

RAILROADS AND URBAN TRANSFORMATIONS IN BARCELONA

Enrique Viana Suberviola

Universidad de Barcelona
enriviana@gmail.com

I. INTRODUCTION

Urban development and transport have been parallel developments. They have influenced each other, sometimes completely blurring the cause and effect of each other. The current territorial planning takes into account the joint development of both systems because it is aware of the mutual interrelationship and the importance of proper development of one of the systems for the expansion and strengthening of the other. But this connotation is a relatively current phenomenon. Keep in mind that until the nineteenth century, cities had a specific structure depending on the distances they were willing to travel mostly on foot its inhabitants.

Later, with the incorporation of mechanical means of transport, this situation changed gradually. Until World War II, they were predominant collective means of transport, but later began the boom in private car that intensified the decentralization of activities, especially residential, prompting the emergence of satellite towns. This differential caused a progressive loss of urban density and this dispersion led to the emergence of metropolitan areas, which conformed spaces, segregating residential areas of the areas of secondary and tertiary activity (Fordism). But this situation was reversed, as subsequently regained public transport a new boom to be perceived as more sustainable and economic (Fordism).

Currently the amount of induced by a means of transport in an urban area effects known. The effects of transport in the city are numerous and are responsible, largely urban settings. Transport modify the shape of the city creating poles of attraction around the stations and routes that generate changes in land use and land value. It reduces transport distances and boosts mobility and boosting productive activities. However, the increased accessibility of some areas causes greater isolation from other, nesting territory and causing a barrier effect.

The configuration of networks and transmission lines are therefore vital to understanding urban development and society as a whole.

II. OBJECTIVES, METHODOLOGY AND SOURCES

The aim of this work is to confirm empirically in Barcelona and its metropolitan area the interrelationship between urban system and transport networks and undoubtedly some of the most important transport networks are the railroad networks. They are considered railroads, according to a nineteenth denomination, as H. Capel (2011, p.11) indicates to all those who use transportation railway track for movement. Within this category it would be included in an order related to its historic appearance to rail, tram, funicular, the subway, light rail and high speed rail.

The scope of analysis studied is the metropolitan area of Barcelona. For different historical periods are analyzed different territorial areas. That is, is analyzed in each historical period all the metropolitan municipalities of Barcelona that have within their municipal boundaries of some kind of railroad urban system (metro, tram, light rail, funicular). Therefore, the spatial scope of analysis is determined by the following municipalities: Barcelona, l'Hospitalet de Llobregat, Esplugues de Llobregat, Cornellà de Llobregat, Santa Coloma de Gramenet, Badalona, Sant Adria de Besos, El Prat de Llobregat, Sant Boi de Llobregat, Montcada i Reixac, Sant Just Desvern, Sant Joan Despi, Sant Feliu de Llobregat, Molins de Rei and Sant Vicenç dels Horts.

To check the city-railroad relationship in this area has proceeded to perform three types of territorial analysis. The first compares the patterns of distribution of equipment in an urban area and its relation to the railroad networks. Cartographic and alphanumeric information necessary for such analysis was achieved by scanning thousands of facilities and services carriers Guide de l'metropolitan area of Barcelona 2007 courtesy of A.M.B. also made use of the land use layers obtained in the Metropolitan Territorial Plan of Barcelona 2010.

The second analysis compares the centroids of the urban areas studied and the centroids resulting from the merger of the areas of influence of each station railroad (calculated at all to 500 meters around each). The closeness or distance of both centroids indicate a greater or lesser correlation between urban and railroad network. One of the objectives of this analysis is to verify the existence of common environmental spatial location (when two or more elements coincide in the same space for common environmental causes but whether or not linking the various elements together).

The third analysis compares the evolution of railroad networks with the evolution of housing prices. It has been used for such analysis data on the evolution of the price of existing housing in the thesis of Pasqual Maragall (defended in 1978 and published the following year).

To carry out the work various cartographic and software statistics and different sources were used. The main sources were the graphic base railroad courtesy A.T.M (Metropolitan Transport Authority) and the cartographic bases provided by A.M.B (Ambit Metropolità de Barcelona).

Finally, it is noted that the software used to process the data obtained were mapping program Arc Gis 9.3 generation and database management programs Access and Excel data.

III. BACKGROUND

The study of the influence of communications in the territory has anchored its roots decades (Buchanan, 1972; Mumford, 1966; Ferrer and Hap Vallès Dubois, 1978). In the work

emanating from this study as the enabling infrastructure change and urban transformation perceived and turn this urban transformation was the incentive that allowed the expansion and diversification of infrastructure.

Urban transformations have been developed increasingly since the nineteenth century (Alegret and Cabré, 2008; Asensio, 2000; Garcia Catala, 2010; Herce Vallejo and Farrerons Miró, 2002; Solá-Morales i Rubió, 1997). There are several factors that have enabled cities creciesen beyond 10 km in diameter that had the largest cities in the world before 1800. Some of these factors are rooted in demographics (improving hygienic conditions caused a increased birth rate and there was a population boom, in addition to the effects of constant immigration process) and the economy (economies of scale tend to agglomerate in a compact space as large cities), but the factor that enabled this growth urban should occur on such a scale (currently megalopolis that exceed the average size of some European regions) was the diversification and proliferation of transport infrastructure.

Within the universe of infrastructure stands out above the other the influence of railroad systems (according to a nineteenth denomination, the railways are those infrastructures running on rails iron, including rail, metro, tram the funicular, light rail, high speed ...) which has been decisive in understanding the metamorphosis that has experienced urban space (Bellet, Alonso and Casellas, 2010; Capel, 2011; Febrés and Miserachs, 1991; Jimenez Garcia, 1986; Julià, 2005; Parcerisa and Rubert de Ventos, 2001; Seguí Pons and Petrus Bey, 1991), especially in the nineteenth century, as the highways were subsequently major drivers of urban and suburban development during the twentieth century.

This article deals specifically with the influence of railroad systems in a city of special features such as Barcelona. Barcelona is a city that has serious geographical constraints (rivers Besòs and Llobregat, Collserola, Mediterranean Sea) that prevent its urban sprawl and limit their transformation (Aguirre and Marmolejo 2010, Alcalá 2006, Bernat 2004, Busquets 1992, Candel and Casamias 1994 Garcia Martinez 2009, Gomez Gamboa 2011, Lluch 1972, 1979 Maragall, Pascual Peaguda 2009, Roca i Cladera 1986). Therefore, the influence of transport in this city has been very noticeable since the affected area had very clear physical limits and each transformation or expansion of transportation systems behaved social, economic and even political change in the affected area (Alcaide 2005, Alemany and Mestre 1986, Miralles 1996).

This article will try to untangle some of the most notorious impacts systems railroads have caused transport in the city.

IV. CONCLUSIONS

There is a clear relationship between the distribution of equipment and railroad network. In the central area of Barcelona it is where you usually agglomerating equipment although there are also a large number of these in the central areas of the peripheral municipalities in the metropolitan area of Barcelona. This pattern of localization in the central areas of urban spaces is shared by transport infrastructure as the core areas of major urban areas are those that are more accessible to the majority of the population because of its high degree of centrality. Both railroad infrastructure, such as equipment, tend to be located in these areas. It is therefore a question relating to the common environmental spatial location. In

fact, the expansion of railroad networks planned for the year beyond 2020 is planned taking into account the location of the equipment, especially those present in the periphery of the Barcelona metropolitan area. Here are transport infrastructure that have planned their structure depending on the equipment. This corroborates the theory that urban development and growth of transport infrastructure have a dynamics of interdependence.

Moreover, analysis of the centroids for the urban area of Barcelona and the coverage area of the stations of the existing railroad network in each historical moment, notes that there has been a parallel process between urban sprawl and expansion the railroad networks. The period of greatest disparity between Barcelona urban area and railroad network is corresponding to the Civil War and the postwar period. This is because, at that time, the lack of available budget prevented investment in infrastructure. But now, plans for expansion of the network take into account the urban structure of Barcelona. Currently, it has projected an extension of the railroad, very ambitious network, in which virtually all lines extends throughout the urban continuum of Barcelona. This is possible because the urban area of Barcelona is fairly stable at around 150 km². Is complete silting of the Barcelona plain and topographic conditions prevent, largely urban expansion. Therefore, as there is a well defined and delimited urban area infrastructures can form a real skeleton cross the entire area efficiently. At the same time, to conduct a technical analysis of the whole network, the increasing of lines and transport networks, their interrelation, increasingly accused, and greater connectivity densification and railroad system warns. These data support the joint development of railroad and urban space in Barcelona.

Finally, it is important to note that there is a clear link between housing prices and railroad network. We analyzed different periods between 1950 and 1980, in which there have been some important changes in the price of housing both quantitative and qualitative. Quantitative variations occurred because the price of housing was multiplied by 7 in just a decade (between 1960 and 1972). Qualitative changes occurred to change the values of housing prices, depending on the variations of the railroad network. In particular, the abolition of the tram and subway expansion (1960 and 1978) produced a series of spatial variations indicating that the railroad structure demarcated residential areas of greatest value in Barcelona. It is noted, therefore, the relationship between housing values and railroad structure.