

TRASPORTI

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60

rivista di architettura delle infrastrutture nel paesaggio



MOBILITÀ, TRASPORTI E PANDEMIA

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Mobility, transport and pandemic

by Laura Facchinelli

For the cover of issue number 60, we have chosen an image with tremendous impact: the impression is that of an explosion, it is surprising and terrifying, and so fittingly evokes the state of mind that we have been living with since the early months of 2020, when our lives were suddenly taken over and disrupted by COVID-19. At the same time, that image is reassuring if we consider, rationally, that that white cloud bears witness to an action aimed at sanitising the environment, and therefore protecting our health. The intervention takes place inside a vehicle, and therein lies the crux of our daily life in the era of the pandemic: the risk of infection - dramatic, pervasive, concrete – was at its highest in our means of public transportation. On the following pages, our experts explain what solutions have been adopted to slow the spread of the virus inside buses, subways and trains. We remain aware of crowded situations that have yet to be addressed and resolved (for reasons of objective difficulty, lack of vehicles, deliberate cuts to the number of runs, lack of controls on crowd flow), when the user can defend himself only by using personal protective equipment, crossing his fingers, and in recent months, trusting in a vaccine.

Another image that remains impressed in our minds, with regard to the pandemic, is the unexpected and alienating (and in some ways poetic) image of our deserted cities, empty of activity and movement, as we saw in the most acute phases of forced (with the rigid rules of the lockdown) or recommended confinement (with the unrelenting presence of virologists on tv).

From the point of view of mobility and transport, our life models were changed by COVID. For example activities moved out of company offices into our living rooms for smart working, from school to our children's bedrooms for remote learning (psychologists will have to analyse the consequences of this prolonged isolation). And citizens who, having to travel, chose to use their personal automobiles (to the detriment, unfortunately, of the environment), or bicycles or scooters (choices that are definitely easier for young people).

Taking advantage of the special (and hopefully unique) opportunity of this pandemic, analysts have wondered if and in what measure the lack of or reduced traffic had any effect on the environment. On the following pages, we take into consideration not only cities, but also internal and mountain areas, especially in terms of accessibility. We review the consequences of the devastating economic crisis on the maritime transport of goods. We document the initiatives undertaken in other countries, where high-speed trains are being planned for the transportation of goods. The consequences of the long and almost total cancellation of cruise ship services and airline traffic were severe: these are aspects related to the suspension of tourist travel. We will address this theme in the next issue of our magazine, which will be dedicated to new forms of tourism.

There is no doubt that a lacerating event such as this pandemic, which is still with us, has stimulated countries, companies and individuals to undertake projects and interventions guided by innovation. Different capacities of reaction, different results. In any case, everything has changed and presumably, when the pandemic is over, nothing will be as it was before.

Questions about the future that awaits us are being raised by sociologists as well, who examine literature and works of art, to try and pick up the trends in the transformation, in relation to our collective experiences and hopes.

Mobilità, trasporti e pandemia

di Laura Facchinelli

Per la copertina di questo numero 60 abbiamo scelto un'immagine che ha un impatto dirompente: l'impressione è quella di un'esplosione, che sorprende e impaurisce, e quindi evoca in modo efficace lo stato d'animo che ci contraddistingue a partire dai primi mesi del 2020, quando la vita di tutti noi, all'improvviso, è stata invasa e stravolta dal COVID-19. Al tempo stesso quell'immagine ci rassicura se consideriamo, razionalmente, che quella nuvola bianca testimonia un'azione volta a sanificare l'ambiente, e quindi a proteggere la nostra salute. L'intervento viene realizzato all'interno di un veicolo, ed ecco il nodo cruciale della nostra vita quotidiana nell'era della pandemia: il rischio di contagio – drammatico, pervasivo, concreto - risulta infatti massimo proprio nei mezzi del trasporto pubblico. Nelle pagine seguenti, alcuni esperti spiegano quali soluzioni sono state adottate per porre un freno alla diffusione del virus all'interno di autobus, metropolitane e treni. Resta la nostra consapevolezza delle situazioni di affollamento non affrontate e non risolte (per difficoltà obiettive, per carenza di veicoli, per deliberata riduzione delle corse, per omissione dei controlli sull'affluenza), dove l'utente può difendersi solo con i dispositivi di protezione individuale, confidando sulla buona sorte e, da qualche mese, sul vaccino.

Un'altra immagine che rimane impressa nella nostra mente, a proposito della pandemia, è quella inaspettata e straniante (per certi aspetti poetica) delle nostre città deserte, prive di attività e di movimento, come le abbiamo viste nelle fasi acute della chiusura imposta (con le regole rigide del lockdown) o comunque raccomandata (anche dalla presenza martellante dei virologi in tivù).

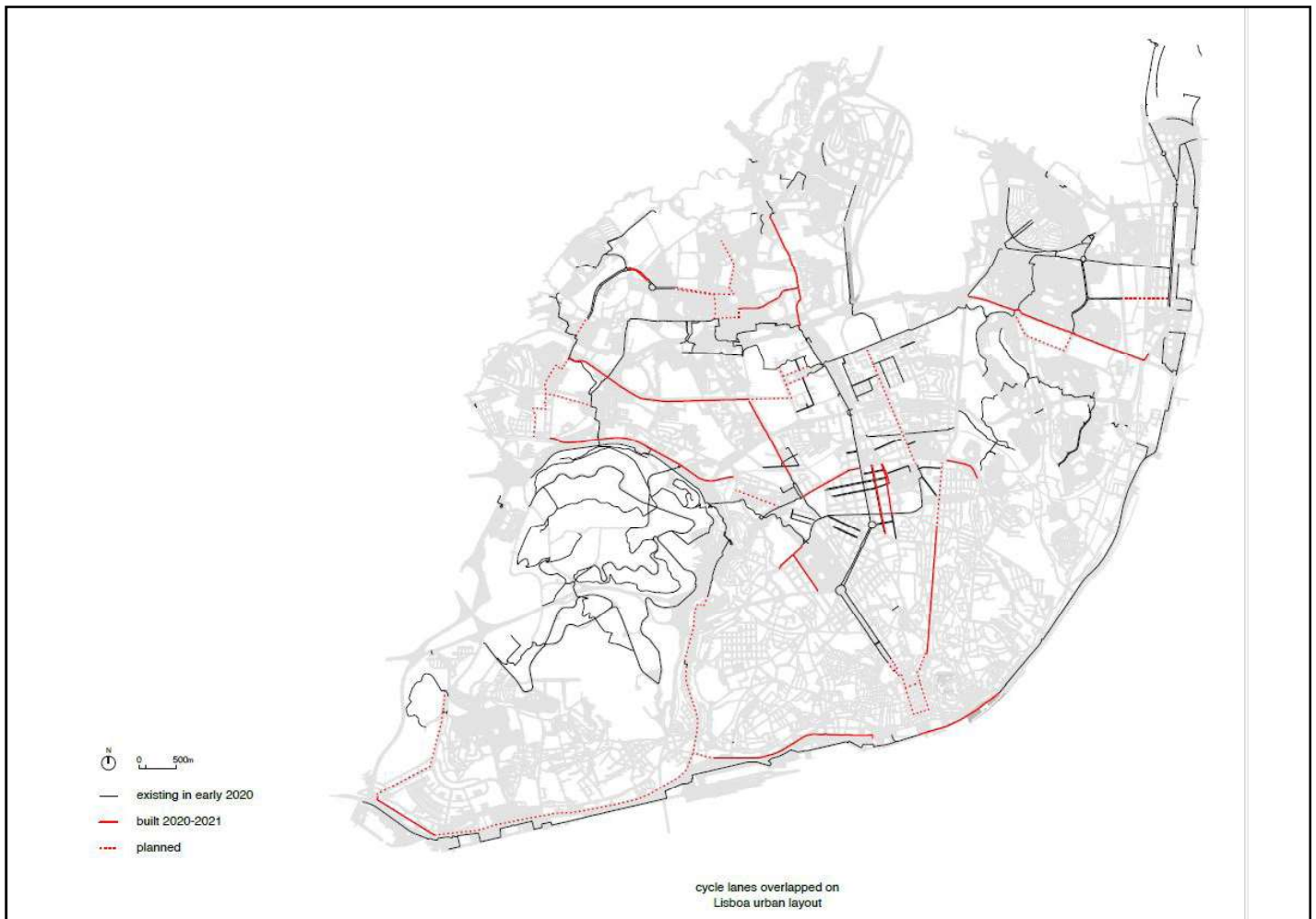
Dal punto di vista della mobilità e dei trasporti, col COVID i modelli di vita sono cambiati. Pensiamo alle attività trasferite dalla sede aziendale al salotto di casa col cosiddetto smart working, dalla scuola alla cameretta dei ragazzi con la didattica a distanza (agli psicologi il compito di analizzare le conseguenze di questa prolungata condizione di isolamento). E pensiamo ai cittadini che, dovendo comunque spostarsi, hanno deciso di usare l'automobile (a danno, ahimè, dell'ambiente) o la bicicletta o il monopattino (scelte decisamente più facili per i giovani).

Cogliendo l'occasione speciale (auspicabilmente unica) di questa pandemia, gli analisti si sono chiesti se e in che misura l'assenza o riduzione del traffico abbia effetti sull'ambiente.

Nelle pagine seguenti si prendono in considerazione non solo le città, ma anche le zone interne e montane, soprattutto in termini di accessibilità. Si registrano le conseguenze della devastante crisi economica sul trasporto marittimo delle merci. Si documentano le iniziative avviate in altri paesi, dove si programmano treni ad alta velocità per il trasporto delle merci. Durissime sono state le conseguenze per la lunga e pressoché totale cancellazione dei servizi con navi da crociera e del traffico aereo: aspetti, questi, legati alla sospensione degli spostamenti per turismo: è un tema che affronteremo nel prossimo numero della rivista, che sarà dedicato ai nuovi turismi.

Certo è che un evento lacerante come questa pandemia, ancora presente, ha stimolato Stati, aziende e singoli a progetti e interventi nel segno dell'innovazione. Differenti le capacità di reazione, differenti i risultati. Comunque tutto è cambiato e presumibilmente, a pandemia finita, niente sarà più come prima.

Ad interrogarsi sul futuro che ci aspetta sono anche i sociologi che, confrontando testi letterari e opere d'arte, possono intuire le linee di tendenza delle trasformazioni, in rapporto alle esperienze e alle speranze collettive.



Triggering adaptation in Lisbon: public space and mobility under COVID-19

by João Rafael Santos and João Silva Leite

Like most cities in the world, Lisbon faced considerable disruption on its urban life, with sharp reduction of tourism, office services and street oriented commercial activities. On the other hand, new pressures increased in residential areas, where a bigger amount of time was spent, and in home delivery logistics. In the middle of such changes, the patterns and logics of mobility were particularly reconfigured, in different ways: sometimes accelerated existing trends; sometimes cases, counteracted them. In some cases, contradictory perspectives were identified, but also new challenges and opportunities.

The changing share of public space dedicated between car, active mobility, pedestrian, and leisure and commercial activities is one of the clearest realms where the impact of COVID-19 pandemic was perceived in Lisbon. In the transportation sector, rail, metro and bus services had a sharp reduction in demand and offer, but congestion was still felt in rush hours in suburban services. On another hand, recently introduced mobility services, such as shared scooters or bikes, have also been subject to changing demands and offered interesting opportunities for alternative mobility solutions, such as home-delivery.

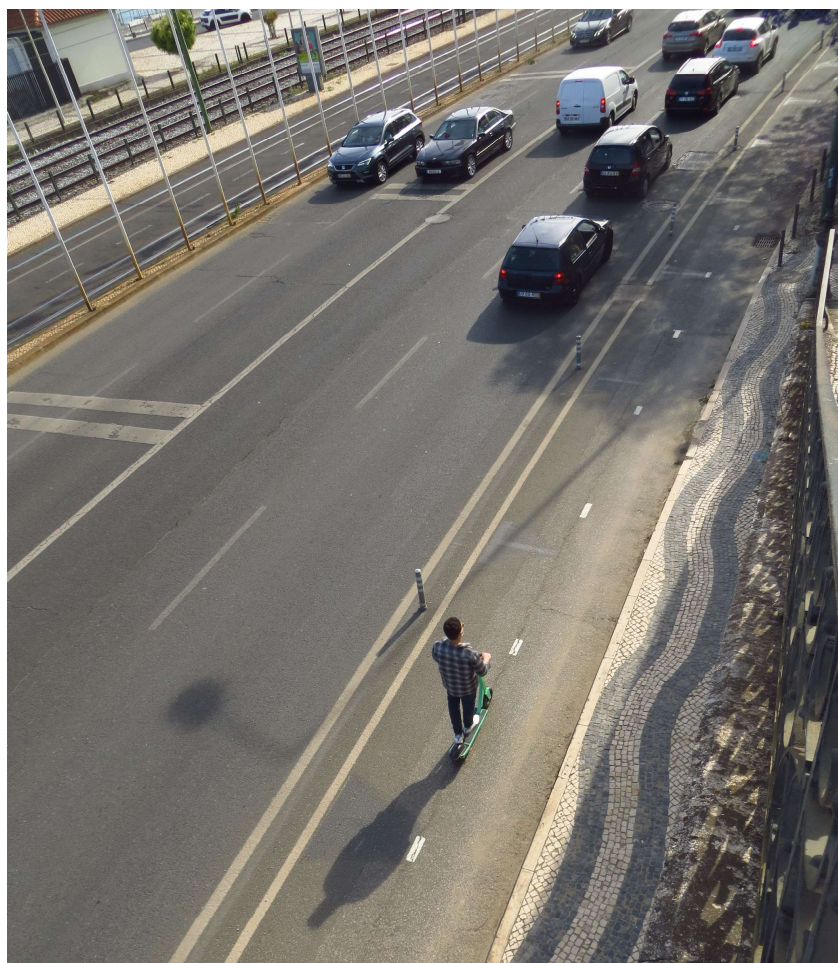
Being a national capital and metropolitan city, Lisbon is simultaneously structured by global, regional and local networks and economic processes. With a significant part of its infrastructure and built fabric organized around larger scale factors (i.e. metropolitan commuting, regional services, international tourism), the impact of COVID-19 pandemic was felt in peculiar ways, eventually different from small and medium-sized cities which tend to be less dependent on external flows. Intensive daily commuting and the presence of national and regional level services (i.e. universities, government or large cultural facilities), together with specific mobility solutions (i.e. mobility as service platforms), shape a unique urban ecosystem distinctively

Innescare l'adattamento a Lisbona: spazio pubblico e mobilità sotto COVID-19

di João Rafael Santos e João Silva Leite

L'articolo fornisce un ritratto degli adattamenti nel rapporto tra mobilità, spazio pubblico e vita urbana di fronte alla pandemia del COVID-19 a Lisbona, aprendo uno spazio di riflessione sulle tendenze di adattamento sia a breve che a medio termine. L'articolo è organizzato in tre sezioni: 1) una breve panoramica sulla situazione pre-COVID-19 di Lisbona, in cui sono delineati i modelli fondamentali di organizzazione urbana e le dinamiche in corso; 2) una mappatura degli interventi erogati nell'ambito della situazione pandemica fra il 2020 e il 2021, come la conversione di strade e carreggiate esistenti agli spostamenti pedonali, le nuove piste ciclabili pop-up, l'estensione delle terrazze di caffè e di ristoranti negli spazi di strade e parcheggi, o l'ottimizzazione degli spazi stradali per aumentare gli usi sociali; 3) alcune linee di discussione sulla resilienza della città, sulla capacità di adattamento e gli insegnamenti per il futuro, a fronte di tali cambiamenti critici sulla domanda di spazio pubblico e di mobilità.

On the previous page, at the top: cycle lanes overlapped on Lisbon urban layout (source: authors). Below: reorganization of traffic space through temporary pavement painting around Arroios market (source: authors).



1 - Pop-up cycle lane in Av. 24 de Julho (source: authors).

2 - Cycle lane in Av. Infante Dom Henrique (source: authors).



reshaped under the interference of sanitary measures.

Aimed at giving a brief insight on these topics, the article portrays the inter-relationships between mobility and the use and reorganization of public space in Lisbon municipality during the pandemic. It offers an outline of the city's major dynamics felt before COVID-19, followed by a mapped identification of physical changes triggered, accelerated or introduced as a response to the pandemic situation and, finally, laying some topics for critical discussion and future adaptation.

Before COVID-19: a city already in transition

Lisbon's metropolitan area is composed of 18 municipalities with a total population of 2,8 million inhabitants. Lisbon municipality, with its 510.000 inhabitants is the region's main economic driver, with a high share of services, touristic and cultural sectors. Despite a fast and intensive growth process during the second half of the 20th century, the metropolitan total population has become rather sta-

bilized in the past 20 years; since the 1970's, however, Lisbon municipality lost more than 300.000 inhabitants, although maintaining very high levels of centrality thanks to national and regional level services, daily commuting from neighboring municipalities and touristic attraction. Tourism has played a decisive role during the past two decades, and, especially, in the wake of the 2008-2011 international financial crisis, with significant investment in local accommodation, public space qualification in central and historical areas, and economic incentives to that sector (Salgueiro, Mendes, & Guimarães, 2017). As a result, major transformation in Lisbon's historical districts land use was felt during the last decade, with older housing and often vacant properties refurbished for accommodation and tourist-oriented services.

Another important and impacting land use change was felt in older port and industrial areas along Lisbon's waterfront, where not only touristic, but also premium offices and services were developed, taking advantage of an incremental public space improvement along the waterfront (Anastasia, 2019). In fact, public space qualification projects have received considerable attention on a broad



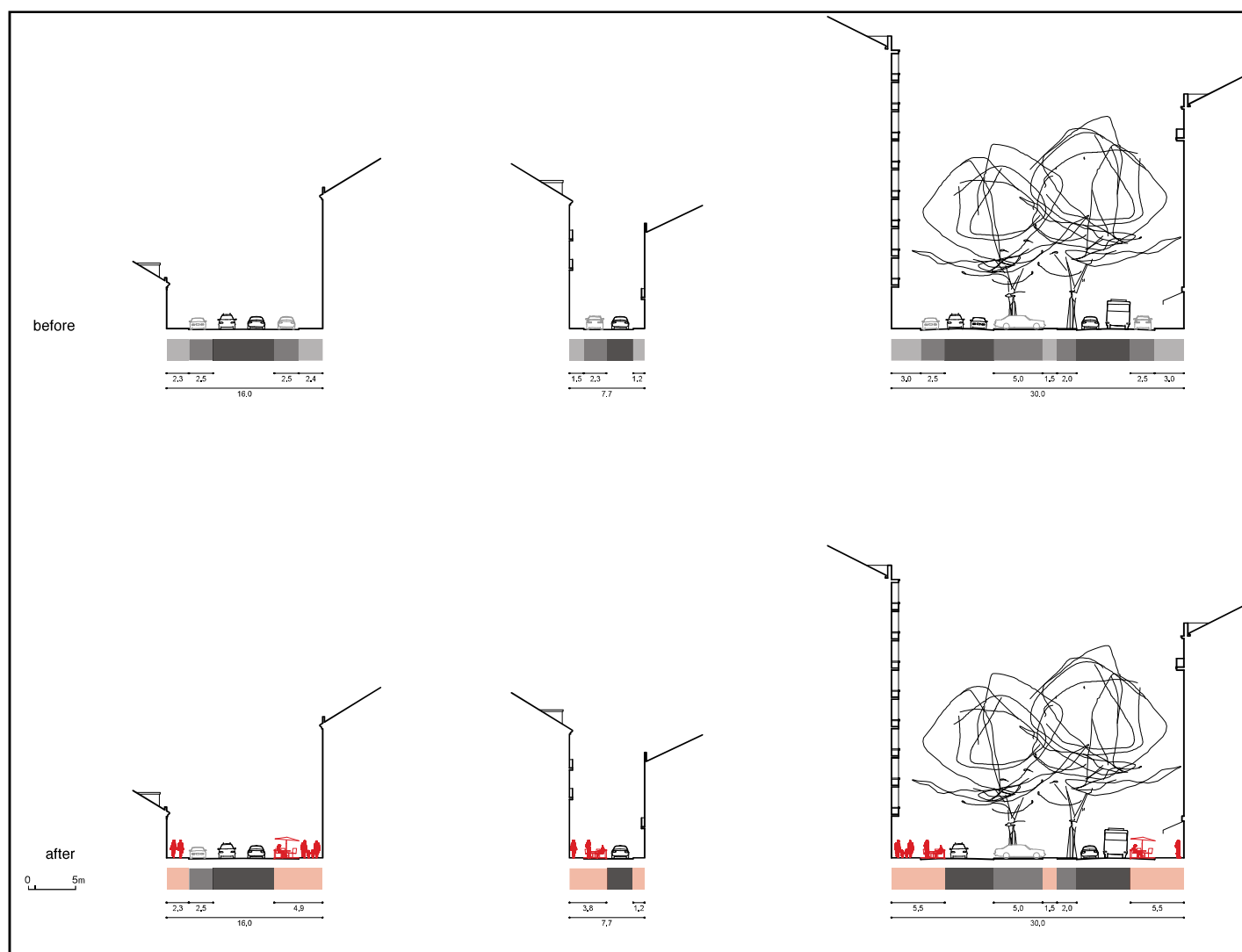
der metropolitan horizon, with local municipalities actively engaging on them (Santos & Matos Silva, 2021). This has been a major field of public investment since the beginning of 21st century, with a focus on increasing spatial quality and walkability in different areas of the city, initially more focused on heritage districts and waterfronts, later on a more distributed basis. Again, walkability and soft mobility take a considerable share in such projects, along with environmental upgrade and green structure development.

When looking at the metropolitan heavy transport networks (rail, tram, metro, river boats), the global radial structure envisioned in the 1960's has been largely consolidated and remains as the basic model, despite a much more polycentric urban location pattern. In fact, only relatively small – yet important – improvements in intermodal stations and limited metro expansion addressed these networks in the last twenty years. Instead, one must look to the lighter pedestrian and cycling lanes associated with green corridors and waterfronts to find a new generation of mobility networks emerging both at the metropolitan and the Lisbon municipality's scales during these last years. The first ge-

neration of cycle lanes implemented during the first decade of 2000 was mostly delivered under a leisure rationale, based primarily on outstanding landscape features (i.e. Monsanto forest park, Tejo river fronts, access to beach areas), later evolving to a green corridor network system, especially in Lisbon municipality. This network reached around 60 km in 2016. In the last ten years, the focus was readjusted to a more balanced approach, in which everyday flows, including home to work and school, became the focus of cycle network development, increasingly significantly the range and diversity of planned and incrementally delivered lanes.

Especially in the more central and touristic Lisbon districts, these new mobility networks and more generous walkable public space facilitated have facilitated the introduction of platform-based services, such as shared bikes and scooters. Although Lisbon municipality introduced a program of shared bicycles – most of which electrically assisted – targeted at residents and regular users, pay-per-use platforms attracted a large share of tourist users and grew exponentially since 2017 (Vale, n.d.). For soft modes, electricity plays an important role in Lisbon,

3 - Shared cycle lane in Alvalade neighborhood (source: authors).



4 - Introduction of parklets in existing parking spaces (source: authors).

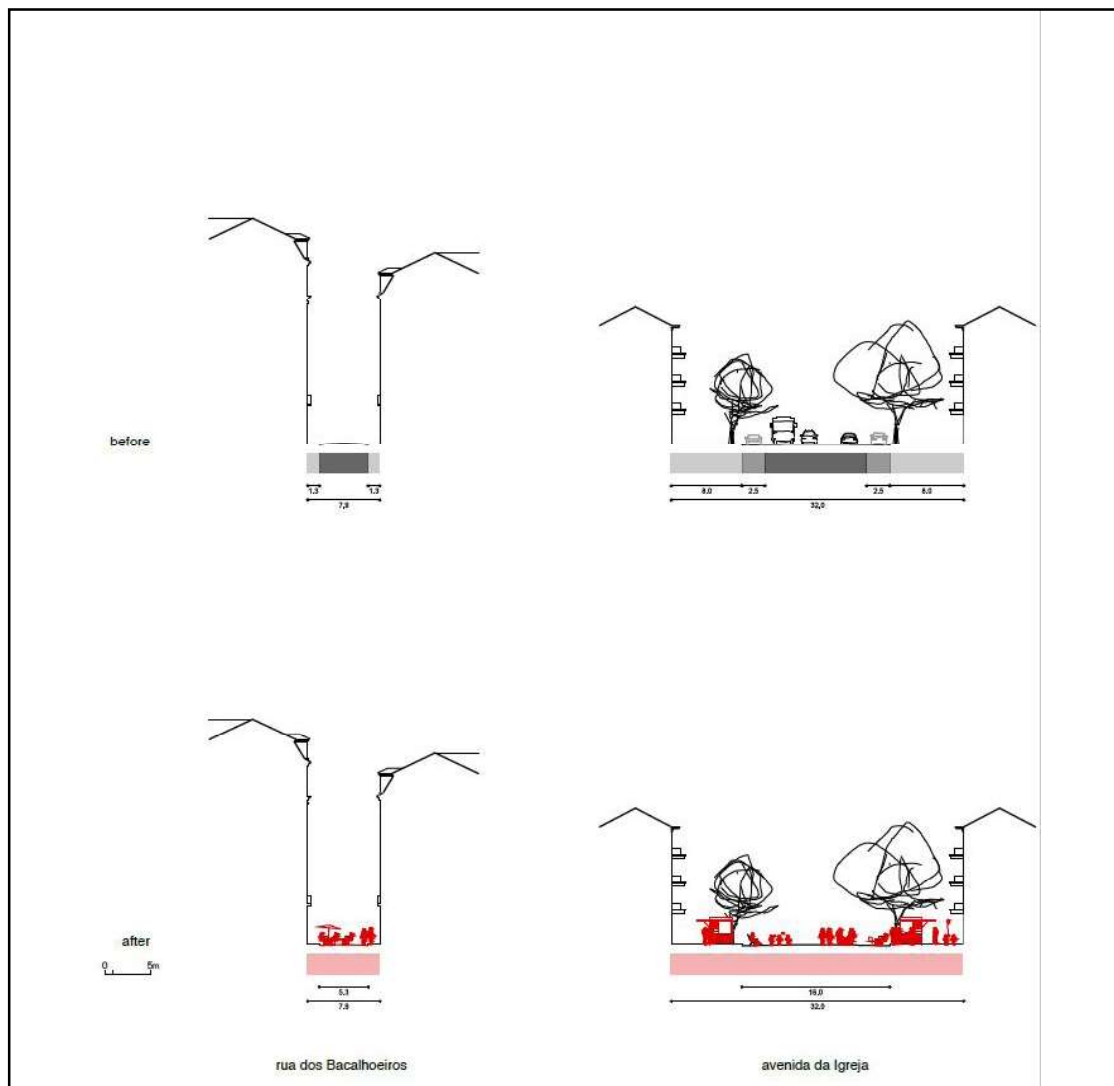
as it helps facing the city's irregular topography. Interestingly, tourism triggered the introduction of new types of vehicles, such as tuk-tuks, amphibious buses or segways. On another level, historical tram lines and urban funiculars and elevators have become a touristic attraction on their own, bringing considerable pressure and conflict as regular users face increased difficulty to conveniently ride them (Santos, 2019).

We can say that Lisbon can thus be seen as an ideal laboratory to monitor and assess the entanglement between mobility, public space and tourism interdependence in contemporary urban life. Pre-COVID-19 Lisbon can also be seen as a city already in transition to more diversified possibilities of (sustainable) transportation associated with ongoing public space requalification agenda and a strong land use re-composition. The pandemic hit the city while it was undergoing a process of structural integration into the globalized tourism and real-estate markets. This shifting background is relevant to un-

derstand the impact of COVID-19 pandemic on urban life and on the way adaptation processes were triggered. Insight on the city's resilience and adaptive capacity can be monitored by looking on how the infrastructure of public space and urban mobility responded to such critical conditions.

Adapting public and mobility under COVID-19

In this section, we will draft a tentative map of public space and mobility interventions that emerged in 2020 and 2021. This mapping is based on field observation, public information provided by the local authorities, such as Lisbon's municipality, as well as less structured sources of information, including internet sites and social media, which often give a better account on ad-hoc, bottom-up, local initiatives. Interventions are overlapped over geo-referenced territorial cartography developed by the authors as part



5 - Temporary restriction of car-traffic in specific local streets: Rua Dom Pedro V (source: authors).

of past and ongoing research (Santos, 2016; Silva Leite, 2017) at URBinLAB (urbinlab.fa.ulisboa.pt) and formaurbis LAB (formaurbislab.fa.ulisboa.pt) research groups.

Three main types of adaptation can be summarized:

1) The introduction of pop-up cycle lanes, accelerating the delivery of the already planned network; 2) the reconfiguration of street space aimed at increasing the share of pedestrian and commercial uses, along with a renewed interest in the extension of ground-floor commercial spaces to the outside; 3) the reorientation of mobility service platforms and fleets to serve new demands, namely the home-delivery logistics.

The introduction of pop-up cycle lanes - In 2016, a municipal plan was presented to add 140 km to the existing 60 km of cycle network the aim of reaching 200 km of lanes was targeted for 2021. The plan was based on promoting a more balanced distribution throughout the city, after some initial critici-

sm of a limited focus on leisure spaces, missing the links between residential areas and key employment and school destinations. Through a combined investment in street paving, wider public space requalification and green corridor network development, around 30 km had been delivered at the beginning of 2020.

On June 2020, after three months of sanitary confinement under COVID-19, a plan for speeding-up the plan implementation was announced by the municipality (Câmara Municipal de Lisboa, 2020), in response to raised claims for public action on the adaptation of urban environment. Under this plan, the whole 200 km of new cycle lanes were expected to be in place in September 2021 resorting to pop-up lanes, along with other local transformation projects aimed at reducing car-traffic and increasing pedestrian public space. Together with this plan, a direct financial incentive for bike acquisition for people living and/or working in Lisbon was announced by the municipality. As of May

2021, the authors mapped 27 km of new lanes (figure on the top at the page 92).

A combined overview of these interventions reveals an incremental process by which quick and low-cost delivery of cycle lanes allowed the expansion of a structural network, based on longer range lanes along some of the city's main streets, while at the same time developing a thinner and local-scale network in residential neighborhoods. Sometimes, this local scale was used to bridge missing links between existing lanes and increase the network's global connectivity and integration.

Three strategies were used to deliver these new lanes:

- a) pop-up intervention, with reallocation of car lanes with cycle lane painting and delimitation pins, providing a quick and low-cost solution to test and assess the lane before permanent consolidation. This strategy was used in streets in which larger scale requalification was not planned on a short-to-medium term horizon [i.e. Av. Almirante Reis, Av. 24 de Julho, Av. Lusíada] (fig. 1);
- b) permanent cycle lane construction, mostly with dedicated lanes with reorganization of car lane and parking space, found used in streets where larger scale requalification was planned and where investment was underway [i.e. Av. Infante Dom Henrique, Av. Conde de Almoester, Av. de Berna] (fig. 2);
- c) shared cycle lane introduction on existing streets accompanied by speed limitations (30 km/h) under a rationale of traffic calming on residential areas, and reinforcement of local mobility basins, namely around schools [i.e. Alvalade and Telheiras neighborhoods] (fig. 3).

The reconfiguration of street space and the extension of commercial ground floors - A second adaptation trend is focused on the optimization of street space in order to increase the share of pedestrian space and, specifically, the possibility of extension of commercial areas. Either by sanitary restriction or risk perception on closed environments, restaurants and cafes faced the need to explore outside spaces for tables and terraces. After a second lock-down on early March 2021, cafes and restaurants were allowed to reopen, but only with outside tables. Along with claims for wider pedestrian and playground spaces and social voices claiming a more restricted use of street space for car traffic and parking, several interventions were developed throu-

gh 2020 and early 2021 with a focus on a re-appropriation of public space for collective uses. Let's have a look on three types:

- the reorganization of complex urban spaces around urban facilities, namely around the market of Arroios (figure at the bottom at the page 92). In this case, a complex street layout encircling the market with a dominant car use pattern, was reorganized through temporary pavement painting to frame a more efficient traffic flow, more controlled parking and safer and clearer pedestrian walking. With a playful graphical design, the painted pavement invited new forms of space appropriation, either by extending the market's surrounding restaurants tables, or by setting up flexible furniture and pop-up cultural events.
- the introduction of parklets in existing parking spaces in streets, mostly of them associated with food and beverage shops (fig. 4). This strategy provided an alternative to increased users restrictions in interior spaces while, at the same time, offering and attractive setting of conviviality in public space. Most cases can be found in historical district's streets, where sidewalks tend to be narrower. Local and cultural associations and private shop owners, often in partnership with local government and municipality, are the main developers of these initiatives (check www.sparqs.pt and www.resdochao.org). The process has been developed on a piece-by-piece approach, without a wider strategy for formal or use requirements, mainly responding to specific local agendas and interests.
- the restriction of car-traffic in specific local streets in historical areas, framing a new outdoor space to be shared by multiple commercial activities (fig. 5, 6 and 7). The use of pavement painting in a strong blue color suggests a strong claim towards renewal and attraction. This concept may be seen as the sequence of a highly publicized and successful experience in 2011-2013 in which a downtown street was painted in pink to become a focus of outdoor nightlife and triggering a revitalization of Cais do Sodré, a rather marginalized urban district in Lisbon's waterfront (Nofre et al., 2018). The municipality has also promoted temporary colonization of streets with informal uses, through traffic restriction (i.e. on weekends or during specific weeks), fostering multiple civic, sport and cultural



6 - Introduction of parklets in existing parking spaces: Rua Dom Pedro V (source: authors).

7 - Temporary car-traffic in specific local streets: Travessa do Cotovelo (source: authors).

activities with local population and associations. These initiatives are often promoted under a wider agenda, engaging local communities with emerging fields of urban sustainability: bio-food markets, active mobility, social and cultural mixity, cultural dynamization, local commerce attraction.

The reorientation of mobility service platforms

- Lisbon's tourism boom felt in the 2010 decade attracted considerable attention from private Mobility-as-a-Service (MaaS) providers (i.e. Uber, Hive, Lime, eCooltra, among others) (Cruz & Sarmiento, 2020; Vale, n.d.). Among the multiple MaaS services (car-sharing, motorscooter-sharing, bike-sharing and scooter-sharing), bikes and scooters had a strong growth and presence in public space. Starting in 2018, there are currently around 5000 shared scooters. Gira, a public bike-sharing service, was also introduced by Lisbon municipality in 2017, currently with 500 bikes and a forecast total of 1400 bikes, 70% of which electrical. Under COVID-19, the downturn of tourism and everyday mobility had a profound impact on these services. However, despite a global decrease in mobility, MaaS systems were quickly adapted to serve new demands.

One of the areas where interesting changes were observed is the home-delivery ecosystem, which took great advantage of available electrical bikes, scooters, and online mo-

bility platforms. With a sharp decrease in the usual level of demand, these vehicles became a convenient alternative to food home-delivery workers, many of them migrants without driving license or a stable contract. The flexibility, convenience and informality associated with these mobility options allow them to quickly meet the growing home-delivery market demand, making use of existing fleets and improved cycle ways.

This reorientation took advantage of the growing cycle lane network, facilitating routes and increasing safety, together with a good integration between urban mobility and home-delivery digital applications. The entanglement between physical and digital realms are clearly explored in this situation.

On the other hand, the physical aspects of territorial management of mobility is also clearly visible, even in times of dominant digitalization. Home-delivery using MaaS services have fostered a reshaping of their own service geography. With a clear orientation towards central and touristic areas, MaaS operators were often criticized for leaving important residential neighborhoods out of their service areas. Under COVID-19, these were precisely the new focus for home-delivery of restaurant and food products.

A second land use change with impact on these shared mobility solutions was felt in the office sector. Like tourism, telework and restrictions to interior space usage left many office buildings empty – a trend that

will probably continue for the future – and, with them, hitherto lively urban districts, in which considerable active mobility and public space improvements were recently delivered. Such functional reorganization impacted on car-sharing, ride-hailing services (such as Uber and Bolt) and shared bikes and scooters, which had a regular customer basis from trendy white collar and young creative classes.

Challenging issues for future adaptation

After a year of life with COVID-19 pandemic and following numerous exercises of forecasting, a number of conflicts, challenges and opportunities start to emerge in a clearer way (Barata-Salgueiro, 2020; Brito-Henriques, 2020). Many stem from previous conditions and ongoing trends, for which adaptation is more difficult, costly and only achievable on the long-term; others are more fluid and fast-changing, but also addressable through tactical urbanism approaches or small-scale and incremental actions.

The heavy trends are concerned with structural dependency on car for metropolitan mobility, given the fact that, despite improvements in some mobility hubs, the backbone of heavy public transport network is far from providing adequate coverage for the highly dispersive land use patterns found at the metropolitan scale. Daily commuting will continue to be an un-addressable challenge by short-term adaptation, especially for less specialized professions with lower levels of IT usage. This is further emphasized by current metropolitan socio-economic territorial distribution in which less affluent population is often residing in areas with poor public transportation possibilities. Accessibility for daily destinations (work, education, urban facilities, shopping, entertainment, etc.) continues dependent on a rather dispersed urbanization pattern, although the growth of telework, e-commerce and online activities may present some alternatives in the personal mobility needs.

Cycle networks are probably one of the areas where adaptation can occur with relatively higher degree of cost-benefit in short-to-medium-term implementation. A broader social awareness regarding sustainable mobility modes emerged from the intersection between climate change crisis concerns and pandemic conditions. EU and national funding for urban development is strongly aligned

with this topic, with local municipalities benefiting from co-funding opportunities aimed at increasing soft mobility. The increase of bicycle users (with a growing share of electrical driven vehicles) is also creating a stronger and more demanding stakeholder group for which political awareness will have to respond – higher demand will require higher offer. On this topic, a major question is whether such increase comes from former public transport users or from private car users. In one case or the other, an increasingly inter-municipal and metropolitan response will be needed, to provide truly networked and long-distance alternatives, which will need to be articulated with multi-modal options – including rail and bus – for metropolitan commuters.

However, a response in this path must include the adaptation of destinations, namely in the spatial and functional conditions to park bike and other soft mobility riders. Safety, convenience, and electrical charging are as important to attract new users as the network conditions themselves. Again, this is a scope in which public space may play a fundamental role in mobility adaptation. In some of Lisbon's historic neighborhoods, some of the few garages have been rented to store bikes for an increasing share of users. With urban areas in which existing buildings may prove difficult to adapt, public space can be a more effective alternative. The management of open space, with a redistribution from car-oriented space to other modes, including soft mobility facilities, is critical. Such redistribution may well be combined with an improved relationship and porosity with internal building spaces, particularly commercial, but also residential.

This *intermediate space* (Silva Leite, 2020) between public and private spaces will become a potential area for micro-change and upgrade with high systemic value. It is an interface in which multiple opportunities can interact and unfold together synergically – support for local commerce, upgrade of common spaces to serve housing neighborhoods, dynamization of public space activities, development of social appropriation. This ambiguous limit played at the ground level is explored by Monteys (2010) as a potential tool to work-out a lively interaction between the public and the private domains, between persistent spatial frames (facades, sidewalks) and temporary, flexible and adaptable architectural devices (shadings, tables and seats, moving windows, folding furniture). This approach will proba-

bly call for a more interactive and negotiated relationship between the design and the management of both public urban space and the private domain of ground floors. Some of these issues pooped-up in some of the urban adaptations and street colonization initiatives seen during the pandemic; it will be important to address its future as a realm that needs an articulated design approach. As just any intervention in public space, they need to be considered not as the result of piece-meal and individual additions, but as a new important system to be considered in the spatial configurations of future streets and buildings (materials, spatial partition, composition, functionality, safety, etc.). Beyond a first and rather consensual positive assessment, critical discussion must emerge whenever poor design quality and disproportionate private appropriation of public space arise. Finally, COVID-19 created the conditions to new civic movements claiming a more sustainable city, in which walkability, cyclability and public space are top priorities. Although lacking scale and a more robust organization, they triggered some ad-hoc initiatives by local authorities that conquered space for further adaptation and consolidation in the near future. In a sense, first steps towards a stronger public space armature as a multi-functional infrastructure have been taken in some areas. This is also a lesson that can be of interest in cities faced with limited resources and a relatively new political agenda on sustainable mobility, such as Lisbon.

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