METROLAB
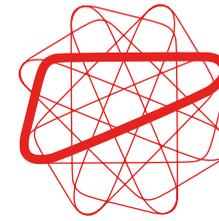# MAGAZINE

METRO
ON THE FUTURE OF METROPOLITAN MOBILITY

METROLAB
FORUM

International Dialogue on Metropolitan Planning

12.10.2020 17:00-20:00	*EXHIBITION OPENING + MOVIE NIGHT*
	Montparnasse Vibrations, FR 2005, 8min **Trains of Thoughts**, A 2012, 1h 25min, English

13.10.2020 — *METROPOLITAN WALKSHOP*

10:00-12:00
Gerald Franz, Urban Innovation Vienna
Vincent Neumayer, Wiener Linien GmbH

17:00-19:00 — *INTERNATIONAL LECTURES*

GRAND PARIS EXPRESS
Alexandre Di Cocco, Société du Grand Paris

BARCELONA'S METROPOLITAN AVENUES
Javier Ortigosa, Àrea Metropolitana de Barcelona

INTERSECTIONAL APPROACH TO UNDERSTANDING MOBILITY
Floridea Di Ciommo, cambiaMO|changing Mobility, Madrid

SUSTAINABLE AIRPORT CITY IN A POST-CARBON ERA
Michaël Leymarie, ADP Ingénierie, Paris

FORUM DISCUSSION

Gregory Telepak, MA 18 - City of Vienna
Vincent Neumayer, Wiener Linien GmbH
Mathias Mitteregger, future.lab, TU Vienna
Stefan Mayr, MetroLab Vienna

#1 METRO
What is the future of metropolitan mobility?

Location: *Die Schöne*, Kuffnergasse 7, 1160 Vienna

Contents

Editorial

*Dear planners, researchers, city administrators,
mayors, and metropolitan residents,*

In the transition to a post-Fordist economy, contemporary processes of structural change such as growing regional differences in terms of labour market, competitiveness, convergence, mobility, etc. permeate and shape many European cities, including Vienna. The consequences of these processes are becoming increasingly evident in the transformation of urban environments and the way we live and work. The central challenges of urbanization, such as increasing growth and competitive pressure, demographic change, or necessary climate change adaptations no longer stop at the (administrative) city boundaries and thus direct the focus to the metropolitan level. Not only the development of (built) infrastructure ("hardware") needs to be considered from a cross-border, metropolitan perspective, but also its uses and functions ("software") as well as governance and management ("orgware").

   In this context, a number of questions arise that we as urban planners, researchers, city administrators and civil society have to face: What might the increasingly functionally integrated metropolitan landscape and its new spatial patterns look like? How will this shape our consumer behavior and leisure activities, and how will we move within the metropolitan area? The most important question for us, however, is what future vision of urbanity and metropolitan life we want to build on to integrate pressing social and spatial developments in a sustainable way?

SUPER…WHAT?

These thoughts inspired us to sketch the vision of the *SuperWien Metropolis*. Under the leadership of Cédric Ramière and Stefan Mayr, the book of the same name[1] succeeded in initiating a discussion on metropolitan planning in the area around Vienna which we refer to as *SuperWien*: the Vienna-Bratislava-Wiener Neustadt area. Analyzing the spatial-functional development of this agglomeration, the authors present in a provocative-artistic manner convincing maps and graphics, accompanied by facts and figures as well as experts' opinions. By reinterpreting well-known urban narratives through atypical images, an impressive re-branding of the area is created. *SuperWien* grows not only beyond its administrative boundaries, but also beyond the limits of the imaginable. ▶
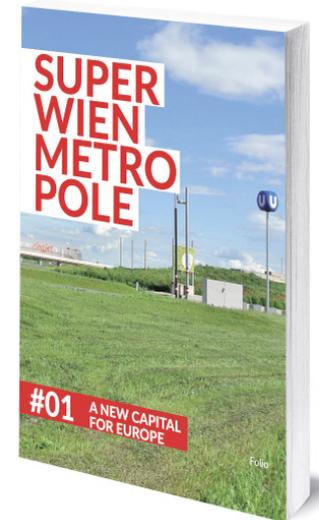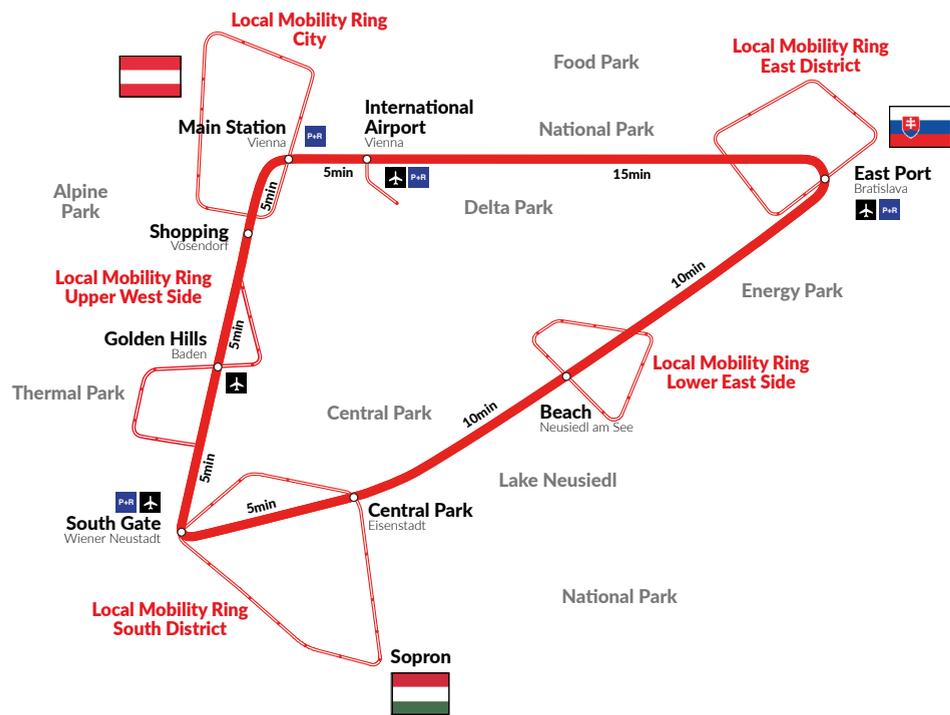
Mental Metro Map

SuperWien Metro Map

For example, the utopian idea of a high speed mobility loop that would connect Vienna's main train station with Bratislava, Eisenstadt and Wiener Neustadt, and could thu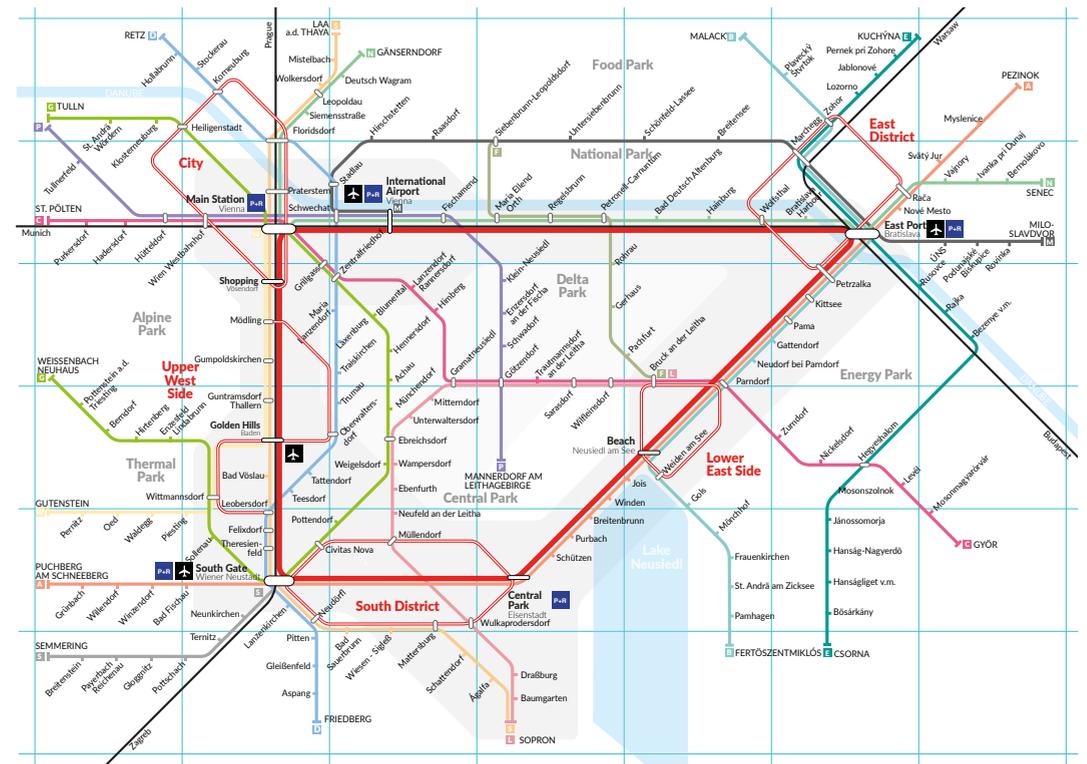s turn the region into a compact and integrated agglomeration, is particularly thought-provoking. In this way, *SuperWien* becomes a radical idea generator for planners, municipalities and their residents, who are presented with a new conception of their common space.

FROM VISUALIZING TO DISCUSSING THE METROPOLIS

The *MetroLab* builds on the discussion of development perspectives arising from this alternative vision and aims to confront the public with its creative approach. Thus, we have launched an *International Dialogue on Metropolitan Planning* – a series of events (the *MetroLab Forums*), each of which is devoted to a specific topic of metropolitan

planning and development. The schedule for each event is designed to provide a varied program of interactive (e.g. walkshops, movie nights etc.) and discursive formats (international lectures and a panel discussion).

The first *MetroLab Forum* on the topic of *Metro - What is the future of metropolitan mobility?* kicked off in autumn 2020 with the exhibition on the *SuperWien Metropole*, which strikingly visualized the above-mentioned idea of an integrative urban region. Furthermore, by taking up the approach of translocal learning, an exchange of knowledge regarding best practice examples and instruments of metropolitan planning and development took place with a series of international lectures. Whether and to what extent the various approaches and their innovative elements presented (such as the Metropolitan Avenues in Barcelona, or the Grand Paris Express in Paris) can be transferred to the Viennese context of city-regional development was discussed in a concluding panel with local experts.

ABOUT MOBILITY

Like this first issue of the *MetroLab Magazine*, the first *MetroLab Forum* focused on the cross-cutting issue of (future) mobility. Mobility, in the sense of an interconnected, cross-border transportation network, is seen as the backbone of metropolitan development. It is undeniable that our mobility systems will have to meet multi-modal and thus multi-optional demands in the future. From the interlocking of different forms of mobility, to a smooth transition from walking or cycling to bus, train or car, the discussion moves towards the general requirements of a successful interconnection of metropolitan areas. Discussing the future of metropolitan mobility means not only questioning existing mobility policy instruments and measures, but also encouraging sustainable and inclusive mobility as well as a territorial rebalance. By learning from other metropolitan areas such as Grand Paris (see guest articles by Alexandre Di

Cocco and Michaël Leymarie in this issue), Madrid (see guest article by Floridea Di Ciommo in this issue) and Barcelona (see guest article by Javier Ortigosa in this issue), we want to take on a multi-perspective view when talking about the planning and management of public transport systems in the Vienna metropolitan area and shed light on to what extent mobility is an essential tool for creating new centralities and can enable the development of new urban-rural lifestyles. ∎

UNDERSTANDING MOBILITY

METROPOLITAN WALKSHOP THROUGH SIMMERING

In mobility development, multi-modality has become an indispensable buzzword, to which great importance is attached, especially regarding the expansion of environmentally friendly modes of transport. But what is the actual potential of networked and multi-modal mobility and how can such new mobility concepts be integrated into district planning? The two mobility experts Vincent Neumayer and Gerald Franz have helped us to shed light on the subject.

On the way through Simmering, Vienna's 11th district, Vincent Neumayer, project manager at the department for multi-modal mobility management at Wiener Linien, introduced a group of twenty people to the first of Vienna's *WienMobil* stations. Developing and leading mobility projects in the field of new mobility services and screening relevant mobility trends is part of his daily business working for the most significant public transport provider in Vienna.

By sharing his vast knowledge about the services provided by this station, consisting of an e-carsharing station, several rental bicycles, a cargo rental bike and a bicycle storage box, the audience was given a wide-ranging insight into how a multi-modal mobility solution can manifest itself in the urban public space.

THE *WIENMOBIL* STATION AS A MULTI-MODAL HUB

The project, which was developed as one of several integrated smart city solutions for Simmering in the realm of *Smarter Together*, an urban regeneration initiative supported by the EU and implemented in the three cities of Vienna, Lyon and Munich, laid the foundation for the expansion of the *WienMobil* stations within the city. While the most recently opened stations are located in inner-city districts, the station under consideration is situated in a less central, but strategically important place. Positioned right next to the metro terminus of the U3, it serves to overcome the so-called "last mile" between the places of work or residence and the nearest public transport station, an important feature of the climate-friendly city.

«The objective in the city of Vienna is to achieve a share of less than twenty percent of trips done by cars by 2025.»
Vincent Neumayer

Since potential users are mainly locals, the station serves as an important transfer point (e.g. from bike to metro or local buses) to reach specific destinations connecting the neighborhood with its wider surroundings. ▶

Especially on weekends, the new mobility services are extensively used for recreational purposes.

As Neumayer points out, this small multi-modal hub has great potential to drive shared mobility. It contributes to reduce motorised private transport by enabling a smooth transition from one mobility mode to the other without the need to own a vehicle at all. According to him, *"the objective in the City of Vienna is to achieve a share of less than twenty percent of trips done by cars by 2025."*

Therefore, apart from boosting public transport it is essential to support cycling, walking and shared modes of transportation even though shared mobility cannot currently be identified in the modal split surveys.

MULTI-MODAL AND SHARING MOBILITY AS A GAME CHANGER

According to Gerald Franz, Senior Expert for Mobility Management at the Energy Center at Urban Innovation Vienna, in order to further implement environmentally friendly mobility solutions in the fast-growing city, we need to be aware of two different starting points. While transforming mobility systems and services in dense city centers turns out to be quite a challenge, new urban development areas are more flexible to adapt to new demands. *"Public transport comes first,"* when it is a question of how places of work and residence are connected, he says. But nevertheless, additionally, other measures are also needed to support people in using alternative modes of transport instead of relying on a private car. Here too, multi-modal and sharing mobility (carsharing implemented in housing, better cycling facilities and bike service stations etc.) are the key to support sustainability in transport development.

"What we see when we implement these measures is that you really have to take people by the hand and clearly explain the new offers", Franz explains. He also points out that a problem which remains partly unsolved is how to deal with the large number of parking spaces in the city. If we really want the cityscape to change in this respect, much effort will be needed to deconstruct these places and put them to a new use, he emphasizes.

«What we see when we implement these measures is that you really have to take people by the hand and clearly explain the new offers.»
Gerald Franz

He feels that there is a particular need to raise awareness regarding the necessary change in our mobility behavior. Only if there is a change in value is there a change in mobility, he argues. This becomes visible in newly emerging neighborhoods where the chance that new multi-modal and eco-friendly offers will be well received is quite high because newly arrived inhabitants are reached at a time when they can still rethink and change their mobility habits. Thus, it is more important than ever to also promote innovative alternatives to fossil mobility in residential construction, already existing and newly built. ▪

Michaël Leymarie
International Guest, Urban Planning Expert in Mobility and Transportation Infrastructure, ADP Ingénierie, Paris
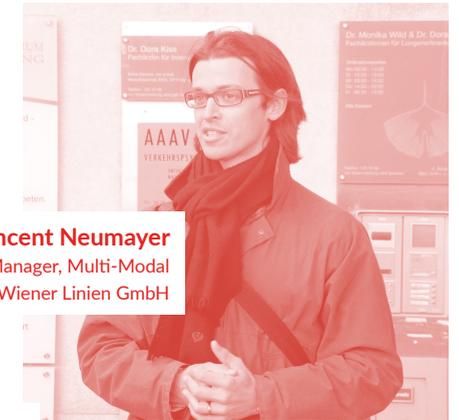
Vincent Neumayer
Project Manager, Multi-Modal Mobility Management, Wiener Linien GmbH

Gerald Franz
Senior Expert at Energy Center, Urban Innovation Vienna
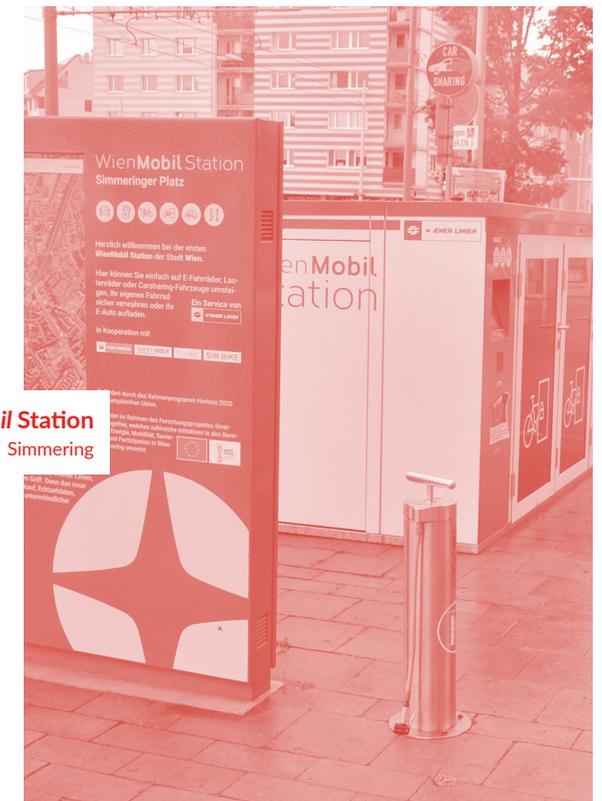
***WienMobil* Station**
Simmering

This QR code takes you to the video documentation of the *Metropolitan Walkshop* organized by *MetroLab*, which took place during the first *MetroLab Forum #1 METRO*.

«IF WE STOP IMAGINING A BRIGHT FUTURE, WE MIGHT AS WELL NOT DO IT AT ALL»

Interview with **Anna Mayerthaler**

MetroLab: In the book *SuperWien Metropole. A New Capital for Europe,* in which provocative visionary images for the metropolitan area of Vienna are presented, we question existing boundaries on several levels. If we look at the Vienna city region, the question arises as to how far it extends from a transport planning perspective? What is the significance of borders for the city region?

Anna Mayerthaler: If we look at the accessibility of the public transport network, everything that can be reached within 20 to 25 minutes must almost be considered part of it, because in this area the work interdependencies and commuting relationships are still extremely strong. For planning, it is essential to ask about functional and not necessarily administrative boundaries. But when it comes to implementation, one unfortunately often ends up back at the politicians and the administrative units.

The *ÖBB 360°* program has made headlines for its pilot project in Korneuburg, a municipality in Lower Austria close to Vienna's city limits. There, new mobility services (car-sharing cars, e-scooters, e-bikes) are offered as a complement to public transport, thus enabling an environmentally friendly way to cover the "first" and "last" mile. What was the initial intention of the *ÖBB 360°* program?

The ÖBB deliberately wanted to promote the innovation sector in mobility development through the program. We then approached integrated mobility and noted in dialogue with the municipalities that there is a great need among the mayors to offer alternatives to motorised private transport for their residents. Often a change in thinking has already taken place in this regard and they realise that by offering alternative mobility concepts, for example, fewer parking spaces need to be built in residential buildings and the supermarket in the periphery may no longer need as many parking spaces in the future. In addition, the bicycle infrastructure planning might also have to be adapted if services that require a certain infrastructure are launched within 6 months [Note: this was the case with the Korneuburg pilot project, for example]. ▶

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Anna Mayerthaler is Team Coordinator of the *ÖBB 360° - Mobility & More* program (previously Senior Specialist for strategic Projects) and in conversation with *MetroLab* reports on how Austria's largest mobility provider creates incentives for the use of new integrated mobility concepts. Together with her innovation team, she is driving the ambitious *ÖBB 360°* project forward, laying the foundation for low-emission mobility of the future.

Launch of the new mobilty services in Korneuburg
September 2020

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Ultimately, it can be seen that the implementation of such projects relies very much on the commitment of individual decision-makers who identify integrated mobility as an important issue, while others still think very mono-modally.

«Companies are also increasingly acknowledging that it is no longer state of the art to simply hand over a company car to everyone from mid-management upwards.»

Companies are also increasingly acknowledging that it is no longer state of the art to simply hand over a company car to everyone from mid-management upwards, but that it is about sensitising people to use other means of transport and sharing modes and to create incentives, for example by providing a job bike instead of a company car or introducing a mobility budget.

What exactly is meant by "integrated" mobility?

"Integrated" means, that the mobility service matches the person's needs. In other words, mobility offers are integrated into the needs on the one hand and into systems such as Mobility as a Service (MaaS) on the other, and are therefore easy to use, access and book.

There are many Mobility as a Service platforms and many want to gain a foothold in this platform business and offer mobility. Mostly, however, it is not a well-functioning IT solution that is needed, but the mobility solution on the ground. We intend, also in the interest of a public company, to cover these services of general interest and to provide mobility where it is needed. And we no longer have to do all of this with the classic tools. It doesn't always have to be a regular bus, that 50-seater that drives around empty once an hour.

How do you see the future potential of integrated mobility solutions?

«[...] I am convinced that public transport is the only logical answer to the challenges of the climate crisis.»

Sharing cars, e-scooters and e-bikes are currently well accepted. Active mobility was also one of the profiteers of the pandemic – cycling in particular is now booming very much at the individual level. At the moment, it is rather difficult with our core business, public transport, as we have made a loss of 90% especially in long-distance transport in 2020. That also had a massive financial impact on us. But I think that will change again. We will not completely stop travelling and I am convinced that public transport is the only logical answer to the challenges of the climate crisis. It is the backbone of our transport system and if we don't rely on it, we have lost. Then, the pandemic is the least of our problems.

With the *SuperWien Metropole* we have taken a look into the future and proposed a *SuperRing* structure that is not only an important hub of a Europe-wide intercity transport system, but also facilitates commuting within the city region (Vienna - Wr. Neustadt - Bratislava) with train connections upgraded to metros. In your opinion, what is the contribution of such visions, or utopias in general?

One has to think a lot with the help of utopias. If we stop imagining a bright future, then we might as well not do it at all. We should express and capture a lot more crazy ideas so that people can actually envision them. Whether it's the superblocks in Barcelona or the highways along the Seine in Paris to green up the riverbank and make it usable again – it will only work with radical solutions.

Personally, Vienna is not progressive enough in this respect. There is still the attempt to apply the watering can principle, where everyone has his or her spot and everyone should be supported. You don't want to step on anyone's toes.

Where would one have to start in Vienna in order to bring about changes in the mobility sector?

«The ideas for the measures are not lacking. The only thing missing is the will and courage to do something.»

There are very conventional measures that people don't dare to tackle. The first would be to reduce the number of parking spaces in a much more radical way. What has become a matter of course in Amsterdam, for example, is met with opposition here. In Vienna, the districts have a lot of power in the transport sector, which should actually be raised to a legislative level. A transport department like the MA18 should be allowed to conduct Vienna-wide planning that is then also implemented. The ideas for the measures are not lacking. The only thing missing is the will and courage to do something. I am deeply convinced that more beautiful environments and more space to stay and linger in public space are concepts that are accepted by the vast majority.

Is it up to the political decision-makers or the population to realise such spaces or to demand their realisation?

The change in value can only take place once things are worth something, also in the sense of monetary prices. We know that urban space, whether it is open space or residential space, is a precious and hard-fought commodity. But compared to the square metre of living space, we ascribe less value to the label "space in public space" via the lower price. And the population also perceives it that way, because the price tag is simply not right here. If we were to give public space the same monetary value as private living space, we would immediately talk about a different distribution of spatial resources, which is currently oriented towards motorised individual transport. ▪

«OPPORTUNITIES OF DESIGN ARE ALSO LINKED TO OPPORTUNITIES OF RESPONSIBILITY»

Interview with **Mathias Mitteregger**

MetroLab: In your 2020 publication, you argue that established territorial, institutional and organizational boundaries need to be challenged quickly to ensure a positive contribution from automated and connected transport. What does this mean for your approach to the Vienna metropolitan region? How is it defined in the context of your research project?

Mathias Mitteregger: We understand the Vienna metropolitan region as the "functional urban area" according to the OECD definition. For us as a project team, this is currently an exemplary area, on the basis of which we are investigating very concrete planning approaches and taking much greater account of the spatial conditions than has been done in the discourse so far. We ask: How could automated driving be used and implemented spatially in the context of the change in transportation, given the limited time frame we have left in the face of the climate crisis? What are the framework conditions that need to be set in order to avoid negative effects as far as possible? We were able to show that this is a planning task that can no longer be avoided in the future. Not planning at all is also a conscious decision.

What was your methodological approach in answering the above mentioned research questions and what was the overall goal?

For us, it was crucial that we as sociologists, architects, urban planners, traffic planners and architectural theorists tried to work together and that we had countless conversations where we did not have the expertise ourselves. You can see that the professional discourse on automated driving in the past was very much conducted from the technological and traffic planning perspective, and that a lot was lost in the process. This may be surprising, but we were the first study (in the field of automated traffic) to understand roads not only as transport routes, but also as living spaces.

The methods used correspond very much to the spirit of our times. Our intention was to use the general scenario technique in a different way and to focus on local design. We want to show that it is people who shape the future. ▶
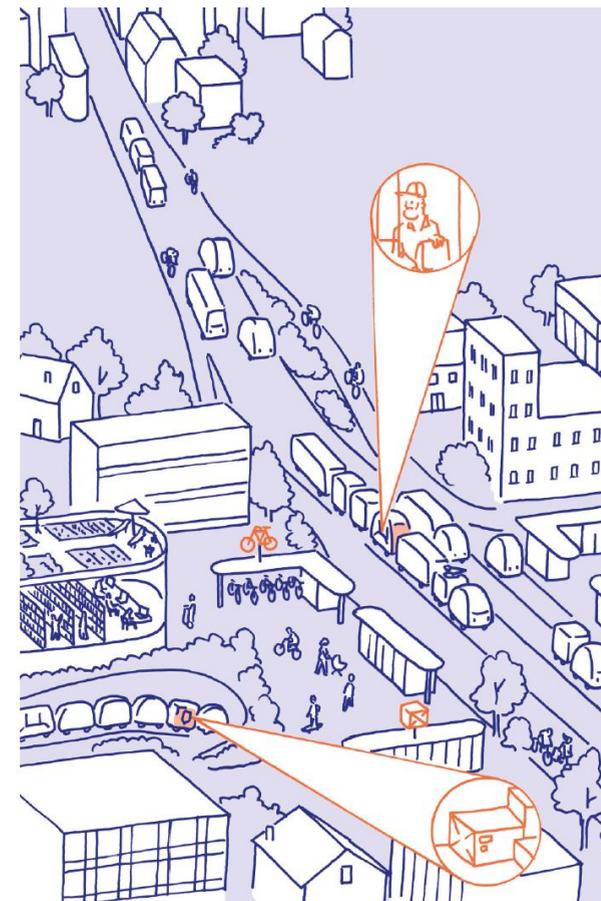
Mathias Mitteregger is Senior Scientist at the *future.lab* of the Vienna University of Technology and project leader of the research project *AVENUE 21. Automatisierter und vernetzter Verkehr: Entwicklungen des urbanen Europa*. In conversation with *MetroLab* he talks about the impact of autonomous driving vehicles on future urban development. With his interdisciplinary team at the Faculty of Architecture and Spatial Planning, he took a close look at the possible (socio-)spatial implications of this technology and asked what contribution could be made to the mobility of the future.
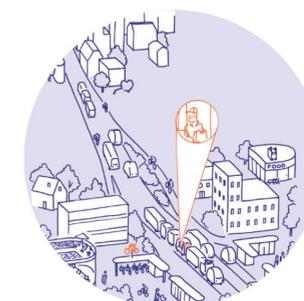

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Policy-Driven Approach
in: *Avenue21. Automatisierter und vernetzter Verkehr: Entwicklungen des urbanen Europa.*

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Mobility
Public Multi-Modal Mobility System

City Region
City-Regional Cooperation

Neighbourhood
Multi-Modal Transport Hubs as Neighbourhood Centres

In the end, the question is which voices are heard and which are not. Who gets to shape the future and who doesn't.

The city of Vienna, with its all-encompassing will to shape the future, is still rather paternalistic. Other cities entrust their citizens with more freedom, opportunities to have a say and to actively shape the future. Opportunities to shape things often create a personal bond instead of the expectation that someone will fix it. I don't think it is possible to move towards a climate-neutral future without this being a truly shared concern.

There is a lot of scope of action not only in technology, but also in politics, urban planning and administration. In your opinion, how should future settlement and mobility development in Vienna be structured in order to be able to design a well-integrated urban region? And what role will automated driving play in this?

«We need to start thinking in an integrated way in order to develop the city and the countryside in a targeted way.»

The longer I work on the project, the more absurd I find the distinction between settlement and mobility development. These two areas are so fundamentally linked and simply have to be thought of together. In the same way, the difference between urban and rural areas is often emphasized today when it comes to the transformation of transportation. This difference is homemade, because it is largely the result of transport and urban development policy mistakes of the past. While (rail-bound) public transport was withdrawn from the area, uncontrolled housing development was allowed. It has always been known that this can only lead to a dependence on cars. We need to start thinking in an integrated way in order to develop the city and the countryside in a targeted way.

What automated driving means for the development of Vienna's urban region cannot be clearly stated because, as I said, it is a design task. If nothing is done – as we were able to show in our publication – urban sprawl would be further intensified and centers and their lively street spaces come under massive pressure. But there are also numerous opportunities, especially in the public provision of suburban areas, where public transport is still unattractive today.

I think there will also be a need for pragmatic decisions in terms of transport policy in the future, especially with regard to climate change. We will have to set priorities and see where we can create attractive offers and alternatives to the car.

Current challenges are strongly linked to past failures. How do you think the long overdue change in transportation can be initiated? What role do digitalisation and automation play in this process?

There are two problematic approaches from the past that we must not repeat. The first is the fixation on a single means of transport. Secondly, we have to make sure that we plan a transport system in which cycling and walking are absolutely prioritised. We conclude that regardless of the technological possibilities, automated driving should only be used in parts of the road network to avoid the mistake we made with the car, namely, letting the car into every corner of the city and village.

«Secondly, we have to make sure that we plan a transport system in which cycling and walking are absolutely prioritised.»

Accordingly, the implementation of automated vehicles in the existing transport system is a planning task that involves understanding needs, developing criteria and assessing compatibility. It is important to create offers on a small scale, because the change in mobility will require cuts. However, if renunciations are demanded, alternatives must also be offered.

Is a paradigm shift in metropolitan planning emerging, or does it need to be initiated in order to achieve the goals you mentioned?

From my point of view, existing planning principles should not generally be called into question: first and foremost, it is about avoiding traffic. This can be achieved mainly by cutting down on land use and by promoting mixed cities and centers. Secondly, it is about shifting traffic and making as many trips as possible within the environmental network. Thirdly, roads must be seen as valuable living spaces and not as mere transport routes. Radical approaches are needed here – a few trees make little difference. We need completely re-designed roads. Much else is up for debate in a time of change we are in.

«[...] roads must be seen as valuable living spaces and not as mere transport routes.»

It also makes no sense to strive for a city as it existed before the car. Because the truth is that we have a suburbia that people also like to go to. We have to recognize that it is in the suburban areas that the leverage should be applied. The city centers are mostly already well served. If we want even difficult transport policy decisions to be accepted by the majority of the population at some point, attractive alternatives must be available – everywhere.

What is your vision of the Vienna metropolitan area?

We need a strong reality check in the development of visions. The city is a perennial and always unsolved problem. The exciting question is not only "where do we want to go" which is what all the strategy papers are for, but the question: "how do we get there?" And that's where the planning starts. It has to be said that the measures in the Vienna metropolitan region have so far been far from sufficient. Political borders, which are sometimes responsible for why Vienna and Lower Austria do not cooperate sufficiently, must also be moved aside, otherwise we have no chance. The reality is that mobility is changing – with and without automation. International companies offer mobility services that can be accessed with an app all over the world, while we in Austria still have a problem planning a trip with several means of transport across city borders. But this problem will hopefully soon be a thing of the past. ▪

INITIATING AN OPEN DIALOGUE

FINDING THE RIGHT FORMAT

CREATING AN OPEN PROCESS FOR AN OPEN CITY

Designing a city that is open to metropolitan development means creating an open dialogue first, which implies finding the right format that supports the mutual exchange of knowledge on many levels. Since *MetroLab* does not only develop large-scale metropolitan visions but also aims to foster place-based approaches, we call not only on planning officials and experts, but also on civil society and local residents to participate creatively in this process.

FROM KNOWLEDGE PRODUCTION TO CO-CREATION

By co-creation of urban environments, we mean the involvement and cooperation of as many heterogeneous stakeholders as possible to jointly create knowledge, policies and tools, and to find and implement place-based solutions. In doing so, we reflect the metropolitan scale in order to translate creative visions into sustainable local action. Co-production as an even more intense form of cooperation *"[…] aims at making engagement matter to both sides, by having the technically trained maker and the life-experienced dweller generate the plans in the first place; open urban forms […] can serve as orienting points for doing so"* (Sennett 2018: 244)[1].

As a first step to stimulate the co-creative process and to discuss the provocative vision of the *SuperWien Metropolis*, as well as to break it down into concrete spatial plans, we brought together actors in a format that allows for a multi-voiced dialogue in the city region: the *International Dialogue on Metropolitan Planning*. We finally decided on multi-faceted (online and offline) formats that were used in the two-day *MetroLab Forums*.

«Co-production aims at making engagement matter to both sides, by having the technically trained maker and the life-experienced dweller generate the plans in the first place.»
Richard Sennett

THE METROLAB FORUM AS A HYBRID EVENT

The first *MetroLab Forum #1 METRO* started with a guided tour of the exhibition *SuperWien Metropole. A new Capital for Europe* based on the book of the same name presenting a provocative future vision of common living space. This has served as an ideal basis to discuss multiple dimensions of metropolitan dynamics and has made the potential of creative-artistic methods visible. ►

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[1] Sennett, Richard (2018): Building and Dwelling. Ethics for theCity. Penguin Random House UK.

During the following Movie Night, two topic-specific films, *Trains of Thought* by Timo Novotny as well as *Montparnasse Vibrations* by Cédric Ramière and Michaël Leymarie, were shown and discussed with the filmmakers.

Thus, fully immersed in the topic of future mobility, the guests were put in the right frame of mind for the second day of the Forum, which started off with a *Metropolitan Walkshop* through Simmering. Accompanied by local experts who shared their practical experience and know-how on integrated mobility solutions, we dealt with networked and multi-modal mobility and learned about the integration of environmentally-friendly and new mobility concepts in district planning.

Back at the gallery *Die Schöne*, where the Forum kicked-off the day before, a limited group of people gathered to follow the live stream of International Lectures. Due to the Covid-19 pandemic, the lectures were primarily held online, with three of four speakers participating via Zoom. The international experts in mobility and infrastructure development shared their experiences about existing challenges and new approaches by different metropolitan areas (including Paris, Barcelona, and Madrid), and presented innovative tools for metropolitan planning and design. Subsequently, during the following Forum Discussion, local mobility experts reflected on the international approaches and projects and discussed the current developments in the Vienna metropolis, along with the question *What is the future of metropolitan mobility?*. ▶

Exhibition *SuperWien Metropole.*
A New Capital for Europe
curated by *MetroLab*

Opening of the first
MetroLab Forum
12th October 2020

Forum Opening

The forum opening on 12th October 2020 began with the presentation of the *MetroLab* and a guided tour of the exhibition *SuperWien Metropole. A New Capital for Europe*, followed by a movie night with a lively discussion. About 50 guests followed the entertaining evening program in the gallery *Die Schöne*.

Watch the video on the *International Dialogue on Metropolitan Planning* to get a vivid impression of the Forum opening.

Grand Paris Express
Alexandre Di Cocco, Project Manager in the Strategy and Innovation Department of the Société du Grand Paris (SGP)

Sustainable Airport City in a Post-Carbon Era
Michaël Leymarie, Architect and Urban Planning Expert in Mobility and Transportation Infrastructure, ADP Ingénierie, Paris

Intersectional Approach to Understanding Mobility
Floridea Di Ciommo, Transport Analyst, Co-Director cambiaMO|changing Mobility, Madrid

International Lectures

The international lectures were held as a hybrid event with most of the lecturers taking part virtually. The following guest articles from the experts reflect their presentations and give an insight into the current mobility-specific developments in Paris, Barcelona and Madrid.

Watch the lifestream of the International Lectures to dive deep into the debate on the future of metropolitan mobility.

Barcelona's Metropolitan Avenues
Javier Ortigosa, Mobility-Urban Planner & Transport Researcher at Àrea Metropolitana de Barcelona (AMB)

THE WISDOM OF THE MANY IN CREATING MULTI-VOICED VISIONS

Despite all the adverse circumstances (limited number of guests, hygiene regulations, etc.) caused by the threat of a global pandemic, the event was a success as it enabled the dynamic complexity of metropolitan development to be communicated and discussed. This should be seen as a starting point for a co-creative process that encourages innovation and allows for experimentation. The willingness to experiment is therefore a prerequisite to mobilize efforts and build capacities within the city region. What is important here is that, "*a co-creation approach should be open to unforeseen or even utopian outcomes, as they still pave the way for generation of ideas and unpredictable possibilities*" (Smaniotto Costa/Menezes/Maciuliene/Golicnik Marušić 2020:11)[2].

«A co-creation approach should be open to unforeseen or even utopian outcomes, as they still pave the way for generation of ideas and unpredictable possibilities»
Saniotto Costa/Menezes/Maciuliene/Golicnik Marušić

Only in this way can we succeed in uniting multi-voiced visions under one roof and finally come up with co-creative visionary designs that represent the perspectives of many heterogenous actors shaping the metropolitan landscape and way of life. The time has come to recognize that *"[...] futures in complex city regions emerge through the energies of the many, not the designs of the strategic few"* (Healey 2004: 18)[3]. ▪

Forum Discussion on the Future of Metropolitan Mobility
with Gregory Telepak, Mathias Mitteregger, Vincent Neumayer, Michaël Leymarie, Stefan Mayr and Roland Krebs (f.l.t.r)

[2] Smaniotto Costa, Carlos/Menezes, Marluci/Maciuliene, Monika/ Golicnik Marušić, Barbara (2020): Co-Creation of Public Open Places. Practice – Reflection – Learning. Series Culture & Theory
[3] Healey, Patsy (2004): Creativity and Urban Governance. In: Policy Studies, June 2004

LES PLACES DU GRAND PARIS – A UNIVERSAL VISION OF THE PUBLIC SPACE AROUND FUTURE STATIONS

Alexandre Di Cocco

LEARNING FROM INTERNATIONAL APPROACHES

The *Grand Paris Express* is the largest infrastructure project in Europe. 200 kilometers of automatic lines and 68 new stations will be built in the Paris Region between 2021 and 2030. New public spaces will also be built around these stations to facilitate access and intermodality. They will be financed in particular by the *Société du Grand Paris* and *Île-de-France Mobilités* (transport authority), which must guarantee the quality of the solutions provided, adapted to each region.

By connecting to the existing network, the *Grand Paris Express* will strengthen the Paris Region public transportation network and profoundly change travel patterns. Alongside buses and bicycles, walking will become the main mode of transportation at future stations, for which more space must be created. Multifaceted mobility practices will continue to evolve after the opening of the lines, so it is essential to develop the integration of the new mobilities that find a place in these neighborhoods. Future public spaces must be capable of adapting to changing uses over time.

At the same time, public spaces will also become new urban centralities. The objective is not only to create new access points for future users of the network, but also to develop new spaces that meet the needs of all people, whoever they are: residents, travelers, passers-by, customers of a business, etc.. To make stations and their neighborhoods living spaces for users and residents, we are convinced that public space must be designed in its multiple dimensions. Their design should be consistent with the construction of the station and with the transformation of the surrounding neighborhood.

The *Grand Paris Express Station Design Reference*, published in 2011 and regularly updated, already stated that "*the Grand Paris station is designed as a route between the city and the trains*". In 2015, the publication *Les Places du Grand Paris* specified the urban ambition of the *Grand Paris Express* by outlining the first guidelines. Also in 2015, the *Société du Grand Paris* and *Île-de-France Mobilités* initiated a study program (68 hub studies) with the aim of defining, in collaboration with all partners, the program of intermodal facilities and equipment to be built within a 300-meter perimeter around each station.

These studies were discussed in a wide variety of geographical, sociological and political fields. In order to guarantee the overall coherence of the *Grand Paris Express* hubs in terms of the quality of the development of intermodal public spaces around the stations, the *Société du Grand Paris* decided to publish a reference framework for the Grand Paris squares.

The aim of this guide is to pursue the creation of a shared vision of the urban and landscape integration model for the *Grand Paris Express* stations, in collaboration with the stakeholders of each area. ▶

La Courneuve "Six Routes" today and tomorrow
© Société du Grand Paris
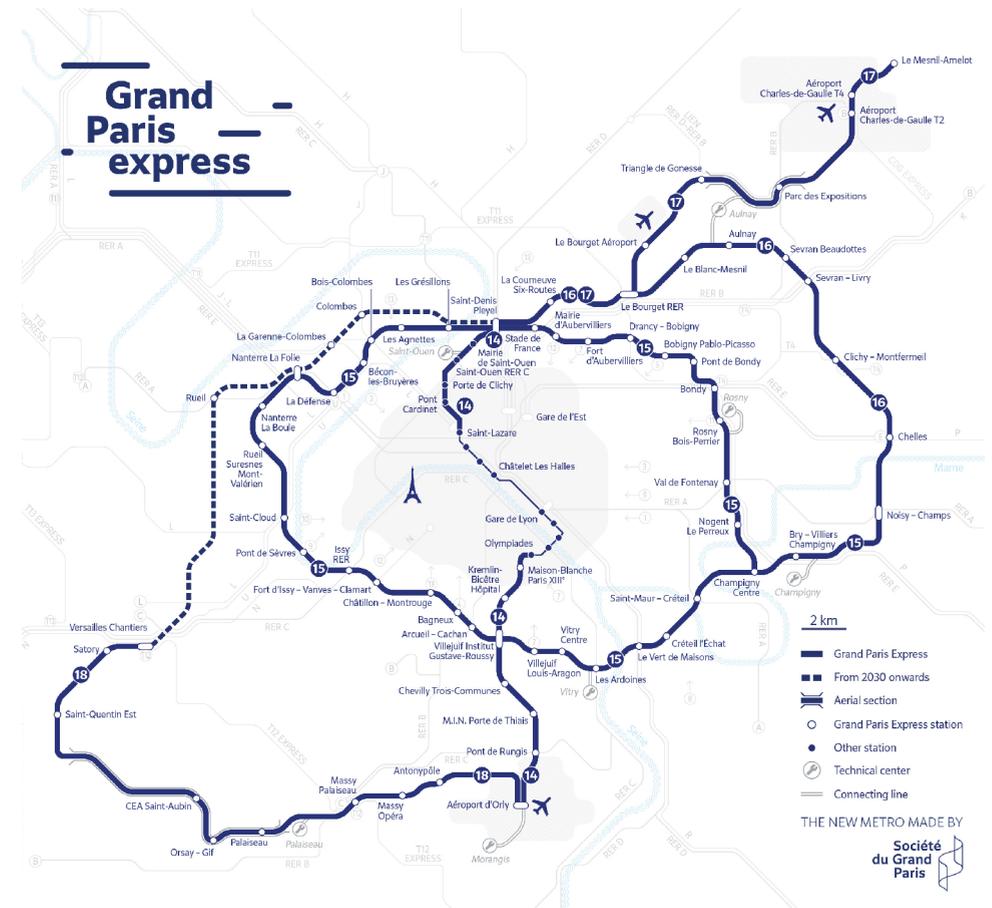
The regional network 2030
© Société du Grand Paris

The book proposes 40 operational design principles, 26 of which are essential, and a roadmap that will guide the design of the 68 *Grand Paris Express* squares.

In order to maintain a common direction, three major ambitions, continuity, scalability and availability of public spaces underpin this shared vision and can be found throughout the entire project. A clear roadmap proposed in the hub's framework guides the delicate passage through the different structuring phases of a project (choice of designer, works, commissioning, management).

The reference plans of the hubs are the first step in affirming a common ambition. This starts with the hub studies, at the end of which the program of intermodal facilities and equipment to be built within 300 meters of the stations, as well

as the estimated costs, financing and contracting authorities, will be formalized in a reference plan. This document forms the basis of a partnership commitment to the project and contributes to the development a shared culture of the public spaces of the *Grand Paris Express*. This will make it possible to align the urban design and landscape proposals and to envisage the principles that will form the basis for the operational phase.

As the quality of the project depends on strong project management, the *Société du Grand Paris* and *Ile-de-France Mobilités* invite the various stakeholders, once this reference plan has been drawn up, to develop a joint program and preliminary project for all the public spaces of the hub, either by appointing a single project or through a consortium. ▶

UPSTREAM OF THE PROJECT MANAGEMENT PROGRAM: THE CHOICE AND PRIORITIZATION OF THE PRINCIPLES OF THE REPOSITORY

The principle selection phase is an essential prerequisite. Based on these principles, the *Société du Grand Paris* and *Ile-de-France Mobilités* validate the obtaining of subsidies for the design and realization of the hubs.

In order to assess the relevance and priority level of each principle for a particular hub, a series of preliminary studies are carried out, ranging from an ecological diagnosis to a permeability study. These development orientations are then formalised into a list of principles which become contractual objectives in the project management programs, that are to be achieved.

SUPPORTING THE ACTORS IN THE SEARCH FOR INNOVATIVE SOLUTIONS

Les Places du Grand Paris, Design Principles for the Public Spaces of the *Grand Paris Express*, will help project owners in piloting, programming, designing and managing their public spaces. The design principles remain at a more abstract level in order not to trap future designers into a generic response, but to leave room for creativity.

Nevertheless, in order to foster shared reflection, the *Société du Grand Paris* and *Île-de-France Mobilités* will deploy a variety of tools to promote and initiate innovative approaches. Thus, in partnership with the *Association of Mayors of Île-de-France*, a call for innovation projects is launched each year, focusing either on mobility or on public space. The sum of these experiments will provide an overall vision for the success of future Greater Paris squares.

The aim of the framework for the Greater Paris squares is not to impose on project owners who already know how to design and manage the public spaces in their area, but rather, given the specificity of a hub, to offer all the keys to success right up to commissioning and to ensure that each area has the same access to these tools. ∎

Alexandre Di Cocco is Project Manager in the Strategy and Innovation Department of the *Société du Grand Paris* (SGP). He works with the project's operational departments and provides alternatives to the constructive methods of civil engineering and is involved in the eco-design of multi-modal hubs.

DESIGNING SUSTAINABLE AIRPORTS IN THE POST-CARBON ERA

Michaël Leymarie

When one is immersed in one's own time, it is difficult to abstract oneself from it in order to project oneself into another, whether past or future. However, this is the exercise one must contemplate if the exit from our present era is not to be too violent.

ENTERING THE POST-CARBON ERA

While the Covid-19 pandemic may be seen as a harbinger of this change of era, its significance in terms of mortality is far less than that of air pollution, which itself is due to greenhouse gas (GHG) emissions, which, as the COVID crisis has demonstrated, are the source of global warming. So, these are our two eras: the one that is coming to an end and the one that can be seen as an answer to the previous. And we are on a journey from one to the other (in search of the most effective response).

The answer to this major problem lies in an ecological approach to the economy, best-known as the Post-Carbon era. Entering this new era not only means energy transition, sustainable development, but also green capitalism. The directions that the organisation of the world will take will question each of our territories, the dense concentration of people in large cities, the models of agricultural and industrial production, the distribution of wealth, cultures and the art of living, etc., but also all forms of transport.

THE CLEAN TRANSPORT REVOLUTION

All modes of transport will be redefined to be clean, without GHG emissions; each taking into account their capacity to carry passengers and their functional specificity in relation to their territorial scales. While this revolution will lead to the emergence of new modes of transport (such as UAM, "hyper-fast trains", airships, autonomous and connected electric vehicles, delivery drones, etc.), it will above all allow each of these modes to fit into or complement the transport matrix. Their starting point will be: interconnection and synergy.

This interplay between each of the parts of this matrix will be all the more essential until each part functions effectively, using clean energy. And this is the case in the aviation sector, among others, where it will probably take more than 30 years to end greenhouse gas emissions. After 2050, this could be a new golden age for air transport, having overcome carbon. ▶
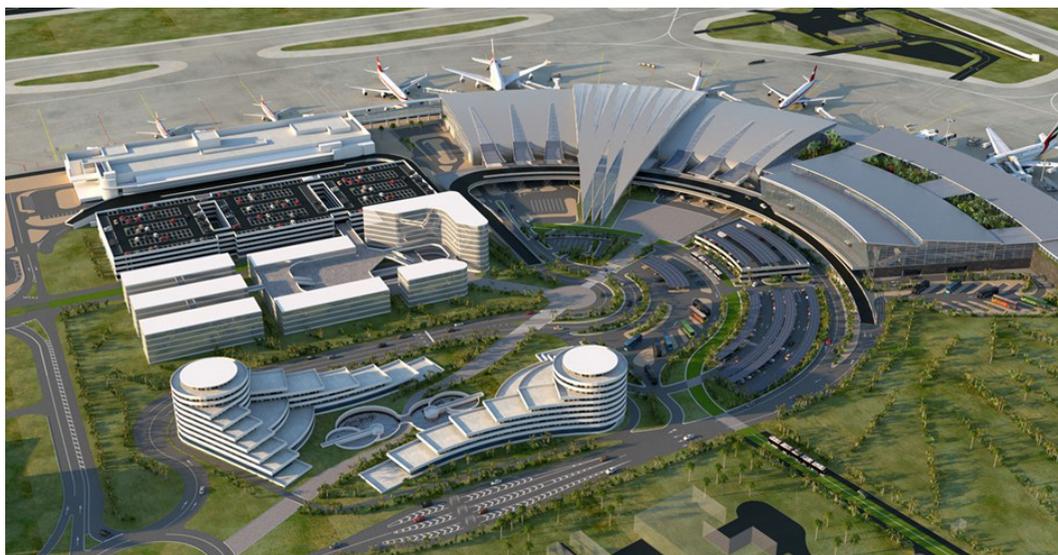
Airport before and after development according to post-carbon targets
© ADP Ingénierie - Michaël Leymarie

THE GENERALISATION OF THE MULTI-MODAL SYSTEM AT TRANSPORT NODES

The transport matrix cannot wait until each mode of transport is fully operational. Moreover, it is also easier to provide access to a transport node for a specific clean mode than to apply a specific clean technology to all modes.

A multi-modal transport system to enable intermodality within the equipment of transport nodes is not new. There are such approaches in railway and bus stations and sporadically in airports.

THE THREE ISSUES OF THE REPORT TO DESIGN SUSTAINABLE AIRPORTS

Firstly, this report seeks to show the generalisation of the system of multi-modality through the following arguments:

1. The multi-modality of transport nodes: Each "station" facility must be able to be a node that allows for the greatest possible multi-modality. In this way, it creates a centrality effect within the territory.

2. The catalytic effect of a multi-modal node: the "station", becoming a central point, allows, on the one hand, easy access to its users and, on the other hand, a catalytic effect that attracts a whole variety of functions (shops, services, facilities, production, etc.) of which location is of strategic importance. Thus, the more the flows of activities that are concentrated there, the more complex and rich the "place-station" becomes.

3. Balance in the management of territories: The system allows for the possibility of embodying short circuits for territories that are both as autonomous as possible around each station (catchment area) and interconnected (inter-catchment area links).

Secondly, it demonstrates that multi-modality as a global flow management system is the best

ally for developing an environmentally friendly approach to transport facilities (the airport platform as a whole). And in the specific case of airports and air transport, this multi-modal strategy is a structural means to mitigate GHG emissions by replacing domestic air links with rail land routes.

Thirdly, it shows that in the particular case of airports, approaching these facilities from the landside (or city side) is a reservoir for the development of their economy and the compensation of aeronautical resources when they are in crisis.

CONCLUSION: INTEGRATING THE HYPOTHESIS TO PRODUCE A NEW GENERATION OF AIRPORTS

This report assumes that the five concluding points must be integrated if airports are to be sustainable and fit into this post-carbon era:

1. Air-to-land transfer of domestic passengers: If achieving the "Zero Carbon Airport" objective (which is part of many airport programs) is limited to developing environmental approaches on the ground on the airport site without meeting the requirement to shift domestic (short-haul) flights to efficient ground transport, then airport managers are missing a major opportunity to reduce GHG emissions on the ground and even more in the air. The strategy proposed in this report aims precisely at shifting domestic air journeys to and integrating them with ground transport.

2. Air-Land Multi-modal Airports Platforms: In this way, airports would become Air-Land Multi-modal Platforms (PMATs) for connecting local land passenger flows with other points in the same regional area (medium-haul) or more distant points (long-haul) around the world. It would therefore be in the interest of each airport to develop both direct international medium- and long-haul services and to provide connections to local rail networks for domestic routes. ▶

3. Reserves for economic growth levers: The large vacant ground surfaces of airports hold an extraordinary amount of development potential, as they can be resources for major economic growth. Also, multi-modal transport management is the best way to activate these growth levers.

4. The urban cluster at the heart of transport hubs: Nevertheless, if we do not change the culture in relation to the management of airports, leaving them trapped in an image of nuisance facilities without being determined to remedy this by studying the spatial artefacts and developing their territory, airports will not be able to integrate these levers of economic growth and they will progressively lose their activities.

5. The tripartite governance of the airport on the large scale of its territory: Finally, in anticipation of better times for the aviation industry, which must face the challenge of massive air transport without greenhouse gas emissions, the 2050 horizon is a period in which the synergy of actors and managers, air and ground transport, must be exploited through shared governance ("Tripartite Governance of the Contextualised Airport in its Environment" TGCAE) and a communitarisation of revenues and investments. This is a prerequisite for airports to be anchored in their territory as a major source of development while respecting its environment. ▪

Michaël Leymarie is an architect and urban planning expert in mobility and transportation infrastructure. In 2017 he joined the *ADP Group* where, for *ADP Ingénierie*, he is in charge of real estate development (Airport City) and airport connection systems including New Mobility, Automated People Mover (APM) and Urban Air Mobility (UAM).

INTERSECTIONAL APPROACH TO UNDERSTANDING MOBILITY

Floridea Di Ciommo & Andrés Kilstein

The mobility of care includes journeys to carry out errands, daily shopping (food, medicines, etc.) and visits to health centers, as well as accompanying dependent people (minors, elderly and/or disabled) on these same journeys, and also to educational establishments. These represent the highest percentage of journeys, which are, moreover, mainly carried out by women. Care mobility accounts, on average, for almost 40% of journeys in large cities, while journeys for work account for less than 20% of total trips – the rest of the journeys are distributed between study, leisure and personal management. Nevertheless, this type of mobility is neither correctly captured in the assessment of transport policies, nor in planning and design. Many of the tools used to collect data about mobility and design transport policies show a clear gender bias, by which mobility is understood through ascribing certain roles to men and women and throughout gender stereotypes.

A good example to illustrate this gender bias is the design of services that focus on a type of trip commonly known as commuting. This implies an individual trip from home to work, without having to look after dependents, to central areas of the city, and with a commuting timetable that specifies peak hours of higher intensity in the early morning and late afternoon. This design based on commuting does not account for the different requirements of mobility of care. These trips tend to be less pendular, chained, entangled with activities or errands in between, and with high intensity in valley hours. The mobility of care exposes the presence of population groups with the greatest mobility needs: older people, children, and working and caregivers (women). The use of an intersectional approach, especially gender, ethnicity, age, and employment status in transport research, provide possible insights for policy makers. Working women and housewives, who assume the largest portion of these caring responsibilities, bear the costs of the failure in design, facing time poverty as a result of not catering services to all needs.

Additionally, with the breakout of COVID-19, frontline workers were particularly affected by the consequences of the pandemic, given that they could not work from home. Frontline workers are also a gendered group, especially when referring to health care and retail staff. This group had mobility needs that were not looked after during the health crisis, which clearly states that transport poverty goes beyond social poverty, and policy makers should set the population's needs as the starting point of planning. Making needs visible is essential for transport equity. Equity is a concept that has become relevant in transport investment assessment in recent years. Previous literature has shown that equity assessment in transport planning and infrastructure investment is crucial for identifying their impacts on society and the environment. ▶

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Reorienting transport planning towards the needs of mobility of care implies thinking of a network with diverse potential users, with different layers of use. It also implies considering the local scale and abandoning the hope that all possible improvements are related to the optimization of high-capacity road infrastructure.

Some of the lessons and recommendations that can be taken from this account are the following:

1. Women should be incorporated into the planning process as planners. There is an example of the city of Ha Noi, which has specific provisions to increase the employment status of women in the sector of metro rail. This implies new perspectives and insights for design and operation. Diversity is positive for any organization.

2. Desig complete streets for walking, facilitating cycling, intermediate modes, and green, weather-resistant public transport. Complete streets entail mixed land uses, street life and the presence of different modes in the same space.

3. Develop whole communities by ensuring that land use and transport are well integrated. Transport-oriented land use ensures optimal urban integration. Encouraging innovation in planning developments with concepts such as the "15-minute city" led by the Mayor of Paris, is in line with our proposal.

4. Provide inclusive transport services that meet the diverse needs of travel beyond business travel. It should always be considered that caring is an essential activity in human societies, and trips with dependent people should be catered for.

5. Enabling progress in funding, education and outreach for inclusive sustainable mobility.

In summary, many activities needed for sustaining daily community life differ from business and leisure. Even when care-giving requires effort, time and dedication, these activities do not receive economic compensation and are often not considered as economic activities. Similarly, the care-givers' needs are not well accounted for in transport planning and need to be tackled in order to achieve transport equity, a fundamental concept in a wide theoretical framework. ∎

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Andrés Kilstein is Sociologist and Economist and holds a Magister in Industrial Economics (University Carlos III, Madrid) and a postgraduate degree in Consumer Behavior and Public Opinion Research (Buenos Aires University). He has a strong experience in policy making at the national level (Advisor for the Minister of Transport, Argentina).

BARCELONA'S METROPOLITAN AVENUES – A HUMAN METROPOLITAN SCALE

Javier Ortigosa

Barcelona's Metropolitan Area is composed of 36 municipalities, has a population of 3.2 million inhabitants, and occupies 636 km[2], 52% of which are natural and agricultural spaces. The metropolis is very dense - more than two thirds of the population live in compact urban fabrics with net densities of over 30,000 inhabitants/km[2] - and there are many historical centers with strong identities (PDU, 2019)[1].

Given the compact nature of the different urban fabrics, many trips are done on foot, especially in the central conurbation where active mobility accounts for approximately 50-60% of internal trips (PMMU, 2016)[2]. However, most economic activities are concentrated in the metropolitan center and it attracts many commuters from a hinterland of 5 million inhabitants. Additionally, accessibility by public transportation outside the center decreases significantly (Recio et al., 2018)[3], and most efforts in the past have been put into building a system of highways that has led to even more car demand, segregation of uses, and urban sprawl. As a result, in such a dense environment, the negative effects of traffic and infrastructure (e.g. pollution, space occupancy, segregation) have a very significant impact on the citizens' quality of living.

The structure and scale of cities has historically depended on the existing means of transportation. The expansion of many cities in the 18th and 19th century needed to accommodate flows of people and goods that travelled in streetcars and railways. That resulted in regional structures surrounding train stations and urban patterns composed of wide streets and avenues. Unfortunately, throughout the twentieth century, the spread of automobile use triggered urban sprawl, as well as a system of highways that segregated urban fabrics and promoted car dependency (Mumford, 1963)[4]. Consequences and impacts of this model are well known to us today.

The case of Barcelona and its metropolitan area is similar to many metropolises around the world (e.g. Herce, 2009; Corominas, 2017)[5]. The *Cerdà Plan* of 1858 proposed an expansion of the city based on a grid pattern and a system of wide avenues to support public space and public transport. A century later, however, the 1953 Regional Plan envisioned a metropolitan area structured by segregated road networks. That perspective was maintained in the *General Metropolitan Plan* (PGM) of 1976 (the current regulation), which led to the almost 300 km of highways and many other arterial streets that exist today in the metropolitan area of Barcelona.

Figure 1: Schematic view of a possible avenue
© PDU, 2019

Although, in the last decades, measures have been taken to reclaim public space by pedestrianizing streets and squares (e.g. the Super-Block initiative), these efforts focus on city centers and do not address the metropolitan backbone, which is still based on street arterials.

It is crucial to get back to the "human-scale" to create inclusive and livable urban spaces and connections at the metropolitan level. This scope is the one that can bring substantial benefits by changing metropolitan mobility to a more distributed and sustainable phenomenon .

Currently, the metropolitan administration, *Area Metropolitana of Barcelona* (AMB), is in the process of drafting a new master plan (PDU) which will define urban development in the next decades, and obviously transport issues are particularly relevant. One of the main proposals of the PDU is a network of metropolitan avenues that aims to structure the metropolis by transforming the road infrastructure and shifting towards a more sustainable mobility (see Figure 1). ▶

[1] PDU, 2019. Metropolitan Urban Master Plan (PDU) strategic proposal. Aproved by the Metropolitan Council on March 27th, 2019. https://urbanisme.amb.cat/ca/divulgacio/publicacions/detall/-/publicacio/avanc-pla-director-urbanistic-metropolita/9303969/6724201
[2] PMMU, 2016. Diagnosi del Pla Metropolità de Mobilitat Urbana, Àrea Metropolitana de Barcelona, 2016.
[3] Recio, J., Pretel, L. and Ortigosa, J., 2018. Public Transport Accessibility Measures and Urban Planning Implications in Barcelona's Metropolitan Area. Transportation Research Board Conference, Washington D.C.
[4] Mumford, L., 1963. The Highway and the City. Greenwood Press.
[5] Herce, M., 2009. Sobre la movilidad en la Ciudad. Barcelona: Editorial Reverté. ; Corominas, M., 2017. Dels carrers a la modalitat o dels escacs al parxís. QRU: Quaderns de Recerca en Urbanisme, 7, 18-35.
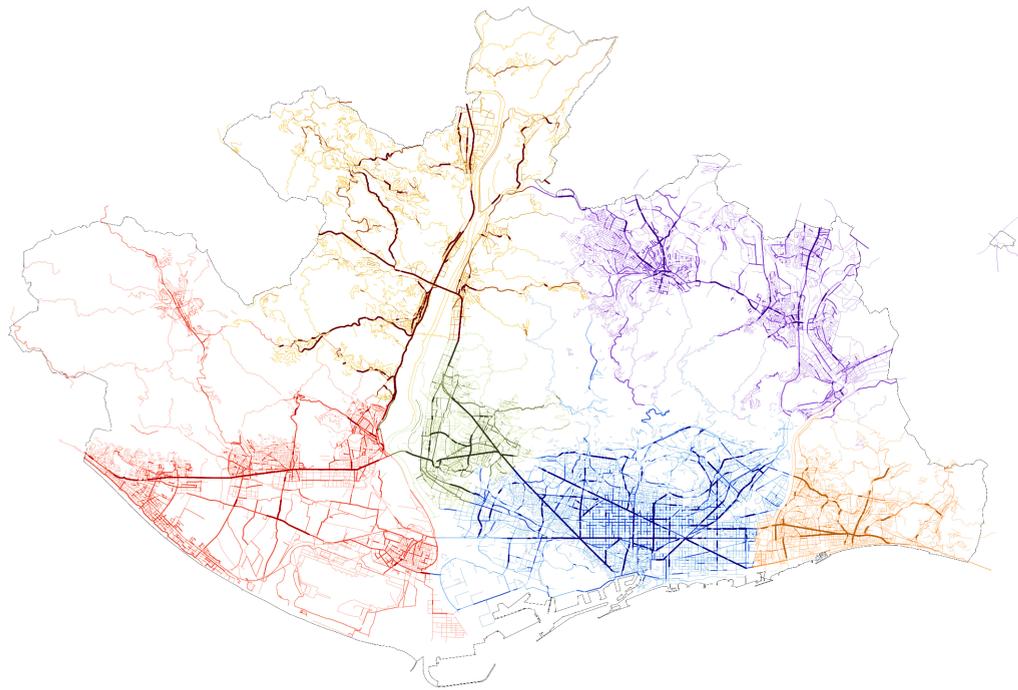
Figure 2: Street potential map adding the standardized 12 indicators, thicker lines have higher score, colors represent different areas analyzed.

Figure 3: Metropolitan Avenues Network, 2019 proposal
©PDU, 2019

Many studies have highlighted the inverse relationship between road traffic levels and livability and activity in streets (e.g. Appleyard, 1981)[6]. The idea behind the network of metropolitan avenues is to transform both: the section and the perimeter.

To do so, we want to create metropolitan avenues with urban intensity and mixture (demand for shorter trips) that ensure continuity and priority for sustainable mobility and support for a high-quality urban space. This "boulevarization" is not an isolated trend, rather the opposite. Different European cities follow similar strategies such as Paris (APUR, 2015)[7], Helsinki (Helsinki, 2013)[8] and Lyon (see the European initiatives such as Metrex or Urbact-Riconnect).

Road networks are typically organized hierarchically according to traffic levels. This single-criteria structure influences the urban planning of entire regions.

Since the logic behind metropolitan avenues takes into account other perspectives, there are many factors that affect the choice of streets and roads which should be part of that network.

Our work consisted of creating a map to help decision making and validate the current proposal. A combination of 12 indicators was applied to all street and road segments (links between two intersections) of the entire Barcelona metropolitan area. These indicators are grouped in 3 categories according to: i) quality of public space; ii) transport flows; and iii) urban intensity and centrality.

Results show that there is indeed potential to create an alternative metropolitan network based on active mobility, public transport and urban intensity (see Figure 2).

Moreover, it validates the strategic proposal presented in 2019 (see Figure 3) after a technical participatory process with urban planners from the 36 municipalities. We are also studying the intersections between the proposed network and the segregated system.

Some of these points might become key nodes for intermodality and metropolitan centralities associated with new urban developments and transformations.

In short, metropolitan areas need to transform their road infrastructure networks towards more integrated streets that enhance urban life at their perimeters and promote more sustainable mobility. However, these networks of metropolitan avenues cannot be determined according to the classical traffic engineering fundamentals. For this transformation, new and more integrated urban science concepts need to be applied. ▪

Javier Ortigosa holds a doctorate degree in traffic engineering from ETH Zürich, and two master's degrees in civil engineering (UPC, Barcelona) and transportation management (Chalmers, Göteborg). Since 2016, Javier has coordinated mobility and urban planning issues at the Barcelona Metropolitan Master Plan (PDU) team at AMB.

[6] Appleyard, B., 1981. Livable Streets. Berkeley: University of California Press.
[7] APUR, 2015. Les boulevards de la métropole, une transformation engagée. Note N°96. APUR Atelier Parisien d'Urbanisme.
[8] Helsinki, 2013. Helsinki City Plan 2050. City Planning Department of Helsinki 2013.

DISCUSSING THE FUTURE OF METROPOLITAN MOBILITY

«WE ARE NOT GOING TO SOLVE TRAFFIC ISSUES WITH TRAFFIC SOLUTIONS»

What does the mobility hub of the future look like? How should public space be regulated around it? Will self-driving cars and busses replace individual car traffic? And can administrative borders be overcome when it comes to the extension of costly transportation infrastructure?

In the Forum Discussion of the first *MetroLab Forum*, we pursue these questions and shed light on how Vienna deals with the issue of current and future mobility from different perspectives.

«It's very important that we understand the urgency of change that needs to happen in the transportation sector.»
Mathias Mitteregger

"It's very important that we understand the urgency of change that needs to happen in the transportation sector", says Matthias Mitteregger, project manager of *AVENUE21* at the *future.lab* Research Center of TU Vienna, referring to the dramatically increasing greenhouse gas emissions. For Gregory Telepak, Speaker Mobility MA 18 – City of Vienna, fast action and the inclusion of everyday human life worlds in a sustainable mobility development is a top priority too. However, he also advocates that multi-modality should be understood in its various functions and at different levels, from the personal neighbourhood-related level to the cross-border national level. Accordingly, different context-sensitive requirements are placed on mobility and the development of mobility hubs and their environment.

Vincent Neumayer, Multi-modal Mobility Manager at Wiener Linien, Vienna's leading public transport company, is particularly focused on mobility points at the local level "*where we try to interlink public transport with sharing mobility as well as active mobility.*" For him it is one of several pieces of a puzzle to ensure the quality of public space when developing multi-modal solutions. This includes the consideration of local businesses as well as the concrete design and intense urban development of surrounding areas.

Matthias Mitteregger and Stefan Mayr, co-founder of *MetroLab* Vienna, also agree that the key to a mobility and transportation change lies in rethinking the streetscape, as international pioneering metropolises have already demonstrated. This would provide the citizens of the Vienna city region with some extra space transforming their living and working environments into livable and healthy urban quarters.

While the moderator and co-founder of *superwien urbanism*, Roland Krebs, states that Vienna, in contrast to the *Métropole du Grand Paris* or *Àrea Metropolitana de Barcelona*, lacks a comprehensive metropolitan strategy in the sense of a Greater Vienna plan Stefan Mayr proposes a strong new element for the redevelopment of the Vienna-Bratislava-Lower Austria region: a *SuperRing*[1] in the form of a mobility loop, connecting all the core areas to one big metropolitan area. ▶

[1] The connecting SuperRing is presented as a metropolitan vision for *SuperWien* in the book *SuperWien Metropole. A new Capital for Europe* (2018) by Cédric Ramière and Stefan Mayr

Stefan Mayr & Roland Krebs
MetroLab Vienna,
superwien urbanism

To transfer such a conceptual idea into a big infrastructure project would, on the one hand, not only emphasize the importance of developing urban design solutions for newly emerging centers around mobility hubs in surrounding municipalities, but also influence the behavior of people and the way they consume mobility. Relying on a needs-based approach would mean taking into account different user groups "*that usually don't show up in renderings of transportation hubs*", Mitteregger adds. Even though, from his perspective, new technologies such as automation and self-driving cars are not going to be the magic solution that can solve all our transportation issues, they bring with them a certain potential to transform suburbia. This future transformation, of course, needs to be guided and is strongly interrelated with social change.

Despite the partly different points of view that the invited podium guests took, they all agreed on one thing: We need to reflect on our values and principles, ask ourselves how and why people move and consequently focus on how mobility needs can be met, including how much we want to invest in it. Or, as Gregory Telepak puts it, "*we need a more honest discussion about the resources we commit as a society to transportation and to mobility.*"

«We need a more honest discussion about the resources we commit as a society to transportation and to mobility.»
Gregory Telepak

Such a discussion would mean, on the one hand, admitting that traffic problems cannot exclusively be met with traffic solutions, and on the other hand, acknowledging the enormous potential of blending in the whole metropolitan picture when it comes to the integrated urban development of mobility nodes as well as political agreements between necessary stakeholders to coordinate costly transport infrastructure. Because, as Vincent Neumayer admits: *"from the governance point of view there is always room for improvement."*

«From the governance point of view there is always room for improvement.»
Vincent Neumayer

With this Forum Discussion the discourse about metropolitan planning was enriched by valuable arguments and ideas of how to understand, manage and design metropolitan mobility and thus is an important step towards a holistic metropolitan vision embracing the future chances and challenges of a successfully interconnected urban region. ▪

Gregory Telepak
Speaker Mobility, MA18 -
City of Vienna

Mathias Mitteregger
Project Manager AVENUE21
future.lab Research Center,
TU Vienna

Vincent Neumayer
Project Manager, Multi-Modal
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Wiener Linien GmbH

Forum Discussion

The Forum Discussion was held as a closing event of the first *MetroLab Forum* and streamed online. On the basis of the previous International Lectures the specific case of the Vienna city region was discussed from the different prespectives the local experts represented: the City of Vienna, academia and Viennas biggest public transport company.

Discussing the Future of Metropolitan Mobility

KEY FINDINGS ON THE FUTURE OF METROPOLITAN MOBILITY

1. CROSS-BORDER COOPERATION IS KEY TO BOOST MOBILITY DEVELOPMENT

Cross-border thinking and planning is key to developing a well-integrated transportation network and therefore an interconnected and well-functioning metropolitan area. Furthermore, defining functional areas according to the intensity of mobility movements (e.g. commuter flows) is a big chance to reduce inequality within a city region and thus to achieve a territorial rebalance. Since it can be assumed that the importance of urban regions in terms of transport and settlement policy will continue to increase, this aspect of transport equity is particularly important.

Strong urban-rural relationships and interdependencies make close cooperation between very disparate partners inevitable. Breaking with existing administrative delineations and artificially created divisions of competences means taking on responsibility in many ways and on many levels. Civil society as well as the private sector are equally challenged as decision-makers to look beyond their administrative borders and cooperate with their surrounding areas to finally boost mobility development and thus the engine for intra-regional growth. ∎

2. RADICAL MOBILITY VISIONS MUST BE FOLLOWED BY BOLD ACTIONS

In the field of sustainable mobility development, more radical visions and utopias are needed to stimulate new, creative solutions and attract the attention of the population and decision-makers.

However, they should be followed by real strategies and approaches, that may well be disruptive (imagine, for example, what a metropolis without cars could look like), and show the way of getting there. This could be achieved by initiating pioneer projects, such as temporary pop-up bike lanes that can become permanent over time. In that sense, to develop visionary comprehensive development strategies requires the will to implement straight-forward place-based solutions. Speaking out loud or sketching seemingly unrealistic but highly innovative ideas and visions is, in any case, essential to take a first step in this matter. All too often, the ideas and good intentions are already there, they just need to be highlighted and worked on. This is a plea for more courage in articulating, symbolizing and finally implementing visions, even if it means leaving the comfort zone of the strategic level.

3. MOBILITY AND SETTLEMENT DEVELOPMENT NEED TO BE CLOSELY INTERLINKED

Regardless of the mobility system in question, mobility development always serves as a driver of settlement development (and vice versa), which means that these two dynamics must always be thought of together. International approaches using mobility as a tool (e.g. the *Grand Paris Express*) show that this enables a healthy and climate sensitive living environment, but also avoids further urban sprawl. Building new urban centers around mobility hubs provides the ultimate opportunity to develop multifunctional polycentric zones with a high standard of living.

Moreover, transforming mobility systems means transforming spaces not only on the regional but also on the local level. The implementation of new mobility services should therefore go hand in hand with rethinking the streetscape on a neighborhood scale. Especially the transformative intervention in public space holds potential to make (already existing or new) qualities visible. The street must be reclaimed as an extension of living and working space.

4. THE RIGHT INCENTIVES MUST BE SET TO CHANGE MOBILITY BEHAVIOUR

Rethinking mobility infrastructure also means rethinking mobility behavior. It has been shown that people are particularly open to change in situations of transition, e.g. embracing alternative modes of mobility when moving to a newly developed housing area. Therefore, especially in those areas, there is a great opportunity to make changes in mobility behavior appealing. One way or another, using shared and active forms of mobility is a matter of values, not just the infrastructure provided as a hardware. Thus, in addition to setting the right incentives (e.g. new multi-modal offers or policies), awareness building is an important component of mobility change. If we want to change the mobility system we need to change how people move in space. Understanding and further developing use-based approaches will be the first step in expanding the range of (environmentally friendly and sustainable) services according to demand and steering them in the right direction – towards an ecologically just city.

5. MULTI-MODAL MOBILITY IS A MAJOR DRIVER OF SUSTAINABLE METROPOLITAN MOBILITY

The range of mobility options is becoming as differentiated as our society. It is therefore becoming increasingly clear that multi-modal, shared and connected mobility will be the future. Not only new technologies (e.g. automated or electric vehicles), but above all the stronger integration of different forms of mobility make it possible to develop adapted solutions for different spatial situations and needs.

Because mobility-on-demand transportation systems, such as multi-modal stations (hubs) consisting of a group of (mostly shared) vehicles, strongly relate to their surrounding public space, multi-modality is linked to the opportunity to achieve individual, place-based designs. This design has the potential to promote active forms of mobility and to ensure easy accessibility to the multi-modal offers. To make sure that users can easily plan, book and pay for their journeys with multiple types of mobility services, a specific service (Mobility-as-a-Service) that offers a joint digital channel is also needed in the long term. ∎

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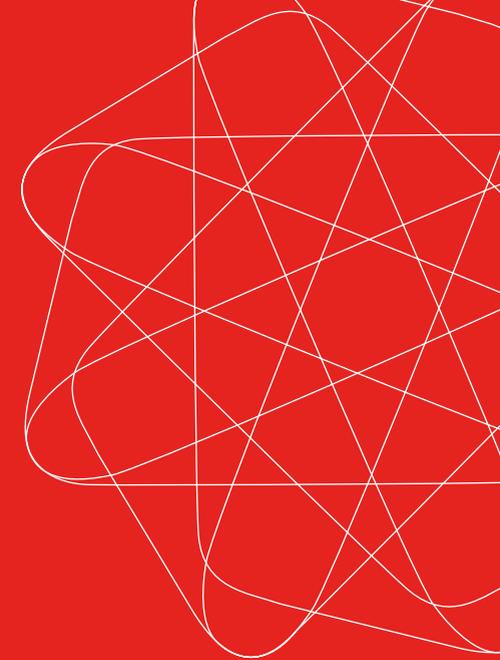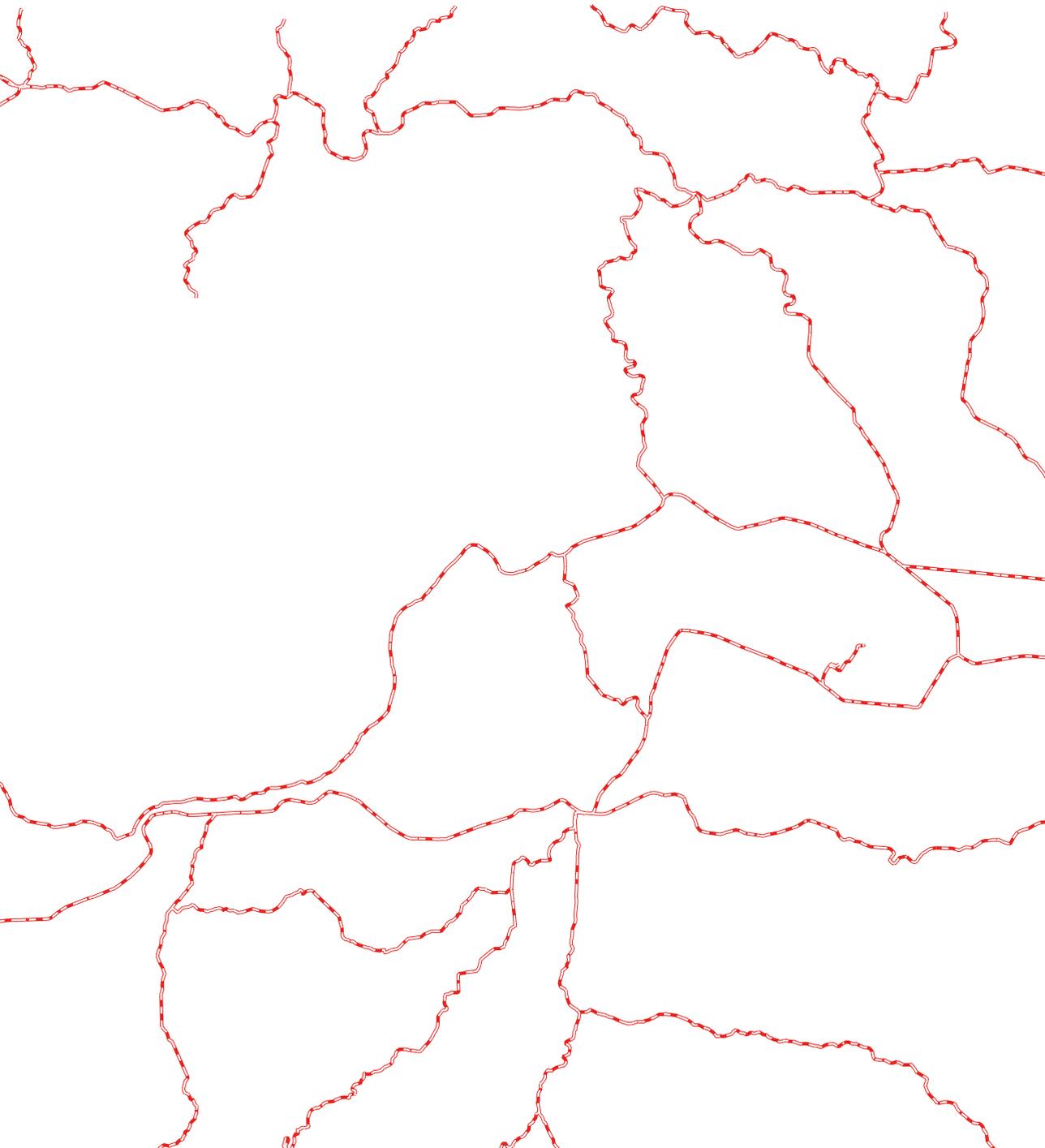
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