

The Second Industrial Revolution and Urban Growth

The Impact of Transport in Spanish Cities

Aguilar, I. (Ed.). (2007). *El tranvía de Alicante. Pasado y futuro*. Alicante, Spain: Consellería d'Infraestructures i Transport, 240 pp., index, notes, photographs, tables, illustrations, maps, bibliography, cloth.

Alcaide, R. (1998). *El trenet de Valencia*. Mollet del Vallès, Spain: Lluís Prieto Editor, viii, 198 pp., appendices, index, notes, tables, maps, illustrations, bibliography, € 25.97 paper. Update for 1998-2001, 2003, on editor's Web page: <http://www.monffcc.com/archivos/erratas09.zip>

Cava, B. and Martín, M. (2000). *Breve historia del transporte urbano de Bilbao; Bilboko hiri garraioaren historia laburra*. Bilbao, Spain: Udala, 151 pp., index, photographs, tables, maps, bibliography, cloth.

Núñez, G. (1999). *Raíles en la ciudad: ciudad y empresa en torno a los tranvías de Granada*. Granada, Spain: Ayuntamiento de Granada-Fundación Caja Granada, 185 pp., index, notes, tables, maps, photographs, illustrations, bibliography, € 4.51 paper.

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An increasingly relevant issue in urban history has been the role played by infrastructures in the economic development of Western cities. These services were strongly linked to the modernization that came during the second industrialization, both as a vehicle of technological, organizational, and managerial advances and through the impact on modern urban transformations. Some conclusions about the relationship between urban services firms and the development of cities have begun to be established. Research has shown that incentives derived from new technologies were influential, on both the supply and demand sides. During the second half of the nineteenth century, the problems of the Western cities were multiple, as a result of their rapid growth, generating a potential demand for many services. But the second industrialization was also offering the tools to meet those needs.

Studies of these networks first began in the pioneering industrialized countries. Countries of later industrialization and urban development have received less attention. In recent years, however, in southern European countries, a growing set of publications is beginning to clarify the links between those services and economic development, although there is still a relative lack of comparative synthesis. The new infrastructures spread throughout Spain, aiming to provide the cities with modern equipment, in line with European cities. One of the most influential services was transportation. Despite the strong link between city and transport, until recently its study was reduced to causal analysis, in

which each one was the cause or the effect, a methodological tradition that has its roots in the nineteenth century. However, the causality paradigm has been criticized. Accordingly, the analysis of that complex relation calls for a profound knowledge of the territorial dynamics in which these means of transport are installed as well as their impact. It entails acknowledging the existence of a reciprocal and circular relation.

Transport has the capability to provide spatial mobility to population and economic flows.¹ Thus, it becomes a crucial sector for economic activity and for spatial organization. Consequently, research in the 1980s stressed the conceptualization of transport networks not only as technological systems but also as vehicles for traffic and mobility. As a result, recent approaches to transport history defend a view focused on the *intermodality* of transport.

Trams have been the hegemonic means of urban transport since the late nineteenth century, their immediate antecedent (overlooking the omnibus) being the narrow-gauge railways. Their linkage with the structure and the processes of urban growth is undeniable.² They were initially horse-drawn cars. In Spain, their implementation was quite delayed in relation to Europe, considering that the first lines were built only in 1871 (Madrid) and 1872 (Barcelona). According to Oyón, those trams had little effect on urban morphology and growth. Only electrification, installed around the turn of the century, had strong repercussions, encouraging their use until World War II, and converting them into a mass transport system. Thus, in 1920-1950 trams had a “golden age” in Spain.

The study of urban transport in Spain, despite its significance, has not received much attention from economic historians, as opposed to the railways, which have been the object of some case studies and synthesis. The numerous local monographs have mostly focused on the large Spanish cities, while case studies of medium-sized cities have been more infrequent. Nonhistorians—journalists, engineers, or geographers—have written most of the studies, most of which offer a descriptive account of lines and materials.³ Another recurrent feature is that the focal point is usually the trams as a public service, not as a business. The publications under review are recent contributions on the impact of urban transport on the growth of Spanish cities, elaborated from diverse methodologies (economic history, geography, urbanism, business history, history of technology). The cities that have been selected include two of the country’s largest (Valencia and Bilbao) and two medium-sized ones (Alicante and Granada), located in disparate geographical areas.

The aim of the book edited by Inmaculada Aguilar is to study the tram in Alicante and its district from the early project of 1883 up until its reopening in 1999. The text is the result of the collaboration of diverse scholars (economic and social historians, engineers, urbanists, and journalists). This offers a wide perspective that enriches the study, but it also presents some repetition. The first two chapters are introductory, making reference to the antecedents of the tram in Alicante and to the local economic context. The core of the text is chapters 3 to 8, which are devoted to the main stages: the first urban tram and the building of a suburban network (1893–1913), the period of Belgian management, with its tardy electrification (1913–1923), the transfer of the company into Spanish hands (1923–1956), and, finally, the municipalization and termination of tram service (1956–1969). The final chapters deal with sector-specific questions, such as the impact of the tram on the shaping of the city, the rolling stock, the changes induced in daily life, and the recent recovery of the tram as a means of urban transport.

The opening of the first tram, horse drawn, took place in 1893 thanks to a local company. The initial network, formed by one circular and two transverse lines, connected the economic and leisure cores, such as the urban center, railway station, port, and tobacco factory. In parallel with the urban layout, a suburban network was built by a Belgian company—with Belgian materials—which connected Alicante with its hinterland by a steam tram. Fierce competition with the railway forced the closing down of the suburban tramway in 1910. The inefficiency of the horse-drawn trams in the urban network argued for its electrification, but the Spanish company's lack of financial resources forced its takeover by a German–Belgian company in 1913. Influential banking and electrical groups of both countries converged in this firm. The organization and financial misfortunes of the Great War, as well as inflation and the depreciation of the franc during the postwar period, delayed the desired electrification. Given these difficulties, the assets of the company were transferred in 1923 to a Spanish–Belgian company, which in the following year proceeded to homogenize and electrify the network. However, in 1926 the assets were transferred again to a company controlled by Spanish banking groups, a rather typical situation in those years.

Between 1925 and 1930, an important expansion of the network was financed through a bond issue. The competition of the buses forced the company to issue discount tickets. The 1930s crisis hurt the firm because of the rise in labor costs and the increasing competition of the bus services. During the Spanish Civil War, the local labor committee confiscated the company. The scarcities of the postwar era affected the firm, which had to face a new increase in labor costs, electrical power restrictions, and difficulties in importing materials. The strong growth in the number of passengers also increased the pressure on an obsolete network. The poor economic results and the proximity to the expiry date of several concessions stimulated the municipalization of the service in 1956. The deficit of the tram service grew in the following years—confronted with the competition of the more efficient technology of the bus—and contributed to the progressive closing down of the tramlines. Thirty years later, the trams were revived as a means of transport in Alicante.

The rolling stock displays a paradigmatic evolution. Until the Spanish Civil War, materials were predominantly imported, from Belgium, the United States, or France. Yet during the Franco autarky years, these materials were remodeled or manufactured in the mills of the company. The tram was significant as an urbanizing vehicle. The firm that built the early tram in the city and the real estate company that built up the new neighborhood of Benalúa—both of them founded in the late nineteenth century—had common management board members. In general, tram lines helped integrate the new environs into the urban area.

Valencia was the third largest city of the country. Its metropolitan area was surrounded by a rich rural milieu (the *Huerta*), integrated with the city in a reciprocal symbiosis. Several historical publications have indicated that the narrow-gauge and suburban railways that were built in the late nineteenth century—and electrified in the twentieth century—had a remarkable impact on the growth of the city and in the formation of the metropolitan area. This system was completed with a tram network, first horse drawn and later with electric traction, used for intraurban service but also to connect the city with the surrounding towns.

Alcaide's publication traces the history of two of the transport systems that had a large impact on the formation of the metropolitan area, the *trenet* (a narrow-gauge suburban railway) and the tramway, whose fortunes were closely linked from their origins. The story

begins at the same time as the building of the city extensions (*ensanches*) that shaped the future lines of urban growth. This expansion required an efficient transport system. The service was rendered—as in most Spanish cities—by private companies, in concession. In 1885 the Sociedad Valenciana de Tranvías (SVT) was created. This company built the first layout of the urban transport network of Valencia and nearby suburbs. Proof of its impact was the success of the business. In addition, it held the ownership of the *trenet* since 1888, when the first line between Valencia and the town of Liria was opened. Valencia thus became a Spanish pioneer in the installation of trams, as the first urban line dates to 1876. In addition, it had one of the most important networks of the country, surpassed only by Madrid and Barcelona. On the other hand, the history of the *trenet* has gone through several stages: from 1888 to 1917, the SVT held the ownership of the concessions and the lines; from 1917 to 1964, it passed to the Compañía de Tranvías y Ferrocarriles de Valencia (CTFV); in 1964, the ownership of the concessions was held by the state; and in 1997, it was transferred to Ferrocarrils de la Generalitat Valenciana.

In Valencia, several transport companies coexisted. This gave rise to fierce competition and rivalry among the firms, leading to the opening of several tram lines between 1895 and 1913, connecting the capital with the suburbs. Apart from the two above mentioned companies, the Compañía de Tranvías del Norte de Valencia, the Compañía General de Tranvías, and the Sociedad General de Tranvías were constituted. The third of these purchased the lines that did not belong to the SVT, later becoming property of a French company constituted in 1898—the Compagnie Générale des Tramways de Valence (Espagne) Société Lyonnaise. They electrified all the existing transport lines after the beginning of the century and even built new ones. Valencia was among the first Spanish cities to electrify its transportation grid. The first line was opened in 1908, behind only Bilbao (1896), San Sebastian (1897), Madrid (1898), and Barcelona (1899).

But the SVT was going through serious economic problems because of high operating costs and increasing competition, which forced it to lease out its network to the French company in 1906. In 1911, SVT had control of all the tram and railroad lines of the city and the suburbs, but that ended in 1917 with the creation of the CTFV, combining the interests of the SVT and the *Lyonnaise*. A second stage began then, characterized by the expansion of the service, which was eased by the monopoly enjoyed by the CTFV. Once the tram network was unified, in 1925, its electrification was completed.

The 1920s witnessed the beginning of a new competitor: the bus. The city council allowed the establishment of bus services along routes that coincided with the trams, to which the CTFV responded with the creation of Valenciana de Autobuses (VASA) in 1927. The 1930s were hard because of the economic crisis and, above all, the Civil War, clear impediments to the expansion of the tram system. During the postwar period, service was affected by frequent electrical shortages and by the scarcity of raw materials and spare parts. However, the lack of fuel turned the trams into the only means of transport, at a time of growing demand because of demographic growth. For that reason, the company undertook a major extension of its services. But profits plummeted as of the late 1940s because of postwar inflation, which essentially blocked investments. The operating results were not compensated with appropriate revision of the fares, which depended on state authorization. This worsening financial situation marked the beginning of the decline of the Valencian

trams. Finally, in 1964 the city council decided to recall the tram, trolley, and bus concessions of the CTFV and its branches, with the exception of the interurban lines operated by VASA, which were sold to the Sociedad Anónima Laboral de los Transportes Urbanos de Valencia (SALTUV) in 1972. Thus, the third stage of the service began. The city council did not wish to disburse the high sums demanded for the modernization of the service. For that reason, a new company was created, managed by the workers of the CTFV (although under municipal trusteeship), which began to work in 1964 (SALTUV).

SALTUV undertook the transformation of the tramlines into bus services, as mandated by the city council. But the economic situation of the company did not allow it to purchase new buses. The solution was to replace the remaining lines with trackless trolley buses. The end of the tram came in 1970, with the transformation of the lines to trolley buses, although these too began to be replaced by conventional buses as of 1974. On the other hand, the *trenet*, after seventy-six years of private concession, became a public means of transport, subsidized by the state, losing its exclusivity, and having to compete with the state narrow-gauge railways. Between 1964 and 1986 a substantial renewal of lines, materials, and facilities transformed it into one of the best equipped in Spain.

Bilbao was an entirely different case. Although Valencia had some industrial activity, Bilbao was the center of early industrialization in Spain (particularly heavy industry), as well as shipping, financial services, and hydroelectric companies. However, the industry was located not only in the city but also along the river linking it with the sea. The publication of Cava and Martín has an antecedent, in which the evolution of the trams in the city is detailed.⁴ Their essay examines the early public transport systems that emerged in the city in the late nineteenth century. From the last third of the nineteenth century until the 1960s, the trams were an important means of transport, until their replacement by trackless trolleys (beginning in the 1940s) and later by buses.

One of the peculiarities of the transport system in Bilbao is that it served all social groups. Unlike in other cities, in which trams were rather elitist, their popularization in Bilbao was a fact—even before electrification—although horse-drawn cars were expensive and slow for consumers and unprofitable for the companies. Since the 1860s, Bilbao had several transport systems, but by the end of the century these were obsolete. Their modernization in the last quarter of the century coincided with the transformation of the city into the hub of the communications networks of northern Spain, reinforcing its role as a financial, mining, industrial, and transport capital.

Along the river of Bilbao there were two distinct areas: the right bank, which was mainly a residential and leisure space, and the left bank, an industrial space. The first trams allowed movement through the right bank, to reach leisure activities. The earliest line was opened in 1875. On the left bank, the growing mining and industrial activity was increasing the traffic in goods and passengers, which was a major reason why, since 1875, several lines were planned. The second stage of the trams is linked to their electrification, although since the 1870s other alternatives (e.g., the steam tramway) had been tried without success. Electrification began in trams travelling from Bilbao to Santurce and from Bilbao to Las Arenas, both in 1896. The urban trams were electrified later. Technological change forced the companies to make large investments. For that reason, local capital joined with foreign capital, constituting in 1906 the *Compañía Tramways et Electricité de Bilbao*, with Belgian

capital. The first urban electrified line was opened in 1907. Thus, Bilbao was the first Spanish city to have electric tramways, which were complemented by an efficient electric railway network. Almost immediately, in 1910, buses appeared to improve the connection with Durango and other towns and to which several urban bus lines were added.

But the Civil War disrupted the process, as the vehicles were confiscated. The war's destruction was particularly damaging to the tram network of Bilbao. The following years brought shortages of vehicles and many restrictions imposed on their use, and during World War II fuel restrictions became critical. The income of the companies remained stagnant, and this generated high losses. The key to the normalization of the service was its municipalization, through the creation in 1940 of a mixed enterprise, between the *Compañía del Tranvía de Bilbao* and the city council. The modernization of urban transport began with the installation of trackless trolleys (an intermediate model between trams and buses) and the extension of the most important lines. Bilbao was again a pioneer, the first Spanish city to install trolley buses (in 1940). When this occurred, the urban and suburban trams gradually disappeared from the city. In 1954, the first conventional bus line was inaugurated. The last urban tram circulated in 1959 (the tram from Durango to Arratia was closed in 1964). In the 1970s, a mixed fleet of trolleys, buses, and minibuses coexisted in Bilbao. But trolley buses were disappearing because of the lack of provisions and parts. In 1972, they began to be replaced. The last trolley-bus line ceased operating in 1976, definitively giving way to the bus. In 1948, the city council municipalized urban transport service in a monopolistic regime, leasing it to the *Compañía del Tranvía Urbano de Bilbao, S.A.* After 1976 the corporation *Transportes Urbanos del Gran Bilbao, S.A.* held that contract. Since 1988, urban transport in Bilbao has been a municipal service.

In contrast to the predominant pattern described above, the book by Gregorio Núñez on the trams of Granada is the first study of urban transport from an economic history perspective (more precisely, from business history). Núñez follows the traditional literature, as he restricts the time period to the years of the trams, which in Granada lasted until 1974. It would have been helpful if an effort had been made to extend this research to the present, as, paradoxically, we know much less about the evolution of the urban transport companies during the last quarter of the century than in previous stages.

The evolution of the company can be divided into two main stages, one of expansion until 1930 and another of slowing down until the tram was shut down in 1974. These coincide with not only the economic evolution of the city but also the evolution of the sector in Spain. The following features are particularly notable: the long-term gestation of the firm; its complementarities with the railway (in Granada, its links with the sugar industry); the participation of foreign capital, above all during electrification (French, Belgian, and Swiss, successively), and also of the powerful business group Escoriaza; and the search for synergies derived from vertical integration (city-planning promotions, creation of electrical power station).

After the usual initial uncertainties, *Tranvías Eléctricos de Granada S.A. (Tegsa)* was founded in 1903, by the initiative of the Escoriaza group, inaugurating service the following year. The author alludes to the initial oversize of the network in relation to the real dynamism of the economy of Granada. This apparent paradox, which seems to be repeated in other cities, is perhaps explicable if we compare it to what happened in the building of other transport systems (e.g., the nineteenth-century railways and the highways of the 1960s), in which the key to the business was the building phase, not its operational aspects, and, in the case

of the trams, also in the revaluation of urban space. The linking of the concessionaires with the mechanical industries, electrical, and real estate sectors is indicative, as well as the rather frequent sale of the operation once the basic network and the electrification were completed.

After 1912, Escoriaza transferred control of the company to another group formed by local and Swiss capital, which carried out an expansion in connection with the upsurge of the sugar industry. Along with this growth, which concluded in 1922, came a diversification of activities, with the creation of repair shops and the building of a hydroelectric power station. In the 1920s, Tegsa embarked on a new plan of expansion, investing strongly in industrial activities (sugar) and in electricity. The 1930s Depression damaged this ambitious industrial venture. The lower demand, labor conflicts, municipal projects of city planning reform, and competition from buses were critical factors that led to the firm's suspension of payments in 1932. The postwar economic policy brought about new difficulties, such as the freezing of fares amid inflation, an increase in labor costs, power shortages, and obsolete rolling stock under pressure from increasing demand. The 1950s showed signs of a recovery, but the abandonment of urban service at the beginning of the 1960s relegated the company to a modest role as supplier of suburban transport. The company suffered increasing losses after 1964. Finally, in 1971 Tegsa substituted buses for railway service at the periphery of the city.

In sum, the publications under review demonstrate, beyond local peculiarities, the existence of common patterns in the installation and development of urban transport in Spain. Among them, we would emphasize its periodization, marked by the changes of traction, the significance of foreign capital in the unification, homogenization and electrification of the networks, and the outstanding role of trams in the urbanization of the territory and in the socioeconomic modernization of urban societies.

—Alberte Martínez

—Jesús Mirás

University of La Coruña

Notes

1. Jesús Mirás, "The Spanish Tramway as a Vehicle of Urban Shaping: La Coruña, 1903-1962," *Journal of Transport History* 26 (2005): 20-37.

2. José L. Oyón, "Tram, mobilità e crescita urbana in Spagna," *Storia Urbana* 119 (2008) (forthcoming).

3. Apart from the books under review, some other recent works are José M. Valero and Joaquín Herrera, *El tranvía de Cádiz a San Fernando y Carraca (1906-2006)* (Gijón, 2007); Alberte Martínez et al., *Compañía de Tranvías de La Coruña (1876-2005): Redes de transporte local* (Madrid, 2006); Hermenegildo Cerezo, *Tranvías, trolebuses y autobuses: Empresa Municipal de Transportes de Valencia* (Valencia, 2006); Juan P. Esteve, *El ferrocarril en Madrid: historia de las líneas de Renfe, Metropolitano, Vía Estrecha y tranvías interurbanos 1851-2006* (Madrid, 2006); Antonio Giráldez, *Recordando los tranvías de Vigo* (Pontevedra, 2005); Manuel Giménez, *Memorias de un tranviario: historia de los transportes urbanos de Barcelona desde el primer tranvía eléctrico hasta el desmantelamiento de la red de tranvías y trolebuses (años 1898 al 1971)*, 4 vols. (Barcelona, 2002-2005); Inmaculada Aguilar and Virginia García, *Valencia Tranvía, 1874-2004* (Valencia, 2004); Juan Olaizola, *El tranvía de Arratia (1902-1964)* (Bilbao, 2004); Juan Peris, Josep A. Fernández, and Adrià Chavarria, *El tranvía a vapor de Onda al Grao de Castellón de la Plana, 1888-1963* (Castellón, 2004); Ángel Peña, *Historia del tranvía entre Alicante y San Vicente del Raspeig (1899-1966)* (San Vicente del Raspeig, 2003); Jordi Bibiloni, *Palma, història del tramvia elèctric* (Palma de Mallorca, 2002); José M. Valero, *Centenario del tranvía eléctrico: Zaragoza, 1902-2002* (Zaragoza, 2002); José V. Colomer et al. *El*

transporte público en las áreas metropolitanas: experiencias españolas (Valencia, 2002); Juan Olaizola, *Los tranvías de Bilbao* (Bilbao, 2002); Raúl Pons, *La Panderola (1888-1963): Estudi geogràfic del Tramvia a Vapor d'Onda al Grau de Castelló* (Valencia, 2002); Xan Fraga, *Tranvías de Ferrol* (O Burgo, 2002); Albert Gonzàlez, *El tramvia de Tarragona* (Barcelona, 2001); Juan Olaizola and Iñaki García, eds., *El tranvía eléctrico de Bilbao a Duranga y Arratia* (Vizcaya, 2001); Xan Fraga, ed., *Trolebús* (Carballo, 2001); Xan Fraga, *Pontevedra-Vigo tranvías e trolebuses (1889-1989)* (O Burgo, 2000).

4. Begoña Cava, *Historia del Tranvía Urbano en la Villa de Bilbao (1884-1954)* (Bilbao, 1990).

Alberte Martínez is a lecturer in economic history at the University of La Coruña (Spain). His research is focused on Spanish utilities, particularly urban transport and foreign investment. He is coauthor of *Compañía de Tranvías de La Coruña (1876-2005): Redes de transporte local* (2006) and *Aguas de La Coruña: 1903-2003. Cien años al servicio de la ciudad* (2004).

Jesús Mirás has a PhD in economics and is an associate professor of economic history in the Faculty of Economics of the University of La Coruña (Spain). His research interests include the history of public and networked services, business history, and ports and maritime history. He is the author of *Continuidad y cambio en la España urbana en el período de entreguerras: Análisis de una ciudad española* (2007) and coauthor of *Aguas de La Coruña: 1903-2003: Cien años al servicio de la ciudad* (2004).