (Buehler and Pucher 2021b); this was much larger on weekends (+ 23%) than on weekdays (+ 8%). A similar trend was observed in the United States (+ 29% on weekends, + 10% on weekdays), although

in Canada there was a decline of 3% on weekdays (+ 28% on weekends). The much smaller increase (or decline) in weekday cycling is due to the overall decline (all modes) in travel to work, university, school, and shops, due to closures and travel restrictions. Many daily trips were cancelled as people worked, learned, and shopped from home. At the same time, there was an increase in cycling for exercise and recreation, as shown by weekend figures. This is also highlighted by changes according to the time of day—an increase in the afternoon and early evening; a smaller increase or decline on weekday mornings—and location—a larger increase on off-road recreational greenways and a (relative) decline within and to/from commercial areas and university campuses (Buehler and Pucher 2021b).

Research has addressed more directly individuals' reasons for changing their cycling practices during the early stages of the pandemic. Some cycled less as they had less need to travel due to home working and distance learning. Others cycled more for a variety of reasons. First, the fear of infection and the need for social distancing led to a strong decline in ridership on public transport that benefited partly to cycling (Tirachini and Cats 2020). Second, active mobilities such as cycling were promoted as a means of staying fit and getting exercise when swimming pools, indoor gyms, and playgrounds were closed (Budd and Ison 2020). Cycling was also seen as a safe recreational physical activity; social distancing may have resulted in more "'undirected travel', i.e., trips without a destination" (De Vos 2020). The strongest increase was on weekends and in the afternoon (in comparison with weekdays and the morning rush hour), and this is in line with the rise of cycling as a leisure activity (Buehler and Pucher 2021b).

1.2 Covid Cycle Lanes: Making Room for Cycling

In the field of transport, the most emblematic measure taken by cities after the first lockdowns was pop-up cycle lanes, referred to as "provisional COVID-19 infrastructure" by Kraus and Koch (2021) and "COVID-19 cycling infrastructure" by Lin et al. (2021). In this introduction we use the term "Covid cycle lanes," echoing the French catchword "*coronapiste*" (corona + lane) that has become part of everyday French language and entered the *Larousse* dictionary.

Bogotá was the first city to expand its cycle lane network and give up road space to bikes (see Chap. 9). It was followed by other cities, mostly in Europe, including Barcelona (which increased its network by 21 km), Brussels (27 km), Milan (67 km), Paris (80 km), and London (100 km). In North America, Chicago increased its network by 48 km, Montreal by 88 km, and New York City by 102 km (Buehler and Pucher 2021b). These cities, among others, reconfigured their built environment, at a relatively low cost, to facilitate safer and better connected journeys for cycling as well as walking (shared streets, pedestrianised streets, expansion of

sidewalks areas, etc.).[2] Depending on the contexts, these new infrastructures were removed (e.g. Montreal and Vienna, see Chaps. 6 and 7) or made permanent (e.g. Lausanne and Geneva, see Chap. 5).

Covid cycle lanes appeared to be a simple and inexpensive way to meet health requirements—social distancing—while avoiding the negative consequences of a modal shift towards cars. As this book shows, additional rationales were found according to the contexts: to guarantee the safety of cyclists, to make people active (for physical and psychological reasons), to cope with the reduction in public transport services, or to support patronage of local businesses.

These pop-up infrastructures were installed during or soon after the first lockdowns (spring/summer 2020) and implemented very rapidly. They therefore differ from "classic" cycle lanes in terms of the planning processes and materials used and their intended duration. Faced with the crisis, municipalities took a number of such shortcuts: rapid and unbureaucratic actions that can be classed as tactical urbanism.

Tactical urbanism is a type of urban planning, usually involving temporary and low-cost interventions, that aims to introduce rapid changes to urban spaces with a broader purpose in mind (Lydon and Garcia 2015). It can be seen as a practical approach to urban change, where many small actions implemented at the hyper-local level can achieve, in aggregate, the longer-term goals of a liveable, walkable, sustainable community.

Tactical urbanism is often associated with grassroot initiatives, but it can also be used by authorities. A famous example of top-down tactical urbanism is Ciclovía in Bogotá, Colombia, where streets are temporarily closed to cars on a regular basis. In Chap. 2 Asa Thomas explores another example, which inverts Michel de Certeau's (1984) distinction between the strategies of the state and the oppositional tactics of citizens. Thomas refers to Lydon and Garcia (2015, 10), who implore citizens to think more strategically about long-term change and governments to adopt tactics to implement changes immediately.

Tactical urbanism is not only about material changes to the city; it is also about processes. In the pandemic local authorities had to react much more quickly than usual given the urgency of the health situation. They created temporary layouts using bollards and separators easy to install (and remove) to demonstrate possible changes to the layout of a street, intersection, or public space. While some local authorities could use the existing institutional framework—as in Montreal, where authorities used what Florence Paulhiac Scherrer (see Chap. 6) calls "temporary" or "crisis urbanism"—others adopted new tactics and "played" with existing laws (see Chap. 5).

[2] Combs and Pardo (2021) tracked 1109 measures relating to the use of streets in 60 countries between March and August 2020. The measures quantified included: curb space reallocations (27%), full street closures (19%), legal, policy, enforcement, or funding changes (16%), partial street closures (11%), automated walk signals (5%), reallocation of non-street space (3%), and other mobility-related strategies (bicycle parking, bicycle sharing, and subsidies) (19%). Overall, 43% of these measures expanded the street space for walking/cycling.

The various forms taken by tactical urbanism, the political, institutional, and social contexts from which they emerged, and the space granted to trial schemes, raise more fundamental questions about what this episode reveals about the evolution of urban planning. Studies of planning, and in particular cycle planning, have found failures, mismatches, discrepancies, and gaps linked to flawed planning, work stoppages, changes of policy, and shortages of materials (Puchaczewski 2022). Such research highlights the challenges of factoring in the various aspects of the long term and thus of planning for the future.

In their book *Elusive Promises: Planning in the Contemporary World*, Abram and Weszkalnys (2013) argue that planning is a form of conceptualising space and time. At both the individual and institutional levels, planning involves using a set of tactics, technologies, and institutions that are designed to control the transition to the future while also enabling planners to manage the present: "Plans require a social context in which they can be produced, but they also require institutional structures under which they can be contested or enforced, and these reformulate the relationship between society, the body politic and what has been called civil society" (Abram and Weszkalnys 2013, 12). However, "the relationship between the spatio-temporal orders laid out by the plan and the actualities they engender is always fragile and multivalent; plans both encapsulate and exclude worlds of imagination and practices" (Abram and Weszkalnys 2013, 22).

Anthropological studies have shown that urban planning rarely factors in the diverse range of ways in which the populations categorised will make use of the space (Abram 2002). As such, "planning schemes rarely provide an accurate description of current circumstances but rather adopt mechanisms to conjure worlds within their scope of action as promisor, using the conceptual body of the public as a promisee counterpart to its plans" (Abram and Weszkalnys 2013, 13). Tactical urban planning is designed to respond to the immediate nature of the contemporary future and promises to implement genuine solutions. But is this truly the case on the ground? How has this way of producing urban planning changed planners' practices and institutional representations?

Another key issue is the effects of Covid cycle lanes. Between 2019 and 2020, Kraus and Koch (2021) measured levels of cycling in 736 locations across 106 European cities and found that Covid cycle lanes had increased cyclist numbers from 11 to 48% on average. This represents between $1 billion and $7 billion in health benefits per year if cycling habits stick. In their study of cycling in North America and Europe, Buehler and Pucher (2021b) also conclude that the creation of such infrastructure and the policies that have sometimes accompanied it have had a significant impact on cyclist numbers. But significant differences remain between countries and between cities within a country. If the measures put in place in different metropolises seem similar, both in material terms and as regards the communication around them, the reasons for this tactical urbanism, the target audiences, and the expected effects are different, as each city's response to the health crisis has been shaped by unique spatial, social, and political configurations. Studying tactical urban

planning policies therefore not only sheds light on local authorities' reactions to the health emergency, but also on local dynamics regarding mobility policies and, more broadly, the energy transition.

After an initial period of urgency and broad agreement about Covid cycle lanes, political initiatives returned to a slower pace. Many Covid cycle lanes were the subject of political controversy. The rapid implementation of these measures had left little or no time for public consultation and a top-down decision-making process had been used (Combs and Pardo 2021; see also Chap. 3 in this book). While the lack of public engagement explains some of the controversy, it should be noted that the hosting potential of a space—in this case, its "bikeability," or suitability for cycling—for the various modes of transport partly depends on power relations, expressed via the allocation of budget and space as well as by planning models. This can be seen, for example, in the allocations and model that consecrated the hegemony of the car and led to the marginalisation of active modes of transport (Koglin and Rye 2014; Cox and Koglin 2020). The car has informally privatised public space, making other users feel illegitimate and that the road has become a dangerous place for them (Lee 2015).

Covid cycle lanes, like any infrastructure, "are not apolitical or neutral technologies. New space carved out for cyclists inevitably represents the disruption of a real or imagined order within the existing streetscape" (Wild et al. 2018, 507). Cycling infrastructures may thus give rise to opposition as they reallocate space, financial resources, and political priority previously dedicated to automobility (Siemiatycki et al. 2016).

1.3 The Political Role of Infrastructure

Cycling infrastructure and policies also have a role to play in mobility justice: the right to mobility is yet to be won, and its restrictions is at the root of many inequalities, at the level of the street and the planet (Sheller 2018). Studies of infrastructure have shown that it can be conceptualised as a socio-technical system (Amin 2014) that, as it "opens up some paths of action, […] also closes down other possibilities" (Cox 2020), since the very existence of the infrastructure organises and governs the actions it makes possible (Koglin 2017). As such, it has a political power (Cox 2020; Nolte 2016; McFarlane and Rutherford 2008).

As mobility is intertwined with asymmetric power relations (Nikolaeva et al. 2019; Cresswell 2010), gaining a better understanding of the effects of the spatiality of infrastructure and its forms will enable both policymakers and policy implementers to better understand how the spaces dedicated to mobility and the topography of the facilities provided have the power to exacerbate or reduce social inequalities. As Schwanen (2020) argues, mobility justice must be understood "in terms of ongoing process, power relations and struggles over praxis, meaning and values that are actively shaped by the places and spatial configurations as part of which they unfold."

Like all technical objects, infrastructure comes with a "script" (Akrich 1992); there is one for speed, for example, in the case of cycle lanes. Functional hierarchies are clearly set out in automobile traffic design but poorly conceptualised in relation to cycling, and the dissonance between design scripts and regulatory scripts is a source of conflict (Cox 2019). Thus, "building cycling infrastructures is not just a matter of providing physical spaces, but also of building the skills, competencies and confidences required for moving in public spaces" (Cox 2020, 15). This requires attention to be paid to infrastructure design, its continuity, and the routes it provides, which represent factors of inclusion or exclusion (Cox 2019). These questions about the effects of infrastructure design contribute to exploring how design decisions and interventions determine mobilities (Jensen and Lanng 2019).

Infrastructure thus belongs to the elements of mobility—movement, meaning, and practice—identified by Cresswell (2006), which are always bounded by existing governance structures, histories, power relations, and embodied experiences (see Rérat (2019) for an analysis of this concept in relation to utility cycling). To draw on another conceptual framework, cycling can be conceptualised as a "sociotechnical system in transition" (te Brömmelstroet et al. 2020; Shove et al. 2012; Geels 2004) that reveals the spatial, historical, social, cultural, economic, and political structures of cycling practices in everyday life. These socially integrated structures ensure the stability of cycling as a "system," but may also get in the way of change. The cycling system can also be seen as an incomplete system that is in the process of redefining and re-exerting itself in a context dominated by the system of automobility (Rérat 2021). The concept of a system of automobility highlights the fact that the car is much more than a vehicle: it refers also to a (dominant) socio-technical order involving practices, infrastructures, social norms, images, rules, industries, etc. (Urry 2004).

This book also contributes to debates about the effects of dominant policy paradigms that promote a "utility" transport model, which prioritises the destruction of distance and the minimisation of time spent travelling (Aldred 2015). Other authors identify current cycling policies, planning, and innovations as having a strong tendency to focus primarily on increasing the appeal of cycling for people who do not currently cycle (Bruno and Nikolaeva 2020). The latter group argue that developing policies that improve the experience of existing cyclists helps to advance a modal shift through social feedback loops (Macmillan and Woodcock 2017; Skov-Petersen et al. 2017), but also facilitates the transition to sustainable mobility by investing in the people who are most likely to lead that transition. In its exploration of the ways in which public policies are implemented and reflected spatially, this book sits at the intersection of these two approaches and encourages a re-examination of the frameworks of production of the mobility transition as well as their localisation, since "locality matters."

Mobility is therefore always simultaneously spatial, political, and social. We believe that any meaningful consideration of the transition must also look at the politics of mobility transition, which includes interrogating the relationship between an individualised "right to move" (Cresswell 2006) and the way in which collective social needs are mediated by mobility.

1.4 Chapter Summaries

The studies published in this book were designed rapidly in response to the pandemic and the changes that were taking place and to what we felt to be an urgent need to capture ongoing changes that may or may not be temporary. We thus developed situated research protocols, since we were unable to travel outside the cities or even sometimes the neighbourhoods in which we lived, depending on the wave of the pandemic and the lockdown restrictions in place. We worked around the constraints using what was available to us, each of us bringing a point of view with our own disciplinary apparatus, based on what we were able to observe and the changing government restrictions—limitations that had to be taken into consideration. The resulting disciplinary, methodological, and territorial mosaic is both a strength and a limitation of the book.

The work is thus both multi-situated and multidisciplinary. Rather than one-to-one comparisons, the multiple fieldwork locations offer diverse portraits that form a panorama of the ways in which tactical urbanism was approached, implemented, and welcomed by cyclists, with the aim of exploring the short- and medium-term effects of the political and social moment represented by the pandemic. The multi-disciplinarity of the book favours its exploration—which is also multi-situated—of the effects of tactical urbanism and is reflected in the use of different theoretical apparatuses and complementary methodologies. Geographers, geomatics specialists, urban planners, sociologists, political scientists, and social psychologists thus joined forces on a research project, Vélotactique,[3] and on the special session on "Tactical urbanism, active mobilities and public space in the Covid pandemic" held at the annual International Conference of the Royal Geographical Society (September 2021).

The book looks at changing bikeability in territories where everyday cycling is still underdeveloped (Grenoble is the only city in which the modal share of cycling is over 10%). The work is unique in addressing this issue by looking at cities of different sizes and with different population densities. While most of the study sites are located in Europe, the Americas are also represented through two contrasting examples: Montreal, Canada and Bogotá, Colombia. Each of the study sites—even those within the same country—also have their own specific characteristics. The studies of the French cities—Grenoble, Lyon, Montpellier, Paris, Rennes, and Saint-Étienne—identify a range of different ways in which measures were implemented during the pandemic and whether or not they were made permanent. The same is true of the two European capitals studied: London and Vienna. Finally, the Swiss study explores two cities that implemented Covid cycle lanes (and made them permanent) as well as two cities that refused to do so despite demands from nonprofit organisations and politicians.

[3] Project number ANR20-COV7-0007. The ANR is the Agence nationale de la recherche (French National Research Agency).

In each chapter, the authors endeavour to analyse both the political processes that led to the emergence and subsequent preservation or removal of pop-up facilities and their impact on cycling.

Analysis of the political processes focused on the origin of the infrastructure, in terms of whether it developed from pre-existing plans or was instead created on an ad hoc basis in response to the pandemic. In both Vienna and France, the start of the pandemic coincided with municipal elections, and this electoral context had a range of effects on the implementation and removal of infrastructure. More broadly, in their discussion of political processes, all of the authors observe the interplay of actors and the levers that were mobilised to maintain or, conversely, to get rid of the pop-up infrastructure. The various chapters thus highlight the political modalities of the moment represented by the pandemic, the role of "political champions" (Wilson and Mitra 2020), and of actors from the nonprofit sector, but also of the technical services that conditioned both the speed of execution and the capacity to engage with the issue in order to take it forward.

Political processes cannot be observed without also observing the impact on practices. The book also looks at how pop-up infrastructure was received by studying road traffic, the safety of cyclists and other road users, and the ways in which these forms of infrastructure were appropriated, thus revealing both the successes and limitations of this tactical urbanism.

A broad range of different methodologies were used. Political processes were studied using semi-structured interviews with various stakeholders, analysis of grey literature and the press via textometric analysis, and dynamic mapping of the form and development over time of facilities. Practices were observed using data from counters, ad hoc quantitative surveys, interviews, ride-alongs, and video elicitation.

The first case study, in Chap. 2 of the book, looks at tactical urbanism in London. Taking a theoretically grounded approach, Asa Thomas analyses the implementation of "School Streets" policies in the capital. In this initiative, 33 local authorities, as well as higher levels of government, used "tactical" approaches to urban change, both prior to and during the pandemic. Tactical urbanism in this case is both a set of temporary and flexible material approaches to urban change and a wider methodology that can be drawn on by citizens and enterprising governments alike. The chapter considers this hybrid character of tactical urbanism—as a flexible material approach and as a participatory method for urban change—in relation to road closures under the School Streets initiative prior to and during the pandemic.

The next two chapters focus on France, where towns and cities created over 500 km of Covid cycle lanes (coronapistes). In Chap. 3, Mariane Thébert, Manon Eskenazi, Matthieu Adam, Guy Baudelle, Laurent Chapelon, Adrien Lammoglia, Patricia Lejoux, Sébastien Marrec, Adrien Poisson, and Mickaël Zimmermann conduct a comprehensive analysis of local measures associated with Covid cycle lanes in four metropolises—Paris, Lyon, Montpellier, and Rennes—during the first lockdown, the months that followed, and one year later. Thébert et al. pay particular attention to the chronological reconstruction of events and the factors of continuity or interruption between the pre- and post-crisis situations. In the four cities, the engagement of local

actors was rapid and significant in terms of the extent of the new cycling infrastructure. The authors retrace the involvement of the different actors and observe the reactions sparked by these measures, including the opposition they generated. They conclude that the crisis has accelerated local mobility policies rather than produced radical change. However, this tactical urbanism has introduced elements of change for the future by slightly modifying the actors' interests, representations, and instruments. The experiments in these cities raise questions about the impact of a crisis on public decision-making and its short- and medium-term effects.

In Chap. 4, Thomas Buhler and Matthieu Adam use different sources to further analyse the changes introduced from September 2019 to September 2020, focusing on the balance of power among the various actors involved in cycling in France. They examine a corpus of press releases from five regional newspapers (Rennes, Montpellier, Besançon, Paris, and Lyon) and one national title (*Libération*). Textometric analysis of this corpus enables them to identify a discursive change during the period considered. Clubs and associations have advocated various measures for years, from particular infrastructure design to the creation of cycling schools, and in the wake of the pandemic the central government and many local councils have sought their advice and know-how on tactical urbanism initiatives, including Covid cycle lanes and the "Coup de Pouce Vélo" programme, a set of measures to increase cycling practice. The authors focus on clubs and associations to analyse the changes in their position as they tackle new issues and take on new roles that give them more power to propose long-lasting change.

In Chap. 5, Hannah Widmer, Noëlle Guinard, and Patrick Rérat discuss the lessons learned from Switzerland. After the first COVID-19 wave in spring 2020, Geneva and Lausanne implemented "Covid cycle lanes," but few other Swiss cities took such measures. The authors first analyse how and why Geneva and Lausanne "played" with the legal framework in a tactical way to implement Covid cycle lanes. They identify the conditions that made such measures possible: the urgency, the low quality of existing cycling infrastructures, and the presence of "political champions" willing to develop cycling, among others. Next, they consider the reception of these new cycle lanes and the opposition they provoked. Finally, they analyse why two other Swiss cities, Lucerne and Zurich, did not implement such measures despite demands from associations and politicians.

An idea common to all the cases presented is that the end of the first lockdown represented a window of opportunity to develop cycling and, more importantly, to reallocate car space. While such processes were time-specific, the local authorities seem to have learned new ways (experimentation and temporary urbanism) of intervening in relation to public spaces. This shift is observed in Montreal (Canada), while the case study of Vienna (Austria) tells a story of missed opportunities.

In Chap. 6, Florence Paulhiac Scherrer starts by reviewing the main ways municipalities put into action a crisis-based urbanism in North America. In the second part of the chapter, she focuses on Montreal and the decision-making processes and levers that stakeholders were able to implement to react quickly. The author pays close attention to how what she regards as temporary urbanism is connected to existing public practices and prior policies. This helps her to highlight the innovative approaches

used by public stakeholders as well as the impact of crisis-based urbanism. She defends the thesis that public action in Montreal focused on agile urbanism as well as conflict urbanism and shows that the municipality's ability to rapidly adapt to the evolving situation in the face of opposition also suggests incremental urbanism. The chapter concludes that the transformative nature of this experience opens the way to a transitional urbanism in the longer term.

Vienna's trajectory was unusual: having implemented temporary shared spaces and "pop-up" bike lanes during the first wave of the pandemic to provide more space for pedestrians and cyclists, it then suspended them all at an early stage. In Chap. 7, Harald Frey, Barbara Laa, and Ulrich Leth present the implementation process of these infrastructures and evaluate their uses. They compare the developments in Vienna to the situation in other European cities and draw conclusions regarding sustainability goals. Using a methodology of video recordings and manual counting, the authors found that pop-up bike lanes were well adopted by cyclists, but temporary shared spaces mostly failed to attract pedestrians. They discuss possible reasons and derive criteria for better implementation of temporary walking and cycling infrastructure. The pop-up bike lanes were a highly controversial issue before the local elections in October 2020, which could explain why they disappeared, as the reallocation of space and the possible uses of tactical urbanism became political targets.

In Chap. 8, Florent Demoares, Nicolas Ovtracht, Kamila Tabaka, Sarah Duché, Boris Mericskay, and Camille Sieper argue the case for using a mapping approach to analyse the nature of the changes brought about by tactical urbanism. The authors compare the Covid cycle lanes in four French cities with those in Bogotá, retracing them in space and over time. The authors carried out extensive data cleaning, harmonisation, and cross-referencing prior to the study. They show that a range of implementation strategies were used beyond simply reducing the space allocated to cars. Some authorities created infrastructure in central areas, others on the outskirts, and in some cases the existing infrastructure was duplicated. In Montpellier, Grenoble, and even more markedly in Bogotá, working-class neighbourhoods benefitted from temporary infrastructure, suggesting the pursuit of greater equity in cycling policies in these cities. The pop-up infrastructure has filled in "missing links" in the networks and improved certain connections.

In Chap. 9, Maëlle Lucas, Florent Demoraes, and Vincent Gouëset continue the study of Bogotá, highlighting the changes produced by the Covid cycle lanes as well as opposition to them. Bogotá was the first city in the world to create a network of temporary bike lanes, on March 17, 2020, to encourage citizens to avoid public transportation. The network was inspired by tactical urbanism, which enabled its quick installation and adaptation. These bike lanes were set up on main avenues and served working-class neighbourhoods. The mayor's office in Bogotá used this measure to show its capacity to handle the health crisis as well as its commitment to more sustainable mobility. Bike use increased from the beginning of the pandemic, especially among the working class (most of whom could not work from home) but also for recreational and sport reasons. As the bike-related economy boomed, temporary bike lanes absorbed important flows of cyclists. After two decades of pro-bike policies, COVID-19 acted as an accelerator for the ongoing mobility transition.

However, cyclists' feedback is quite critical: they report an increase in bike thefts and aggressive behaviour, cycling infrastructure of poor quality, and a high level of insecurity, especially on temporary bike lanes, though these had mostly disappeared by May 2022.

Finally, in Chap. 10, Nathalie Ortar, Laurent Chapelon, Sandrine Depeau, Benoît Feildel, Adrien Lammoglia, Adrien Poisson, David Sayagh, Léa Bardé, and Andoni Hentgen-izaguirre analyse the way in which both experienced and novice cyclists made use of the temporary facilities in five French cities—Grenoble, Lyon, Montpellier, Rennes, and Saint-Étienne. These cities were chosen because they were interesting both in terms of cycling policies and ridership evolution. The authors observe the effects of tactical urbanism on cycling practices and the social representations associated with them. In particular, they look at changes in use in contexts characterised by different relationships to cycling. The chapter highlights how Covid cycle lanes as well as some incentives of the "Coup de Pouce Vélo" have opened up paths of action and produced a different relationship to space and mobility. Moreover, the pop-up infrastructure has contributed to normalising the place of cyclists in traffic and in the public space more generally and confirms the importance of moving from a section-based approach to a network-based approach in order to understand the infrastructure as a whole. Finally, the analysis of the use of Covid cycle lanes by both novice and more experienced cyclists reveals the ripple effects that this temporary infrastructure may have had in encouraging new users.

1.5 Lessons Learned

This book explores a range of questions: have the changes observed been maintained over time? In what political context did they originate? Who took up these forms of infrastructure and the measures that accompanied them? And more broadly, what do the changes observed tell us about the social and political effects produced by these developments in the context of the mobility transition?

We can identify six key messages from the nine empirical evidence-based chapters.

First, the pandemic has been a window of opportunity for cycling policy. The urgency of the situation and the inability to predict the pandemic's consequences led many cities to implement temporary cycle lanes. Cycling was seen as a means of travel that avoided physical proximity (unlike public transport) and a way to get exercise and reach necessary destinations (e.g. the workplace for those not able to work from home). In the cities studied, the pandemic has mainly acted as an accelerator rather than a disruptor, accelerating existing plans and projects, valorising the expertise of cycling associations, and contributing more broadly to the renaissance of cycling. Superimposed on one another, the health and climate crises have had a cumulative effect on policy.

Second, the local political configuration is a crucial factor for explaining the implementation (or not) of Covid cycle lanes, their extension, and their perpetuation or removal. The cities studied in this book have a rather low modal share (as noted earlier, Grenoble is the only city where over 10% of all journeys are made by bike). This means that their cycling policies, if not new, are often fragile and still being developed or redefined; the local political configuration is therefore important. In some cases, a "political champion"—with the support of a political alliance—pushed to implement cycle lanes. In other cases, cycle lanes were dismantled due to opposition or waning support (after elections, for example). This scenario raises a number of questions, including how to implement policies that foster the transition towards a low-carbon footprint and challenge dominant practices (namely car driving).

Third, local authorities resorted to unusual processes to implement Covid cycle lanes. Their actions are a form, at least partly, of tactical urbanism: the quick implementation and the materiality and flexibility of these new facilities highlight that it is ideas that circulate, not policies (Page 2000). While it could be argued that the measures are a form of temporary and transitory urbanism, several local authorities also "played" with the legal framework to find room to manoeuvre so they could act quickly and reallocate road space to cycling. This prompts several concerns about the acceptability of these measures and the process of concertation. But it also shows that cities can act not only in a strategic way (e.g. with a master plan) but also in a tactical, agile, and experimental way. It could be interesting to use this latter approach in future to foster active mobilities, public spaces, and green spaces, with experimentation enabling planners to take changes in social norms into account in a more effective way.

Fourth, Covid cycle lanes were received differently in different cities. In most cases, they helped to boost cycling by providing more convenient routes in terms of safety and direct trajectories. In other cases, cyclists were rather critical of low quality infrastructure. This raises the question of the kind of cycling facilities necessary not only to increase cycling but also to expand it to a wide range of the population considering various needs (in terms of routes and segregation from traffic) and capabilities.

Fifth, Covid cycle lanes faced opposition to both the process (the speed of implementation, the lack of usual consultation) and the substance (the reallocation of space from motorised traffic to cycling). While some authors in the book see cycling as a normalised practice, others highlight that it is still contested, especially when it implies sharing road space in a new way. The key issues here are the effects of top-down tactical urbanism in terms of fairness and inclusivity and how to reconcile climate challenges and transport needs.

Sixth, reflecting on the urgent implementation of the infrastructure and how it was received "in the moment," the work re-emphasises the importance of ensuring design coherence and quality by considering its multiple dimensions and also underlines the need to factor in the speed of developments (and thus anticipated futures) from the design stage, so that the envisaged changes can be made in time. Moreover, the functional hierarchy must be made clear so that cyclists can become fully socialised to the practice.

The chapters also contain several methodological lessons: (1) the importance of a comparative perspective (to question the context in which the policies are devised, their upscaling, and transferability); (2) the importance of an interdisciplinary approach both in theories and methods to address the multiple dimensions of mobility policies, and (3) the importance of longitudinal analysis both at the scale of individuals (how cycling trajectories develop over the life course, given some external events) and of spaces (how cycling policies evolve over time).

These lessons are drawn from the pandemic and the period after the first lockdowns. However, they also relate to the challenges of climate change and how societies will decrease greenhouse gas emissions, reduce their energy consumption, and adapt cities and regions to new climate conditions. Although the COVID-19 health crisis may come under control in the near future, the urgent need to tackle the much larger issue of climate change will remain. The rapid responses adopted by the cities studied in this book show both their resilience in the face of the health crisis and their capacity to pursue different futures, despite being conditioned by their legal and political history. Mobility plays a crucial role here because part of the solution to the climate crisis is to reduce travel and promote non-motorised mobilities (Barr 2018; Givoni and Banister 2013; Baehler and Rérat 2020; Dennis and Urry 2009). Socially and politically, addressing climate change will require—as in the first stage of the pandemic—"a more balanced attention to both the essential and existential aspects of mobility" (Salazar 2021) while ensuring it remains inclusive (Verlinghieri and Schwanen 2020) across all territories, both urban and non-urban (Flipo et al. 2021).

These lessons and the need for climate actions also present two cycling-related challenges. The first is how to foster this low-carbon practice and expand it in terms of spaces, population groups, and reasons for engaging in the practice. The second, as described for instance by Spinney (2021, 3), is how to generate "a broader view of cycling that embraces a full range of qualities that could not only transform how it is experienced, but help to transform the goals to which it is oriented away from economic growth and toward human flourishing, connection and wellbeing."

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