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# Rethinking cities beyond mobility? A discussion

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## Abstract

*The negative environmental, social, and economic side-effects of the individual motorized transport-centred urban development paradigm have been repeatedly denounced. The criticism inspired the alternative, 'sustainable mobility' paradigm, which has been attempting to shift to a different pathway for the past thirty years. While the outcome of this struggle is still undecided, an even more fundamental shift seems to be taking place on the ground, which rather demands to redefine the very scope of the struggle. An urban development paradigm altogether 'beyond mobility' might be emerging, based not on facilitating or even managing mobility but rather on a redefined broad set of urban qualities. This discussion paper explores this development by connecting different, as yet unrelated interventions and argumentations to identify underlying challenges and potentials. It first reviews the multiple, diverse reasons for shifting away from mobility centred city planning. Second, it highlights what might be the emerging complementary components of an urban mobility and development paradigm beyond mobility. Third, it contends that an experimental, narrative-driven approach to the transformation is needed to build on the potentials and cope with the challenges. In conclusion, the paper gives pointers for a research and policy agenda.*

## Introduction

The ultimately self-defeating character of 'the faster, the cheaper, the better' urban mobility paradigm has been long and repeatedly denounced (Goodwin et al., 1991; Cervero, 2006; Curtis, 2020; Filippi, 2022). Also, the negative environmental, social, and economic side-effects of the unbridled pursuit of ever faster and cheaper mobility have been highlighted extensively (Berger et al., 2014; Jasiński et al., 2016; Curtis, 2020). The criticism has eventually resulted in an alternative 'sustainable mobility' paradigm (Banister, 2008), which has been challenging the dominant one for at least thirty years (Holden et al., 2019). The outcome of this struggle is still unresolved, as the incumbent paradigm has proven to be extremely resilient (Geels, 2012; Mattioli, 2020). While this struggle is still ongoing, an even more fundamental shift might be taking place on the ground, advancing a radically expanded set of urban mobility policy goals and means, reaching much further than economic efficiency or environmental sustainability. Expanded policy goals include the likes of social cohesion and inclusivity, physical and mental health, and biodiversity enhancement. Expanded policy means most notably hinge around the notion that urban streets should be seen not as channels of movement but as complex public spaces and natural ecosystems.

Accordingly, in cities across the world, streets are being reclaimed 'from traffic' and 'for people' (Gehl, 2010; Bertolini, 2020); the values of local social interactions and human bodily mobility are being rediscovered (Moreno et al., 2021); urban nature is being restored and integrated in the built environment (Apfelbeck et al., 2020). The motivations behind these initiatives are diverse, and initiatives are often self-referential and uncoordinated. Nevertheless, they seem to converge on a shared urgency. Current efforts to remake the city seem an indication that what might be needed in cities is not so much a shift to a *different* mobility but rather one altogether *beyond* mobility (Cervero et al., 2017). There is acknowledgment that transport innovations, and notably electric, autonomous, and shared vehicles (Burns, 2013), hold the promise to address some current

urban challenges. Electric cars and vans can for instance make the ambient air cleaner and cities less noisy, while reducing carbon emissions. Autonomous cars and vans can make traffic safer, while shared cars can save parking space. However, there is also a growing realization that even in the most optimistic scenarios ‘different’ cars and vans will not ultimately make cities healthier, more liveable, sociable, or engaging (Legacy, 2019). They will not encourage active lifestyles nor open urban public space for social interaction, relaxation, discovery, and play. They will not make cities greener. Against this backdrop, the potentials of personal car alternatives, such as public transport, cycling and walking, and more recent innovations as micro-mobility (Abduljabbar et al., 2021) and mobility-as-a-service (Jittrapirom et al., 2017), have also become prominent, as have new freight delivery concepts (He, 2020); however, they face a twofold problem. First, they are yet to prove capable of overthrowing the dominance of the car and the van (Geels, 2012; Berger et al., 2014; Holden et al., 2019; Mattioli, 2020). Second, and perhaps more fundamentally, while they might be better than the car and van at combining mobility with other goals, their prominence does not necessarily translate in questioning the centrality of mobility enhancement in urban planning and design, or the accompanying, reductive set of policy goals and means.

This critical awareness seems to be growing, and city governments and citizens seem to be acting upon it. The range and scope of interventions to curb cars and vans and enable alternatives has been impressive for some time and is rising: physically constraining car access to public space, pricing their use and ownership, making space for cyclists and pedestrians, or improving public transport (Holden et al., 2019). In many contexts and importantly, interventions are however increasingly going further than pursuing just a change of transport means and are rather foregrounding cities as social spaces and natural ecosystems (Bertolini, 2020, Combs & Pardo, 2021). These more radical interventions face a formidable task. Cities have been conceived, planned, designed, and regulated around not just the car but mobility for over a century (Norton, 2015), and changing this focus will not be easy. Individual interventions must therefore add up and create momentum for nothing less than a shift to an alternative urban development paradigm. In the process, deep-seated, systemic resistance to change and irreducible uncertainty about the future need to be recognized and confronted (Geels, 2012; Berger et al., 2014; Mattioli et al., 2020).

To help increase this emergent understanding and help structure the policy and academic debate, this discussion paper will connect different argumentations and interventions, identifying underlying challenges and potentials. Three questions will be structuring the argumentation: Why is the focus of urban mobility policies moving beyond mobility? What are the emergent components of an urban mobility policy moving beyond mobility? And how can the paradigm shift be enabled? The paper will first review the multiple, diverse reasons being raised for shifting away from mobility centredness in the planning and design of cities. Second, it will explore some of the key, emerging policy components being advanced, together sketching a new, potential urban development paradigm. Daunting challenges stand in the way of realising the potential. This is not just a technology turn; entire lifestyles and business models must be reinvented and conflict and pushback is inevitable, as is uncertainty. In the third part, building on insights from the academic literature and pioneering experiences, the paper will contend that an open, experiment-based, narration-driven approach to the transformation is needed. The conclusions will outline a few pointers for a research and policy agenda.

### **Cities beyond mobility: Why?**

Current emergent developments and debates increasingly stress that urban mobility is a problem with multiple dimensions, and improved cars and vans or alternative transport are not enough to cope with this multiplicity. Let us assume a most optimistic scenario, where in a not-too-distant future most cars and vans

are electric, self-driving and shared. This is the scenario evoked for instance by Burns (2013) and espoused by the automobile and high-tech industry (see e.g., Google's Waymo Driver<sup>1</sup> advertisement). A wholesale substitution of gasoline and diesel-powered vehicles with electric ones will drastically reduce transport emissions and traffic noise. If electricity is generated without releasing carbon, and if the production process is also carbon neutral, a shift to electric cars and vans will also contribute to climate change mitigation. Self-driving cars and vans are claimed to make traffic safer, as algorithms take over from mistake-prone humans. If self-driving cars are also shared, parking space could be reallocated to other uses, thus resolving one of the most striking and least questioned inefficiencies in the built environment (Gössling et al., 2016; Creutzig et al., 2020).

There are however major caveats in these assumptions. There is still much uncertainty and debate about whether electric vehicles will or even can be carbon neutral (Hensher, 2020) or whether self-driving cars and vans will be safer, and cars shared (Narayanan, 2020). There are, importantly, also more fundamental questions raised. Self-driving cars might save parking space but also generate more car traffic (Narayanan, 2020). Users who previously had no access to a car (e.g., those without a driving license or unable to drive) now could use one. Furthermore, the car's ubiquitous availability, without the need of parking, could make it a much more attractive option. Electric, self-driving, shared vehicles could discourage active lifestyles and exercise (Soteropoulos et al., 2019; Pourrahmani et al., 2020) and diminish personal interaction with the surroundings. Less contact with one's surroundings could also result in reduced engagement, with downward pressures on the quality of the social, built, and natural environments (Legacy et al., 2019; Milakis, 2019; Yigitcanlar et al., 2019). Furthermore, even if the reduction of parking spaces could add up to a net gain in the *quantity* of urban public space, the increased motorized traffic could worsen the fragmentation of urban public space and its connective *quality* (Legacy, 2019). It could therefore further disrupt human communities and natural ecosystems, and crowd away alternative, vital uses of public space such as socializing, lingering, or playing. More motorized traffic could, in short, further erode the urban public realm and with it the 'city's quintessential social territory' (Lofland, 1998). Ironically, by not requiring the driver to pay attention to the environs, self-driving vehicles would in this respect be even more alienating than conventional motorized vehicles, which at least demand eye contact and interacting with other road users (Te Brömmelstroet et al., 2017).

While a wholesale shift from cars to public transport could be less ambivalent than different cars in its positive contribution to lowering emissions, making traffic safer, and using street space more efficiently, it could similarly discourage personal interaction with the surroundings (Te Brömmelstroet et al., 2017), particularly when underground or using dedicated, separate infrastructure. Above ground, mixed traffic public transport could, beyond certain capacity and speed thresholds, be outright disruptive of the use of streets as multi-functional public spaces. Active modes (cycling and walking) seem to come closer to addressing a broad range of goals beyond enabling mobility, even though cycling still happens at speeds limiting personal interactions with others and the environment (Te Brömmelstroet et al., 2017). However, alone they may not be able to ensure access to essential opportunities for everyone, as for instance stressed by the emerging debate about the merits and drawbacks of the '15-minute city'.<sup>2</sup>

The critical awareness of the limits of transport focused definitions of problems and searches for solutions seems to be growing. Sustainable mobility discourses have evolved from a focus on technological fixes to one

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<sup>1</sup> The video can be viewed at: <https://www.youtube.com/watch?v=xjoWJ3XZFNk>.

<sup>2</sup> See e.g., <https://forumviesmobiles.org/en/arguings/15541/15-minute-city-way-forward-or-ideological-mirage>.

on more holistic approaches (Holden et al., 2019). Cities are increasingly espousing policies to constrain car and van use and enable alternatives, addressing a broad range of aims in the process (Nieuwenhuijsen and Khreis, 2016; Glazener and Khreis, 2019). However, impact on the ground remains elusive, with strong built-in, system-wide resistance to more than marginal change (Berger et al., 2014; Geels, 2012; Gössling and Cohen, 2014). If cities are to be reclaimed from motorized traffic, the deep-seated dependency of contemporary lifestyles and business models on mobility needs also to be recognized and apt answers need to be explored. To this I turn next.

### **Cities beyond mobility: What?**

To relieve cities from their mobility dependency, two key challenges must be addressed. First, acknowledging that urban households and firms demand mobility in the first place to access essential resources, a vision of urban mobility should be crafted that is not just beyond mobility but also sufficiently enables essential accessibility, or ‘sustainable accessibility’ (Bertolini et al., 2005). Second, there is a need to institute governance strategies that can cope with deep-seated, systemic resistance to change, both material and symbolic (Geels, 2012). This section explores the former challenge in greater detail, the next section will turn to the latter.

For urban households and firms, mobility is for the great part not an end, but rather a way to access valuable opportunities. For example, by means of mobility households can get access to jobs, services, social contacts, while companies can connect with workers or business partners, and ship goods (Levine et al., 2019; Levine, 2020). Interventions that curb car and van use and enable alternatives need therefore to add up to an urban and mobility system that provides comparable – or even better – accessibility than the current, mobility-dependent system. Below, I outline how current interventions, while focusing on a much broader range of urban goals, could achieve this accessibility goal as well, but *only* if they are seen and developed as integral, complementary components of an overarching, alternative accessibility provision system.

I propose to label these complementary components ‘convivial streets’, ‘accessibility by proximity’, ‘diffused transit-oriented development (TOD)’, ‘the car as an option’, and ‘avoid, shift, and improve freight’. Convivial streets address the scale of the immediate surroundings of the home and the workplace, ‘the city of your doorstep’. Accessibility by proximity focuses on the urban neighbourhood or district scale, ‘the city of the everyday’. Diffused TOD is about the urban and regional scale, let us call it ‘the city of incidental destinations’. The car as an option is about the role of the car in an urban world where cheap and fast mobility is no more a need. Finally, avoid, shift and improve freight moves the focus of mobility from people to goods, ‘the city of things’. The remainder of the section will explore each of these elements in greater detail, based on emerging practices and insights. To stress this emergent, exploratory nature, the argumentation will be structured around ‘what if’ questions<sup>3</sup>.

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<sup>3</sup> There are two caveats. First, while acknowledging that telecommunication, or ‘accessibility by connectivity’ (Levine, 2020), can substitute for some physical travel, the following discussion will focus on accessibility to opportunities where physical presence is still desired, or even needed. This choice recognizes that physical presence is still – and will likely remain – essential for many activities, also under advanced ICT (Mokhtarian, 2002). The second caveat is that while acknowledging that urban mobility also has a global dimension (e.g., international business and leisure trips) the discussion will focus on local, everyday mobility. This is still the scale where the vast majority of trips takes place, and perhaps more importantly in the context of this paper, the scale at which mobility is most intimately connected to the use, form, and regulation of the urban fabric (Newman et al., 2016).

*What if city streets were first and foremost public spaces?*

Convivial streets are the first and perhaps most defining building block at the most immediate scale of the direct surroundings of the home and the workplace. Emerging practices and insights (Bertolini, 2020) stress that the street should be seen (or perhaps seen again: Norton, 2015) as first and foremost the quintessential urban *social public space* (Mehta, 2014), with all its human and more-than-human relational richness. The underlying idea is to radically shift away from motorized traffic as the dominant guiding principle for city street design and regulation. Other, including non-motorized and most importantly non-mobility-related public space uses such as socializing, lingering, or playing, should be treated equally, reflecting a radical diversity of functions and values. The specific ‘mix’ in each street should be determined via public deliberation, acknowledging that the mix will inevitably be contested (not everything can be facilitated at once, and choices must be made), and with diversity and inclusivity of uses and users as an overarching aim. While the more limited presence, and in some case even absence, of motorized traffic could reduce accessibility, it could also generate *new* accessibility. It can, for instance, enhance social contacts in the neighbourhood, and provide space for relaxation and play close to the home. It can also make streets more attractive to visitors, bringing new customers to local firms.

*What if all everyday needs could be accessed by walking or cycling?*

Repurposing city streets away from motorized traffic can generate but also reduce accessibility (as it hampers certain forms of mobility), which is not compensated directly, and alternatives need to be enabled. How to enhance accessibility while fostering convivial streets? A key concept being foregrounded by emerging insights and practices is ‘accessibility by proximity’ (Pajares et al., 2021), recently popularized by notions such as the ‘15-minute city’ (Moreno et al., 2021). Accessibility is a product of the ease of access to destinations, *mobility*, and the distribution in space of those destinations, *proximity* (Levine, 2020). Accessibility by proximity emphasizes improving accessibility by bringing more – and more diverse – destinations closer, rather than by making mobility faster or cheaper (Pajares et al., 2021). It emphasizes walking and cycling as the primary transport mode and creating a dense and diverse urban fabric, with plentiful destinations within easy reach of non-motorized mobility. In short, it seeks to make everyday accessibility needs independent of fast, motorized mobility.

Not everything needed or desired by everyone can however be located within 15 minutes of walking and cycling (see again, the debate on the ‘15-minute city’ referred to in footnote 2), and in cities it arguably also *should* not be. A city is, quintessentially, also about confronting the *other* (Lofland, 1998). It is and should be also about differences, surprises, discoveries, and possibilities. It can’t just be a collection of enclosed and self-sufficient, homogeneous villages. In part, just walking and especially cycling longer can be a first step. For instance, within the 30-minute distance that most people accept for accessing jobs or non-everyday destinations, there is much ‘elsewhere and further away’ that can be experienced by cycling, as evidenced by the rich social, cultural and economic dynamic of cycling cities like Amsterdam or Copenhagen. E-bikes can extend this reach, which might be especially important in less dense and diverse contexts, as suburbs or the countryside, or cities where the topography is a barrier to cycling. Conversely, access can also be extended by further densifying and diversifying the urban fabric, also outside of urban cores (Pozoukidou & Chatziyiannaki, 2021).

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### *What if public transport could take us anywhere else?*

For those not willing or able to walk or cycle, and for destinations beyond a 30-minute walk or bike ride (and only for those), public transport should be a preferred option, especially because of its vastly greater capacity, and hence greater efficiency in the use of street space, than private motorized transport. Using street space more efficiently is after all an essential transport means characteristic if street space is to cater for a multiplicity of functions and values (i.e., ‘convivial streets’). In addition, because of its collective nature, public transport can itself provide a venue to cultivate the public realm (Te Brommelstroet et al., 2017). Making public transport attractive requires improvements in public transport networks. However, following the principle that accessibility is not just about mobility but also about the location of destinations (proximity), it also requires concentrating important incidental destinations (e.g., metropolitan facilities) around public transport nodes, as advocated by transit-oriented development (TOD). TOD has quite a long history and global reach (Thomas et al., 2018); however, it has so far mainly been successful in dense, polycentric urban fabrics, typified by global transit cities such as Hong Kong, Tokyo or Singapore in Asia; Stockholm or Munich in Europe; Curitiba in South America; and (albeit relatively) Portland in North America (Cervero, 1998). What emerging practices and insights are however emphasising is that the challenges for TOD are, first, to make it work in less dense and more diffused urban fabrics and, second, to connect whole rural and urban regions, not just urban cores.

To meet this challenge conventional notions of TOD would have to be fundamentally reconsidered for suburban and rural contexts (Nigro et al., 2019; Staricco & Vitale Brovarone, 2020). On the transport side, this could be achieved by highly interconnected networks and coordinated timetables, as for instance shown by public transport in suburban and rural Switzerland (Mees, 2009). It can also be achieved by combining fast, high-capacity public transport with slower but more flexible feeder modes (Nigro et al., 2019). In the current context this could most importantly be the bike, as in the bike-train system advocated by Kager et al. (2016). Electric, shared and self-driving cars could also fulfil this feeder function in the future. A final direction is provided by the likes of flexible, dial-a-ride, Demand Responsive Transport (DRT: Mounce et al., 2018; Sørensen et al., 2021) and subsidized and/or community-based ‘social’ taxis (Wang, 2015). On the land use side, the challenge is to develop transit-oriented typologies that are better suited to less dense, and more nature rich, suburban and rural environments (Staricco & Vitale Brovarone, 2020). Last but not least, in all contexts the development of public transport-based concepts should be informed by the principle that they are complementary options, focusing on incidental trips or specific target groups, rather than an all-encompassing solution for everyday needs, which, in the holistic spirit of this discussion, are better served by accessibility by proximity.

### *What if the car was an option rather than a necessity?*

The three ingredients above could together – but *only* together – provide accessibility that is in many contexts equivalent to private motorized transport (Bertolini & le Clercq, 2003) and *at the same time* allow for the cultivation of a much richer range of urban values and functions, thereby, and crucially enhancing the urban public realm. There will however still be accessibility needs or desires that cannot be met by this combination. Think about those living, working, or visiting locations outside of the reach of diffused TOD, or about special purpose trips, such as carrying bulky goods. Furthermore, not everyone is able to walk, ride bicycles or take public transport. In all these and similar situations, emerging practices and insights are suggesting that the car could be a complementary option. However, and this is the challenge, it should be also considered as such and not as today’s default, universal ‘territorial adapter’ (Dupuy, 1995) and ‘radical monopoly’ (Illich,

1973). The car as an option concretely would mean that in many instances it could be a shared car, and that its use in situations where there are viable transport alternatives should be discouraged (e.g., via pricing tools or physical barriers).

#### *What if there was less need for freight?*

Up to this point, I have been mainly discussing the mobility of persons. However, the urban system should also provide for access to goods, a field of much debate and innovation (for a recent overview see He, 2020). For this discussion of an emerging alternative urban mobility and development paradigm going beyond mobility, much of these ideas and practices seem however insufficient. A useful reference to understand what a more fundamental step would be is the well-known avoid, shift, improve (ASI) sustainable development approach (Roy et al., 2021). As with cars, addressing the multiple dimensions of the urban first requires *reducing* the number of vans and only then exploring *different* modes or vehicles. As with cars, this is needed to allow urban public space to cater to more than transport functions and mobility values. Traditionally, and mostly spurred by an efficiency drive, innovation in urban freight transport has focused on marginally improving the current ways of delivering goods (e.g., by optimizing the use of the available capacity). Only more recently and less ubiquitously has a shift to the use of different transport modes than the van, such as cargo bikes, been explored. The option of altogether avoiding the need to transport goods, for instance, by increasing the durability of goods or the scope for local recycling and production, is hardly considered. A different paradigm is needed, not just for transport, but for the economy (Xue & Kęblowski, 2022; Cattaneo et al., 2022), and one that would instead reverse the priorities, first looking at options to *avoid* transport, then to *shift* to different modes, and only lastly to *improve* current distribution systems.

#### *Added value and underlying challenges*

The sketch of an alternative accessibility system outlined above aims above all to show the value of bringing emerging but often disconnected interventions and concepts together. The effort aims to help elucidate potentials to be seized upon in the pursuit of a richer set of urban goals. It recognizes at the same time that enabling households and firms access to essential resources is a key urban and societal functionality. However, it suggests that the central question should not be ‘how to make the current ways of providing accessibility *less destructive* of urban life’ (as in the sustainable mobility paradigm) but rather ‘how to provide accessibility in ways that are *intrinsically supportive* of urban life’, adding up to a full-blown alternative urban development paradigm. In the process, it also advances a different hierarchy of goals, with providing a rich public realm to the largest number of inhabitants replacing the policy focus on enhancing mobility or even just accessibility.

There are also several underlying challenges, and some have been named. As in all paradigm shifts, there will be winners and losers. It is necessary but not sufficient to acknowledge and compensate the latter. Rather, they should be proactively engaged in the process of conceiving and implementing change, so that their individual needs and desires can be understood, and fitting solutions can be jointly explored. This is vital because contemporary urban societies are still mobility dependent, both materially and symbolically (Mattioli et al., 2020). Therefore, it should be acknowledged that losing access to cheap and fast mobility might break basic social functionalities or cause a loss of identity. While a new paradigm might redress some inequalities of the old (e.g., between those owning and not owning a car, or having or not having access to high quality public transport), it might also create new inequalities (e.g., between those able and those not able to afford a dwelling in a proximity rich neighbourhood).

A paradigm shift will also question the mobility dependency of the economy (Mattioli et al., 2020). Jobs will be created (e.g., in sustainable transport sectors and economies of proximity) but also lost in car production and maintenance, and in commercial activities relying on far away access. Existing tax bases might shrink, for example, through lost parking and fuel tax revenues. The list of challenges is therefore long: lifestyles will need to be reorganized, identities reimagined, new inequalities recognized and addressed, different jobs created, and fiscal systems reformed. While there might be some answers already, a lot will have to be discovered along the way. Resistance will be inevitable and so will uncertainty. At least as important as the ‘what to do’ is therefore the question of ‘how to do it’, which is at the centre of the next section.

### **Cities beyond mobility: How?**

While a vision might provide direction, a lot remains uncertain, and fierce resistance should be expected. The approach should be able to cope with both deep uncertainty and systemic resistance. The challenge is analogous to that in other societal domains where incumbent paradigms are being questioned, for example, in energy, agriculture, or health. One overarching academic domain of reference is the field of sustainability transitions (Köhler et al., 2019) and within it concepts such as the multi-level perspective (Geels, 2012) or transition management (Neuens et al., 2013). The field of urban experimentation (Sengers et al., 2019) provides another important pathway. All these domains share a common approach to change which acknowledges deep resistance and uncertainty and is centred on experimentation. Experimentation is seen as necessary because, while we might have some ideas about where to go and how to get there, much remains unknown or controversial (just think about the scope of the challenges named in the previous section) and can be discovered and negotiated only by trying it out. Experiments should be pursued in all components of the vision sketched above: street designs and regulations towards convivial streets, local land use and transport plans towards accessibility by proximity, TOD concepts for suburban and rural contexts, the car as complementary option, production and delivery chain innovations reducing the need of transport.

It is important to stress that the experimentation should focus not only on practical solutions but also on alternative, mobilizing narratives (Holden et al., 2020; Te Brömmelstroet et al., 2022). Three main supports for such an approach centred on narratives stand out. First, the dependency on mobility is not just material but also symbolic (Mattioli et al., 2020). Unravelling the lock-in is, thus, also a socio-cultural challenge to create alternative identities, norms, values and beliefs. The second reason is outlined in the starting point of this paper. The current questioning of mobility-centric urban planning and design is not so much a movement ‘against mobility’ but rather one ‘for the city’ – for all that the city needs (a healthy, resilient environment for its different inhabitants) and can give (unique opportunities for personal and societal enrichment). Variations of this positive narrative are showing essential in mobilizing the actors behind current initiatives to reclaim urban public space, neighbourhoods and ecologies (Bertolini, 2020). Third, alternative narratives are needed as underlying rationale for new policy assessment frameworks fitting the holistic, deeply multi-dimensional nature of the challenge, as sketched in the first, ‘why’ section of this paper. This multi-dimensional nature is deeply at odds with the reductionist, narrowly economic growth-focused narrative of dominant assessment frameworks, such as cost–benefit analysis (Næss, 2006), and require much more open and diverse frameworks (Chambers et al., 2022; Luederitz et al., 2017).

Much experimentation, both with material solutions and symbolic narratives, is already happening (see Table 1 for an illustrative overview). The challenge seems however to see and treat these material and symbolic experiments as a leverage point for a *transformation* of the urban and mobility system. This is often not the case, as urban experiments are instead frequently terminated, marginalized or co-opted (Savini & Bertolini, 2019). Transition experiments are a useful reference concept here. Transition experiments are ‘short-term

actions through which alternative structures, cultures, and practices are explored' (Roorda et al., 2014, p. 32) (see also Nevens et al., 2013). According to Roorda et al. (2014), system-altering transition experiments are marked by five defining characteristics. They should be 'radical', in that they should explore fundamentally different arrangements than the dominating ones. They should be 'challenge-driven', in that they should explore the potential of system-wide, long-term change pathways. They should be 'feasible', in that they should be relatively easy to implement in the short term, and 'strategic', in that they should aim at learning about possibilities and constraints of change beyond the experiment. Finally, they should be 'communicating and mobilizing', in that they should reach out to and engage the broader public. These characteristics can provide an initial framework to assess the effectiveness of current urban and mobility experimentation and point at directions to make experimentation more effective, as has been for instance recently explored for the case of city street experiments (Bertolini, 2020; Glaser & Krizek, 2021; VanHoose et al., 2022).

A central question with experimentation aimed at transformation is how to consolidate the results of the experiment, either by making them permanent or replicating what has proven effective or – and just as important – by learning from what has failed to inform a new round of experimentation (Nevens et al., 2013). A key challenge in this respect is how to connect the local and short-term of experimental interventions with the city-wide and long-term of broader visions and strategies. Early research on city street experiments (VanHoose et al., 2022) emphasizes the importance of both the 'transitional' quality of experiments as well as the receptivity to experimentation of the broader, city-wide, governance system. Consistently with the plural, and necessarily contested nature of the transition, the process of 'upscaling' experiments (Augenstein et al., 2020) must be seen as highly political and, therefore, needs to be publicly debated (Kenis et al., 2016). As it alters the status quo power distribution, some actors will advocate for it, while others will resist it, creating tension and heightening cleavages in the social system, which demand a space for political deliberation. The latter is an awareness still largely lacking in approaches inspired by the transition studies literature (Kenis et al., 2016; Savini & Bertolini, 2019).

Table 1 The emerging vision illustrated through alternative narratives and experiments at each urban scale

Scale and component	Alternative narratives	Experiments
STREET: Convivial streets	From streets as regulated traffic channels to streets as self-regulating public spaces: -Streets for people, not for traffic (Gehl, 2010; Bertolini, 2020) -The street as ecology (Mehta, 2015) -The street as quintessential social public space (Mehta, 2014)	City street experiments: intentional, temporary change[s] of street use, regulation and/or form, aimed at exploring systemic change in urban mobility – away from 'streets for traffic', and towards 'streets for people'. ▪ <u>Example:</u> intersection repairs, parklets, play streets, and ciclovias/open streets (Bertolini, 2020)
NEIGHBORHOOD: Accessibility by proximity	-From planning for mobility to planning for accessibility (Handy, 2005). -From accessibility by mobility to accessibility by proximity (Pajares et al., 2021)	Complementary interventions: (1) introducing and/or maintaining essential everyday facilities (e.g., schools, shops, parks, public services) at walking and cycling distance from homes, and (2) improving the quality (e.g., safety, comfort, attractiveness) of walking and cycling routes from homes to essential everyday facilities. ▪ <u>Example:</u> Paris' 15-minute city approach (Moreno et al., 2021).
CITY/REGION: Diffused/Ubiquitous TOD	-From compact cities vs sprawling suburbs to diverse and connected	Complementary interventions: (1) introducing new sustainable transport mode combinations such as the train-bike (Kager et al., 2016) and

	rural-urban landscapes (Westerink et al., 2013). -From material and symbolic physical separation to socio-ecological integration of the urban, the peri-urban, and the countryside (Keil & Addie, 2015).	(2) promoting context-sensitive land use concentration and mixing in the suburbs and the countryside (Westerink et al., 2013; Staricco & Vitale Boverone, 2020).
ALL SCALES: Car as an option	-From car as a necessity to car as an option, as in multimodal urban development (Bertolini & Le Clercq, 2003). -From universal car ownership to incidental car use, as in mobility-as-a-service (Jittrapirom et al., 2017). -Ending automobile dependence (Newman & Kenworthy, 2015)	Complementary interventions: (1) alternative mobility options and (2) car constraints. ▪ <u>Example:</u> Combining mobility sharing concepts and the reduction of car parking in Munich (VanHoose et al., 2022).
CITY/REGION/WORLD: Avoid, shift, improve freight	-From a linear economy to a circular economy (Sariatli, 2017). -From an ownership economy to a sharing economy (Richardson, 2015). - -From global to local sourcing (Ashby, 2016).	He (2020) presents more mainstream ‘shift’ and ‘improve’ approaches. More radical ‘avoid’ approaches involve localization of production, socialization of consumption, repair of goods, and reuse of materials, and ‘degrowth’ approaches to spatial and mobility planning (Xue & Kęblowski, 2022; Cattaneo et al., 2022).

## Conclusions

This discussion paper has contended that current efforts to address emerging, topical challenges and opportunities in cities should question the dominance of narrow mobility goals and means in current urban planning and design and explore a paradigm shift towards an urban planning and design ‘beyond mobility’. Based on emerging practices and insights it discussed why a paradigm shift might be needed, what it might entail, and how to explore it on the ground. Central to the ‘why’, is the radical multiplicity and contested nature of the needs and desires to be addressed in urban and mobility development, demanding a both quintessentially holistic and political approach. Central to the ‘what’ are emerging key components of a ‘city beyond mobility’: convivial streets, accessibility by proximity, diffused transit-oriented development, the car as an option, and avoid, shift, and improve freight. It has been contended that together – and only together – they could provide an alternative to car and van-based accessibility. Central to the ‘how’ is the need to cope with inevitable conflicts and uncertainties, and an approach centred on experiments, embedded in alternative, mobilizing narratives has been advanced as a potential way to cope. From this discussion, a research and policy agenda also emerge.

On the research side, the potential impacts claimed by the vision of a ‘city beyond mobility’ need to be assessed, both in its individual components and jointly. It is important that also perverse effects (e.g., increasing inequality: Kęblowski et al, 2019) and contradictions (e.g., between different aims) are also highlighted. This would build an evidence base that can inform both future research and present practice. Several ongoing research efforts already embrace these aims (and some have been referred to in the paper), but these efforts could be stepped up in especially two areas. First, the too often assumed ‘apolitical’ nature of urban and mobility transition efforts should be scrutinized (Kenis et al., 2016). This is a serious misconception; the urban and mobility transition is inevitably political (or it will not succeed as a transition). There will be winners and losers and ignoring this issue might end up reinforcing the status quo. Research needs therefore to also identify ways of productively incorporating conflicts and negotiations in transitions

(Chambers et al., 2022). Second, research should be aware of and contribute to the need of also developing alternative narratives, not just ‘objective’ experiments (Te Brömmelstroet et al., 2022). It could help towards this by questioning current definitions of problems and solutions, for instance, by exposing taboos in current debates (Gössling & Cohen, 2014) and thus enabling individuals, societies and economies to find their aims *beyond* mobility.

For practice the main message is the need to continuously envision and to experiment, in close connection with city-wide, longer-term policies. Professionals, policymakers, and citizens could explore visions of urban life beyond mobility by means of experimentation on the ground, putting enabling the very richness of the city at the centre of the exploration. Mobility, or better accessibility, could be seen as one of many conditions to allow this richness, but also something that could endanger it. Both influences need to be acknowledged. The transformative potential of the vision could be assessed by means of experiments, consolidating what works and learning from what does not work. The latter is a key task, as learning from experiments and building on the lessons to transform existing arrangements is still showing the weakest features of urban experimentation (Castán Broto et al., 2019; Augenstein et al., 2020). Most importantly, envisioning and experimenting should be seen as intimately connected; the former giving direction and purpose to the latter, the latter generating insights on what to retain and what to adapt in the former – in a continuous, incremental, open-ended and far-reaching process.

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