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Public spaces of mobility in Paris, Tokyo, and Buenos Aires

Andrés Borthagaray

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Public spaces of mobility in Paris, Tokyo, and Buenos Aires

Design, management, and governance for a social and
post-pandemic transition

Andrés BORTHAGARAY

(Furban / City on the Move)

2022 FFJ / Michelin Foundation Fellow

March 2023

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Abstract

Mobility is essential in improving the quality of life and access to the city's opportunities. However, it contributes to and is affected by planetary emergencies, such as environmental and health crises. Therefore, cities must address their spatial organisation, technology, and a better understanding of the societal construction and regulation of urban mobility behaviour to reduce emissions, promote healthier environments and mitigate climate challenges on time.

Three global metropolises offer contrasting realities. Tokyo, Paris, and Buenos Aires have specific urbanisation patterns in space, demographics, cultural attitudes, socioeconomic situations, and institutional organisation. But they are all affected by global cycles and health crises, like the last pandemic, from which some common lessons should be learnt. As a result, there could be a greener, more socially inclusive, and more intelligent urban development. Of course, an acceleration of change can create conflicts in the short term. But a multidisciplinary approach to achieve an adequate difference in space design and management behaviours, and –beyond the scope of this paper– the adoption of new technologies, could offer an achievable roadmap for a different social organisation of urban mobility.

Keywords

Mobility, Social Inclusion, Health crises, Climate change,
Spatial organisation, Transportation infrastructure.

Short summary

This discussion paper is about public spaces of mobility. It analyses the criteria for its design, management, and governance by studying three metropolitan cases. While spaces for urban infrastructures are essential, the focus here is on railways and railway stations as the backbone of metropolitan dynamics and as a guiding principle for social inclusion, urban growth, and sustainability.

Acknowledgement

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Introduction and motivation: action-oriented research

This discussion paper is about public spaces of mobility. It analyses the criteria for its design, management, and governance by studying three metropolitan cases in different continents within various social and economic contexts. While spaces for some basic infrastructure, such as sidewalks, street widths, traffic light control and coordination, and bus heights, among others, are essential, the focus here is on the railway and guided transportation as the backbone of urban dynamics and as a guiding principle for urban growth and sustainability. First, it raises the differences between those cases which always kept metropolitan railways at the heart of their strategies –Paris and particularly Tokyo– and the one that, despite having one of the largest metropolitan railway networks in Latin America, neglected it as part of an ongoing strategy. It considers the importance of railways as an essential part of metropolitan transportation strategies facing global challenges, such as the environmental crises and public health, including preliminary lessons from the last pandemic. Finally, it assumes railways are an essential part of allowing healthier environments, able to enhance a more walkable and cyclable urban development. In this sense, it considers governments and the car industry's significant efforts to change from fossil fuels and internal combustion vehicles to electric ones. However, it deems global warming emissions, and healthier environments will only be achievable under a modal shift where metropolitan railways frameworks play a central role.

There is a public policy concern about decarbonising mobility by governments and the car industry. Part of it is about changing car emissions. For instance, Toyota¹ and Renault have outlined decarbonisation strategies. Although those changes are significant, a once-in-a-century shift for reaching climate strategies will be needed to address more profound transformations in how people and goods move around in cities.

Technology and infrastructure, in this case, are seen as part of a spatial and social strategy, including how behaviours evolve in a specific context. A key to stimulating different behaviours is precisely the quality of the public space in railway stations and their urban environments. The

¹ Toyota Motor Company, “Toyota’s Views on Climate Public Policies 2021” (Toyota, 2021), https://global.toyota/pages/global_toyota/sustainability/esg/environmental/climate_public_policies_en.pdf.

experiences they provide and the urban typologies and models they are based on are a central point in this discussion paper.

A series of documents by the IPCC clearly states the cities' responsibility to reach emission reduction goals.² In the same direction, the IEA promotes actions at different levels, not only for environmental reasons but also to reduce dependence on fuel imports for geopolitical reasons.³

Railways need capital investments, apparently out of reach for less affluent metropolises and countries. But the analysis will consider how this view could be challenged and contrasted with how economic models for existing mobility patterns are even more unaffordable.

Those elements must consider behavioural aspects of mobility and their specificities according to age, gender, values, and socioeconomic background. The way metropolitan societies move is not necessarily the product of a rational choice, but one based on experience, aspirations, economic incentives, and societal models. While an in-depth analysis of theoretical explanations about this last point exceeds the scope of this paper, a reference to them is still necessary to understand possible modal shifts. In this sense, the recent pandemic was a catalyst for changes in working and other activities, such as health and education services and commerce. It was not the technology, which was already available, but the changes in social behaviours that made the change possible. Designing, managing, and governing the public spaces of mobility in a social and energetic transition means understanding the context of social organisation that underlies individual choices. In brief, to meet international agreements on climate change and to face severe health challenges, priorities on the public spaces of mobility play a central role. Railway strategies are essential to produce sustainable public spaces for those who live in their metropolitan and suburban centres.

This research expects to bring new light to the case of Buenos Aires and other metropolises in emerging countries.

Research questions and research objectives

How do space, behaviour, and governance interact in constantly evolving cities –including new developments in public transportation networks and environmental concerns?

How to accelerate a modal shift in politically sensitive contexts, framing public debates in different social and economic cases?

How do digital developments and public health strategies determine the place of social activities and spatial and mobility strategies?

To identify possible ways to accelerate a more sustainable spatial and social organization of metropolitan mobility strategies through cross-references in three specific contexts.

To project references about how demographics and geography –and their respective social and cultural representations– influence political decision-making.

² Working group II contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, “IPCC_AR6_WGII_SummaryForPolicymakers,” February 27, 2022.

³ International Energy Agency, “Net Zero by 2050 A Roadmap for the Global Energy Sector,” 2021, <https://iea.blob.core.windows.net/assets/4719e321-6d3d-41a2-bd6b-461ad2f850a8/NetZeroBy2050-ARoadmapfortheGlobalEnergySector.pdf>.

To include case studies from different continents and incomes, particularly the case of Buenos Aires, in a French-Japanese research framework.

Methodology

This discussion paper is an essay based on analysing planning documents and policy statements, interviews, conferences, seminars, and workshops. It includes selected authors as a framework for understanding each metropolitan case, for instance, Antoine Grumbach, Juliette Maulat and David Mangin for Paris, Natacha Aveline; Ideoshi Hono and André Sorensen for Tokyo, Yo Kaminagai for both; my work and previous studies from other authors for Buenos Aires.

I couldn't have a field study in Tokyo this time as I would have liked. Instead, I did so in Paris and Buenos Aires. I have been studying and working in Buenos Aires for a long time. Paris offered a pivot for another international comparison extended to Tokyo.

My perspective of public spaces of mobility is based on my experience in Buenos Aires, previous research on the City on the Move Institute and my thesis about Buenos Aires, directed by Sébastien Velut and co-directed by Marie-France Prévôt Schapira. Regarding health, mobility and public space, the framework is based on Anne Vernez and her colleagues' work, emphasising the importance of including planning and mobility in the organisation of public policy as a health measure.

1. Case study practices in Tokyo, Paris, and Buenos Aires

The three metropolises share the fact of being the capital of their respective countries, the largest metropolitan region, and the concentration of a significant share of their respective national economies. While on the surface, they can be to some extent comparable, Tokyo's population is by far the largest. According to UN-Habitat, its population was 37,393 million in 2020 (metropolitan area), with 32,2% residing in the agglomeration. In Buenos Aires, the population was 15,154 million (urban agglomeration), with 36,1% of the urban population living in it. And Paris had 11,017 million (urban agglomeration), with 20,7% of the urban population.⁴ Administrative divisions are complex in the three cases. However, while Tokyo and Paris have relevant regional institutions, Buenos Aires presents a different situation. Tokyo has the Tokyo metropolis, with 23 wards of central Tokyo and suburban municipalities of the Tama Area. The Tokyo Megalopolis Region, or Greater Tokyo Area, comprises Tokyo and the three neighbouring prefectures of Saitama, Chiba, and Kanagawa.⁵ With 13,49 million in 2015, the "central area", over 2191 km², covers a significant part of the Greater Tokyo Area.⁶

An assessment from the regional planning institute in Paris about Tokyo's governance structures stated, "The disinvestment of the public authorities in urban affairs is also evident in the transport sector. For example, there is no transport authority for the Tokyo conurbation. Territorial planning within the conurbation is carried out at the level of the four prefectures, each with a transport

⁴ UN Habitat from UNDESA population division, "World Urbanization Prospects: The 2018 Revision (Files 3, 12, 14, 15, 16, 17a, 18 and Sources for Urban Agglomerations and Capital Cities)" (Nairobi: UN Habitat, 2020), <https://population.un.org/wup/>, https://unhabitat.org/sites/default/files/2020/09/gsm-population-data-booklet-2020_3.pdf.

⁵ Tokyo Metropolitan Government, "Tokyo's History, Geography and Population," accessed October 23, 2022, <https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/HISTORY/history02.htm>.

⁶ Tokyo Metropolitan Government.

department. However, these authorities do not intervene directly in the regulation of transport. Consequently, only the Metro, largely located in Tokyo prefecture, has a legible governance."⁷ As the document states, "In total, the network has nearly 2600 kilometres of lines. The perimeter used for the study is that of the Greater Tokyo Area (13 561 km², 37 million inhabitants)."⁸

In the case of Paris, the Région Ile de France embraces the central city of Paris and seven *départments*. The Mobility Organizing Authority (AOM) is *Île-de-France Mobilités*. It is responsible for organising and developing the public transport service and coordinating all mobility-related policies at the regional level.⁹

In Buenos Aires, the city of Buenos Aires has the status of a federal state. It is surrounded by the Province of Buenos Aires, where more than 40 municipalities share a common metropolitan region with the city. While there is a metropolitan transportation agency, it doesn't have financial and operative competencies.¹⁰

Governance

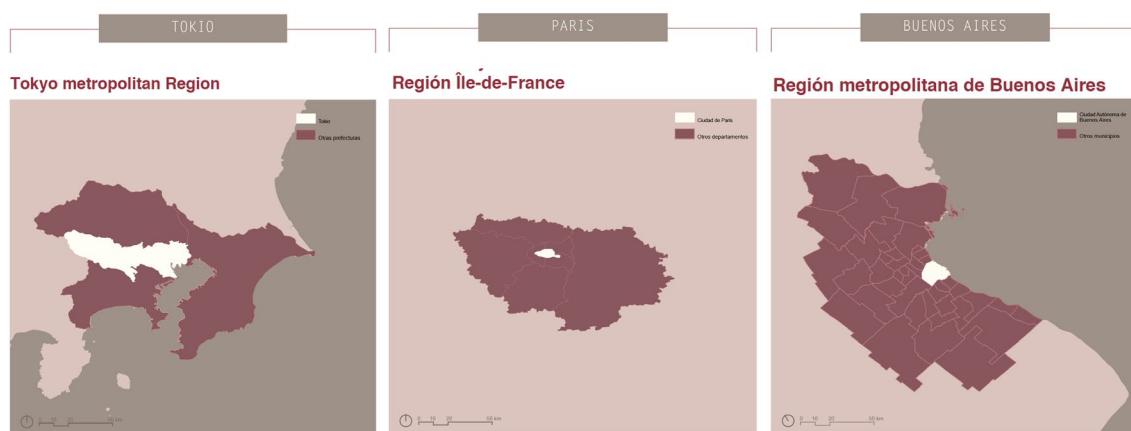


Image 1: a comparative view of scales and population in the three case studies.

Sources: *World Urbanization Prospects: The 2018 Revision*.¹¹ Students research: Bárbara Rocío Burgos, Adriana Brance Lespada.¹²

1.1 Tokyo: railway stations as a hub in a closely knitted metropolitan space

Since the Meiji restoration, in 1868, at the end of the Edo period and the Shogunate, Tokyo and Japan had a significantly accelerated modernisation, and a particular path of economic and urban

⁷ IAU - Institut d'Aménagement et d'Urbanisme, "COMPARAISON DE RÉSEAUX MASS TRANSIT FRANCILIEN Comparaison de Réseaux Mass Transit Francilien et Internationaux Avec Un Zoom Sur l' Accueil de Grands Événements" (Paris, 2018), https://www.iau-idf.fr/fileadmin/DataStorage/user_upload/benchmark_mass_transit_rapport_FinalV2_20180727.pdf. Page 31. My own translation.

⁸ IAU - Institut d'Aménagement et d'Urbanisme. Page 28.

⁹ Île de France Mobilités, "Organisation," accessed October 23, 2022, <https://www.iledefrance-mobilites.fr/decouvrir/organisation>.

¹⁰ Andrés Borthagaray, *Buenos Aires, Tras Las Huellas Del Futuro. Entre Urbanismo Explícito y Decisiones de Planeamiento (1958-2018)* (Buenos Aires: Fundación Tejido Urbano, 2021).

¹¹ UN Habitat from UNDESA population division, "World Urbanization Prospects: The 2018 Revision (Files 3, 12, 14, 15, 16, 17a, 18 and Sources for Urban Agglomerations and Capital Cities)."

¹² Bárbara Rocío Burgos, Adriana Brance Lespada. Research practice, 2020.

growth. As a result, Tokyo has a relatively lighter hand from public authorities in shaping urban development. For almost a century, private and public transportation operators anticipated urban growth along corridors in coordination with local public authorities. The presence of transportation operators who also develop fundamental state strategies has been a singular aspect of its institutional framework.¹³ This dynamic also marked the rebuilding of Tokyo twice in the XX century, after the Great Kanto earthquake and after the end of World War II bombardments.

Despite some rebuilding plans after the war, rails remained more significant than roads, heavy infrastructure could be articulated with liveable local neighbourhoods, and railway stations became the nodes of a polycentric metropolis.¹⁴ Naturally, the scarcity of space is a driver for spatial strategies and a constraint for the use of cars which is also inhibited by charges and parking costs. The weight of vehicles in the modal shift is the lowest of the three case studies.¹⁵



Image 2: JR chart.¹⁶ A regional framework. A large region with a densely covered railway network by a private operator.

¹³ Paul Chorus and Luca Bertolini, “Developing Transit-Oriented Corridors: Insights from Tokyo,” *International Journal of Sustainable Transportation* 10, no. 2 (February 7, 2016): 86–95, <https://doi.org/10.1080/15568318.2013.855850>.

¹⁴ Jorge Almazán and Joe McReynolds, *Emerging Tokyo: Designing the Spontaneous City* (San Rafael, USA: Oro Editions, 2022), <https://oroeditions.com/product/emergent-tokyo>.

¹⁵ See for instance <http://ondat.fra.utn.edu.ar/> and Simon Dixon, “Deloitte City Mobility Index Paris,” 2018, https://www2.deloitte.com/content/dam/insights/us/articles/4331_Deloitte-City-Mobility-Index/city-mobility-index_PARIS_FINAL.pdf, Simon Dixon, “Deloitte City Mobility Index 2020 - Tokyo,” *Deloitte Insights*, 2020, https://www2.deloitte.com/content/dam/insights/us/articles/4331_Deloitte-City-Mobility-Index/Melbourne_GlobalCityMobility_WEB.pdf.

¹⁶ Image reference: https://www.jreast.co.jp/e/info/map_a4ol.pdf

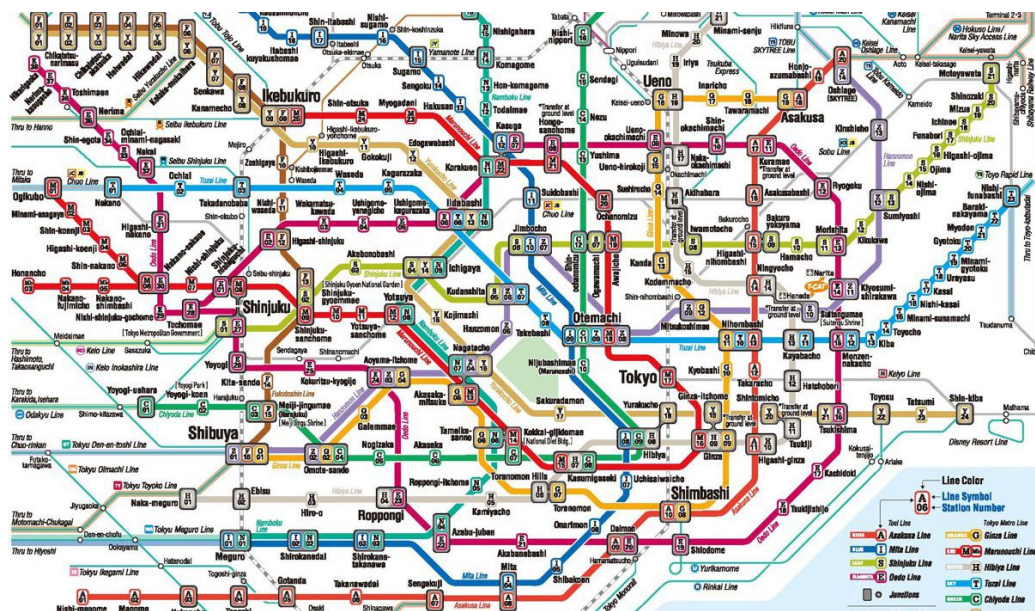


Image 3. Tokyo Subway Route Plan.¹⁷ Urban Framework. The subway integrates the regional lines, particularly the loop of Yamanote line.

Official Tokyo planning documents are explicit in the role of transportation nodes. First, the outline of the City Planning, an official document updated in 2021, offers a framework for understanding a local government's point of view on Tokyo's planning history.¹⁸ It describes the Structure of Urban Planning and urban planning chronology.¹⁹ Finally, this document elaborates on the state of integrated transportation policies and offers a vision for Tokyo 2020 and post-games transportation requirements.

One of the stated metropolitan government priorities is upgrading the functions of transportation nodes, including information, spatial quality, accessibility, and urban development around and above the stations. For example, a committee of relevant parties at Shinjuku Station about Road Usage states: "Constructing major roads to reduce through traffic in the city" but also "increasing the number of pedestrian areas in keeping with a modern urban environment". Furthermore, "Ways of combining different methods of travel, including bicycles, are being studied".²⁰ Finally, the document explains the role of different kinds of roads in detail.

¹⁷ Toei Transportation, "Toei Subway. Route Map.," accessed November 21, 2022, https://www.kotsu.metro.tokyo.jp/eng/services/pdf/sub_map_eng.pdf.

¹⁸ Tokyo Metropolitan Government, "Outline of the City Planning. 2021 Version," 2021, <https://www.toshiseibi.metro.tokyo.lg.jp/eng/index.html>.

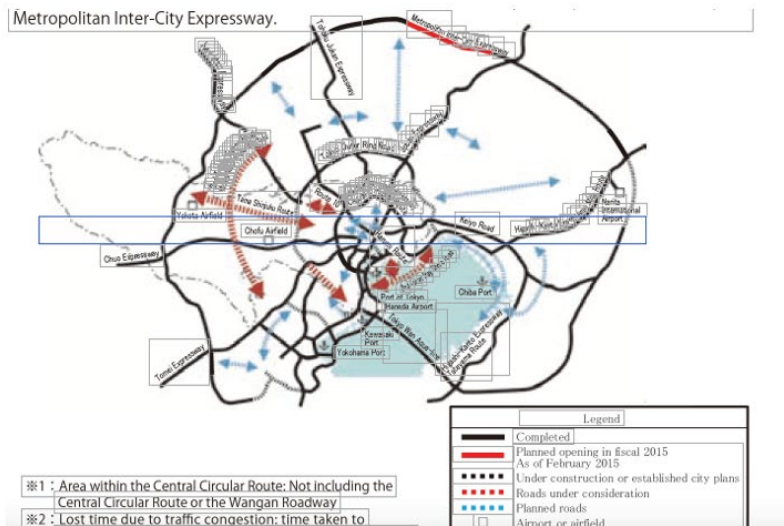
¹⁹ Tokyo Metropolitan Government, "Urban Planning Chronology," n.d.

²⁰ Tokyo Metropolitan Government, "Section 2 Facility Plans" (Tokyo, 2009), https://www.toshiseibi.metro.tokyo.lg.jp/eng/pdf/index_03-2.pdf?2009.section



Image 4: <https://www.tokyobybike.com/> A bike crossing in the Tokyo area.

Three-ring expressways of the National Capital Region are presented in a scheme.



Fuente: Development infrastructure that supports the capital.

Image 5: Development infrastructure that supports the capital.

Regarding the development of railways and new transportation systems, official documents refer to improving Subway lines (such as Tsukuba Express, Rinkai Line, and Tama Monorail). They

raise the need for railway crossing measures –for 1050-level railway crossings remain in Tokyo. There is also a point about complementary Bus Rapid Transit lines (BRT) and specific logistics and parking policies considerations.²¹

In the case of Tokyo, the role of private operators is particularly relevant. In this sense, Natacha Aveline has long-term research on how Tokyo railway stations are organised, structured, and financed.²² Her analysis includes new developments of this model in Hong Kong and China. She develops a framework of understanding for the funding of sustainable infrastructure through land value capture strategies of the Japanese railway groups. This combination has a specific far Eastern specificity in present times. However, in the late XIX and early XX century, there were combinations of railway developments and real estate operations also in other countries, including Argentina.²³ The business model described by Natacha Aveline of the “integrated private management” by the private railway groups in Japan can also be seen in the report of railway operators.²⁴ This way of presenting the information expresses the approach based on real estate asset management, transportation and complementary services.²⁵

As the author mentioned above explains, this economy of land value capture model has allowed companies to finance transportation operations sustainably. On the other hand, it fostered sprawl and land price increases. In recent times, there has been a new sort of concentration in central stations to the detriment of the peripheral ones, accelerating the depopulation of suburbs. Furthermore, high-rise buildings and towers are being developed in selected stations, such as Tokyo Skytree Tower (Tobu), Osaka Station JR West, Tokyo Station JR East, and Abenobashi Terminal Tower.²⁶ Through extreme and unregulated economic concentration, the virtuous process of land value capture can develop a negative side. On the one hand, it can generate sprawl; conversely, a concentration of high-rise buildings in central stations can also cause additional pressure on land and real estate prices.²⁷

Beyond the economic analysis, a series of spatial studies allow us to interpret and project Tokyo's evolution. Hideoshi Hono, in *Fiber City*, introduces a way of launching a possible development of Tokyo in an ageing, negative population growth era. He proposes a way of opening green open spaces articulated as a fiber.²⁸

Sorensen offers a framework for understanding urban Japan and Tokyo from an occidental point of view.²⁹ First, his study explains the dynamics of industrialised developments combined with preindustrial methods until the '60 in the XX century. Then, he follows a tension between a

²¹ Tokyo Metropolitan Government.

²² Natacha Aveline-Dubach and Guillaume Blandeau, “The Political Economy of Transit Value Capture: The Changing Business Model of the MTRC in Hong Kong,” 56, no. 16 (2019), <https://doi.org/10.1177/0042098018821519>.

²³ M. J. Lopez, J. E. Waddell, and J. P. Martínez, *Historia Del Ferrocarril En Argentina. La Política Ferroviaria Entre 1857 y 2015* (Buenos Aires: Lenguaje Claro, 2016).

²⁴ Tokyu Corporation, “Results in FY2021 Presentation,” 2022, <https://www.tokyu.co.jp/global/>. Tokyu Corporation, “Tokyu Corporation. Segment Information,” [ir.tokyu.co.jp](https://ir.tokyu.co.jp/en/ir/finance/segment.html), 2022, <https://ir.tokyu.co.jp/en/ir/finance/segment.html>.

²⁵ Natacha Aveline-Dubach and Guillaume Blandeau, “The Political Economy of Transit Value Capture: The Changing Business Model of the MTRC in Hong Kong,” *Urban Studies* 56, no. 16 (2019): 3415–31, <https://doi.org/10.1177/0042098018821519>.

²⁶ See Natacha Aveline, “Funding sustainable infrastructure. Land value capture strategies of the Japanese railway groups”. A presentation on the FFJ Michelin Chair workshop, July 5, 2022.

²⁷ Jan Gehl, *Ciudades Para La Gente* (Buenos Aires: Infinito, 2014).

²⁸ Hidetoshi Ohno, *Fiber City A Vision for the Shrinking Megacity, Tokyo 2050* [Bilingual: Japanese/English] (University of Tokyo Press: University of Tokyo Press, 2017).

²⁹ André Sorensen, *The Making of Urban Japan* (London: RoutledgeCurzon, 2002).

centralised administration and revindications of local autonomy, between laissez-faire and environmental restrictions until the end of the XX century. The outcome is a mixed fabric with vibrant neighbourhoods but also too heavy infrastructure and industrial complexes next to residential units. In his analysis, the first real estate bubble that preceded those in other countries some decades later is part of this process.

Accommodating infrastructure for an ageing population is a priority and has reached an early development of accessibility developments. Tokyo offers a unique example of what a shrinking metropolis is. Aged people tend to have an increasing role in the workforce. The distribution of functions is evolving, but there is still a long-term practice of women participating in the welfare state within households.³⁰

In a benchmark study developed by Paris, Tokyo has the most developed regional railway network. The report states that successive governments have been actively involved in industrialisation since the Meiji era and are less involved in urban policies. About the modal shift, motorised vehicles weigh less than 10%, bikes more than 15% and walking 23%. Tokyo railways have one of the highest rates of the population by station in a mass transit benchmark.³¹

³⁰ Marion Lagadic, “Cycling for All ? A Feminist Analysis of the Tokyo Bicycle Utilisation Promotion Strategy HAL Id :,” HAL Id : Hal-03683676 Fondation France-Japon de l’ EHESS FFJ Discussion Paper # 22-02 (Paris, 2022).

³¹ IAU - Institut d’Aménagement et d’Urbanisme, “COMPARAISON DE RÉSEAUX MASS TRANSIT FRANCILIEN Comparaison de Réseaux Mass Transit Francilien et Internationaux Avec Un Zoom Sur l’ Accueil de Grands Événements.”

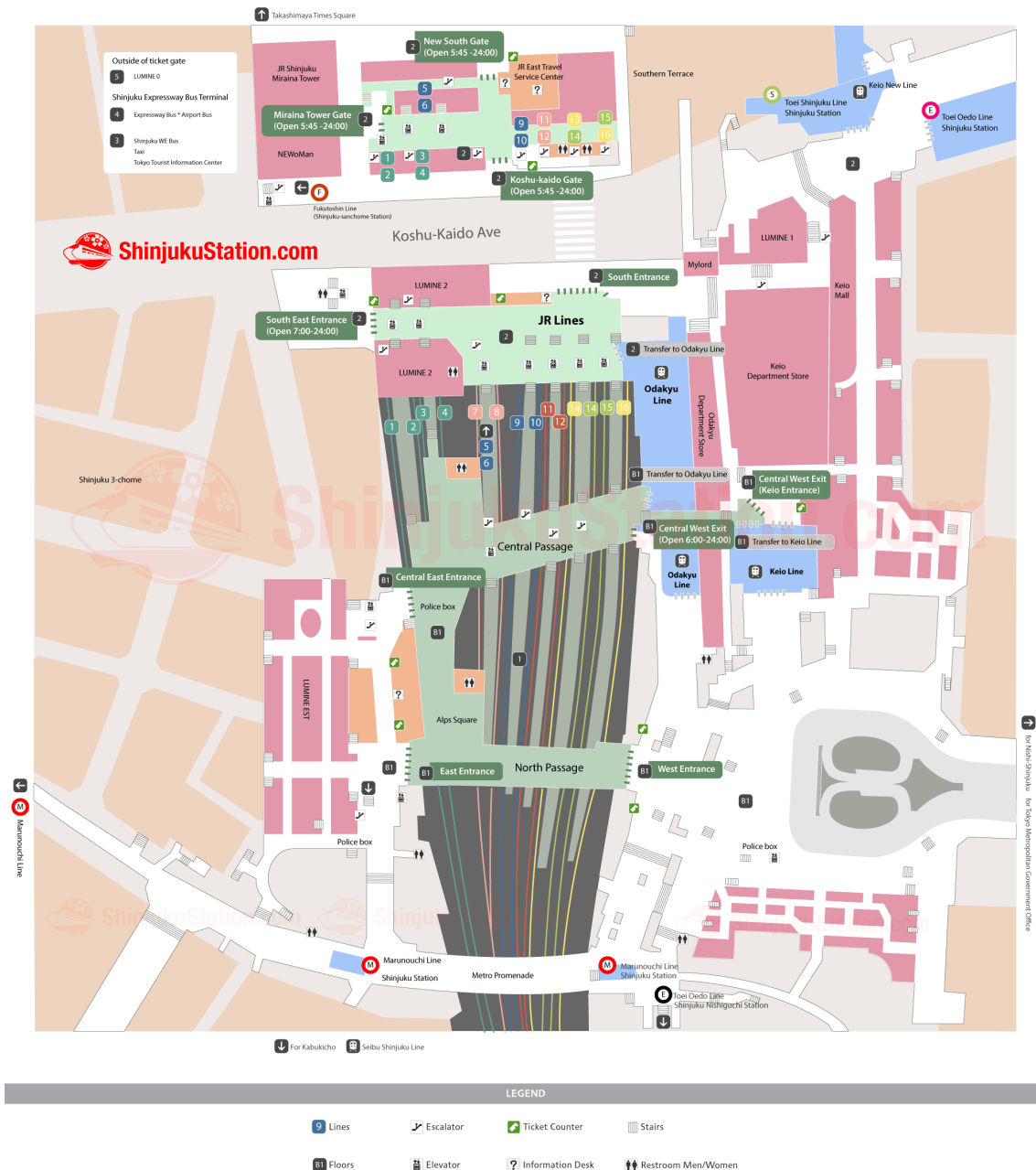


Image 5: Shinjuku station, as explained on its website.
<https://www.shinjukustation.com/shinjuku-station-map-finding-your-way/>

The explanation of the station offers a view of its complexity, its multimodal combinations possibilities and the need for orientation and help for wayfinding within its space and multiple articulations.

Stations are conceived as hubs in the corporate strategy of the main groups. JR East's "Move Up 2027 vision" is an example. Its basic principles include safety, customer-oriented, autonomous, self-standing and sustainable growth for the group development by achieving social responsibility. The company presents, amid its strengths, "a multilayered "real" network that supports life infrastructure with a brand that is founded on trust and in its stations that act as hubs

for interaction mainly in the Tokyo metropolitan area where people, products, money and information are exchanged and gathered."³²

1.2 Paris: the third wave of urban railway expansion in a net zero era

As the oldest of the three metropolises, Paris has experienced radical transformations in different periods of its history. Contemporary ones can be traced to Haussmann and Napoleon III in the second half of the XIX century. The roads and sewage systems, the first railroads and parks. Of course, at a cost and with the forced relocation of part of its population. The Metro started in the XX century and was also part of developing a vast network of tramways on the one hand and metropolitan railways on the other.

The city's adaptation to the car was very present in the modernist plans³³ and partially developed as part of a series of ambitious projects in the 60s and 70s. But what later marked the evolution of Paris the most was the development of the RER and *villes nouvelles*, as part of *Plan d'aménagement et d'organisation générale de la région Parisienne* (PADOG) amid other plans.³⁴ In addition, however, some interventions took place to give room to the car: the boulevard *périphérique*, parking spaces, and la Défense, among other interventions.

Globally, an increase in public transportation ridership is linked to a decrease in the share of private cars and an extension of the served territory. Between 1976 and 2020, there was an increase of 51 km of subway lines, including line 14. In addition, there was a development of 128 kilometres of tramway lines and the creation of RER lines, including the opening of RER line E. Adopting a single fare has also contributed to creating a new geography of mobility in greater Paris.³⁵

Since the Kyoto agreement and the Grand Paris vision introduced by Atelier International, new plans have been proposed. On the one hand, a series of futuristic concepts, such as the one all along the Seine River, were developed by Antoine Grumbach from Paris to Rouen and Le Havre in the Atlantic. On the other, Paris assigned a crucial priority to its railway infrastructure. After a series of institutional reforms in its governance, the Société du Grand Paris, a public company owned by the state, oversees and manages the building of the new railway lines in the periphery. An elliptic scheme allows for concentrically connecting the existing radial lines in the periphery. Along 200 km and with 68 stations, the *Société du Grand Paris* estimated its budget at 40 bn Euro, borrowed by the state to be paid through an internal local tax. The idea is that the SGP must coordinate the railway and new urban centres. In this context, real estate developments around stations are expected to recover part of the investment. The modality and scope are significantly different than in the Japanese case. Again, understanding context-specific studies offers a basis for comparisons: Natacha Aveline for Japanese cases and Juliette Maulat for French ones.³⁶

³² JR East Group, "JR East Group Management Vision 'Move UP' 2027" (Tokyo, 2018), <https://www.jreast.co.jp/e/investor/moveup/pdf/all.pdf>.

³³ Jean Pierre Orfeuill and Marc Weil, *Gran Paris. Sortir Des Illusions, Approfondir Les Ambitions* (Paris: Scrineo, 2012).

³⁴ Premier Ministre, "Plan d'aménagement et d'organisation Générale de La Région Parisienne" (Paris, 1960), https://www.institutparisregion.fr/fileadmin/DataStorage/IauEtVous/mediatheque/docs_historiques_de_reference/IA_U_0001.pdf.

³⁵ APUR, "Évolution Des Mobilités Dans Le Grand Paris Tendances Historiques, Évolutions En Cours et Émergentes," 2021, <https://www.apur.org/fr/nos-travaux/evolution-mobilites-grand-paris-tendances-historiques-evolutions-cours-emergentes>.

³⁶ Caroline Gallez et al., "The Role of Tools for Coordinating Urban Planning and Public Transport in Urban Policy Making," *Flux* 101–102, no. 2 (2015): 5–15, <https://doi.org/10.3917/flux.101.0005>.

The idea of zero emissions and net impermeabilisation structures the whole planning process.³⁷ A national bill, approved in 2021, establishes Net Zero Emissions and Net Zero Impermeabilization by 2050 through quotas. Amid other legal references, the French government was condemned by the European Court and Conseil d'État for not meeting environmental targets.³⁸ At the city of Paris level, a new local urbanism plan (PLU in French), including the above-mentioned legal framework, is under treatment.³⁹

At the regional level, there is also a process of reviewing the *Schéma Directeur*.⁴⁰ It is a spatial strategy where the specific development of the Grand Paris Express is already included. Compared to the city of Paris, the region has a different political orientation and embraces very heterogeneous constituencies. Several municipalities in the periphery are more car-dependent than Paris itself. Car restrictions are laxer in the periphery than in the central city. Nevertheless, the underlying values of more transit-oriented policies are evident in the mobility plans.

There is a simultaneous expansion of subway lines (such as 4, 12 and 14), in some cases, such as Bagneux in line 4, combining future lines of Grand Paris Express. (See scheme).



Image 7: photo station Bagneux.

The new terminal station of subway line 4 will meet the Grand Paris Express. The quality of public space and the importance of governance in articulating lines have been a focus of the design office at RATP and the public space office at SGP.⁴¹

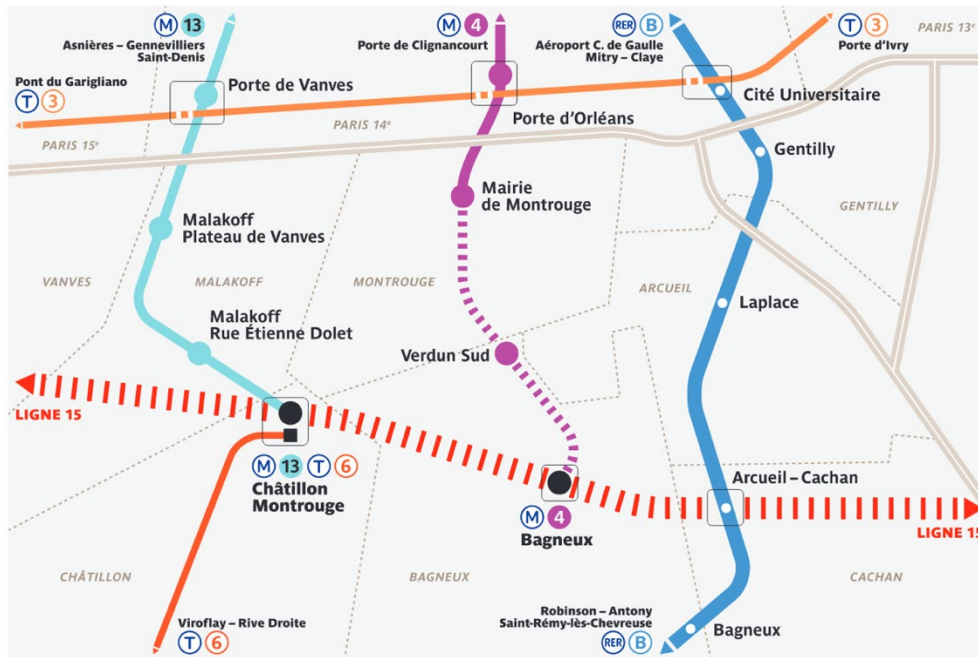
³⁷ République Française, “LOI N° 2021-1104 Du 22 Août 2021 Portant Lutte Contre Le Dérèglement Climatique et Renforcement de La Résilience Face à Ses Effets (1) - Légifrance,” Journal Officiel de La République Française, no. 0196 (2021): 1–210, <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043956924>.

³⁸ European Commission, “Air Quality: Commission Decides to Refer France to the Court over Failure to Meet Its Obligation to Protect Citizens against Poor Air Quality,” Press Release (Brussels, 2020), https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1880.

³⁹ Stéphan Leclerc: directeur de l’urbanisme. and chef du projet. Pierre-Alain Brusseau, direction de l’urbanisme, “Paris et Son PLU. Lecture Urbaine.” (Paris, December 2020), <https://www.paris.fr/pages/le-plan-local-d-urbanisme-plu-2329>.

⁴⁰ Région Île de France, “Dossier de Concertation. Conduite En Application Du Code de l’environnement. Élaboration Du NouveauS DRIF Environnementale à l’horizon 2040” (Paris, 2022), https://www.iledefrance.fr/sites/default/files/medias/2022/09/Sdrifeconcertation_V8_0.pdf.

⁴¹ And the subject of doctoral contracts, such as the ongoing study by Mathilde Pedro.



Encore plus de réseaux ferrés

Image 8: a scheme in RATP, Paris public transportation operator. And the Grand Paris Express, by the Société du Grand Paris.⁴²

An already built new station in Bagneux for Subway line 4 expects the achievement of line 15 of Grand Paris Express. In addition, a series of housing developments is underway next to the station. However, despite coordination efforts by RATP and SGP, governance challenges in anticipating quality experiences remain. They affect the way new stations from the subway and Grand Paris Express are integrated.

In Paris, car spaces were reduced (over 70000 according to Paris authorities). As a result, there is less space for cars on parking lots along streets and boulevards, such as the Seine River banks. The pandemic accelerated the process with the reduction of traffic and bike lanes expansion. At the same time, on-road parking spaces were reallocated to bars and restaurants, like in other cities.

The way the pandemic changed land occupation, work and office spaces is something still being assessed. But, by the latest statistics, according to city officials, office space demand in Paris remains high.⁴³

Electric cars are being actively promoted (for example, a new *Megane* with Buenos Aires as a scenography).

⁴² RATP, "La 4 Rejoint Bagneux," RATP, accessed October 14, 2022, https://www.ratp.fr/sites/default/files/inline-files/m4-bagneux-dossierinfo-fiches-a4-exe_hd-150609-stc.pdf.

⁴³ Interview, Charles Antoine Dépardon.



Image 9: advertisement of a French electric vehicle. Buenos Aires as background.⁴⁴

However, beyond the reduction of emissions by changing oil for electric power, it is a matter of fact, public space can shape behaviour. Therefore, user experiences are closely studied, for instance, by Yo Kaminagai, concept director of RATP. As he argues, while by car one of the significant advantages is to go directly from one point of origin to destination, a trip by public transportation most of the time has at least one combination. Therefore, to promote a modal shift, the quality of the experience of combining stations is essential.⁴⁵

At the regional level, a challenging question is how to accommodate population expectations without compromising environmental goals. Not only in roads but also in parking policies.⁴⁶

As mentioned before, there is a legal mandate for net zero artificialisation and a change in the pattern of land consumption to stop emissions and prevent heat island effects. Therefore, it will be necessary to share and optimise the use of resources. But traditional urban planning is not enough to meet these goals. A new way to produce this urbanism is needed, particularly significant for transportation issues. It implies a new way of matching mobility at a regional scale and inside territories.⁴⁷ And it also suggests reconsidering or critically evaluating local projects tending to increase car capacity.

Regional planning must balance contradictory demands, such as economic growth and sobriety. In the denser areas, it is easier to expect a reduction in travel by car. But the movement is different in the less dense areas where changes are more complex. In this context, "yellow vest" protests were born amid people dependent on the car. Public transportation does not exist in outer areas from where some protesters came. One of the challenges is to accommodate that population's expectations without dropping carbon reduction goals.

⁴⁴ Renault, "Nouvelle Megane E-Tech 100% Électrique | Publicité Horses | Renault," 2022, <https://www.youtube.com/watch?v=4crrnr036wo>.

⁴⁵ Presentation, Yo Kaminagai.

⁴⁶ Interviews, Dany Nguyen-Long. Dominique Riou. Institut Paris Région.

⁴⁷ Idem.

Road projects developed by regional authorities mirror contradictory demands. On one side, there are still projects to fight against congestion by widening sections of roads.⁴⁸ On the other, there is a commitment to zero emissions and net zero artificialisation mandates.

In the railway front, the Grand Paris Express exceeds a single look. It transcends an infrastructure project to embrace regional development, including sophisticated management of newly created public spaces.

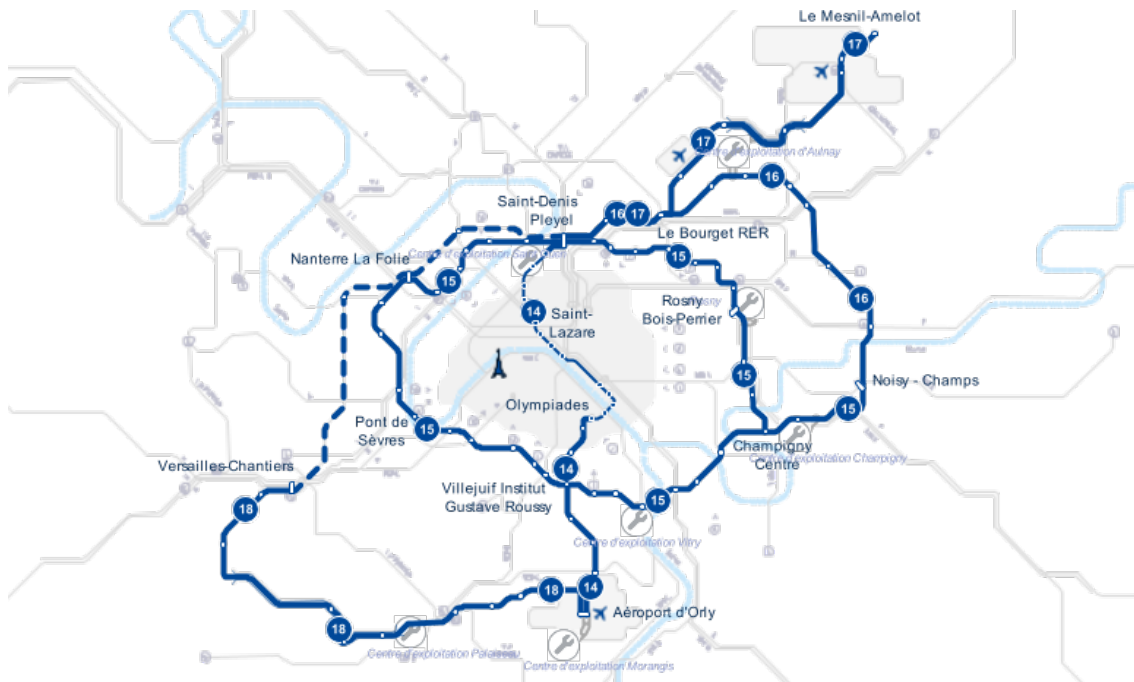


Image 10: Grand Paris Express.⁴⁹

The Metro started in the 1900s, the RER in the 1970s, and the Grand Paris Express in the 2020s. The last one articulates 68 new stations allowing a new dynamic from and to peripheric locations.

Like in previous railway stations, the city's production around the new stations differs from East to West. Among other challenges in the city's production, there is a search for a better way of producing space around stations.⁵⁰ The role of metropolitan Tokyo railway stations, including bicycle parking policies, is a reference to consider.

As Antoine Grumbach explains, extensive scale planning requires a collective representation.⁵¹ Metropolitan citizens belong to vast spaces they do not necessarily recognise. One of the challenges of the *Atelier International du Grand Paris* (AIGP) in the late 2000s was to try to build an identity of large spaces. In this case, a large river is something very significant that contributes to its geographic identity. Mobility is distinctive in representing and understanding a common language of signs and cognitive devices, including references to geographical and public spaces at micro and metropolitan scales. People's representations of plans are essential to making a metropolis a common identity. While his comment was about particular places in Paris, it could

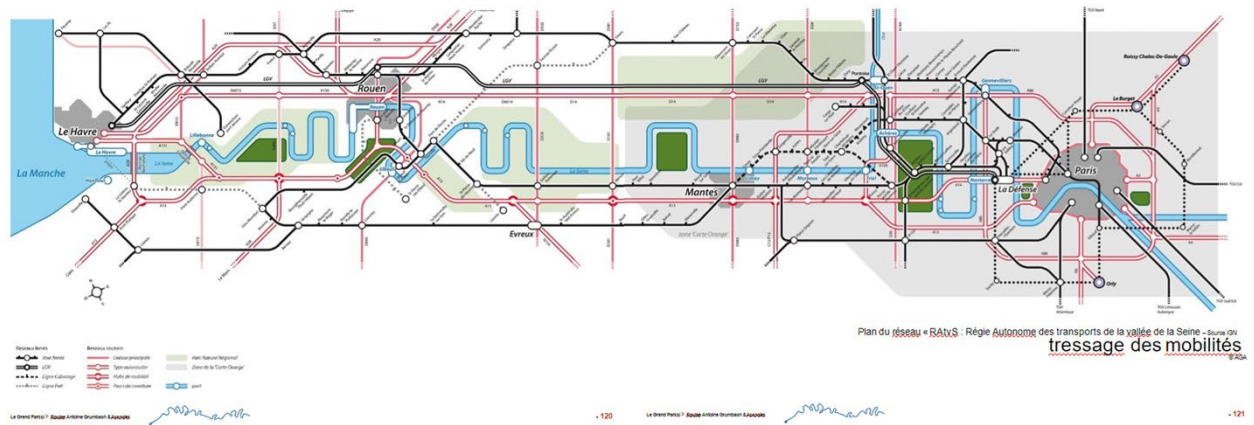
⁴⁸ Région Île de France, "Rapport Pour Le Conseil Régional MAI 2022 Présenté Par Valérie Pécresse Présidente Du Conseil Régional d'Île-de-France" (Paris, 2022).

⁴⁹ See also <https://www.societedugrandparis.fr/gpe/carte> Visited on October 25, 2022.

⁵⁰ Dominique Riou. Interview.

⁵¹ Antoine Grumbach, "Seine Métropole, Paris, Rouen, Le Havre" (Paris, 2009), <https://www.ateliergrandparis.fr/aigp/conseil/grumbach/GRUMACH1c02.pdf>.

also be extended to other metropolises. Representation of metropolises has been multiplied by satellite images and accessible software devices. However, it remains challenging to integrate the idea of representing the metropolis beyond existing limits, enlarging its reach until the Atlantic. And that can be extended and projected to a set of multiple polarities in a larger territory.



*Image 11: Tressage des mobilités.⁵²
Representation is crucial for a metropolitan identity.*

In Grumbach's perspective, there is a second type of problem to focus on: the question of public space as a representation of what democracy is, of what living together is, a recurrent subject since ancient Greece. One example is a project for a railway station like *Bibliothèque François Mitterrand*, where several layers of lines converge –above a suburban train and below a new subway line. The connection between the two transportation systems is a place for active public spaces. Thus, in this perspective, public spaces of mobility are important places for exchange, integration, and inclusion.



Image 12: François Mitterrand Library. Subway and Railway station.

The station —a project by Antoine Grumbach— combines an ambitious design with innovative solutions to structural challenges to make a public space beyond functional requirements.

⁵² Antoine Grumbach, “Seine Métropole,” 2009.

Public transportation means dealing with public space and all events around it, events of a very different nature. Including, in some cases, cinema, festivals, and fashion shows. Designing public transportation spaces means creating occasions of living together.

Another example is the tramway of Paris. Regulation, in this case, gave way to an integrated approach. RATP and the city created a team, "façade to façade" in terms of the architect as mentioned above, instead of a project constrained by railroad infrastructure alone. This integrated team was able to reshape the public space, connecting the subway and tramway and pointing out the strengths of the public space within the city. In other cases, the engineers only embrace the infrastructure, not the street, from property to property. Moving the people is thus conceived as the articulation of public space.

In this sense, implementing a new system of Metro implies an answer to what happens around the stations. Therefore, planning transport includes an integrated understanding of what is around transportation places, conceived as part of building the public space.



Image 13. Parc Clichy Batignoles. Martin Luther King.

A landscape and transportation project, including housing and public space, has already been built on the periphery of Paris.

Another architect and urbanist, David Mangin, offers a complementary way of conceiving public spaces of metro and railway stations.⁵³ Instead of underground urbanism, he proposes developing a vertical approach, from the Metro to the neighbourhood and the city.

1.3 Buenos Aires: railways as a bloodline for a democratic public space

Buenos Aires is, by far, nowadays, at least, the less affluent metropole in the three cases under study. At the heart of *Pampa Húmeda*, a vast, fertile hinterland, it is also a port city and the industrial heart of Argentina. Railway and car infrastructure coexist, but unlike Paris and Tokyo, the former was left behind for the latter, despite relatively recent efforts to upgrade them. Amid public transportation means, motor passenger services play a significant role.

⁵³ David Mangin, Marion Girodo, and Seura Architectes, *Mangroves Urbaines Du Métro à La Ville : Paris, Montréal, Singapour* (Paris: DOMINIQUE CARRE, 2016).

A plain, rich in land and water, was open for the growth of a city through a grid. Then, railways, subways, and tramways gave way to new neighbourhoods, suburbs, and urban development. Since the mid-seventies, motorways and car-related development boosted gated communities as part of a new wave of urban development. Informal settlements found their way into public or scattered vacant lands, often without access to public transportation services. This later stage of urban development is more consuming of land, less able to be serviced by infrastructure at a reasonable cost and less inclusive in social terms.

Since its foundation, Buenos Aires has been object to different urban plans. A series of innovations in infrastructure and public services came with the passage from a Gran Aldea (a great village)⁵⁴ to a great metropolis. Buenos Aires metropolitan railways were the backbone of its initial growth.⁵⁵ In the mid-20th century, a series of plans for spatial strategies tried to establish a link between urban development and transportation.⁵⁶

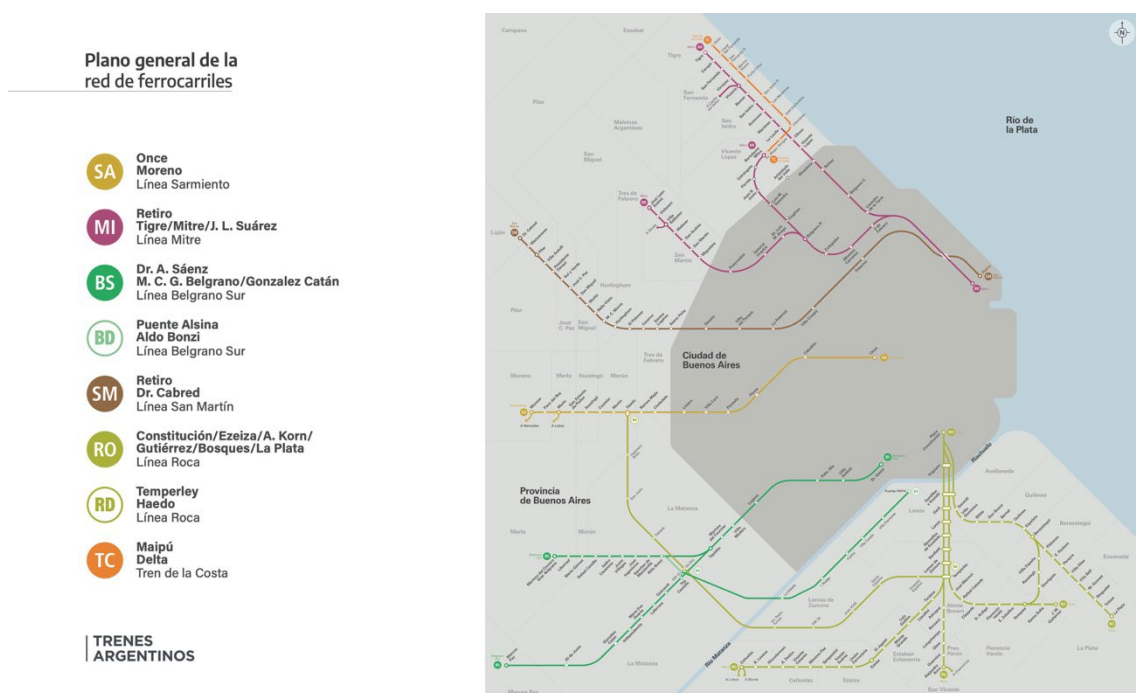


Image 14: Buenos Aires metropolitan railways were the backbone of its initial growth.⁵⁷
The network is a legacy from the beginning of the XX century.

⁵⁴ Lucio V. Lopez, *La Gran Aldea* (Buenos Aires: El Aleph, 2000).

⁵⁵ Schlomo Angel, *Planet of Cities* (Cambridge, Mass.: Lincoln Institute of Land Policy, 2012).

⁵⁶ Borthagaray, *Buenos Aires, Tras Las Huellas Del Futuro. Entre Urbanismo Explícito y Decisiones de Planeamiento (1958-2018)*.

⁵⁷ "Plano General de La Red de Ferrocarriles," argentina.gov.ar, 2021, https://www.argentina.gov.ar/sites/default/files/mapa_trenes_amba_300822_0.pdf.



Image 15: Buenos Aires Subway network.⁵⁸

While it has a very early development for its region, most of the subway network was built in the mid-20th century. Even though Buenos Aires started the first line of its network in 1913, the growth rhythm declined steadily since the mid-XX century. However, in the mid '70s, a decision to develop penetrating urban motorways and demolish hundreds of densely built blocks changed the balance at the expense of guided urban transportation.



Image 16: Railways as urban rivers. Photo: Albano García for Arquís.⁵⁹

⁵⁸ Gobierno de la Ciudad de Buenos Aires, “Mapa Del Subte y Combinaciones,” Buenosaires.gob.ar, 2022, <https://www.buenosaires.gob.ar/subte/mapa-y-combinaciones>.

⁵⁹ Sandro Munari, “Los Ferrocarriles Como Ríos Urbanos.,” in *Arquís, Revista de Arquitectura de La Universidad de Palermo*, ed. Andrés Borthagaray (Buenos Aires: Universidad de Palermo, 2017), 39–43, https://www.palermo.edu/arquitectura/pdf/Arquis_POSTFOSIL.pdf.

The support of railway infrastructure is also a reserve of natural land and could improve green spaces in Buenos Aires, even if they are not as accessible as public spaces.



Image 17: a railway crossing in Buenos Aires. A critical infrastructure to rediscover.

There are new projects for changing priorities in favour of public transportation in some arterial avenues in Buenos Aires. But the current shift from railways to motorways is visible in metropolitan declining stations urban environments and the emergence of new developments at crossroads at the main motorways.

There is a long history of relatively recent efforts to articulate spatial and transportation strategies. Among them, since the second half of the XX century: *Esquema Director (1969)*, *Estudio Preliminar del Transporte para la Región Metropolitana (1971-73)*, *Lineamientos Estratégicos (2006)*, and a *Plan Quinquenal (2014)*.⁶⁰ However, they remained rather theoretical than actual planning guides. In practice, capital investment since the mid-seventies prioritised road infrastructure over railways and subways. While real investments and public works were not part of a stated plan, they may be considered implicit plans. For instance, administrative innovations for financing public works with tolls and the concentration of power in the dictatorship or after the shock of hyperinflation in the early nineties were powerful enough to practice disruptive policies.

On the other hand, after the nationalisation of the railways in the late '40s, metropolitan fares remained frozen during growing inflation. This measure helped make the journey to a less

⁶⁰ Borthagaray, *Buenos Aires, Tras Las Huellas Del Futuro. Entre Urbanismo Explícito y Decisiones de Planeamiento (1958-2018)*.

expensive land on the outskirts affordable. However, it benefited the landowners without charging for the improved accessibility. This lack of coordination between fares and land use impacts would have long-term effects.⁶¹ Complementary, it also had long-term consequences for the management of railway companies.



Image 18: Federico Lacroze station in Buenos Aires.

An active hub combines subway, railway, and bus lines. But it was somehow isolated from surrounding public spaces and neighbourhoods.

On the other hand, railways were progressively neglected, passenger services drastically reduced for intercity services and metropolitan services were rationalised and privatised for some time, then partially renationalised.⁶² While the subway was the public transportation mode that was slightly increasing in passengers, it has had the most severe decline since the pandemic. Conversely, individual ways of transportation have risen proportionally at the expense of public transportation modes in the same period, consolidating and deepening long-term trends.⁶³

1.4 A preliminary finding of a combined analysis: paradoxically, the less motorised society has been investing the most in roads

Through these three metropolitan cases, common elements are combined in different proportions. All three have their share of space associated with railways and subways, their share of space related to pedestrians and bikes and car space. The most striking difference comes when timeframes show that while Tokyo and Paris continued to develop railway infrastructure until now, with some peak periods of development, Buenos Aires mostly inherited its networks from

⁶¹ Horacio Torres, *El Mapa Social de Buenos Aires 1940-1990* (Buenos Aires: FADU - UBA, 2006).

⁶² Lopez, Waddell, and Martínez, *Historia Del Ferrocarril En Argentina. La Política Ferroviaria Entre 1857 y 2015*.

⁶³ Aiga Stokenberga and Javier Morales Sarriera, "Buenos Aires Transport Demand Assessment: Leveraging Big Data To Understand The Changing Mobility Patterns," 2022, <https://documents1.worldbank.org/curated/en/099210006232252568/pdf/P17720505bc7080c409f82092e88455b9d4.pdf>.

late XIX and early XX century. And what it shows in most recent times, despite new interventions in favour of bus priorities, bikes, and pedestrian spaces, is a very dynamic development of car spaces.

This decline in railway infrastructure is part of a context of institutional weaknesses and economic decline. Or, reciprocally, part of the explanation behind the economic decline lies in the evolution of its railway infrastructure. Moreover, part of the rationale behind disparities in income distribution in Buenos Aires compared with the two other metropolises, could also have one root in the relationship between transportation and land policies.

Urban development follows transportation infrastructure. And transportation infrastructure generates specific types of urban development according to modal choices and spatial strategies. While in Paris, the state and public authorities, in general, could shape spatial actions to a certain extent, in Tokyo, private transit companies could shape urban strategies along railway corridors. In Buenos Aires, at least at a metropolitan scale, urban development follows as the consequence of shifting public regulations and short-term strategies in private developments.

Land and energy constraints were different in each case. Nevertheless, with a mixed-modal structure, Buenos Aires could be a link between developed and emerging cities. This international approach illustrates how metropolitan railways could be seen as the future and not as, at best, a nostalgic and second-best possibility. It also shows how the economics of land value capture could boost a new era for improving existing infrastructure and inclusive and sustainable mobility.

More specifically, spaces of mobility are critical elements of modal choice. By explicit decisions or by default, decisions on those spaces shape the metropolitan future.

2. Public spaces of mobility under pressures for change

In different economic contexts, with dramatic shifts in their financial situations, the three metropolises are affected by global trends –including the environment and global warming– that act as change accelerators. At the same time, recent international events generated additional pressure on energy policies. The three metropolises are or have recently been subject to world events. As it is known, those events are expected to catalyse improvements in their transportation infrastructure and leave a legacy in their urban environments. In addition, Tokyo, Paris, and Buenos Aires must cope with the increasing demands of social inclusion and ageing populations, although in different relative weights.

The state has a commanding role in the new railway infrastructure in Paris. In Tokyo, the private sector is a long-term-oriented one. In Buenos Aires metropolitan railway services returned to public management, but a strained, organizationally unstable one. While in the first two cases, urban development is somehow, even if imperfectly, linked to high-capacity public transportation infrastructure, in Buenos Aires, this link exists, but it is a declining one. Many reasons could explain this decline: complex management requirements, financial constraints, unsustainable fares, and declining demand. Industrial policies and economic models could be complementary factors. However, this integrated approach shows the vital necessity of revisiting this element of metropolitan mobility.

This section will consider social inclusion and the consequences of environmental changes in public health. Then, it will discuss the extent to which recent global events act as accelerators in modal shifts in different cases and how those factors converge on public spaces of mobility.

2.1 Ageing and younger populations

The ageing population is a common trend in the three cities. However, in Tokyo this is more accentuated by a longer life expectancy and lower immigration rates. In this context, policies for an ageing population offer different lessons.⁶⁴ In Paris, the European and national laws are drivers for change.⁶⁵ Buenos Aires has part of its population ageing without a social safety net equivalent to those of Paris and Tokyo. While Buenos Aires is a walkable city in many parts of its structure, there are emerging restrictions too.

On the one hand, a growingly car-oriented infrastructure is not adapted for the ageing part of the population. On the other, sidewalks, pedestrian crossings, railway and subway stations and bus stops are weakly adjusted for accessibility. However, it is a long-term process in older stations. In Buenos Aires, meeting accessibility policies should drive change in mobility spaces.

Concerning younger populations, how children attend school indicates car dependence in some societies and inclusiveness, equality, and environmental health in others. For different reasons, Tokyo has the highest access by bike. While the culture and spatial determinants are singular to its case, it shows how it can evolve and be included as a reference for the other two. Population increases or decreases in big cities and changes in respective population age structures pose a complicated equation for governments to solve. It is a matter of efficiency and equality in how public policies assign priorities, including public spaces of mobility.

2.2 Gender and public spaces of mobility

A gender perspective is increasingly included in public policy statements and academic studies on urban mobility. Its consideration in defining goals and measurement of policies strengthens the point for a more sustainable mobility model and accessible public spaces. Based on newly published statistics from Buenos Aires, after a 2018 household mobility poll, a gender perspective offers inversed proportions of walking travel (28,3% women and 20,4% men), to car travel (20,6% and 33,7% respectively) and motorcycle travel (1,5% and 4,8%, respectively). While in public transportation, the distribution is 44,7% to 32,6%, travels by bicycle is 3,2% for women to 4,8% for men.⁶⁶ This last distribution by gender contrasts sharply with the case of Tokyo, according to a recent study by Marion Lagadic.⁶⁷ A first reading of the gender perspective by travel mode has a straightforward translation to the design of public spaces of mobility if they

⁶⁴ Junko Saito et al., "Community-Based Care for Healthy Ageing: Lessons from Japan," *Bulletin of the World Health Organization* 97, no. 8 (2019): 570–74, <https://doi.org/10.2471/BLT.18.223057>.

⁶⁵ See, for instance: SNCF, "Making Stations More Accessible in the Paris Region," SNCF Web Page, 2021, <https://www.sncf.com/en/passenger-offer/travel-for-everyone/people-with-disabilities/paris-region-stations-more-accessible>.

⁶⁶ Observatorio de seguridad vial y movilidad, "ENMODO 2018 – Informe de Resultados" (Buenos Aires, 2022), <https://data.buenosaires.gov.ar/dataset/?groups=movilidad>. Observatorio del espacio público de Bogotá - Defensoría del espacio público, "Reporte técnico de indicadores de espacio público" (Bogotá, 2019), http://observatorio.dadep.gov.co/sites/default/files/2019/reporte_tecnico_de_indicadores_de_espacio_publico_2019_baja.pdf.

⁶⁷ Marion Lagadic, "Cycling for All ? A Feminist Analysis of the Tokyo Bicycle Utilisation Promotion Strategy," Version 1 (Paris, 2022), <https://hal.archives-ouvertes.fr/FFJ/hal-03683676>.

expect to be inclusive. Moreover, another study in Buenos Aires led by Agostina Signorini and co-directed by Andrea Gutiérrez shows that gender distribution of mobility-related jobs, particularly decision-making posts, has been unevenly distributed by gender.⁶⁸ In this sense, for the gender dimension, always related to social-gender roles, sharing public space is not only infrastructures but also uses public space from a gender perspective.

2.3 Health concerns beyond the pandemic

Each one of the three metropolises had to react to global sanitary crises. Moreover, their societies being part of a progressively digitalised environment, the last pandemic acted as a driver of change in work, education, health services and shopping habits.

But while the pandemic exacerbated health concerns, there are reasons to permanently include health as a critical urban policy goal as Anne Vernez Moudon explains, in a nutshell, how people who do not use the car every day tend to be healthier. There is, therefore, a link between urban design, how people move and health. Amid many other articles about health and mobility, a series published in *Lancet* develops the idea about how "City planning decisions (...) shape land uses and travel patterns, which in turn influence urban lifestyles and environmental exposures, and thus human health and environmental sustainability".⁶⁹ In this sense, much of the urban growth anticipated by 2050 is expected to occur in low-income and middle-income countries (LMICs), which are disproportionately affected by the global disease burden and face the harshest consequences of climate change.⁷⁰ A set of indicators shows the condition of 25 selected cities on an open-source database, which is expected to include more cases in the future. The conception is dynamic. It contains goals and measures to reach them. What is relevant in this case is the way public authorities address health as a primary concern for their spatial and transportation policies and the importance of both strategies integrated since the formulation and organisation of local governments. The three metropolises studied here, Tokyo, Paris, and Buenos Aires, are out of the selected cities in the database. Nevertheless, it provides a framework for health concerns related to one of the main points of this discussion paper: spatial and transportation policies need to be addressed comprehensively.

In this sense, city planning policy is often inconsistent with public health evidence. In many cases, beyond this study, it contributes to urban design and transport features that foster car dependence and suburban sprawl, with inadequate access to jobs, shops, parks, and schools by walking, cycling, and public transport. Effects tend to be measured more often than systems of policies (e.g., transportation policies), affecting how the problems are framed.

In Anne Vernez's words, how we design cities is also how we produce air pollution. Therefore, one of the policies cities must encourage is health, not only in general statements but also in quantitative targets (people must walk or 25% of the population must walk, means to enable that).⁷¹

⁶⁸ Agostina Signorini, "Hacia La Movilidad Inclusiva: El Rol de Las Mujeres En El Sector Transporte de La Ciudad Autónoma de Buenos Aires.," *Memoria Ciudades Inteligentes e Inclusivas*. (Buenos Aires, 2021).

⁶⁹ Melanie Lowe et al., "City Planning Policies to Support Health and Sustainability: An International Comparison of Policy Indicators for 25 Cities," *The Lancet Global Health* (Elsevier Ltd, June 1, 2022), [https://doi.org/10.1016/S2214-109X\(22\)00069-9](https://doi.org/10.1016/S2214-109X(22)00069-9).

⁷⁰ Lowe et al.

⁷¹ Lowe et al.

2.4 Olympics and world events

International events are also drivers of change in mobility, affecting the three case studies differently. Tokyo had just organised the 2020 Olympic Games (in 2021, because of the Covid pandemic), and a new World Expo will take place in Osaka in 2025. There was new infrastructure, such as barrier-free access at essential subway and mainline stations, parks, roads, and sidewalks. Part of the legacy was how to manage a bubble during the games. Previously, in parallel to the 1964 Tokyo Olympic Games, the Tōkaidō 'New Main Line' – *Shinkansen* – was inaugurated.⁷² It constitutes a landmark in how global events and mobility projects can be associated.

Paris was host to the World Expo, the Olympic Games of 1900 (when the Metro entrances of Guimard were introduced), and the 1924 Summer Olympic Games, amid other great events. It will hold the Olympic Games of 2024. The transportation innovation for 2024 is the Grand Paris Express, even though its conception has begun earlier. The extent to which the investment in the Grand Paris Express should be considered part of the costs of organising the games is subject to debate.⁷³

Buenos Aires organised the Summer Youth Olympic Games in 2018. The Olympic village left new infrastructure and housing units, clearly improving a left-behind neighbourhood. But it was a different kind of international event, and there was no such evident long-term transportation legacy as a housing one. For the Soccer World Cup of 1978, the main transportation legacy was a partially built network of urban motorways.⁷⁴ In this case, even if very different ones at different times, global events did not revert a long-term trend of decline in Buenos Aires railway infrastructure.

2.5 A combined approach to health, energy, and environmental policies

To include health considerations may seem a long-term expectation. However, it is not only the need to react to challenges such as the pandemic. Indeed, it was a driver of change that generated different consequences in different cases. Moreover, it tended to accentuate previous trends in the three Metropolis, like growing electronic commerce and developing a new kind of urban logistics.⁷⁵ For example, in Buenos Aires, while there was a slight increase in the share of bicycle travel, there was an overall increase in car ridership (more than 12% of current cars and motorcycles were public transportation users before the pandemic, according to an interview of the authors of a study – Stokenberga and Morales Sarriera – by Karina Niebla.⁷⁶ In this sense, each city tended to accentuate previous trends.

⁷² Japan House London, “Shinkansen and the Legacy of Tokyo 1964,” Japan House London, 2021, <https://www.japanhouselondon.uk/whats-on/2021/shinkansen-and-the-legacy-of-tokyo-1964/>.

⁷³ Alexandre Faure, “The Impact of Paris 2024 on the Construction of the Grand Paris Express : A Hidden Extra Cost of the Olympic HAL Id : Hal-03253557 FONDATION FRANCE-JAPON DE L’EHESS FFJ DISCUSSION PAPER # 21-02 The Impact of Paris 2024 on the Construction of the Grand P,” 2021.

⁷⁴ Jennifer Tamara Hoyt, “Beyond the Dirty War : Urban Reforms and Protest in Buenos Aires during the Last Military Dictatorship , 1976-1983” (The University of Texas at Austin, 2012), <http://pqdtopen.proquest.com/doc/1432175829.html?FMT=AI>.

⁷⁵ Andrea Gutiérrez, Laura Ziliani, and Andrés Borthagaray, “La Ville Lise, Flux et Points d’ancrage de l’e-Commerce à Buenos Aires,” *Urbanisme* (Paris, 2019).

⁷⁶ Karina Niebla, “Por Qué Mucha Gente Abandonó El Transporte Público En La Ciudad y El GBA,” *Clarín*, September 30, 2022. Based on Stokenberga and Morales Sarriera, “Buenos Aires Transport Demand Assessment: Leveraging Big Data To Understand The Changing Mobility Patterns.”

Soaring energy prices are a global and short-term concern too. Amid the measures proposed by the International Energy Agency to reduce dependence on hydrocarbons, there are short-term policies such as speed reductions and behavioural changes.⁷⁷ At the same time, health considerations and reactions to energy crises tend to reinforce each other. And to those concerns, the need to address them drastically to afford climate challenges. In this case, for instance, a national law in France acts as a driver of change for transportation and urban policies.⁷⁸

Public spaces of mobility are closely related to health. The way spaces —urban expansion patterns — are articulated determine the possibility of their access by public transportation and active mobility. And, reciprocally, transportation infrastructure determines the way spaces are articulated. Public transportation facilities and new developments must be combined. There is a need to build new networks. That was the case with RER and Grand Paris Express. The extension of Tokyo lines preceded urban development. The same happened initially in Buenos Aires, from the centre to the neighbourhoods.⁷⁹ But later, the decline of railways closed many passenger services for good, and the development of new motorways facilities marked new urban development patterns. And once those patterns result in a low-density, land-consuming outcome, it is costly to arrive at public transit infrastructure, especially when resources are scarce.

However, Buenos Aires can still foster existing railway infrastructure, which offers the most inclusive, environmentally sustainable transportation.

In the post-pandemic reality, when cities are still adapting to a new situation, the way activities take place seems to have lasting changes. Availability or scarcity of land is one essential one. While in Buenos Aires, there is the availability of land and laxist government control, Paris has a much more controlled system of land use and building permits. Tokyo has developed its model where public transportation providers combine urban development along the corridors in a particular way for a very scarce availability of land. While in Paris, public transportation providers and developers are mainly public (RATP, SNCF, SGP), even though some private operators also have a secondary role, they are primarily private in Tokyo. Part of them was always private, and part of them was privatised in a relatively recent period. In Buenos Aires, there were several changes in how railway operators were managed, from public to private concessions to public again. Buses remain privately operated but with public subsidies, at least in the last few decades. The three metropolises have different relations to the car industry. The most unequal on the economic front, Buenos Aires, with the lowest motorisation rate, is the one that has invested more in car infrastructure to the detriment of new transportation infrastructure globally.

⁷⁷ International Energy Agency, “A 10-Point Plan to Cut Oil Use,” (Paris, 2022).

⁷⁸ République Française, “LOI N° 2021-1104 Du 22 Août 2021 Portant Lutte Contre Le Dérèglement Climatique et Renforcement de La Résilience Face à Ses Effets (1) - Légifrance.”

⁷⁹ James R. Scobie, “Buenos Aires: Plaza to Suburb, 1870-1910” (New York: Oxford University Press, 1974).

3. Sustainable growth, inclusion, and governance in public spaces of mobility

This section considers the relation of public spaces of mobility to the growth dynamics behind the three case studies. In this sense, it analyses how international agreements affect urban strategies in this discussion. And in the last part is about how public spaces of mobility, at the heart of democratic societies, must challenge installed habits in the political constituencies on whom governments rely.

3.1 Growth / "Ungrowth"

National patterns of growth affected metropolitan developments for each capital. Japan had a miraculous growth since the Meiji restoration and from the end of World War Two until the late 80s.⁸⁰ Successive waves of growth included, amid other sectors, railways, motorways and cars, and lately, mass transit plus alternate energy cars. The search for hydrogen solutions happens simultaneously while the population is shrinking and ageing.

France had an earlier industrial development and accelerated growth in the "30 glorieuses", also a post-war boom. There was a significant car role, but railways were also renewed in successive waves. Today, there is a combination of new developments, such as the Grand Paris Express and a shift in the car industry towards electrification.

Simon Kusnetz, Nobel Prize in economics in 1971 for his work on growth, reportedly said: "there are four types of countries in the world—developed, undeveloped, Japan and Argentina."⁸¹ Since then, Argentina's economic growth has been deceiving, particularly since the mid-seventies.⁸²

Argentina offers a singular case in economic terms. Despite a booming economy in late XIX and early XX and a more modest growth until the mid-seventies, it declined in the following decades.⁸³ The debate about addressing economic policies seems to shadow any other policy concern. However, the way to conceive mobility, transportation infrastructure, and economic growth should be part of that debate. On the one hand, because of the weight in economic terms of resources employed for an inefficient and unequal mobility outcome. On the other, an integrated approach in metropolitan Buenos Aires and other metropolitan areas in terms of mobility spaces and transportation could generate revenues for financing an upgrading of public transportation infrastructure and a more ingenious pattern of associated land policies. In addition, it should have environmental and social benefits and make living conditions more affordable for its population and more efficient and successful in public health policies. It could be part of a policy for making public budgets more balanced. Public budgets where the weight of energy and transportation subsidies is particularly relevant. It could also help make transportation

⁸⁰ Sébastien Lechevalier, *The Great Transformation of Japanese Capitalism*, ed. Sébastien Lechevalier (New York and Abingdon: Routledge, 2014).

⁸¹ Quoted in *The Economist*, "How Argentina and Japan Continue to Confound Macroeconomists Bold New Policy Frameworks Have Failed to Break Long-Standing Habits," *The Economist* (London, March 28, 2019), <https://www.economist.com/finance-and-economics/2019/03/28/how-argentina-and-japan-continue-to-confound-macroeconomists>.

⁸² Gerchunoff et al., *Medio Siglo Entre Tormentas. Fluctuaciones, Crisis y Políticas Macroeconómicas En La Argentina (1948-2002)*.

⁸³ Pablo Gerchunoff et al., *Medio Siglo Entre Tormentas. Fluctuaciones, Crisis y Políticas Macroeconómicas En La Argentina (1948-2002)*, 1st ed. (Buenos Aires: EUDEBA, 2022).

infrastructure capital investments more consistent and coherent. And it could offer consistent metropolitan policies (a failed condition all along the proposed spatial strategies since 1958).⁸⁴

The motorisation rate is proportionally lower in Buenos Aires. However, along with its country and region, it shows a progressively car-dependent evolution.⁸⁵ There have been proportionally smaller investments in railways. And the evolution of the car industry towards gas, electricity and hydrogen-based energy generation is at its beginnings.

3.2 International agreements declined in metropolitan cases

International agreements on climate change left images of spatial frameworks, such as the schemes for Grand Paris that followed Kyoto's agreement. As the 2015 Paris agreement's goals seem now unattainable, the question of what to do with roads, stations, roads, and streets becomes even more urgent.

In each case, successive railways and car industry technologies were behind images of metropolitan responses to those updated commitments. Climate pressures for change must compete with other urgencies, particularly in Buenos Aires. However, combining policies, representations and governance devices could be part of changing policies. In this sense, the environment, climate change and energetic transitions could be part of integrated policies facing demographic changes, ageing populations, gender issues, social inclusions, poverty alleviation and economic development.

Measures to mitigate and adapt to climate change are part of stated public policies at national and local levels. For example, Argentina's government has just published guidelines for a sustainable transportation plan.⁸⁶ It proposes three axes for reducing gas, electricity, and lithium emissions. That could be partly a trend already initiated by the national governments in the two other examples. However, it will take longer because of local industry constraints, affecting a less motorised society. But changes in mobility's spatial and social organisation could be part of much faster and broader benefits.

Urban mobility patterns less dependent on cars are necessary to meet energy constraints, climate challenges and social integration. But they require a combined approach of spatial strategies concerning public transportation networks and city services. The challenge is dealing with complex regions when long- and middle-distance travel needs are changing. There is a new angle still in the project to be integrated by public policies.

3.3 Public spaces of mobility, a democratic challenge to installed habits

People did not become car-dependent spontaneously. Conversely, any measure to promote a shift in car dependency will meet resistance. But it could be smoother if political will is aligned with a well-designed policy framework. In any case, developing a high-capacity transit network combined with land use and urban development measures and the quality of combination stations and public spaces for active mobility will be essential.

⁸⁴ Andrés Borthagaray, *Buenos Aires, Tras Las Huellas Del Futuro. Entre Urbanismo Explícito y Decisiones de Planeamiento (1958-2018)* (Buenos Aires: Fundación Tejido Urbano. Buenos Aires Publica. , 2021).

⁸⁵ International Organization of Motor Vehicle Manufacturers, "Motorization Rate 2015-Worldwide," n.d.

⁸⁶ Ministerio de Transporte de la Nación and Presidencia de la Nación, "Plan Nacional De Transporte Sostenible," Boletín Oficial § (2022), <https://www.boletinoficial.gob.ar/detalleAviso/primera/272624/20220928>.

Behaviours, as explained in The Installation Theory⁸⁷ or in a policy approach that helps people to make better decisions for themselves voluntarily, as explained in an article about commuting travel behaviour focused on shared transportation during Covid-19 and Tokyo Olympics,⁸⁸ are an essential point in a transition. However, as this analysis illustrates, decisions are not necessarily voluntary. Advertisement, an array of options for public transportation and active mobility, giving or taking room for individual car options, and fiscal and economic incentives are some of the factors that might condition behaviours. And critically, public spaces of mobility play a central role in decisions through their quality, their accessibility, their representation, their central role as a democratic space and the experience they offer to the people.

Conclusion: guidelines for a possible roadmap

As explained, despite being less motorised than Tokyo and Paris, Buenos Aires tends to depend more on cars. This paradox follows social trends and a pragmatic response for those who can reach more affordable housing not served by public transportation. Many reports state how unequal Latin America is in income distribution. And how income gaps tend to be widening globally. The way cities and national governments allocate investment of public funds for mobility infrastructure is one of the reasons for explaining inequality besides being unsustainable in environmental terms. Paris, Tokyo, and Buenos Aires had started since the XIX century to develop guided infrastructure. The first two continued developing it all along the XX and this part of the XXI century –in waves in the case of Paris, more continuously in the case of Tokyo– while Buenos Aires remained basically with the networks of the early XX century. The reasons are complex and varied. One of them was supporting the car infrastructure to the detriment of the railway infrastructure. Another one is an apparent divorce between urban mobility and spatial strategies. And still another one is how, through the successively public or private provision of services, the governance of railways struggled to develop and sustain a long-term vision.

In short, four issues came out of this analysis: first, the need to link transportation, urban planning and development, and governance; second, a virtuous relation between transportation nodes and quality public space; third, the crucial importance of the users' experience in modal and intermodal exchanges; and four, health concerns as a driver of urban design and mobility planning.

The need to link transportation, urban planning and development, and governance.

Transportation networks structure the territories they serve one way or another. Railway grids tend to generate denser, more compact patterns of urbanisation. It could result from a clear public strategy, like in Paris. Or it could be the consequence of transportation operators who also have a role in urban development and assets management, like in Tokyo's case. Strategies along the corridor make sense in urban development, and the rationale of the equations is financing infrastructure and exploiting public transportation services. However, this system can have a dark side, like enhancing sprawl in the periphery and creating too high a density in the centre, fostering real estate bubbles and rigidity to accommodate an ageing population. Tokyo's system can also

⁸⁷ Saadi Lahlou, *Installation Theory The Societal Construction and Regulation of Behaviour* (Cambridge: Cambridge University Press, 2018), <https://doi.org/https://doi.org/10.1017/9781316480922>.

⁸⁸ Nagahiro Yoshida and Weilin Ye, "Commuting Travel Behavior Focusing on the Role of Shared Transportation in the Wake of the COVID-19 Pandemic and the Tokyo Olympics," *IATSS Research* 45, no. 4 (2021): 405–16, <https://doi.org/10.1016/j.iatssr.2021.11.010>.

be challenging to reproduce from its original context. But those reserves can be avoided or mitigated and must be weighed against the effects of the current urban growth trends.

What is attractive from a Buenos Aires perspective —and in a certain way from other emerging, metropolises too— is that there is a way to manage growth by corridor despite not having a clear governance structure for overall regional spatial or transportation strategies. Thus, how Tokyo shapes urban development through each corridor deserves more study for metropolises in other parts of the world.

In the case of Paris, there is a strong engagement of public authorities and a more legible governance structure for spatial and transportation strategies, even though it is still complex. Moreover, public operators are also involved in real estate development. In one way or the other, both cases can provide alternative models for the railway, the subway, transportation service providers and regulatory authorities in emerging metropolises.

A virtuous relation between transportation nodes and quality public space.

Public spaces, in all cases, are crucial to the success of public transportation and urban development. From the large-scale metropolitan development to the architectural scale and the intermediate scale of the neighbourhood, they are essential to articulate the whole urban framework and the railway transportation networks. Moreover, the vitality and attractiveness of stations as public spaces are crucial for improving the experience of people travelling around the cities and shifting towards more sustainable public transportation.

Despite systematic interventions, too frequently, the experience offered by public spaces in Buenos Aires railway and Subway stations can be frustrating. This situation could change through a virtuous circle of revitalising stations and urban development, financing railways and improving mass transit services, enhancing household budgets, and improving public finances.

Users' experience in stations: modal and intermodal exchanges.

Returning to the research questions, how space, behaviour, and governance interact in these evolving cities can offer a clue to consider alternative courses of action and weigh their consequences. Whatever the role of technological evolutions in car engines, it is still imperative to promote modal shifts in favour of more efficient public transportation and urban growth alternatives. And to enable more innovative ways of moving around the cities. While there is a worldwide trend in the car industry, a race to develop more efficient batteries and to provide charging infrastructure, governmental actions for improving public transportation and walkable neighbourhoods are much less coordinated.

There are no simple answers to accelerating a modal shift in politically sensitive contexts and framing public debates in different social and economic cases. First, Tokyo and Paris demonstrate that it is not unavoidable that travel by car should rise to the detriment of more sustainable modes. Buenos Aires contrasts with them. Second, to promote changes in attitudes, public transportation's image, perception, representation, and experience are as important as the infrastructure itself. Third, inequalities arise when public transit users are a captive public and not the product of voluntary choices.

Public debates on infrastructure tend to come behind contradictory and conflictive messages. Having explicit references to international cases is a way of framing a discussion for an effective change for individuals and the industry, for governments' priorities in public investment, financing options and governance frameworks. Moreover, these references can help to develop

an awareness of environmental consequences, long-term economic gains, and enhanced quality of life and experience combined.

Health concerns as drivers of urban design and mobility planning.

The pandemic highlighted the need to include health in a prominent role in urban design and mobility strategies. It needs to be addressed more openly in urban research, both from academic and policy institutions. Sanitary networks have dramatically improved health in an urbanising world since the XIX century. The combination of infrastructure networks with metropolitan development could still be a dramatic improvement for decarbonising the planet and reducing respiratory and sedentary diseases, road safety, mental health, and social inclusion.

The question about digital developments and public health strategies in determining the place of social activities and spatial and mobility systems refers to a change in progress. The pandemic acted as a catalyser for pre-existing digital developments that allowed new patterns of the spatial organisation of activities. Remote work, education, health care, and entertainment have all developed new ways of virtual or hybrid modalities. In different degrees, the three cities experienced those trends.

Timeframes and travel purposes change, potentially allowing for a better distribution of installed capacities over days and weeks. And physical travel evolved with improved conditions, accurate time information, better legibility, and alternative ways of metropolitan representation. However, public spaces remain all important.

Difficulties: language and field restrictions for Tokyo

This research has an apparent asymmetry. While there could be an in-depth analysis of Buenos Aires and Paris and updated knowledge of their respective evolutions, direct interviews and access to original documents, there were clear restrictions to studying Tokyo while developing this research. In part due to travel restrictions and in part to language barriers. I tried to overcome these limitations through accessible documentation in English and French, information and interviews with experts with a deep, direct knowledge of Tokyo's mobility spaces. But clearly, the report was less developed than in the other two cases. Yet, for all the shortcomings, I still think it was worth a parallel analysis of three metropolises rarely seen together.

Possible next steps: reverse engineering for emerging metropolises

There is an active field of foreign exchange and cooperation from France and Japan, promoting their respective expertise in urban mobility and climate strategies worldwide. Further developments in this kind of analysis could fill a gap between knowledge offered abroad and first-hand observation from emerging metropolises about the trends and solutions in Paris and Tokyo. A multidirectional exchange could enrich the intellectual capital for anticipating urban challenges globally.

While exceptions exist, policy-oriented comparative analysis in metropolises focuses on case studies closer to economic development. It will be necessary to enlarge the field. The following research steps could include references in other metropolitan cases, such as Sao Paulo and Mexico. Both are developing railway infrastructure and are coping with still-in-process motorisation. Metropolises from different continents, like Ho Chi Min City, integrating other

research subjects under the Fondation France Japon mobility chair, could be part of a comprehensive study.

More attention to what makes the public space of stations places that offer quality, accessibility, attractiveness, and a broad supply of activities, would be a tool for inclusion and sustainability. In the methodology, a grid for assessing the quality of the stations, such as the one developed for the Grand Paris Express, could go in-depth for each case.

An alternative governance structure for contracting and operating transportation services aligned with urban development a, public space design, and management tools could enrich existing options for emerging metropolises, including combining different public or private companies in a coherent network.

Interviews (a synthesis)

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Sébastien Velut. Professor. IHEAL. Sorbonne nouvelle.

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