TRANSIT SYSTEM AS A PROJECT OF URBANITY

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Up to which point a transit system, a primarily utilitarian element of the city, could become a positive constituent of urban context, giving it a new significance and an additional value? In the last few decades, there is a relatively new and increasing phenomenon in urbanism which is to put more effort into the integration of transit system and its surrounding. In different regions of the world, multidisciplinary teams of planners are working on many-sided urban projects along the transit routes in order to establish a stronger dialog between mobility and the built environment, regardless the transport mode, size of city or urban context. The objective of this discussion is to give a general overview of this phenomenon and to evaluate some common ideas or outcomes.

Keywords: **Public space, Urban mobility, Urban quality**

EL SISTEMA DE TRÁNSITO COMO PROYECTO DE URBANIDAD

Hasta qué punto el sistema de tránsito, un elemento principalmente utilitario de la ciudad, podría convertirse en un constituyente afirmativo del contexto urbano, dándole un nuevo significado y un valor adicional? En las últimas décadas, existe un fenómeno relativamente nuevo y creciente en urbanismo, de poner más esfuerzo en la integración del sistema de tránsito en su entorno. En las diferentes regiones del mundo los equipos multidisciplinarios de planificadores trabajan en los proyectos urbanos multifacéticos a lo largo de las rutas de tránsito para establecer un diálogo más intensivo entre la movilidad y el entorno construido, independientemente del modo de transporte, tamaño de la ciudad o contexto urbano. El objetivo de esta breve discusión es dar una visión general de este fenómeno y evaluar algunas ideas o resultados comunes.

Palabras clave: **Espacio público, Movilidad urbana, Calidad urbana**

Transit system - Synergy of the synergies

Up to which point a transit system, primarily utilitarian element of the city, could become an affirmative constituent of urban context, giving it a new significance and an additional value?

Is it possible to exceed usual functional requirements and treat a transit system as a multidisciplinary project of urbanity?

How these general ideas could be adapted to different urban and economic contexts?

Being part of a wider investigation, this short discussion has as the objective to analyze a relatively new phenomena of treating a transport systems as a generator of urbanity, integrating them into the context or adapting the surroundings to their presence. Global, multi-contextual and multi-modal approach of this analysis should be understood as a dialog and an introduction to a wider and more complex issue.

Generally, the relationship between city and transport can be followed through the history

Cities were always determined by transport. Medieval towns were often founded on the crossroads facilitating communication and trade, while their urban structure (network of narrow streets and squares) was an expression of the pedestrian movement. The big innovations of the 18th century were avenues and wide squares which for the first time allowed fast movement through the city and a new perception of the urban environment (SMETS, 2010). In the 19th century, with the arrival of the railway, a new infrastructure emerged whose immense dimension could no longer be aborted by the existing streets, but was developed as the independent network separated from the rest of the city, resulting often in the demolition of the poorer areas. (HAUCK, 2010).

Train stations redefined urban territory, becoming landmarks and new authentic public spaces with cafes and restaurants. Industrial city introduced a new requirement - journeying between home and work. Increased trans-

port of individuals and materials led to dynamic urban planning and design theories, which saw an unobstructed flow as an objective of urban planning (Smets, 2010). By the end of the 19th public transport became the pivot of urban development running through every major street.

In the 20th century use and popularity of car drastically changed urban morphology. New urban theories like the *Charter of Athens* introduced an innovative concept of the city based on the division of the four urban functions and a new approach to the public space design based on the segregation of the modes of different speed. These ideas, together with technological complexity of the traffic, led to the theoretical and professional separation between transport and urban design. Though interdependence between infrastructure and urban development has always been one of the most important topics of urban planning, infrastructure played subordinate role in the discourse of urban design (Smets, 2010). Gradually, these concepts led to some of the major problems of the contemporary cities (urban sprawl, traffic congestion, degradation of the public space and the loss of its traditional meanings).

In the decades after WWII new urban theories started to emerge introducing a critical approach to the relationship between traffic and city. Some of those ideas were expressed in Buchanan's report, Jane Jacobs or Lewis Mumford openly criticized the role of the car, Team X´s experiments led to some innovations[1] and later postmodern theories and New Urbanism expressed some new ideas.

Finally interrelation between city and transport could be followed all the way up to the complexity of the contemporary city and its dialectic relationship with mobility (Miralles, 2002). Miscellaneous experience of the practical solutions and the theoretic concepts from the past, together with modern-day urban challenges impose search for new innovative concepts. Word transport is often superseded by the broader term mobility which includes the social dimension of the problem, with ideas of intermodality, inclusion, diversity and sustainability. Mobility could be defined as a transport planned in equilibrium with urban context, as the element of intermediation with an incentive for overall improvement, whenever possible.

In the last few decades, we can see a new approach in the contemporary urban design towards transport infrastructures treated as elements which do not remain anonymous. Instead, they influence, dominate or even define their urban context (Hauck, 2010). Nowadays we can talk about an interaction between city and mobility.

This interaction is particularly expressed through the synergistic relationship between mobility and public space. Public space is the aspect of the urban environment which is very directly associated with infrastructure. On the conceptual level, it could be understood as a synergy between mobility strategies and public space politics. In this research synergy could be defined as any conceptually unifying and institutionally coordinated action between transport and public space design with the mutual objective to improve the urban environment and enable functionality.

Examples of synergies could be found on different scales: balance between urban planning and transport through, transit oriented development around intermodal nodes, concept of interconnected city; equilibrium between mobility modes, pedestranization, shared space philosophy,[2] limited access areas, traffic calming, traffic diversion, street hierarchization; urban 'digestion' of the parking facilities (understood as the improvement of the space required for parking, as well as the public spaces in its immediate surroundings) or different park and ride systems; urban and contextual integration of mobility lines (routes that cross urban fabric like urban highways, railways or public transport lines) and the projects of their integration into the urban context.

Out of a variety of contemporary synergies the main focus of this discussion is transport systems seen as a crossroads between dynamic and static visions developed as a single equation. The practice of multidisciplinary projects with an objective to integrate public transport into the urban environment linking it with public space is becoming a common place for many contemporary cities. These projects are producing new types of urban reality, according to the different logic and timelines. The relationship is the key to the success of the design. Routes that link urban neighborhoods which are strangers to each other act as lines that creating urbanity.

Unlike other more aggressive or high-capacity infrastructure lines, like urban highways or railroads (Hauck, 2010), transport systems have much higher levels of adaptability to the context, while the complexity of their integration comes from their correlation with all other synergies (Dell'Osso, 2009).

A strong link between public transport and public space design is a global and relatively new phenomena. Integration is understood as the incorporation into the urban context different logic and concepts. This synergy gains social dimension, particularly in the underserved or previously neglected communities.

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1   The first purpose-built pedestrian street in Europe is the Lijnbaan in Rotterdam, opened in 1953 designed by the firm Van den Broek & Bakema. Some urban planners have some similar proposals in the 19th or early 20th century, but implemented solutions were usually much smaller in scale.

2   A traffic engineer in the Netherlands, Hans Monderman (1945 – 2008) turned urban transportation planning upside down with the groundbreaking concept of "Shared Space." His idea is disarmingly simple: remove traffic lights, signs, crosswalks, lane markers and even curbs so that pedestrians, motorists, and cyclists must negotiate their way through streets by interacting with, and reacting to, one another (www.pps.org).
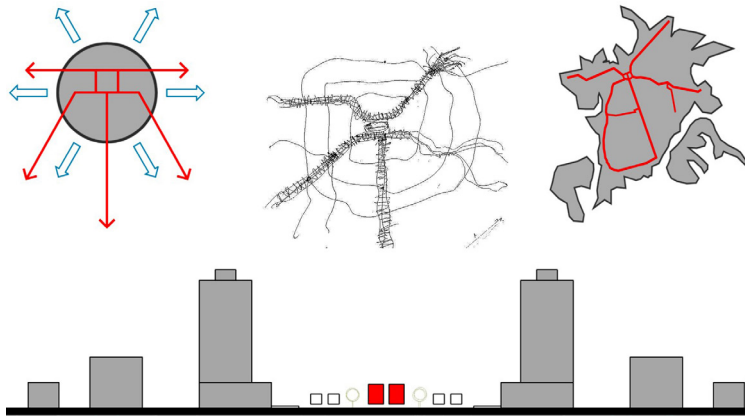
Figure 1. Concept of the Master plan – the relationship between urban growth and a rapid bus system, Curitiba. Source: Own elaboration

Socially responsable infrastructure

•   *Social and institutional endeavor as backdrop of integrated project*

Some of the first examples of strong links between transit systems and urbanity are to be found in Latin America and Brazilian city of Curitiba, a pioneer in this field.

During the decades after the WWII the most of the Central and Latin American cities were experiencing processes of an intensive urbanization, rapid increase of population, uncontrolled urban growth, social segregation and crime together with car-oriented urban policy (with paradoxically low car ownership). Due to the economic situation it was necessary to propose a feasible solution for the urban mobility.

Curitiba was suffering from similar problems. Brasilia and its modernist planning were still considered to be a paradigmatic urban model. The Government proposed a plan for Curitiba based on widening all major roads and the transformation of the city on behalf of the private vehicle.

Radically different proposal came from an investigation group lead by young architect Jaime Lerner[3] who later become mayor of Curitiba. The plan was based on the concurrent transport solution and overall urban plan of the city.

Since building metro would be too expensive, the idea was to use buses as a rapid transit mode for the affordable price. It was achieved by dedicating central lanes of some major avenues exclusively for the buses, allowing them

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3   Jaime Lerner, an architect and urban planner, was the mayor of Curitiba three times (1971–75, 1979–84 and 1989–92) and have recieved different international rewards for applying inovative urban mobility solutions.
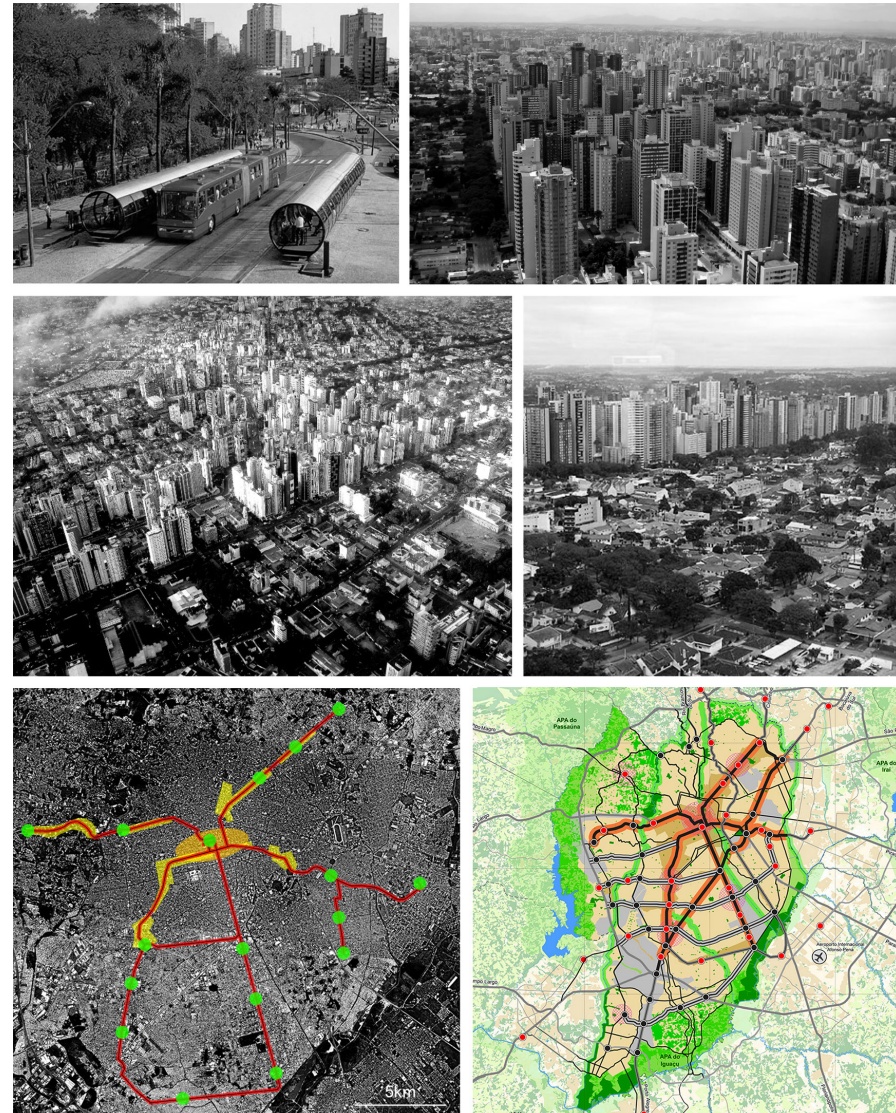

Figure 2. Elements of RBT of Curitiba – buses, tube bus stops and urban densification alongside the routes.   Plan of Curitiba with RBT network compared with the zoning plan from 2012. Sources: hopebuilding.pbworks.com, Panoramio, IPPUC, Own elaboration and Instituto de Pesquisa Planejamento Urbano de Curitiba

uninterrupted flow from the periphery to the center, speed, short frequency and high capacity. This simple, but innovative system was named Bus Rapid Transit system (BRT).

The second part of the concept was to integrate overall urban planning with BRT by intensifying urban growth, density and centrality alongside the bus corridors. In this way five specified avenues with dedicated bus lanes, that were crossing entire urban territory, become a skeleton of the transport system and were guiding the urban growth converting uncontrolled, radial city into the linear one.

Additionally, higher density of the population was making system more efficient. Conventional bus routes were feeding the main system on circumferential routes and mini buses were used to access the poor areas.

Implementation of this general plan was a difficult task for the years to come and was followed by different urban and social strategies, zoning and planning regulations, negotiations with citizens, etc.

Jaime Lerner gave his team time to implement the plan supported by the proper institutional planning. The integral part of the plan was pedestrianization of the historic center, which found a strong resistance within society of the time.

Different strategies related to the alleviation of poverty were essential in order to make the idea work (like reduced prices or free rides for the residents of the slums who were participating in the local waste recycling projects in return, just like some special programs within schools that would inform young citizens about the social programs and benefits related to the programs).

In the words of Jaime Lerner, the most difficult task was to avoid centralized planning which often led to the impracticability. The solution was to include the local community in the planning, to give some economic incentives for investors who participate in the program, making sure that all interested sides understand and have an interest in the realization of the plan. Fusion of mobility and urban growth is a multidisciplinary task with a strong social background. The guidelines of the original plan are still the base for the new planning.

- *Spatial (dis) connection on local and metropolitan scale*

The concept of BRT of Curitiba was widely accepted as a functional and rational solution and become a role model for many cities in the region. Nowadays, 14 similar systems are operative in Brazil (Sao Paulo 1988, Rio de Janeiro 2012, Sao Paulo 2014) and more than 30 in the rest of the South and Central America (Bogotá 2000, Lima 2006, Santiago 2007, Buenos Aires 2011). Recently, cities in other parts of the world have accepted these ideas: there are more than 50 systems in the North America (San Diego 2008, New York 2008); around 70 systems in Asia, (Beijing 2004, Jakarta 2004, Teheran 2008, Jerusalem 2008, Bangkok 2010, Kuala Lumpur 2015); 10 systems in
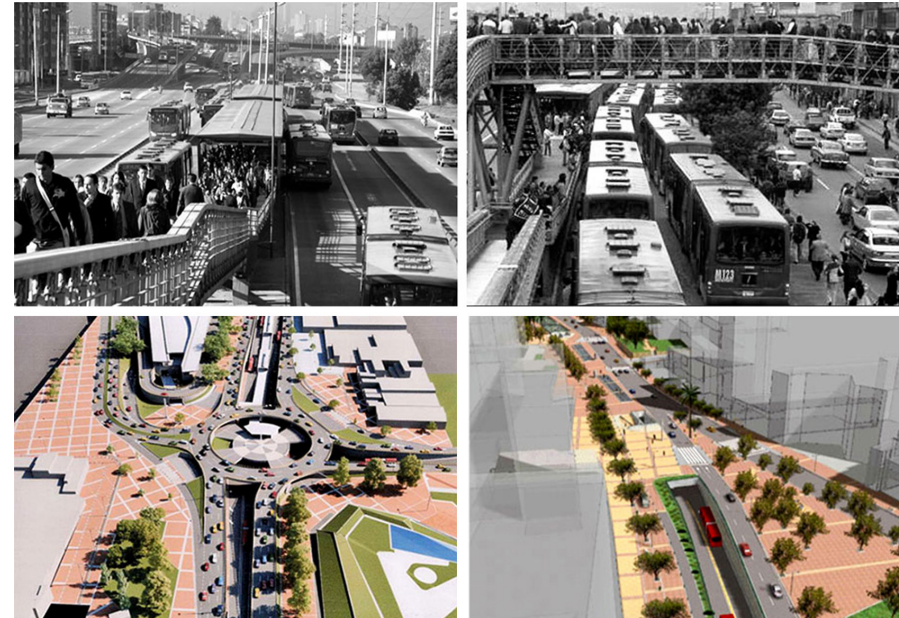

Figure 3. Urban highways and avenues of Bogotà with Transmilenio buses; Segregation of transportation modes and conflicts with surrounding public space; Intersection of calle 6A and carrera 10 – RBS as an opportunity to restore and articulate its surrounding in the central area of the city. Sources: www.howtobogota.com, www.bogota.gov.co

African cities (Lagos 2008, Cape Town 2010, Kampala 2016) and around 40 partly or fully BRT in Europe (mostly in France, UK and North Europe, like Stockholm or Zuidtangent in Amsterdam from 2011[4]).

Cities are adapting this concept to their circumstances, due to the contextual and economic differences. A common spot for many cities which were following the same model are intentions to improve the concept by innovative urban interventions and public space design alongside the routes. But often there are some unwanted effects due to contextual differences.

One of the oldest examples is the Transmilenio (RBS of Bogotá), an ongoing project with the first line implemented in the year 2000. By the end of the 20th century Bogotá was facing many problems like the increased urban population, poverty, insecurity, crime, low capacity of public transport, etc. The city adopted various urban strategies to improve the conditions - overall public space politics, social projects or mobility improvement. Apart from the new pedestrian areas in the center, new urban parks and one of the longest bike lane network in South America, the city decided to implement BRT and give it branded name Transmilenio.

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4 BRT system established in 2002 and well known for its contextual design of the bus stops - colored glass canopies with floral form and each stop has glass of a different color, showing that public transport infrastructure can do more than just the core job.

Unlike Curitiba, Bogotá was already developed city which was a dynamic multi-layered support for the new transit system. The basic idea in Bogotá was to use the existing urban highways which are crossing the entire urban territory, dedicating their central zone to bus corridors.

The last terminal of each line was connected by regular feeder buses to its surroundings, which generated a powerful flux of people. These terminals caused intensive development of the area, creating new residential districts or large retail facilities. But, due to the social and safety conditions, public spaces in between those new artifacts often cannot reach its full potential and urbanized area in their proximity stays without content, significance and meaning.

The transit system provides a good territorial connection within the city, but as a new urban layer its infrastructure (stations, buses, overpasses) often causes local conflicts and disconnection on the urban level. Some parts of the network are completely indifferent to their adjacent public space and incapable to have any influence. A series of no places are emerging alongside the network. On the contrary, in the newer fazes of implementation there is a tendency to use the transit system as a tool to develop quality urban space in its proximity. Some areas of special interest are treated in a particular way and transformed into civic places[5] (monumental areas, centric zone, historic core, important crossroads, terminals, etc.).

The question which is emerging is: up to which point urban context and financial reality represented inevitable obstacles for system like Transmilenio to develop fully its potential as an articulator of urbanity and overall improvement and up to which point we can talk about its unfulfilled potentials?

• *Meaningful high-tech mimicry*

A common issue of all BRT systems is an intention to give identity and recognizability to the system by branded name, designed vehicles and infrastructure. The BRT of Curitiba was designed to be recognizable urban element. The red buses are creating noticeable urban images, together with cylindrical tube glass bus stops. Designed in a futuristic, high-tech manner as a symbol of technological ability, their basic function is to provide a shelter and allow people to buy tickets while waiting for the bus. Bus stops are equipped with different amenities like the elevators for people with disabilities (which was an innovation for the 80s), public phones, newspaper stands, small retail, etc. Design, form, materials and futuristic look of the tube stops were an obvious mimicry of the rapid transport systems like metro, applied to give the feeling of safety and efficiency.

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5   Emblematic example is the historic center of Bogotá, Av. Jiménez also known as the Eje Ambiental, a pedestrian street, develop over the former river, designed as shared space with pedestrians and buses.
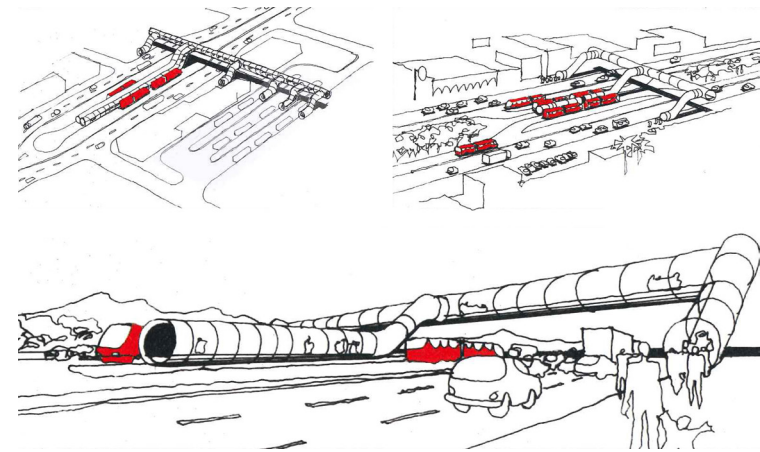

Figure 4. Red bus of Curitiba and glass tube bus stops. Source: The landscape of contemporary infrastructure (NAi Publishers)

But, is this post-modern high tech urban decoration of the city or a human scale element which gives benefit to the users? The tube bus stops were often criticized for being uncomfortable by giving a feeling of closedness while waiting for the bus. They are introvert urban elements, designed uniformly (unlike some other transit systems), without local sensitivity or adaptively to their surroundings. Bus stops were innovative when they were built, but during the time as new technologies appeared their functionality was decreased (low platform buses do not require an elevated access and the contemporary tickets registration works well without any previous ticket purchase). Still, iconic and recognizable appearance of the tube stops could be compared with the paradigmatic metro stations (like Bilbao) which became urban landmarks. Having in mind all the pioneer innovations which cylindrical glass tube stops have introduced, even if once they are to be removed from the streets of Curitiba they will probably be remembered as symbols.

Urbanity through the self-reliance of transit

• *Mannerist approach in urbanism or improvement of urban quality?*

In the last few decades, we are witnessing an interesting process of reviving the trams in many cities in Europe. It started in France with Nantes 1985, Grenoble 1987 and Strasbourg 1994. Similar concepts were followed by almost every French city (more than 30 operating tram systems and several more in planning) and many other cities in other European countries (Italy, UK, Netherlands, Belgium, Ireland, Greece, Germany, etc.). Bilbao was the first Spanish city which has re-introduced new trams in 2002 and up to today 10 cities have similar networks (Seville, Alicante, Barcelona, Madrid, Zaragoza, etc.)

Figure 5. Glorieta del Deportista Sergio Cardell, Alicante; Rue d'Alsace, Angers. Sources: SUBARQUITECTURA and Richez Associes

New generation of the trams in Europe is more than just a transport solution. Trams are treated as urban projects, related to reduction of cars, improvement of the urban environment and overall public space renewal. This wide phenomenon works in synergy with other mobility strategies and is followed by comprehensive public space policy, with an objective to restore the lost human scale.

Important operational feature of the new generation trams are the platforms on which vehicles are running on the largest part of their routes, separated from the rest of the traffic, just like rapid systems. Additionally, platforms together with light synchronization and right-of-way are acting as a traffic calming measure. Therefore, during implementation of the trams it is necessary to renewal the entire public space, from one facade of the street to another, changing its logic. This process is followed by improvement of pedestrian crossings, widening of the sidewalks, reorganization of the street parking, new greening, lightning, introduction of the public seating, artworks, water, etc. Furthermore, new trams are capable of reducing the speed, running calmly within the pedestrian areas together with people and bicycles. This feature is an excellent tool to maintain access to the city center, but to pedestrianize streets and squares.

Renaissance of the tram as an urban process has a long history.

Trams were first public transport that was introduced in European cities in early 19th century as animal-power and rail-guided, first in the UK and in other countries. As technology was developing electric power replaced animals.[6] Soon trams become not only indispensable transport mode, but a backbone of urbanity and the essential part of the urban landscape. By the beginning of 20th century tram was dominating mode of transport in Euro-

6   First in Berlin in 1881 and in following years in other cities like Paris, Budapest or Sarajevo.
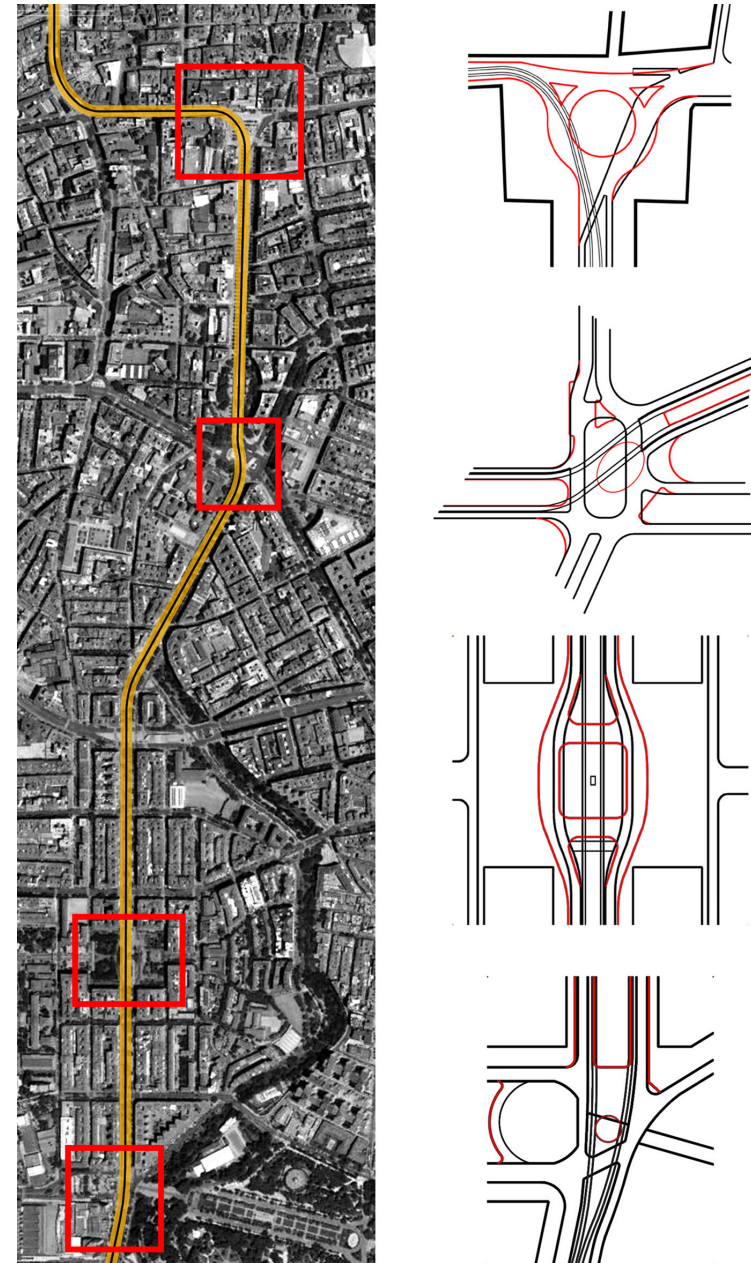

Figure 6. Central fragment of the tram line of Zaragoza - Paseo Independencia, Paseo de la Gran Vía, Paseo Fernando El Católico; Specific nodes of the fragment (pl. España, pl. Basilio Paraíso, pl. San Francisco, pl. Emperador Cralos) – transformation of the urban morphology before and after implementation of the tram, as an expression of the tendency to regain human scale of public space. Source: Own elaboration

Figure 7. The main square of Zaragoza (pl. España) and its transfiguration during 20th and 21st century. At the beginning of the last century trams were present in every large street or square and space was shared by all users. After the WWII trams were removed from the streets, which were redesigned following guidelines from the Charter of Athens and confirmed in Buchanan's report like the separation of the modes of different speed. Contemporary revival of the trams is regenerating traditional relationship between users, evoking the past. Source: Panoramio

pean cities. Tram routes were generating urban development, vehicles were recognizable part of city image and were sharing the same space with other participants of mobility (pedestrians, bicycles and cars).

As technology was progressing needs of society were changing and urban theories were conceiving different model of cities. Car become a dominant mode of transport. Principals of the Charter of Athens were fully promoting this new mode proposing separation between different speed modes and re-configuration of the traditional street. After the WWII car became a symbol of the new age and buses were considered to be a flexible transport mode fully compatible with cars, sharing the same space. Trams were seen as obstacles and were gradually removed from the streets, which was a sign of progress of that time (with some exceptions in Central and Eastern Europe).

Car-oriented policy seemed as a progressive at the beginning, but through decades led to devastation of public space, loss of traditional and social activities of the street. Sidewalks were reduced to their function of communication. Large parking areas in the city centers, traffic jam, noise, pollution, over-sized transportation facilities caused loss of human scale.

The decision to re-introduce trams followed by renewal of public space and creation of a new urban landscape was seen as a possible solution to these complex problems.

This concept is criticized for many reasons - for its ineffectiveness having in mind the needs of the contemporary city, for the insecurity for pedestrians in the areas like historic centers where space is being shared with the trams and even for its revival of traditional urban form. Furthermore, the total cost of its implementation is much higher, because it includes overall renewal of public spaces. Following chapters have an objective to reassess these critics.

•   *Urban memory and deliverance of pedestrian itinerary*

"Urban integration is the incorporation into the public space of all logic that cross the city: pedestrians, cyclists, public transport, private vehicles, neighbors, merchants, visitors, history, culture, urban development, vegetation, water, etc."
Alda and Jover architects, landscape architects of Zaragoza tram

The urban requalification which follows implementation of the trams allows a complete revision of the deteriorated urban landscape in order to create a public area that is shared by all users. One of the objectives of the plan was to seek to retain efficiency of the main transport route through which trams operate, but at the same time to create a high degree of transverse porosity within the urban landscape and to prioritize weaker users, promoting con-

Figure 8. Center of Strasbourg, Homme de Fer square, pedestrians and trams coexist in the same public space. Source: Pinterest

tinuity of pedestrian movement, direct links for pedestrians on the major crossroads and the removal of the barriers. The streets in the historic centers are designed as the pedestrian zones,[7] forcing cars to circulate at low speed.

There is always an initial resistance to the pedestranization and car reduction. It is considered to be opposite from the progress and functionality and the repeating historical patterns in the urban design (popular during 80s). Evoking traditional forms and uses of public space, while integrating tram into the urban context is a technique used in many European cities, but it cannot be considered as something which has no positive impact on modern life. It indubitably restores the idea of the public space as an urban area shared by all users.

• *Equitably deployment of opportunities*

The peculiarity of the integration projects is the constant quality of the design parameters and architectural language through the entire urban territory: establishment of the coherent system of paving and urban elements throughout the city, design of urban furniture (tram stops, street light, greenery, public seating) and democratic treatment of the public space in the suburbs and in the central areas. This constant quality reinforced by the visual identity of the sequences being travelled through is complemented by a series of urban interventions at the key points.

One of the earliest and the most comprehensive example is a French city of Strasbourg. It illustrates well the entire process of implementation of the new trams treated as the project of urbanity. With a population of
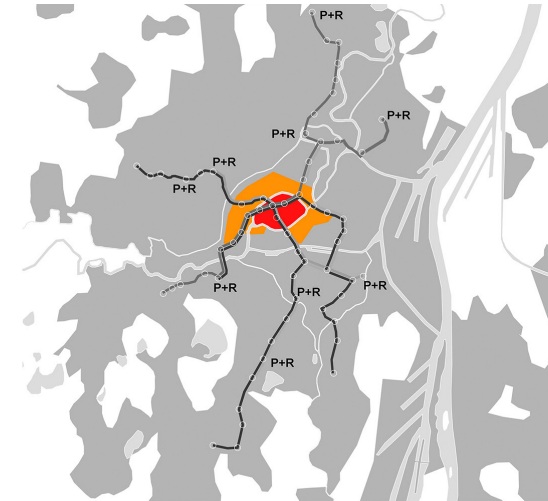

Figure 9. Plan of Strasbourg with tram network, Park and Ride scheme and areas of strict parking and car access; Public space of Strasbourg before and after implementation of the tram system in the historic center and the periphery of the city. Source: Own elaboration, ADEUS, Strasbourg urban area development and urban planning agency

270.000, Strasbourg is an administrative center, capital of the Alsace region and a city with rich cultural heritage. The old town (protected by UNESCO) is an important medieval urban ensemble, located on the river island Grande-Île.

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7   Trams sharing public space with pedestrians and bicycles is a usual solution for the historic centers of French cities, but similar concepts could be found in other areas of Europe (Spain, Italy, Central and Eastern Europe, etc).

Figure 10. Robertsau Boecklin terminal and Hœnheim-Nord park and ride interchange. Source: studio Paradon & Denu and Zaha Hadid architects

Car-oriented urban policy of the postwar period led to public space devastation, particularly in the Old town where parking occupied large areas. The city needed a better public transport and the city planners chosen modern tram, claiming it was not just a mobility improvement, but a tool for a larger urban transformation.

When the first line was implemented in 1994 there was a strong opposition, fearing that tram might impede car traffic, reduce accessibility or won't be feasible due to its high cost. But the solution was accepted and the system is constantly expanding. Now network consists out of 6 lines, 37 km of track, 67 stops and more than 300.000 rides daily. The network is radial and most of the lines pass through the historic core of the city intersecting at the square Homme de Fer, the main hub. Its high cost (approx. 25-30 m. € per km) has been justified by the cost of public space renewal that was following implementation of tram system and was an additional value for the city.

The area of the Old town has been transformed into a large pedestrian zone with limited car access and trams which share space with pedestrians. This transformation enabled more social activities and gave a strong civic character to the public space. In order to make possible such large pedestranization different measures were required. It was necessary to decrease on-street parking within the pedestrian areas. Resolving the problem of parking space became a major task. It was achieved by positioning parking around the wider central zone and by planning a park and ride system with more than 4000 parking lots within 8 tram terminuses located in the

outskirts of the city, equipped with different facilities, connected to trams, buses and bicycle network.

Important aspects of design are the artworks alongside the network and eco-aspect which was expressed through greening space around infrastructure (alley, grass platforms, etc.).

The whole network could be observed as a series of independent micro-urban projects which at the same time belong to the same network and follow the same logic of civic public space. All of them were designed to be valuable parts of urban landscape like the main hub, square Homme de Fer redesigned by local architect Guy Clapot[8] as a fusion of transport hub and civic place or two suburb P&R terminuses Hoenheim-Nord, designed by Zaha Hadid architects and Robertsau Boecklin, work of French architectural studio Paradon & Denu.

- *Aftermath of superposition of urban layers*

Urban rail transit converted into a carrier of urbanity is not just a European phenomenon. Other parts of the world have some similar concepts and in the last few years, many cities are adapting the model to their own context.

For example, in the North America some cities kept their historic streetcars as a part of an urban image (like San Francisco). Other cities implemented Light Rail Transport system (LRT) as a more rapid version of the new generation trams. Several earliest examples were to be found in the 80s (the most comprehensive example is Portland, which initiated its LRT network in 1984 with constant expansions until 2016). Some contemporary examples are Houston[9] in 2004 (well known for its contextual design of each station and the renewal of the city center), Seattle in 2007, Atlanta in 2014 or Washington in 2016. Though, LRT has different speed and has a higher degree of the segregation, there is a very similar tendency to urbanize the surrounding area in the center and in the suburbs, particularly having in mind newer examples.

In Asia around 20 examples of new trams could be found, like Shanghai 2010 or Jerusalem 2011 together with many cities which never withdrew trams from their streets. Recently, less developed cities, traditionally unfavorable towards rail transport, are also following a similar model despite of cost increase, in favor of overall benefit for the city (we can found 8 systems in the North of Africa, like Algiers 2011 or Casablanca from 2012 and some in the Central and South American cities like Rio de Janeiro 2016 or Medellín 2015).

8   Historically important square was forgotten as it was transformed into the parking and car access zone of the Old town, but implementation of the tram network gave it the purpose of the Gate, restoring its identity.
9   Houston light rail from 2004 is well known for its contextual design of the tram stops, each one as a reference to its surrounding, concept that was applied during the implementation of the new Green line of Portland´s LRT and a contextual works of public art on each stop.

Figure 11. carrer A, Barcelona and Beatrixkwartier office district, The Hague. Source: Own elaboration and Wikipedia (Steven Lek)

Despite of the complete contextual differences we can observe some similar effects like restoring human scale of public space, overall transformation of the street, encouragement of the pedestrians, the transformation of the devastated suburb areas, etc.

From corners of pedestrian permanence to incomplete conceptualization of urban renewal

As soon as the first massive transport systems, urban rails, were implemented in Europe and North America in the 19th century, cities started experimenting with elevated structures in order to separate rapid transit. London built its first viaducts for trains in 1836, New York in 1868 and Berlin in 1882, which was seen as an expression of modernity. The elevated mass transit has often been a part of the visions of international style urban planners, like Le Corbusier or Antonio Sant'Elia. Even nowadays futuristic visions often include elevated systems as their integral part. In the postwar period, many cities built fully or partly elevated systems (urban trains, metro, monorail, light rail).

Despite of relatively large number of elevated systems (in Asia, North America and some examples in Europe), in the most of the cases implementation of the system has not been linked with the idea of urbanity. Generally, elevated systems are designed autonomously, without any relationship with the context, following the logic of functionality, rather than urbanity.

Urban integration of a transit system is a relatively new phenomenon. Furthermore, many elevated systems are located over urban highways, in the industrial zones or airports, which doesn't require integration. Still, there are some exceptions. In the last few years, some cities are experimenting with some singular urban interventions on the special fragments of the

network. An example could be a skeleton space-frame tubular structure built in the center of The Hague, in the Beatrixkwartier office district, as a part of Randstadrail.

Another interesting design is carrer A in the port area of Barcelona designed as 3 km boulevard under the elevated structure of the future metro line. Some cities are experimenting with overall urban integration of the elevated transit systems. Examples could be ongoing projects of the green areas and parks planned alongside Sao Paulo new metro line or new boulevards, squares and plazas alongside the new metro system of Riyadh. In some cases, like the removed line of Sydney Monorail, transport acted as a high-tech decoration of the city, rather than a functional mobility mode. This area is still undeveloped field of urbanism and allow more possibilities.

Conclusions

Examples treated in this discussion are different from one another due to the contextual adaptation to the circumstances, their cultural framework, urban situation or technical requirements. This leads to the use of different instruments of the relation with the urban environment. In spite of that, we can draw some parallels between them.

Urban renewal of the area where public transport was never an integral component is based on the capacity of the transit to act as a lever to encourage higher density and pedestrian-oriented development. Within the fragmented city transit system assumes structuring logic initiating process of urban densification. In some cases public transport is intentionally designed as an impetus for urban development and this process was guided by relevant public institutions. This process could occur even in the areas without firm administrative or institutional frame, as an outcome of the new connectivity in the dilapidated area.

Evolutionary development of the paradigmatic concepts of urbanity can be seen by comparing early examples with more recent ones. The newer examples show a deeper alliance between mobility and public space, as well as a stronger formal recognition of the space through visual perception. Often, we can see a higher grade of the improvement of the urban life quality, in terms of the level of the reconciliation of the ambiguity between public space and transport or the intensity of the reconfiguration. Accumulated practical experience of the previous references and a theoretical understanding of mobility, as one of the layers within the urban complexity, is making projects of urban integration more complex and multifaceted.

On the urban level new configuration of the public space acts as a base for the urban quality and retrieval of the human scale. There is a tendency to convert residual and marginal space on the edge of the in-

frastructure and encompassed it into the urban composite. The idea is to convert previously unused parts of the urban fabric into the area of pedestrian permanence with some new urban activities (like plateaus, public seating, cafes or green strips).

Superposition of the mobility modes, followed by superposition of the urban activities contributes to the urban vitality and creation of the urban places. But still, that concept is not always possible due to the technical restrictions and the nature of the transit route.

Transit acts as a strong element of urban image of the crossed area, giving a new character and identity to the public space. Urban landscape of infrastructural public space transforms rural, industrial or suburbanized areas or gives a new meaning to the urban environment through evoking historical urban morphologies or emphasize technological progress. It becomes a recognizable part of the visual identity.

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