Urban Interchanges within the Contemporary Vision of Sustainable Mobility

Miguel Hincapié*

Abstract

There is a growing need to understand how to design urban interchanges while ensuring that urban mobility is as economical and ecological as possible. The article addresses the question of how urban interchanges influence the human experience of commuting and identifies a mixture of activities in interchange systems as a principle of urban design. By conducting a comparative analysis of two sustainable mobility examples in Latin-America and Europe, the article shows that urban interchanges are essential elements of the urban fabric and are encouraging physical, intellectual and emotional contact between human beings. The article calls to challenge a classical understanding of urban design by mixing different elements of the city into hybrid products that are able to adapt to the changing needs of current and future populations. It concludes that the issue of urban mobility has to be approached in a manner that puts the life quality of citizens first.

Keywords: urban interchanges, sustainable mobility, urban design, mixed use.

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Intercambiadores urbanos en la visión contemporánea de movilidad sostenible

Resumen

En la actualidad hay una creciente necesidad de entender cómo diseñar intercambiadores modales urbanos garantizando al mismo tiempo que los sistemas de movilidad urbana sean lo más económicos y ecológicos posibles. El artículo aborda el problema de cómo los puntos de intercambio modal en las ciudades influyen en la experiencia de los desplazamientos humanos e identifica la mezcla de actividades en los sistemas de intercambio modal como un principio fundamental de los conceptos de diseño urbano. Al realizar un análisis comparativo de dos ejemplos de movilidad sostenible en América Latina y Europa, el artículo muestra que los puntos de intercambio modal son elementos esenciales en el tejido urbano, los cuales fomentan el contacto físico, intelectual y emocional entre los seres humanos. Además de esto el escrito llama a desafiar la comprensión clásica del diseño urbano mediante la mezcla de diferentes elementos de la ciudad en productos híbridos que sean capaces de adaptarse a las cambiantes necesidades de las poblaciones actuales y futuras. Finalmente, se concluye que el problema de la movilidad urbana sostenible debe ser abordado de una manera diferente, siempre poniendo la calidad de vida de los seres humanos en primer lugar.

Palabras clave: intercambiadores urbanos, movilidad sostenible, diseño urbano, uso mixto.

Freiburg Train Station - Germany 2007
Fuente: Miguel Hincapié

Miguel Hincapié

Introduction

In contemporary society and, particularly during the last two to three decades, there has been a growing concern about how architects can best incorporate sustainability into urban planning and design. This concern, related specifically to the processes that directly affect resource consumption and waste management, is focused on human mobility, which is one of the major resource consumers as well as an important cause of green house gas emissions worldwide (Whitelegg, 1993).

Within the field of sustainable mobility, specialists have searched for a way to apply the concepts of sustainability to transport design, in the effort to find the most logical and economical way for individuals to travel from one place to another, which is also as ecological as possible. Such concepts are the basis of the transport design and they determine the use and functionality of a particular design.

There are two key elements that comprise a sustainable public transport system: the first relates to movement into the system and the second is basically the exchange from one transport system to another. In the first element we find different types of public transport available, all of which focus on the reduction of resource consumption and on clean management, ranging from massive vehicles using light trains or articulated buses, to the simple action of walking or cycling. The second element is the possibility of interchange between modes of mobility, thus making a sustainable system effective; this means that the easier the transference from one mode to another, the more effective the overall system is.

The purpose of this article is to present (within the topic of Sustainable Mobility/Design) an analysis and evaluation of the specific points of interchange from one system to another (stations, stops, terminals, etc), not only in terms of the functionality, but also in terms of the spatial and urban quality as a part of the public space. The main intention of this article is to address the question of whether these pieces of the urban fabric are actually allowing people to commute and to connect from one place to another, and also to identify mixture of activities in interchange systems as a principle of Urban Design.

The first part of the article presents an overview of the *urban interchange* principle, analyzing the topic from the following three different points of view: planning and efficiency in terms of mobility and transference, their functionality in terms of activities, and the general quality as urban public spaces.

In the second part, the article conducts a comparative analysis of two classic examples of sustainable mobility: the first is in a Latin-American context and the second in a European context. This section evaluates the design's functionality and the role of the places for interchange within the systems. Sustainable mobility has been interpreted in a specific way according to the different Latin American and European contexts.

Finally, in conclusion, the article explores urban elements and activities that can be included into urban interchanges in a contemporary vision as a part of our daily life.

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Urban Interchanges and the Present Vision of Sustainable Mobility

Interchange between modes of transport: the key element for a Sustainable Mobility

In transport and mobility the expression *Urban Interchange* refers to the place, point or space used for the transferral of bodies and goods from one system to another (Richards, 2001). This expression normally refers to a part of the public transport system, but on certain occasions it can also refer to interchange between private and public transport modes. The scale of this interchange depends on whether we are referring to a national, regional or local urban interchange.

For the resolution of a well-planned scheme of mobility in a specific area, the design and localization of the points of interchange are essential. They are as basic as the designation of corridors in a public transport vehicle, the planning of cycle lanes or even pavement for pedestrians. This means that in the design of a mobility strategy in a specific city or region, it is important to bear in mind all the connections and relations from the specific locality to neighbouring localities as well as within the locality or the region itself. The scales of design must correspond and correlate to ensure clarity in the system as a whole.

The next level is the specific design and planning of the interchange itself. As mentioned above, in most cases proposals focus on the interchange between different modes of public transport. Despite this, the inclusion of private mobility is vital for a complete and more complex picture of the system.

Apart from walking and cycling, there are basically three different modes of public transport generally used in cities, either separately or in conjunction, which are: buses and trolley buses, light rail (trams) and railways (Richards, 2001). A well planned interchange searches for the most suitable way to interconnect these systems within a single point, bearing in mind the clarity and legibility necessary for a clear relation from one to another. In most designs, there is a comprehensive differentiation between modes through the use of levels, which define the place for a specific function. However, in other cases, we find a combination of systems operating to and from the same space.

Within contemporary sustainable mobility design, recent studies have shown that the inclusion of private transport and a focus on its relation with the public systems is a fundamental requirement for effective wide-ranging mobility. Strategies for bridging the gap between public and private transport have been applied in these studies, such as 'dial-bus' and collective-taxis experiments, car-sharing among several households or within a family or even the application of new technologies, encouraging users to develop new mobility patterns.

In some cases, car owners have a considerable degree of knowledge as to how to deal with complex conditions, as well as how to shift from private transport to public transport without major disruption. In these cases, transport systems are given a different use and car-parking facilities in places of interchange are made necessary.

Apart from those considerations directly related to the efficacy and structure of transport systems, there are other points which refer to the combination and inclusion of other possible activities into the program of urban interchanges. The next section will focus on

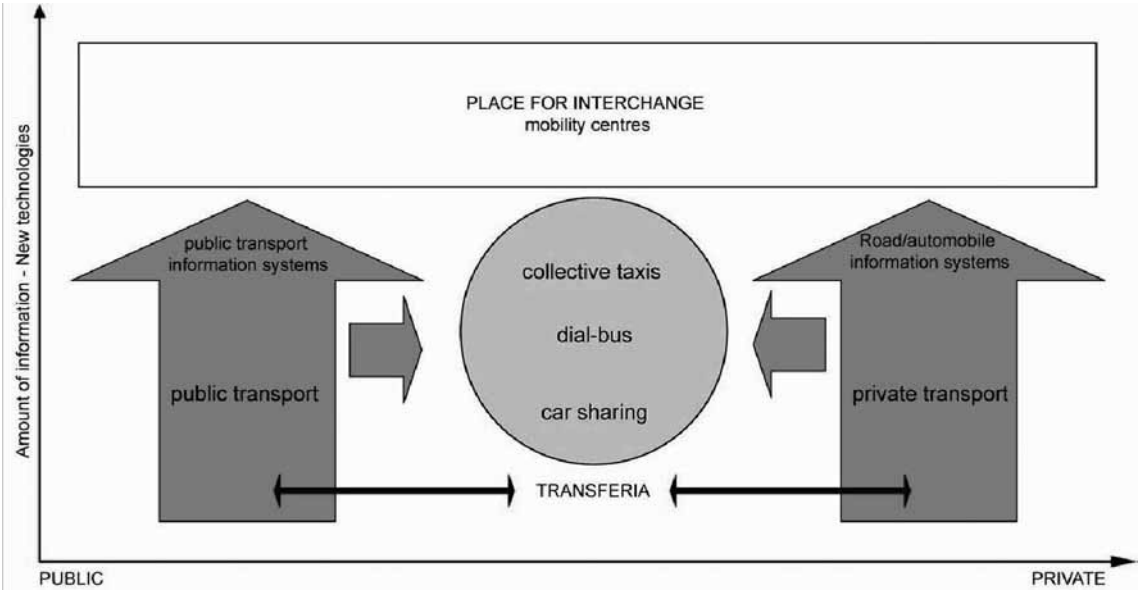


Figure 1. Approach to bridge the gap between public and private means of transport that are enhanced by increasing the use of information and technology and may lead to the emergence of new mobility patterns
Source: Remco Hoogma (2002).

the diversification of t he locality and how it is possible to incorporate other activities.

Interchange of Activities and Functionalities: Diversifying the Nature of the Place

Diversity in urban design is a powerful concept that has already been emphasised by many authors who treat it as one of the most important requirements for the quality of urban environment. Jane Jacobs, for instance, stresses the importance of both spatial and functional diversity as a fundamental requirement for cities to remain competitive and attractive over time (Jacobs, 1961). Some of the key points Jacobs refers to regarding diversity within urban space are explained in the quote below:

> The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use

> many facilities in common. 2) Most blocks must be short; that is, streets and opportunities to turn corners must be frequent. 3) The district must mingle buildings that vary in age and condition, including a good proportion of old ones so that they vary in the economic yield they must produce. This mingling must be fairly close-grained. 4) There must be a sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentration in the case of people who are there because of residence. (Jacobs, 1961, pp. 150-151)

Although debate about the insertion of diversity into urban design started in the 1960s and 70s, diversity has been appropriated by many other authors as one of the key elements in the configuration of urban space during the past decades. In some contemporary urban proposals, it can be appreciated that this notion is not only applicable to a large scale such as specific town or 'district', as mentioned by Jacobs, but it is also valid in the resolution of urban projects on a smaller scale. For instance, in the Master Plan of the city centre of Almere in the Netherlands (Koolhaas, 1998), it can be seen that the variety of activities, the combination of shopping malls, library services, residential blocks, offices and even governmental offices, guarantees the continual vitality of these places; their permanence means that users make the most of a single shared public space. Therefore, according to the scale of intervention, diversity in this sense can be useful for the resolution of urban interchanges, which can increase the possibility of new experiences offered to the user, extending the variety of activities and becoming economically more productive.

Figure 2. 'Buy! Buy! Shop! Eat!' London's Paddington Train Station loaded of commerce and consumer activities. In UK and most European cities, places for interchange, such as airports, train and bus stations have been converted into shopping centres, giving special priority to consumerism as a main activity Source: www.flickr.com. Ramones Karaoke. March 18, 2008.

However, in most cases around the world, places of interchange, such as train, tram stations and airports, have been converted into shopping centres, giving a special priority to consumerism as a main activity apart from the specific function of the place. In the case of London and most cities in the UK, the inclusion of commercial activities has gained ascendancy. Trains, metro and underground stations have become places of commerce. The focus of consumerism reduces the essence of what is public to just a commercial experience, people are blinded and focused on buying, the interaction between them is minimal and the possibility of other experiences as part of urban life is left behind.

To encourage diversity in urban projects such as transport interchanges, participation of both the public and private sectors is necessary. Governmental and planning institutions have developed strategies to promote popular participation as well

as the interest of private investors, applying the skills of different actors within the process; these include the contribution of transport specialists, professionals, and even the opinion of transport users, to evaluate and respond to the urban projects they see as most suitable in the effort to harvest new ideas that can benefit all levels of society. In Australia for example, members of the public participate in the redevelopment and improvement of train stations. The mechanisms for participation are 'through public forums', which work as a kind of public surveys where people put forward their own ideas about their needs and the activities that they would like to find within trains stations. These mechanisms are listed as follows:

- "Integrate into the design of the station a new range of activities, making it a destination as well as a transport station. New planning (e.g. building above and below station)".
- "Create more attractors at the train station, day care centres, employment, taxi ranks, cultural activities, mixed use, 24 hour station precincts."
- "Shower facilities, bike lockers and hire at train stations/ more comfortable seats on stations/ plenty of lighting-high quality".

As can be seen, some of these opinions have a direct relation to the concern for diversify of function and activity in stations, while some others are more associated with the spatial quality of the building. The public forum shows the general opinion of users and contributes to improvements and new proposals for transport interchanges. The next section explores precisely the topic of urban interchanges from the point of view of ordinary people and focus on their role as generators of community and dynamic centres of the city.

Interchange and Community Exchange: the Character and Quality as a Public Space

The character and quality of a place is the third issue to be examined in relation to urban interchanges. It partly includes the two issues discussed above —integration of modes and diversity— but at the same time it goes beyond them. Two main topics are discussed in this section: the first one relates to the quality of public space and more specifically to the intangible aspects of the city. The second explains more about quality in spatial, urban and even architectonical terms that give a particular character to the locality, making it different than the rest of the city's urban fabric.

Firstly, we can address the question: *What makes a good public space?* This question has been the topic of research for many authors. Even experts in the field have found it hard to give a definite answer. Apart from the specific roles or functions as transport interchanges, these places have also became city centres and meetings points for the community. Introducing complexity and dynamism into the urban interchange gives the place a different perspective. One interpretation of 'city centre' could be defined as is by William Whyte in *City: rediscovering the centre* (1988):

> […] it is the place for news and gossip, for the creation of ideas, for marketing them and swiping them, for hatching deals, for starting parades. This is the stuff of the public life of the city – by no means wholly admirable, often abrasive, noisy, and contentious, without apparent purpose. But this human congress is the genius of the place, its reason for being, its great marginal edge. This is the engine; this is the city's true export. (Whyte, 1988: 341)[1]

The presence and interaction of people lends a new perspective to the character of urban interchanges: they are no longer just transport nodes but also urban centres to enjoy and live in. In addition, the diversity of activities referred to in the previous section brings a new dimension to these places; they attract individuals not only because the need to travel, but also because they experience pleasure when sharing urban life with others in a heterogeneous manner. The transformation would have rich cultural, social and even political aspects and mean that urban interchanges start to play the role of public squares, theatres, public markets or all of these combined.

Secondly, a specific aspect of the design process is concerned with the design qualities of urban interchange. The design dimension is almost as important as the public or economical dimension. The inclusion of new activities to promote urban life in interchanges brings new challenges for urban design, which, combined with the previous idea, can dictate a new approach to the design of these places.

Comparative Analysis in the Latin-American and European Context

Curitiba: The Latin-American pioneer in sustainable massive transport

Background for a revolutionary proposal

Curitiba is the capital of the state of Parana, south of Brazil. It has a population of 1.5 million people and 2.5 million in the entire metropolitan region. Curitiba is one of the main examples of transport management and urban planning development in the world. It has become a pioneering model for inspiration to American cities such as Bogota, Santiago de Chile and even Los Angeles, in the USA.

During the decades between the 1950's and 90's Brazilian main cities suffered one of the fastest and most intense processes of urbanization. Curitiba, particularly, represented one of the highest city growth rates in the country. This accelerated population growth produced an unsustainable situation that the city had to solve immediately, and even though this process was not caused directly by rapid growth, such pressures posed new challenges to the public and private administration of the time. "At the end of the 60's Curitiba's public transportation was unreliable and erratic. Areas with low potential revenue went un-served. Travel routes were set by custom and in delayed reaction to the new growth. Most of the routes began in the city centre and finished outward. The result was a tendency for a typical congested centre where most of the routes and passengers passed through it, even if they were going to a different direction" (Hoehn, 1995).

From 1943, when the first plan of urbanism was commissioned to a French Planner (Agache Plan), the city started a process of development introducing the concept of urban planning to Curitiba. Afterwards, in 1965, this early proposal was modified and adapted by the Institute of Research and Urban Planning of Curitiba[2] (IPPUC, 2008), into the 'Linear Model of Urban Expansion' which was going to be the guide and Plan Regulator for the next generations of design. The plan was thought of as a complete strategy for the city, including proposals for work locations, entertainment, social environment, housing and even transport, all of them comprised within a single City-Plan. The aspects covered in Curitiba's master plan ranged

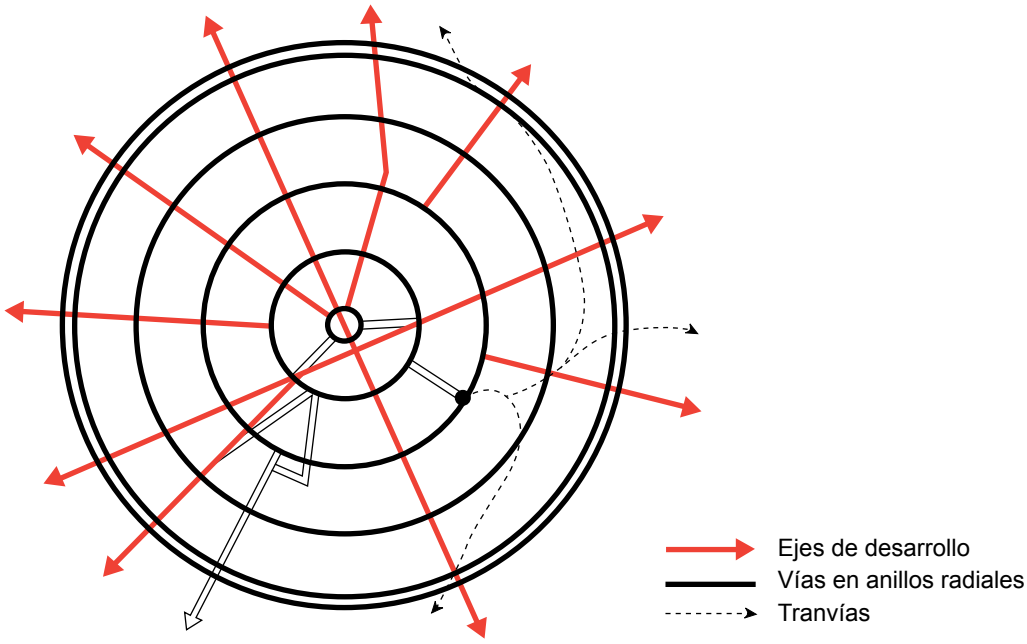


Figure 3. 1943. First Map for the Agache Plan with the Omnibus Lines and existent Trams. This plan was developed with a radial structure of development
Source: File IPPUC - Database

from a proposal for a new growing scheme to a new social, economical and political scheme for the city, in response to other external pressures of the time (Junior, 2005). The main objectives of the Plan Regulator were:

- Encourage public as opposed to private transport by providing a low cost and good quality service.
- "Change the radial scheme of the city into a Linear Growing Scheme based on the configuration of 5 corridors, including Urban Transportation, Roads System and Land Uses. These corridors are the basis for the early proposals of transport and mobility for the city".
- "Preserve the 'Traditional Centre' not allowing the circulation of Motorised Systems into it and encouraging pedestrian mobility inside the centre".
- "New increase of Public Buildings for citizens helping the demand of the centre in the search of a decentralised city[3]". (IPPUC, 2008).

The early objective to preserve the traditional centre, as well as the first intentions of decentralisation of the city and creating sub-centres, would later promote the localization and creation of terminals of transference whose purpose was to link the city to its peripheral areas. With the expansion of the system, the process of *Transport Integration* began in 1974. The creation of two terminals in the North and in the South, and the first 'tariff – integration' were the first steps towards a general integrated network.

The system has evolved dramatically for the past two decades, the creation of the District lines serving the periphery and the integration through the transfer terminals or *Terminal for Interchange* helped to finally consolidate the RIT (Integrated Transportation Network).

Proposal for Sustainable Mobility. The Present Plan

RIT: Rede Integrada de Transporte. Integrated Transportation Network (ITN)

The consolidation of one single transport system allowed the complete physical and ticket integration. The collective transport system of Curitiba is formed by the varied kind of service and lines which compose the ITN. By 1996, a company called URBS was the first to operate this system and to include all of the metropolitan area, increasing the system's capacity with the inclusion of neighbouring towns. The core system is composed of transfer terminals, express routes, direct routes using boarding tubes, feeder routes and inter-district routes.

Urban Interchanges in Curitiba's Integrated Transportation Network

The integration between different types of modes, lines and services is one of the key characteristics in the success of Curitiba's public transport system. This is possible thanks to the existence of the interchange points or Terminals of Transference which promote the consolidation of a single network. However, due to the evolutionary progress of the plan throughout time, the localization and prioritisation of interchanges is still in process and a new approach that allows the project to achieve its initial objectives is still being searched for.

First of all, ever since the integration of the transportation network, the general system has become more complex and the combination of the regular lines with the special lines, gives a new multifaceted dimension to the plan. For this reason urban interchanges in Curitiba's proposal play an important role for the functionality of the system. The main characteristic of these nodes of interchange is their capacity to integrate the different lines that compound the entire transport system (express line, inter-districts, feeders and directs) as well as the special lines which feed hospitals and tourism (Inter-Hospital and Tourist lines). Those lines are located strategically so that they can help reduce shorter feeder lines which consequentially reduce the user's journey-times (URBS, 2007).

Secondly, based on the proposal of corridors for public transport and the localization of sub centres around the city, the creation of terminals for the interchange in the district centres has established order and organization within the districts. This has been the first step towards the decentralization promoted by the government since the 70's, inserting new activities into the proposed urban sub centres. The influence of the urban interchanges also affects land use, public space design and urban development for the next stages of the plan, which will be analyzed in the section on "Ruas of citizenship", where the article explores the interest in the diversification of urban interchanges in more detail.

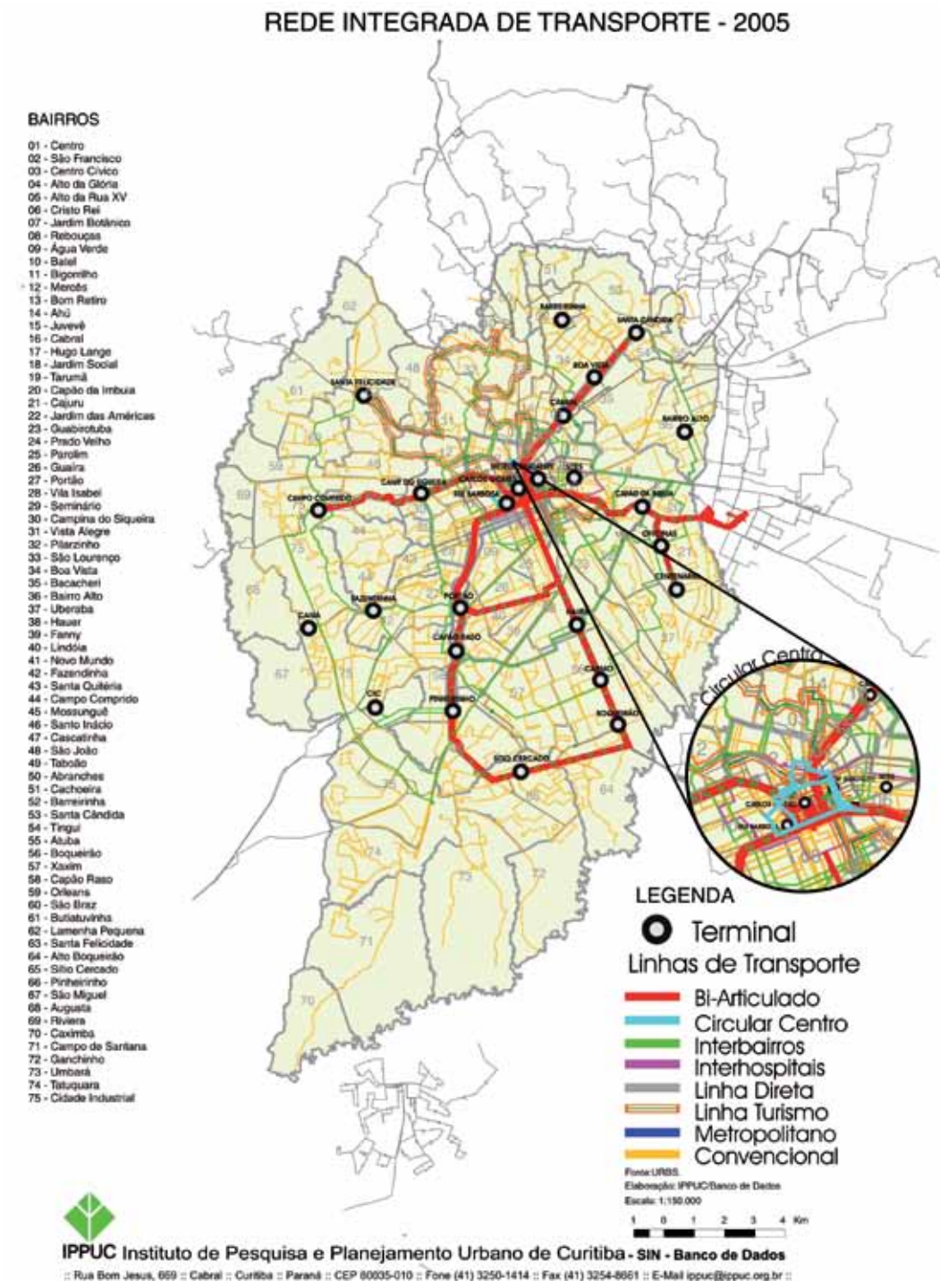
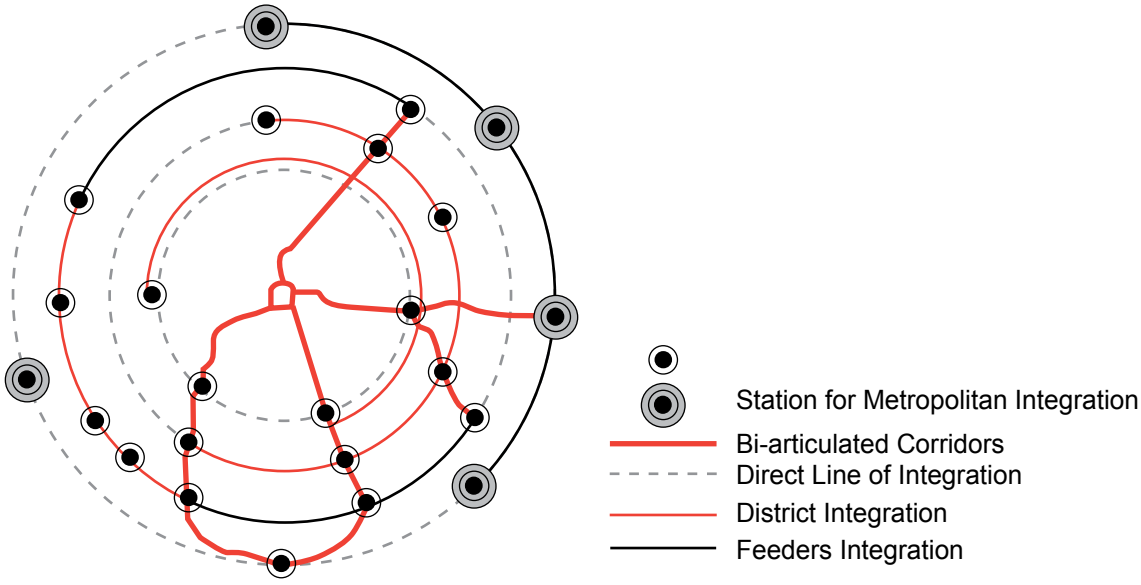


Figure 4. Integrated Transportation Network
Source: IPPUC - Instituto de Pesquisa e Planejamento Urbano de Curitiba



Scheme by author based in the one from the URBS website.

Figure 5. The graphic shows the Bi-articulated Bus Corridors and the localization of the main places of Transference (urban interchanges). At the end of each corridor, the interchange is proposed to get the immediate connection with the Metropolitan region System
Source: URBS - Urbanização de Curitiba

Nevertheless, connecting Curitiba with the metropolitan area was not proposed as part of the plan from the outset; it was a product of evolution from the original plan. As a consequence, the proposal of interchanges has been varied and has been modified as the plan evolved.

Terminals of Transference

The system is composed of terminals of transference that work as urban interchanges, transferring people from the feeder system to the direct and district lines. Each terminal was designed with a clear functional scheme allowing the transferral from one mode to the other. The central area meets the demand from the feeders coming from the peripheral and suburban areas; then, in the transferral area, passengers pass from one system to another using the tube stations located on the sides.

Curitiba's interchanges are designed to play one single role. The configuration of these places are massive structures designed

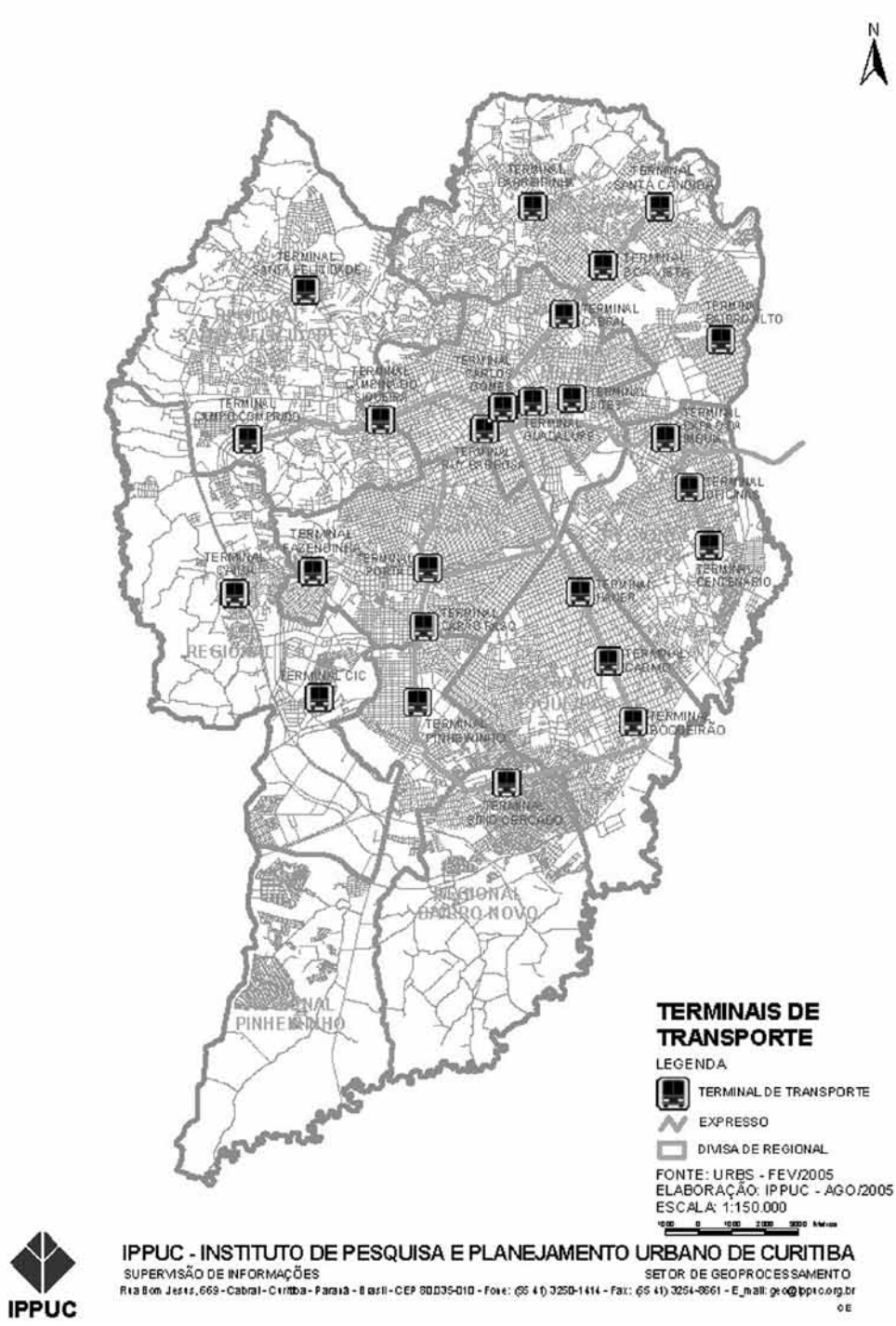


Figure 6. Terminals of Transference
Source: IPPUC - Instituto de Pesquisa e Planejamento Urbano de Curitiba

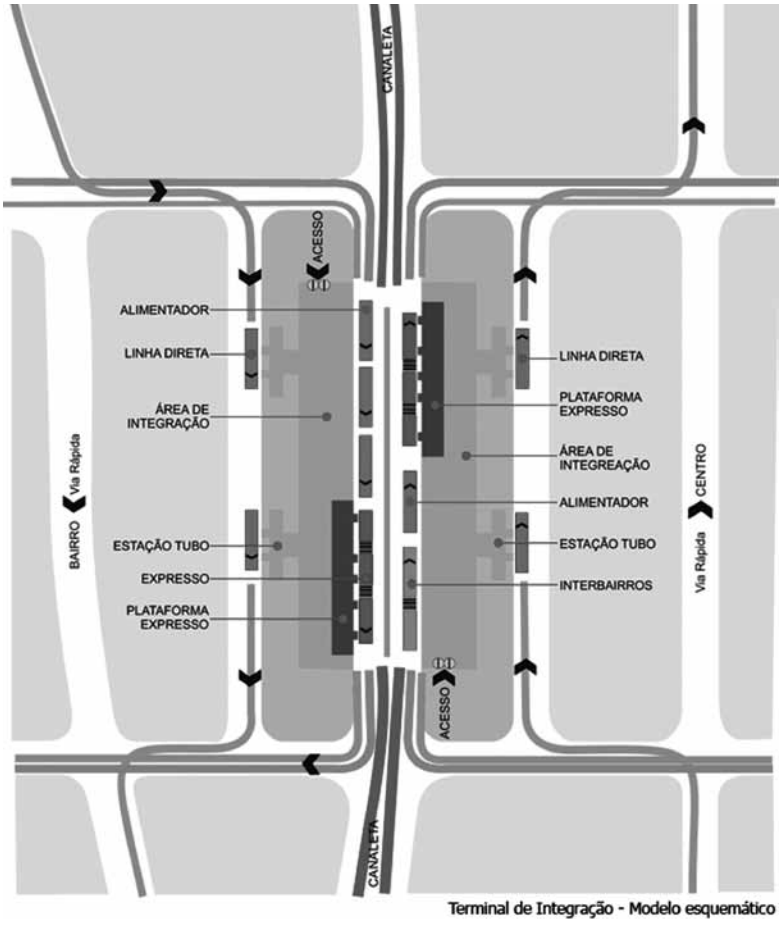


Figure 7. This scheme explains how the interchange is made from the Feeder buses to the Direct and District Lines
Source: URBS - Urbanização de Curitiba

Figure 8. Boqueirao Terminal
Source: URBS (2007).

Figure 9. Bairroalto Terminal
Source: URBS (2007).

for the interchange between modes of transport with a minimal amount of aesthetic or spatial qualities that can help to define them as real pieces of urban design. In most cases, in terms of public realm treatment, there is no clear relation with the context that forms public and spatial relationship within the existent urban fabric. Nevertheless, and due to their urban function, they have become community centres and focal points of the regeneration of future projects, helping to define land use and their priority over the sub centres.

Integration Terminal and Station for Boarding and Disembarking Along the Metropolitan Axis North – South

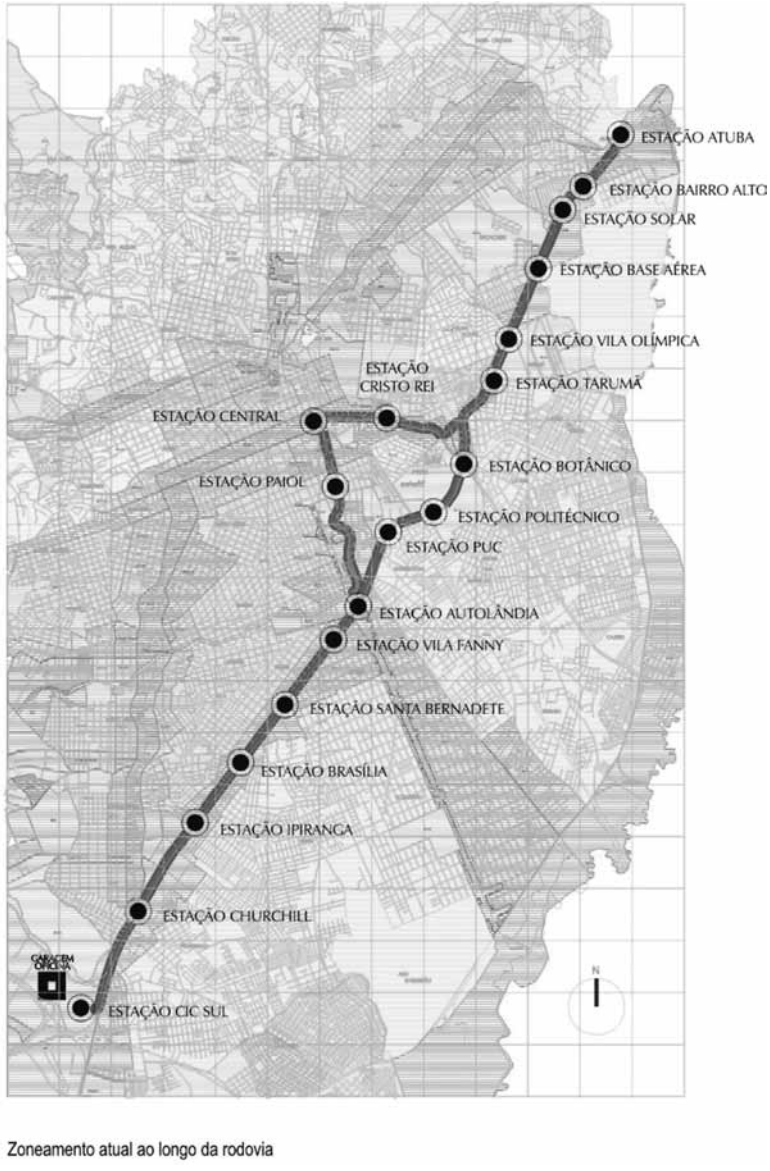


Figure 10. Interchanges of integration composed by three main terminals of integration to the metropolitan area will be located along the main corridor North–South of the Metropolitan Axis. They are Atuba (North), Pinherinho (South) and central station, as well as a corridor of thirteen intermediate stations for boarding and disembarking
Source: IPPUC - Instituto de Pesquisa e Planejamento Urbano de Curitiba

Tube Stations

Figure 11. Curitiba Public Transit
Source: Image taken from: http://www.inhabitat.com/author/emily/page/2/, taken by Emily Pilloton in the article "Transportation Tuesday".

The 'Ruas de Cidadania', Citizenship Centres

Figure 12. Citizenship centres are located near the transport station in order to support and create the urban subcentres. Rua de la Felicidade.
File (Ruas de Cidadania)

Interest in the decentralisation of Curitiba during the Master Plan from the 1980s encouraged the creation of an interesting kind of new public space, the purpose of which was to serve inhabitants at a district scale. These places, called 'Ruas de cidadania' are elements of the urban fabric, where public activities and services of the city are available. They promote contact and interaction between inhabitants, going beyond commerce and leisure in order to serve the citizen (Ruas de Cidadania).

These citizenship centres are proof of the government's interest in complementing sub centres with different activities, as well as supporting and interacting with the existent transport interchanges. Therefore, 'Ruas of citizenship' have been located near terminals, where inhabitants can have a high level of accessibility and through a mutual interaction they are able to create a sub urban centre. 'The main objectives are to facilitate the access to public services, to establish a focus of animation through the sports and entertainment for the local community and finally, in a planning way, to create a step and relationship between the metropolitan region and Curitiba's Urban Nuclei' (Ruas de Cidadania).

Freiburg im Breisgau: Trams systems in Europe and the Sustainable City

Background

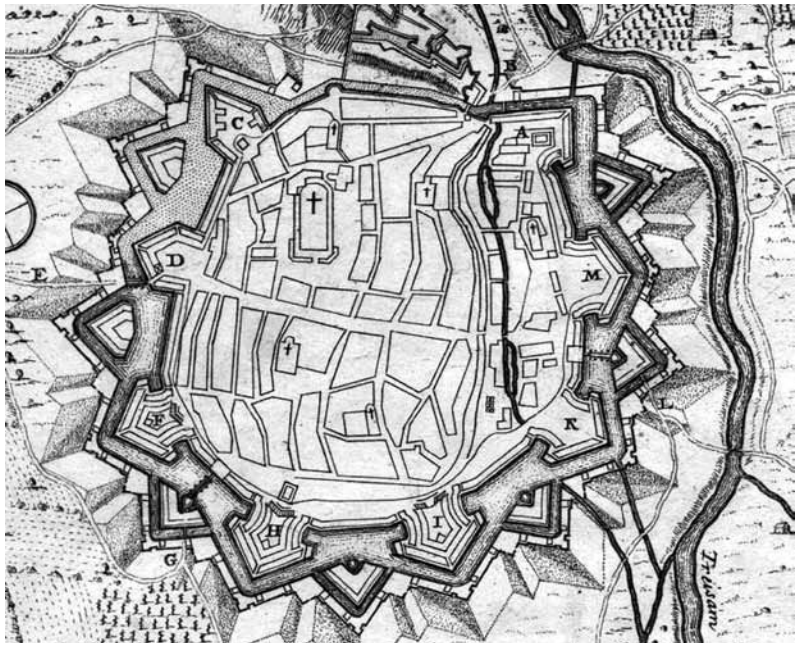


Figure 13. Freiburg Medieval Plan View
Source: URBS - Urbanização de Curitiba

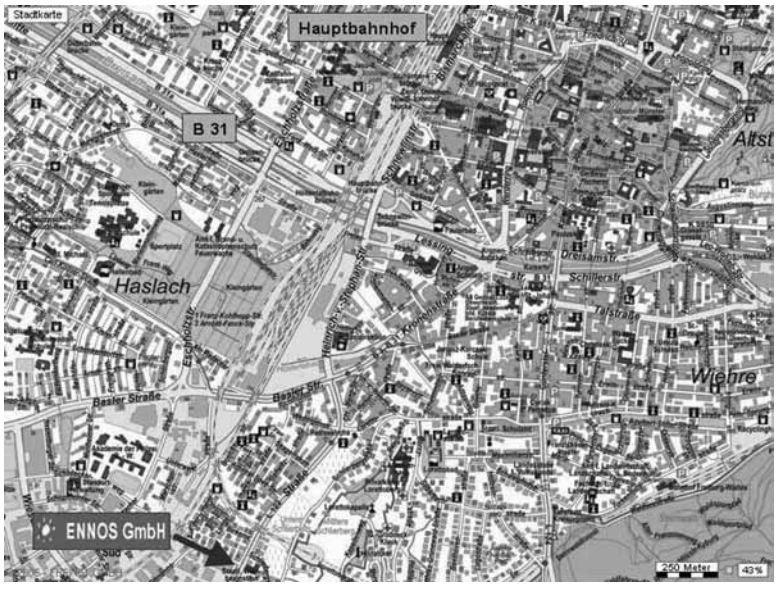


Figure 14. Freiburg Urban Centre
Source: URBS - Urbanização de Curitiba

As a medieval town, Freiburg was characterised by a walled market town in the city centre. This centre later on became its historical area, and was preserved for tram and pedestrian use (Small, 2002).

General Mobility System

Figure 15. Freiburg localisation in South-Western Germany
Source: URBS - Urbanização de Curitiba

Miguel Hincapié

Figure 16. Freiburg Mobile systems in the region
Source: URBS - Urbanização de Curitiba

The main characteristic of the plan's success is that Freiburg has long been characterized by its proposal for the optimization of various mass transit systems and has adapted the previously existing networks within the new projects. The first step, for example, was the integration of the bus system with the tram lines, producing a single unit of mobility. New routes replace bus lines are used as feeders for the tram lines covering remote or suburban areas. Furthermore, the proposal of new lines has been oriented towards current as well as forthcoming urban development, forming a consolidate transport structure.

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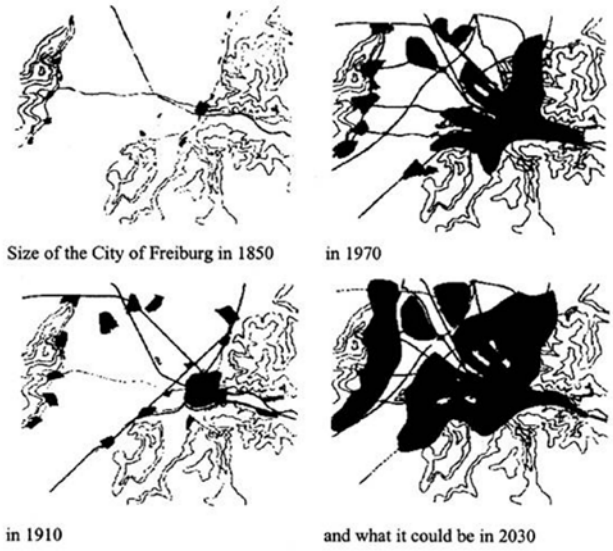

Figure 17. It is important to bear in mind that the city's growth was also one of the key issues in the transport development proposals. The Freiburg Office for Statistics and Resident Population assumes an increasing the city population up to 2010 from 7,000 to 10,000 inhabitants
Source: Heller (2002).

Figure 18. General Tram system. The lines in colors indicate the Tram Lines. The gray lines indicate the bus fedeers which complements, consolidating a single system (VAG)
Source: URBS - Urbanização de Curitiba

Miguel Hincapié

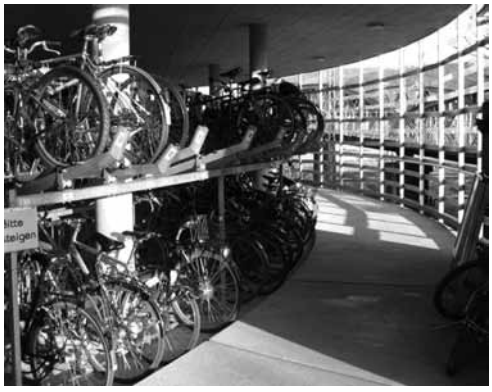

Figure 19. Mobile - View from outside.
By Nemorino (Don)
Source: URBS - Urbanização de Curitiba

Urban Interchanges in the General Freiburg's System

Analysing the basic mobility structure, the interchange places are seen to represent one of the central pieces for the general composition of the system. In Freiburg's public transport system, interchanges are basically made between the modes of bicycle, private vehicle, trains, bus feeders to the tram system and between different tram lines.

Cycle's Parks

The bicycle, alongside the Tram, is one of the modes of preference for people in Freiburg. Between 1976 and 1992, the percentage of trips by bicycle increased from 18% to 27% and, by 2006, 29% of all shopping trips to the centre were conducted on foot, 24% by bicycle and 26% (Freiburg-im-netz, 2006) showing an extraordinary success in a really short time. Therefore the offered places of interchange are a fundamental element of the public space and even more, they have become as a part of the integral design of the urban interchanges. This it is the case of 'Mobile', located on one of the sides of central station which, apart from being a centre of attention for cyclists and point of parking for bicycles, 'Mobile' combines other activities of entertainment and administrative use which convert it into a real piece of urban infrastructure.

"*Mobile*: is a purpose-built bicycle station and mobility centre located directly beside the main railway station. It is a round building with two levels. On the lower level there are guarded parking spaces for about 1001 bicycles, as well as a bicycle rental service and a bicycle repair shop. On the upper level there is a café and also the Mobility Centre where it can get information and tickets for travel by train, bus and bicycle" (Freiburg im Breisgau Transportation, 2007).

Figure 20. Mobile - View to the parking spaces.
By Nemorino (Don)
Source: Urbanização de Curitiba

Park and Ride

In European and some North American cities there is a figure that appears to bridge the gap between the elevated use of private cars and public transport. Park and ride (P+R) services are public transport interchanges with the space that allow commuters to leave their cars during the day while they are working and have access to public transport systems. Due to the increase of car ownership, they are often located in places of the periphery, around city centres, "becoming obvious to site them next to rail or light rail routes which people could use to reach the centres more quickly than driving" (Richards, 2001).

TRAZA N° 3, enero-junio 2011 / 54-81 / ISSN 2216-0647

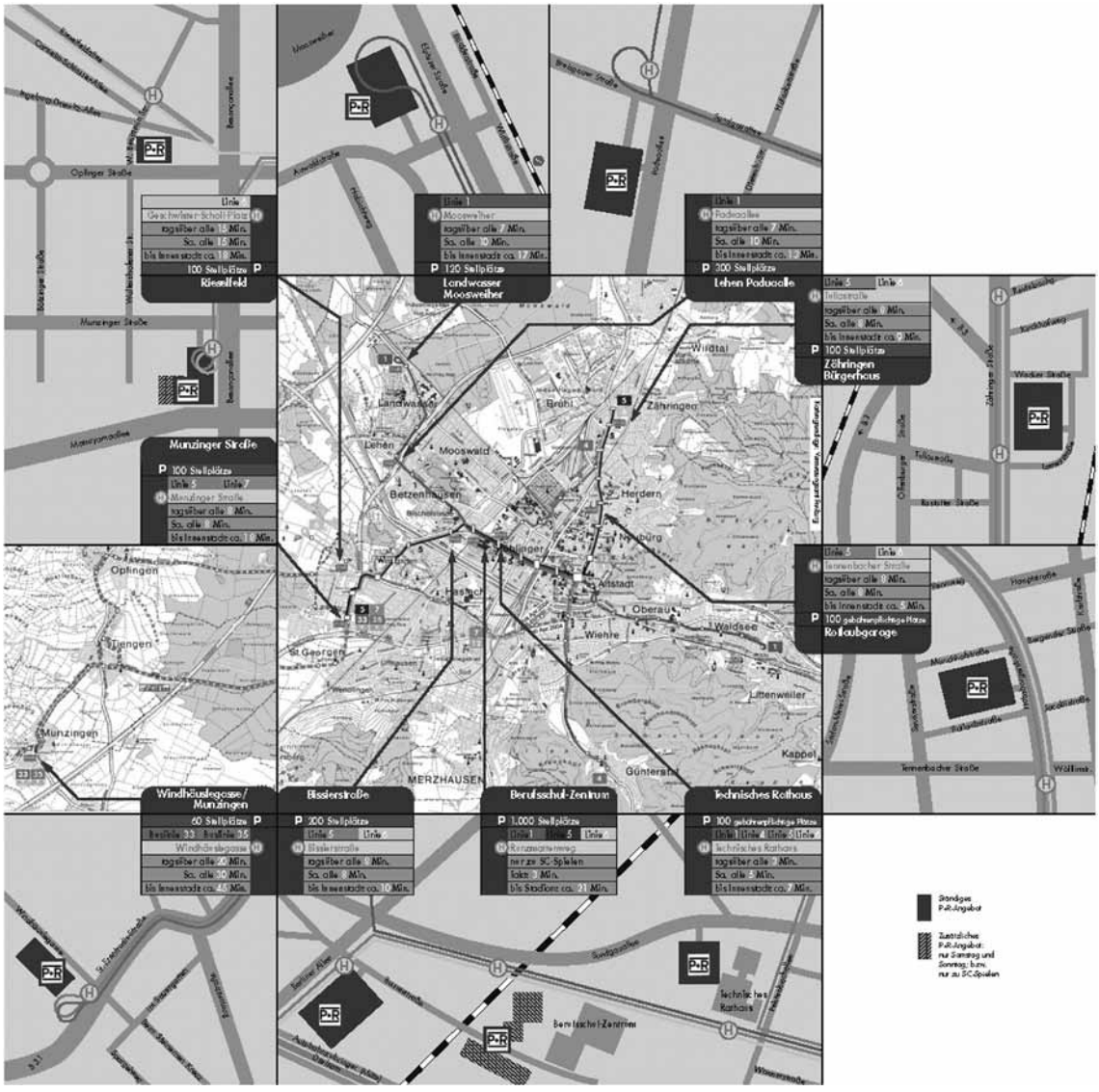

Figure 21. (VAG file) Park + Ride facilities on the periphery of the city centre make it possible for car drivers to transfer to public transportation
Source: URBS - Urbanização de Curitiba

In the case of Freiburg, the proposal and insertion of Park and Ride is one of the elements that have seemed as crucial by the time when they decided to pedestrianize the city centre. As a consequence, car owners leave their vehicles in the periphery of the centre, changing to public services or simply walking in order to reach their destinations. Most of the Park and Ride services are located along the corridors of the Tram, facilitating

the access from one mode to another. However, as can be observed in the figure above, some areas on the northern, north-western zones and near the station that already have a good road access into downtown, are not covered by the Park and Ride service. This situation should be solved in order to not provoke some traffic and circulation problems in the general transit system.

Figure 22. Zac the Scooter King
Source: The author.

Freiburg im Breisgau Hauptbahnhof

As a part of the metropolitan integration from Freiburg with other towns and cities in the region (Basel, Zurich), the internal tram system has been consolidated as a unified structure mixed with the train services that integrates the region. The main point of transference between the systems is located alongside the centre of Freiburg in the east side of the city and constitutes an important city centre as well as a focus of community interchange.

The central station is one of the projects developed by the city with an environmentally friendly conception that has characterised the urban planning of this place during the past decade. It was

TRAZA N° 3, enero-junio 2011 / 54-81 / ISSN 2216-0647

inaugurated in 1999 as part o a development project, including the design of several office buildings, stations, the transformation of Bismarck Avenue and the Freiburg concert hall.

Figure 23. Feiburg central station – general view. Image modified by the Author from the original taken from Breisgauverein für Segelflug e.V. Freiburg
Source: Freiburg (2000).

The integration of the urban project with the existent fabric is one of the Station Design's main achievements. The general urban project is composed by a diversity of activities: office towers, hotels, bars, commercial and leisure activities, and Mobility centre on the other side of the railway. This facilitates the interaction and exchange of different kinds of users, therefore intensifying the urban life of the area (Freiburg-im-netz, 2006).

Freiburg station's design is certainly one of the contemporary approaches to the design of urban interchanges with a clear concept of complexity and diversity in terms of activities and uses, as well as a comprehensible understanding of the levels of design in scales in accordance with the regional/metropolitan and local system.

Conclusion

In conclusion, it is seen that the search for a contemporary proposal for urban interchanges is a challenging task, and even

though some planning authorities globally have started this process, there is still a new world to research and explore. Urban interchanges should be conceived as one of the most important elements of the urban fabric, encouraging a physical, intellectual and emotional contact between human beings. Therefore, in order to make urban interchanges efficient and sustainable as well as to contribute to the quality of public spaces, new designs should strive to challenge existing understanding of urban design and approach the issue in a manner that focuses on the life quality of citizens.

In terms of functionality of mobility systems it is crucial to understand that designing the place involves a process and understanding of several topics. First of all, it is important to analyse and interpret the multi-scale significance of the interchange within a specific territory and how it can be linked within the current and future transformations of its urban fabric. Secondly, that the space has the specific role to transfer people from mode to mode, meaning that it has to be well resolved in the design itself.

In the case of Freiburg, this topic was specially taken into consideration, having a well located station and allowing people

Figure 24. Old city market in Curitiba, Brazil
Source: Westermayer (2007).

TRAZA N° 3, enero-junio 2011 / 54-81 / ISSN 2216-0647

Figure 25. Freiburg street life
Source: Coakley (2007).

to transfer easily between modes. Nevertheless, it is not so well resolved in the case of Curitiba, where a well planned strategy location for the interchange places was proposed, but with a lack of functionality when it comes to the actual function and spatial design of the specific buildings.

Furthermore, it is important that apart from the functional and strategic aspects of interchanges, the project (like in Freiburg) should bring a spatial, morphological and good-quality public space design for a specific piece of fabric, encouraging community exchange and allowing a better quality life style for the cities' inhabitants.

Finally, the current world faces new life dynamics and processes that affect not only our basic daily routines but also the way we communicate and interact with people around us. The continuous and rapid movement of people inside cities is giving a new dimension to the places that almost cannot be defined within a single title or function. Markets, squares, streets, parks —they are all charged by infinite urban qualities that have yet to be discovered. It is time to change and mix different elements of the city into hybrid products with the capacity to adopt and respond to present and future generations.

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Notes

[1] Paragraph extracted from the Dissertation Theses: What makes a city? Planning for 'quality of place'. The case of high speed train station area redevelopment, Jan Jacob Trip, Delft University of Technology, 20th March 2007.

[2] In Portuguese: Instituto de Planejamento e Pesquisa Urbana de Curitiba.

[3] Translation from Portuguese by author.