

The Spanish tramway as a vehicle of urban shaping

La Coruña, 1903–1962

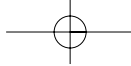
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The aim of this article is to shed light on the connection between tramway layout and the location of economic activity in a Spanish town during the first half of the twentieth century. The town is La Coruña, in the north-west of the country, and the main source used in the research is the industrial and commercial contribution (*contribución industrial y de comercio*).¹ Three critical dates are selected: 1914, which marks the beginning of the electrification of La Coruña's trams, as well as the beginning of the First World War, 1935, the last year of the Second Republic, immediately before the outbreak of the Spanish Civil War, and 1960, in which year the town's trams were dismantled and the 'autarchic' period of the Spanish economy drew to a close. The aim is to determine the influence of successive tram branch-line building on the spatial structure of an urban economy like La Coruña's.

Urban transport and economic location in cities

The relationship between transport and economic location is complex. Space is critical to the urban economic system, and this explains the interest of both economists and geographers.² The idea of linking urban growth and location and transport is well established. Since A. Weber (1909) it has been recognised that one of the main factors favouring the location of industries in towns is the proximity of transport.³ Transport has the potential to provide spatial accessibility and mobility for both people and goods;⁴ it is a vital sector, linked with economic activity and spatial organisation.⁵ Indeed, it is almost a cliché to talk of the decisive role of transport networks in the development of contemporary Western cities.⁶ The relationship is complex, however.⁷ Cities are shaped by transport systems, but transport systems are also dependent on other urban characteristics.⁸

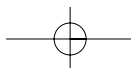
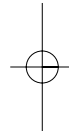
There has been wide agreement on the idea that the use of the urban space determines the shape of urban transport.⁹ But changes in transport technology have also exercised a strong influence on urban shaping, and on economic location.¹⁰ There is a relationship of interdependence and mutual determination between transport and urban shaping at any moment in history.¹¹ The improvement of the infrastructure depends on accessibility



between urban areas, and the distribution of accessibility determines the spatial distribution of commercial and social activity.¹² In other words, there usually exists a clear connection between transport networks and the location of businesses, land rents and inter-urban movement. Urban growth in the nineteenth century needed the establishment of efficient means of transport once a certain urban size was reached.¹³

Urban transport is a dynamic area of transport history that has provided a lot of evidence on the relationship between transport and urban growth.¹⁴ According to T. C. Barker, historians generally agree as to the importance of the relationship between the development of public transport and urban growth, particularly in countries such as Britain and the United States.¹⁵ From the time of the industrial revolution onwards urban areas expanded dramatically. These changes, which began in Britain and later spread to the rest of the Western world, were to provoke far-reaching effects on the living conditions of many people around the world.¹⁶ Historians dealing with the impact of transport on the city have been more interested in the nineteenth and early twentieth centuries, however, than in the later twentieth century.¹⁷ For example, Barbara Schmucki notes that 'the history of urban transport has been seen as the story of the rise and fall of the tramways'.¹⁸ New approaches have prompted her to call for 'a closer look at the intermodality of transport' in an attempt to obtain a clearer overall view.¹⁹ The installation of tram networks was a significant factor in the process of urban expansion and suburbanisation, although many of the first tram companies were not profitable.²⁰ Initially trams were horse-drawn and, as McShane and Tarr have shown, within the broad context of transport throughout the whole of history horse-drawn vehicles have had a fundamental impact on the changing shape of cities, fostering suburbanisation and determining the location of trade.²¹ The end of the nineteenth century saw the introduction of electric traction, and it was this which brought trams their competitive advantage over horse-drawn vehicles and effectively signified the consolidation of urban transport for the masses; tramways became cheaper and popular.²² Electrification meant that urban transport was much faster. Speed of communication was symptomatic of a developing world in which technological change, cultural liberalisation and the advent of mass production made urban and inter-urban mobility the life blood of economic change.²³

The layout of many European cities was determined by a process of urban growth that began in the 1880s, and ran in parallel to the rise of suburban neighbourhoods. This process took place as a result of the decentralisation of new industries and those residential areas that sprang up as a consequence of new means of transport, particularly electric tramways.²⁴ Surface transport was limited to railways and trams, with fixed lines, and the population tended to gravitate to areas surrounding those lines. Urban settlements were built near to radial transport routes, and this had an obvious impact on economic activity; housing, for example, created a demand for services and retail establishments, and there was a counter-incentive, in terms of land prices, for industry to locate in other areas. Despite the fact that trams were relatively



slow, they were the most common form of urban transport until the Second World War, and formed the structure of urban diffusion, generating 'axial' land use patterns.²⁵

There is abundant evidence to suggest that in developed countries such as Britain, and particularly in London, public transport such as buses, trams, the Underground and railways had an influence on urban growth.²⁶ Several authors have defended the premise that transport facilities were a necessary condition for suburban growth.²⁷ In Germany, urban expansion was prompted by the development of transport networks in cities such as Berlin, Leipzig, Stuttgart, Nuremberg and Frankfurt am Main.²⁸ In France, transport systems served as a kind of template for the urban expansion and internal spatial organisation of cities, especially Paris, although rural areas were also affected.²⁹ Italy had a vast local railway network, which contributed to the spatial organisation of the urban development of the country as a whole, and more particularly to determining the flows of traffic within cities. The impact of railways, however, was conditioned by the competition provided by an extensive urban tramway system.³⁰ Urban growth was similarly influenced by the evolution of transport systems in countries such as Belgium, Austria, Switzerland, Greece, Japan, Canada, Australia and Russia.³¹

References to the connection between transport and urban growth in Spain for the period analysed here are numerous, but perhaps the city of Barcelona best reflects the relationship between urban transport and urban growth.³² The layout of Barcelona reflects quite clearly the early tram and railway network.³³ These lines formed a functional link between the centre of the town and the new extensions and suburbs, particularly after electrification.³⁴ In Madrid the introduction of the first tram and railway lines took place at a time when the city's development was already well under way, but it did serve to consolidate late nineteenth-century suburban growth.³⁵ The tramways in Madrid enjoyed a monopoly in terms of public urban transport, and this was reinforced by electrification.³⁶ The tram's influence on the urban layout of other cities such as Gijón has been studied in some detail, and case studies of Bilbao, Palma de Mallorca and Granada also provide important points of reference.³⁷

Urban growth in the first half of the twentieth century

La Coruña is a coastal town in the north-western corner of Spain, located within the autonomous region of Galicia (Figure 1). The early twentieth century was a period of remarkable change for the town. In 1914 most of its commercial activity was focused in the centre, where the population density was very high. But the integration of rural spaces within the urban area was beginning to take place and this facilitated a greater availability of land for expansion. The central business district included the area traditionally known as Pescadería, the extensions (*ensanches*) that were built at the beginning of the century, and certain areas of the old town that were no longer central. These areas contrasted with peripheral areas such as Santa Margarita



Figure 1 Geographical position of La Coruña and the main Spanish cities

or the Garden City (Ciudad Jardín), construction of which began in 1921, and where residential and economic densities were much lower.

There were various forms of urban growth. First, building took place within the town itself, that is, there was an intensification in the use of available land in the inner city. Second, there was a parallel trend towards the adoption of a grid formation, known as *ensanches*, a tendency that was prevalent in a lot of other Spanish cities at the time. A third and final tendency may also be identified, one which involved the growth of certain architecturally rather anarchic settlements.³⁸ Therefore one can observe a shift in activity from the historic areas towards the south and south-east of the town, with Santa Margarita forming the dividing line between the two directions of expansion, that is, towards Riazor and following the coastline of the port and the estuary.

Thus, on the eve of the Civil War (1936–39), the urban structure of La Coruña was transformed by the demographic growth of the 1920s and 1930s. There was no obvious change in the direction of urban expansion during these years, although the *Ensanche* underwent a gradual process of consolidation. During the two decades *after* the war the town was to grow faster than at any other period of its history. This growth reflected a tendency toward urbanisation throughout Spain, and the expansion of La Coruña,

particularly in the 1950s, was mirrored in a number of medium-size Spanish cities such as Valladolid, Leon, Cadiz or Vigo.³⁹ The urban planning initiative of 1948 aimed to co-ordinate this expansion, and effectively served as a basis for the town's development during the decades which followed.

All these medium and long-term changes spurred a reorientation in the location of much of the town's economic activity. This reorientation was unplanned, as was the land use in the urbanisation of the Ensanche and in much of the outlying areas of the town. This lack of co-ordination was largely responsible for the rather anarchic siting of industrial firms.

The tram network and the location of business

In Spain the first trams came into service in Madrid in 1871 and Barcelona in 1872. During the following years, trams became more prevalent throughout the country as a whole.⁴⁰ In most Western European cities horse-drawn trams reached their apogee between the 1860s and the 1890s, so it would be no exaggeration to say that the arrival of trams in La Coruña was rather late.⁴¹ The *Compañía de Tranvías de La Coruña* was founded on 3 December 1901.⁴² The company began business in January 1903, using mule-drawn trams. There was one main line connecting the Puerta Real with the railway station, with branch lines to Riazor and the coach station. The tram network provided transport links between the streets that made up the main lines of the urban network, as well as important residential and economic areas.

The network spread progressively and the second line connected one of the main roads of the town, San Andrés, with the old town. The line was subsequently extended by way of a branch that linked Cuatro Caminos with Monelos, one of the areas of the former municipality of Santa María de Oza (annexed in 1912), which was starting to become an important centre. Despite the relatively short trajectory of these lines, they had a tremendous impact on the flow of urban traffic, and this should not seem too surprising given that the municipal area of the town covered a space of little more than 35 km². However, the figures reveal that, during the early years, the economic results of the tram company were poor, probably because the service was used relatively little.⁴³

At that time the location of firms depended, to a large extent, on the kind of activity in which they were involved. As in most Western cities, a firm's location was conditioned by a kind of historical inertia, which usually involved businesses that carried out similar activities gravitating to the same geographical space. One long-term consequence was an increase in land prices in the centre of the town, which led to a progressive decline in this area as a residential neighbourhood, families being squeezed out by firms which were better able to afford the higher costs. Those involved in the service sector tended to gravitate to the centre, especially those for whom a successful business network depended on a central location, but this location also depended on demand thresholds. Retailers such as grocers and hardware dealers, and those involved in craft activities, were more dispersed in their

patterns of location, since their business generally required close relations with their customers. On the other hand, wholesalers and more specialist retailers (jewellers, ironmongers, etc.) were to be found in the town centre. Manufacturing took place in newly developed areas. The craft-like nature of many of the branches of production, however, meant that production centres were dispersed. Some of the location factors were common to those of other sectors – economies of scale, and proximity to a healthy urban retail market – however, the availability of cheap, abundant land, the accessibility of transport networks and in particular the proximity of the port held sway when it came to localisation.⁴⁴

The maps in this study testify to an important conglomeration of activities in and around the historical heartland of the town. This area centred on the parallel streets San Andrés and Real. Both were the setting for the main commercial and service activities (Figure 2). The most prestigious firms, those with a national and international reputation like banks and commercial agents, were located here. These kinds of activities needed to be situated in the centre of the town in readily accessible areas. The most important factor in terms of location, however, continued to be the proximity of the enterprise to the port; the vast majority of tertiary activities were closely linked with the port traffic, i.e. cargo and passengers.

The streets and roads surrounding the Orzán constituted the area where the first of La Coruña's industries began. Thereafter, industrial expansion followed the northern coastline. The main advantages of this area lay in the fact that it provided access to coastal and inland transport. It was also the point at which various roads met, funnelling communication networks into the centre and providing easy access to areas outside the town. The area was also near the market place and the port, hence the tram routes between the Juana de Vega and Puerta de Aires roads.

The other two major areas of economic activity were the Ensanche and the space between the old town and la Pescadería. This area had a diverse range of economic activities, including basic services, crafts, naval supplies, harbour services, etc. Access to areas beyond the town was not a key factor, but proximity to the port was. This was especially true where fishing activity continued on nearby quays. Nevertheless, as the area was densely populated, it was also well connected by the tram network. The Ensanche was engaged almost exclusively in tertiary activities. The commercial and service district began to expand at the beginning of the century towards the south and south-east, in the direction of new residential areas. The Ensanche was a residential area characterised by a broad spectrum of the social classes, and typically firms in the area were a mixture of shops, workshops and those involved in the professions. One final district of commercial importance was in the area Cuatro Caminos–La Palloza–Monelos. The tobacco factory exerted a powerful demographic influence on the zone, reinforced by a variety of consumer goods industries. The main factors influencing location here were the district's proximity to the fishing port and to the railway station, easy access to the road leading to Madrid, a surfeit of land, the river as a power source, a

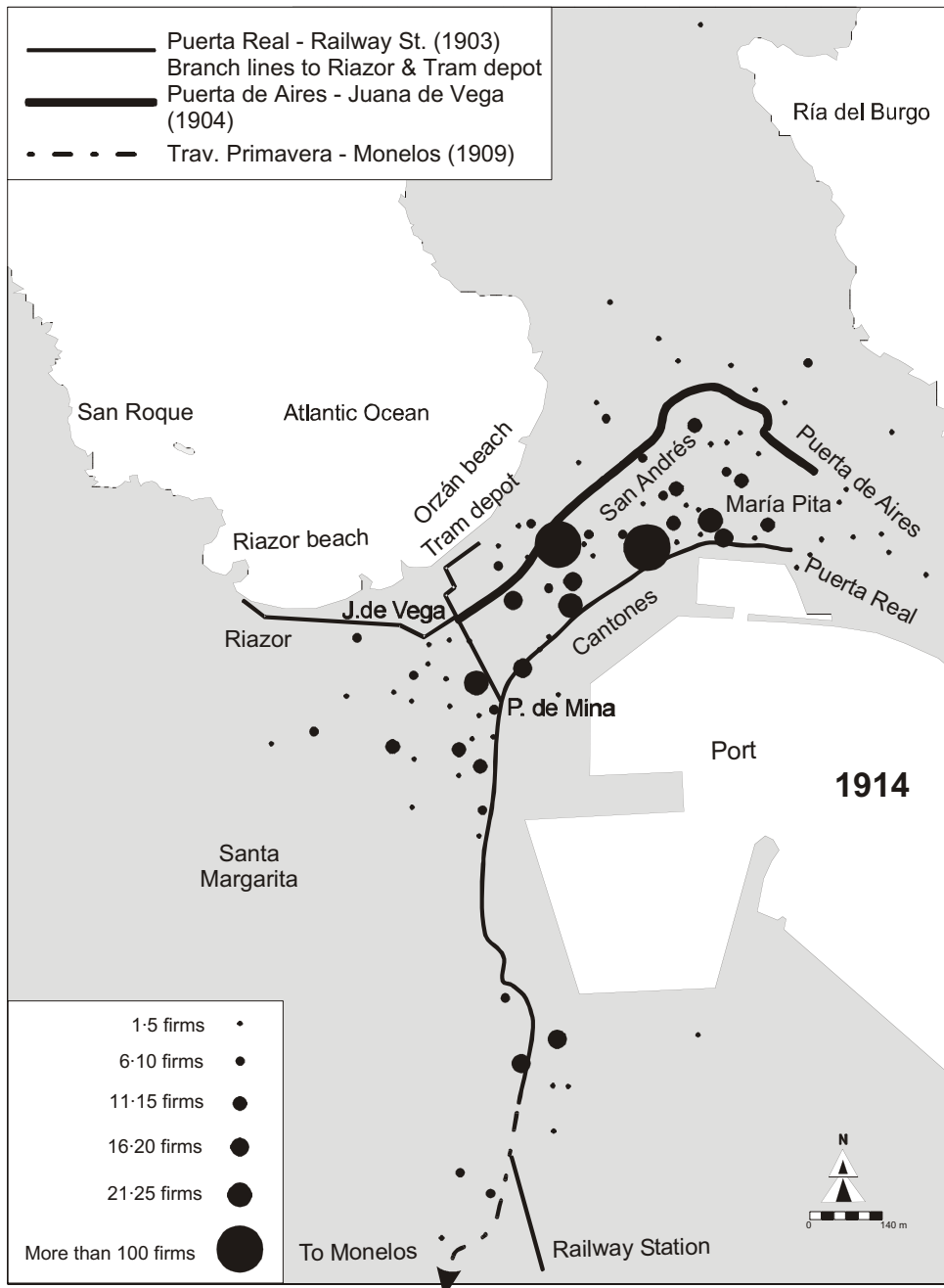


Figure 2 Location of economic activities in La Coruña in 1914

ready supply of water and a simple way of getting rid of refuse, and its proximity to the urban market.⁴⁵

Consequently, the routes of the trams in the town followed the template of urban diffusion. The first of the lines to come into operation provided accessibility and allowed the population to move more freely throughout the most densely inhabited areas and in those areas in which economic activity was most intense. The location of the tram network also constituted a factor in the decision where to site firms, particularly those firms that dealt with urban markets (retail and services). The layout of the tram network was not really very influential in the location of businesses. This was because there was little flexibility in terms of the kind of displacement the tram was able to effect and because the horse-drawn trams were slow. Further, the process of urban expansion had already outgrown the planned layout of the tram network.

Nevertheless, the tramways fulfilled the function of connecting the town with other areas that were peripheral but which were gradually being absorbed into an expanding urban space. The tramways, therefore, helped to transport a work force that needed to commute to the centre on a daily basis while, at the same time, serving as a way of channelling the exchange of goods. The function of the Monelos line, therefore, was rather different from that of the other routes that threaded their way through the centre of the town.

Electrification and the impact on the town prior to the Civil War

On 1 October 1913 the first electric tram route was officially opened. By May 1921 the whole service had been electrified, somewhat later than in other European countries, where electrification took place between 1890 and 1914.⁴⁶ The effects of electrification on business profits were immediate. Incomes grew faster than expenses and firms enjoyed nearly two decades of stability.

By the 1920s some of the world's tramways were confronted with a rapid increase in the cost of labour and materials, yet local politicians were reluctant to raise fares in order to offset the increase.⁴⁷ Many tramway concerns experienced declining profits because of the introduction of mass-produced motor cars.⁴⁸ Moreover reliable motor buses had become available, so real competition for the trams was emerging. Exacerbating the crisis in tram profitability was the fact that it was cheaper to implement bus feeders than to extend tramways.⁴⁹ The depression of the 1930s saw the rapid collapse of many systems that were operating at marginal profitability, most of them small town and interurban tramways. The Coruña firm managed to remain profitable until the economic crisis of the 1930s brought about restructuring of the company's patrimonial management and the substitution of trolley buses for trams.⁵⁰

Throughout the 1920s and 1930s trams came to be seen as noisy and dangerous to other road users, and this led to an impulse to modernise the system; by the early 1930s the 'Golden Age' of the tram was drawing to a close.⁵¹ In Spain, however, the period of the Primo de Rivera dictatorship

(1923–30) was the heyday of the Coruña tram network. In 1922 Coruña was connected with the nearby town of Sada. This had a very important impact on the metropolitan area, as it facilitated commercial exchange with part of the hinterland and, more especially, because it increased the mobility of the work force. The urban network also continued to expand. New routes were opened that connected growing neighbourhoods, such as Ciudad Jardín–Peruleiro (1924) and two lines serving the area of Monte Alto and the old town (1929).⁵²

The location of trade activity began to undergo significant change (Figure 3); however, in the urban centre the bustling San Andrés and Real streets and the adjacent thoroughfares continued to be prominent foci of commerce. Tertiary sector activity was gaining impetus in this area, particularly specialist services and services connected with port traffic, i.e. agencies and commission merchants.

Thanks to the newly opened connecting route between the Pescadería and the old town, the area between Real Street and the town hall experienced a strengthening of its service sector, making it one of the town's most highly frequented commercial districts.⁵³ During this period it could boast a great variety of shops, some of which produced their own goods, but the main tendency was towards an increase in the service sector. Retailing was boosted by the building of the San Agustín municipal market, echoing a previous impulse to retail growth provided by the Mercado da Guarda in the Ensanche. Both markets catered to the needs of the surrounding population in terms of basic goods. Their area of commercial influence did not generally go beyond the neighbourhood of the market itself. Nevertheless, they acted as a dynamic pole for the commercial activity of their areas.

The Orzán Esplanade and the roads leading out of town took in some important industrial settlements. The area around the Orzán road, and the coastal corridor, continued to be one of the main manufacturing areas. The urban expansion taking place in the area began to determine its functional specialisation, which reduced the firms to artisan workshops and retailers. Thus, although it remained ostensibly industrial, much of its industry began to be drawn into other areas of the town. The Juan Flórez road enclosed the Ensanche to the south. The road and the surrounding area might be described as a zone in the midst of transition and demographic flux. It contained a new residential neighbourhood and a certain amount of land as yet undeveloped, factors that, together with the area's favourable location, were fundamental in attracting both housing and business. Activity in the area was essentially commercial, and included the daily supply of the Ensanche population and other nearby areas, and other forms of industrial activity. The district also had important manufacturing establishments, particularly small-scale metallurgy and timber merchants. Finally, the Palloza–Santa Lucía district continued to be the industrial heart of the town, expanding relentlessly in the direction of the railway station and Monelos. Certain service firms also sprang up within the area, but these aimed to satisfy a strictly local demand.

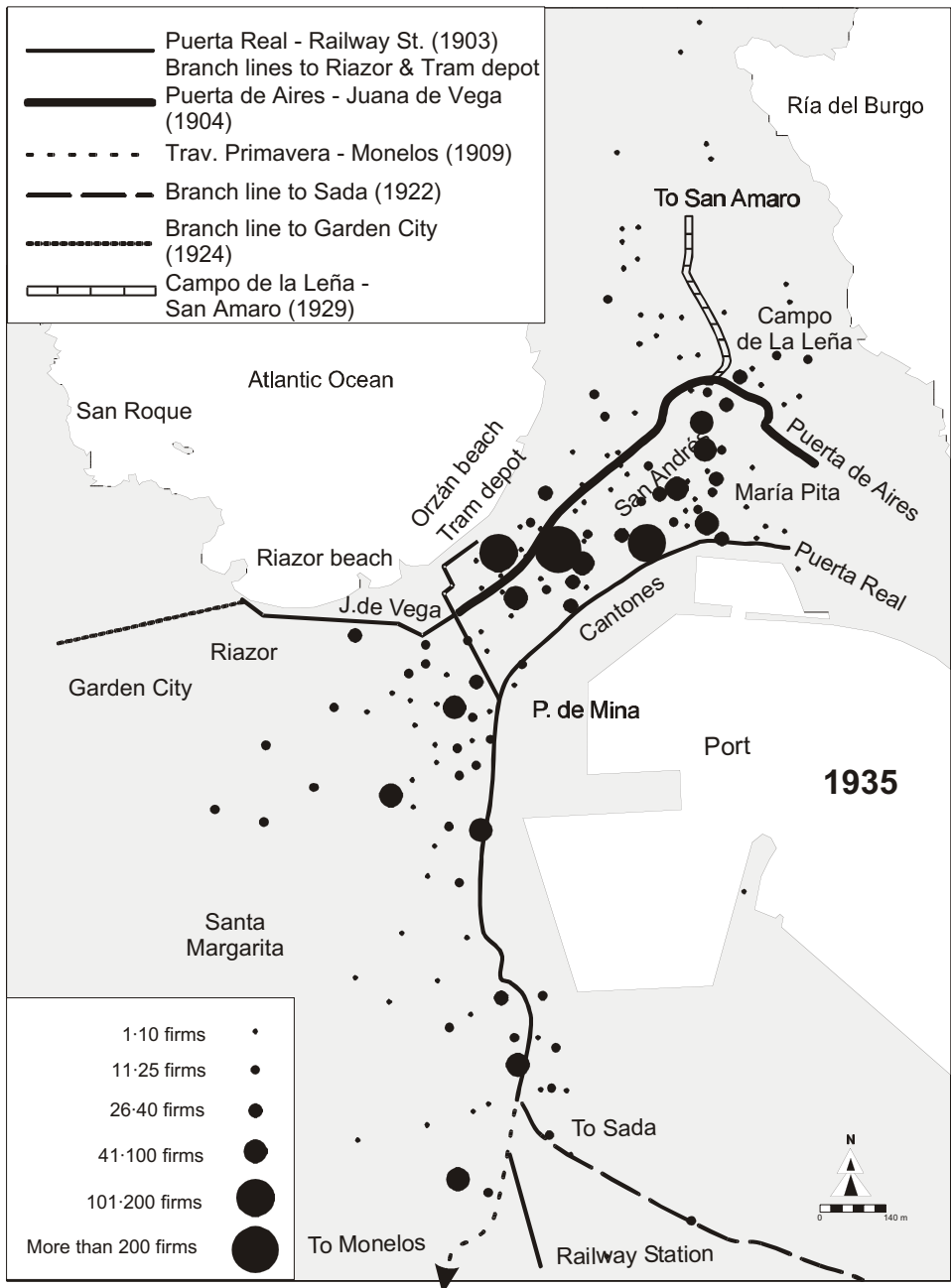


Figure 3 Location of economic activities in La Coruña in 1935

The growth of the service sector and the craft industries cannot be explained solely by urban and demographic expansion in the centre. In the middle of the town the Ensanche was the last area to undergo urban consolidation, a process that had practically finished just before the Civil War. The growth of tertiary activities, however, was dependent not upon local urban growth but rather upon the needs of the town as a whole. It is probable, therefore, that trams channelled the economic dynamism of populous neighbourhoods towards those areas that were more specialised in terms of business and manufacturing.

The post-Second World War era and the decline of the tram

The Second World War hastened the decline of tramways in countries such as Britain and France, where they were replaced by the cheaper motor buses.⁵⁴ In other parts of Europe such as Belgium, Holland and Germany, however, this same phenomenon provided the opportunity for tramway reconstruction and reinvestment.⁵⁵ The post-Civil War period in Spain marked the beginning of the tram's decline in La Coruña and its replacement by trolley buses. In 1947 there was a record number of passengers, due to demographic growth and a reduction in ticket prices, but the company was undoubtedly in decline.⁵⁶ The first trolley buses began to run in July 1948.⁵⁷ At first trams and trolley buses coexisted in a certain harmony, because each of the lines used one system exclusively. This situation did not last long, however, and the tram was gradually replaced by the trolley bus, until in July 1962 trams disappeared altogether.⁵⁸

After 1950 the criteria for localisation changed as a result of the urban expansion of the 1940s and 1950s (Figure 4). La Coruña became predominantly a provider of services, although there was also a boom in the manufacturing industries. Town planning in the 1940s and 1950s envisaged the creation of separate industrial areas as a means of removing polluting industry from the central urban space. In consequence the outskirts of the town were gradually occupied by manufacturing firms. Traditional industrial areas ended up disappearing and were absorbed by urban growth. The port areas were strengthened, however, as were the neighbouring coastal areas located in the municipalities of Arteixo and Culleredo, with only small factories and workshops remaining in the town. The consequence of this change was the gradual dispersal of economic activity throughout the urban area.

By 1960 there were three clearly definable centres of entrepreneurial activity: the traditional centre, stretching towards the north and the south, the Juan Flórez–Ensanches corridor, and the area surrounding Cuatro Caminos. To a lesser extent the Los Mallos area also evolved progressively until it became an important diversified sub-centre of activity. The area remained partially disconnected from the rest of the town, since there were open spaces between many of the built-up areas, but from an economic point of view Los Mallos had already become an integral part of the town centre.

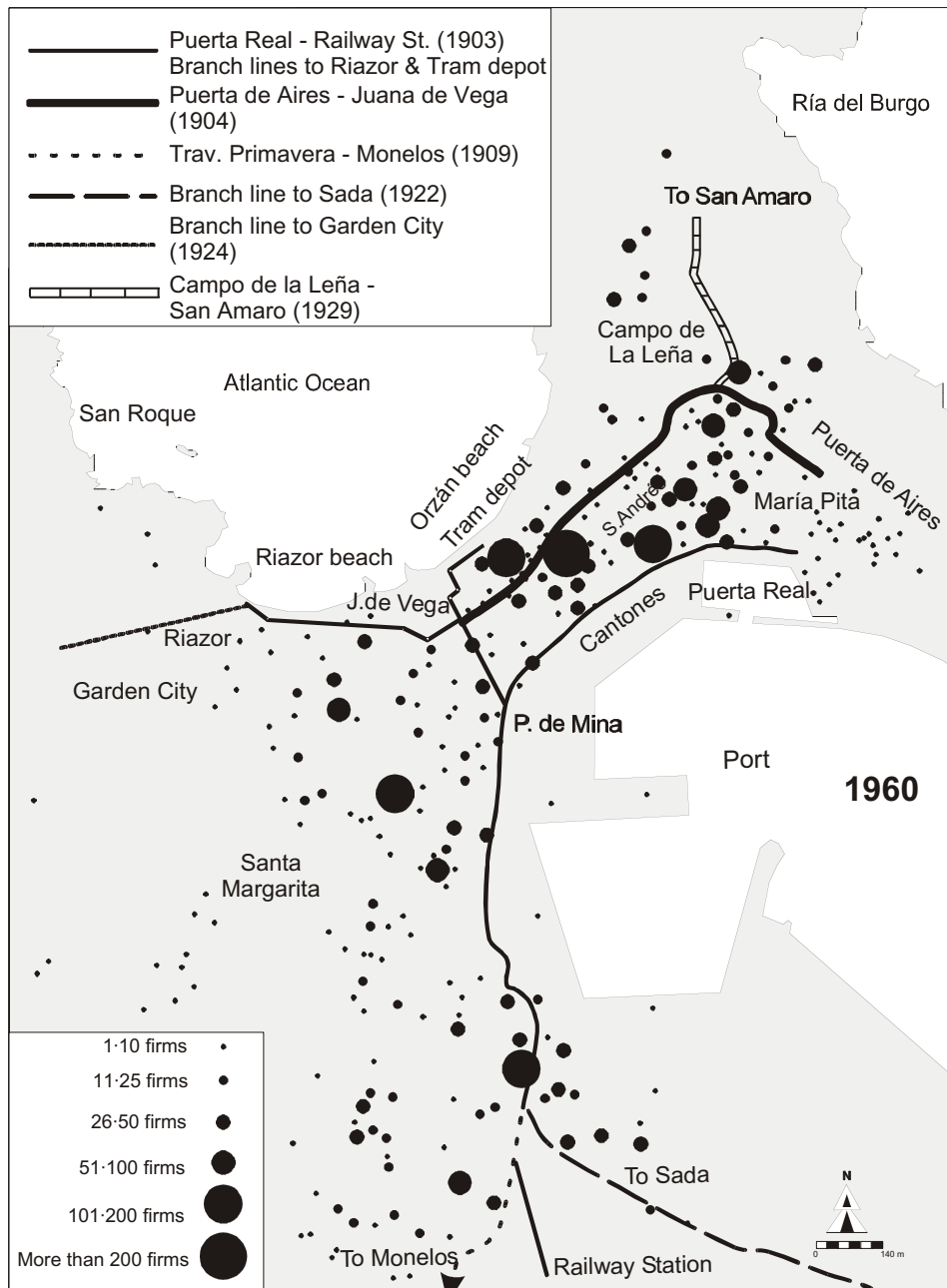


Figure 4 Location of economic activities in La Coruña in 1960

During the 1940s and 1950s a clear pattern in the influence of trams on the location of economic activity is difficult to discern. The model of urban transport had changed. Tramways no longer enjoyed the fruits of a monopoly of urban public transport, and many of the lines had been ‘pruned’, as they were unprofitable. Furthermore, the use of private vehicles became much more common, albeit rather gradually, because of post-war shortages in Spain. It can be said, therefore, that the influence of the tram in defining the urban layout of La Coruña was important only during the first half of the century.

Conclusion

The evolution and consolidation of the tram network in La Coruña, whilst certainly influencing the location of economic activity within the town, exerted that influence in a way which was subtle and makes it difficult to detect a clearly definable pattern. If there is an underlying relationship, however abstruse, one means of tracing its roots might be to explore certain aspects such as the relation between the building of new routes and land speculation, factors which are beyond the scope of this article.

Nevertheless, this study enables us to draw certain conclusions. First, it is not possible to determine a homogeneous pattern of behaviour, valid for the whole period. Instead, three main phases are clearly identifiable. During the era in which trams were horse-drawn, i.e. until the advent of the First World War and for a few years thereafter, the influence of trams was almost imperceptible. Technologically, the Coruña-based tram company lagged behind other Spanish companies and even further behind tram companies in the rest of Western Europe, where electrification was the norm. Thus the influence of horse-drawn trams, which were expensive and slow, was much weaker than that of electric trams, which were cheaper, more popular and more ‘working-class’ in patronage. During this phase the built-up area remained relatively small, so most individuals moved about town on foot or by other types of vehicle, especially in the centre, where the population was dense. Later, in the period up to just after the Civil War, a time in which trams had a monopoly of urban public transport, the influence of the network upon the urban layout and the location of economic activity increased. This influence was exerted not upon areas that had already undergone a process of consolidation but, rather, on those districts that were in the process of economic and demographic genesis, where economic growth was in a symbiotic relationship with the accessibility that the trams provided.

Finally, in the period of Spanish economic autarchy (the 1940s and 1950s), trams went into steep decline. This decline coincided with the appearance of other transport systems that were initially compatible with the tramways but later came to represent a source of competition. It may seem surprising, therefore, that the economic decline of trams in La Coruña coincided with a period in which their passenger levels were actually increasing. The company’s balance sheet, however, tells a different story and reflects impending

crisis due to shortages, particularly of electrical power. When trolley buses were introduced, trams were unable to compete. The technological obsolescence of the tram made it anachronistic; society had moved on and was in need of faster and more flexible means of transport.

Notes

- 1 The main limitation of this source resides in the fact that larger companies are not included, particularly public limited companies. But, owing to the overwhelming predominance of small or medium-sized firms, the information does not suffer substantial distortions.
- 2 R. W. Vickerman, review article 'Transport and spatial development in Europe', *Journal of Common Market Studies* 32, 2 (1994), pp. 249–56. J-F. Thisse, 'Introduction', in J-F. Thisse, K.J. Button and P. Nijkamp (eds), *Location Theory I* (Cheltenham, 1996), pp. xvii–xxxii.
- 3 A. Weber, *Theory of the Location of Industries* (Chicago, 1928), translation of *Über den Standort der Industrien* (Tübingen, 1909).
- 4 Research from the 1980s in countries like the United States has relied upon the conceptualisation of urban public transport as a mere system not only of technologies but also of traffic and mobility. See C. W. Cheape, *Moving the Masses: Urban Public Transport in New York, Boston and Philadelphia, 1880–1912* (Cambridge, 1980). P. Barrett, *The Automobile and Urban Transit: the Formation of Public Policy in Chicago, 1900–1930* (Philadelphia, 1983). G. Yago, *The Decline of Transit: Urban Transportation in German and US Cities, 1900–1970* (New York, 1984).
- 5 C. Winston, 'Conceptual developments in the economics of transportation: an interpretative study', *Journal of Economic Literature* 23, 1 (1985), pp. 57–94. M. E. Beesley, 'Transport research and economics', *Journal of Transport Economics and Policy* 23, 1 (1989), pp. 17–28.
- 6 F. J. Monclús and J. L. Oyón, 'Transporte y crecimiento urbano en España, mediados del siglo XIX–finales del siglo XX', *Ciudad y territorio—Estudios territoriales* 28 (1996), pp. 217–240. J. L. Oyón, 'Transporte caro y crecimiento urbano: el tráfico tranviario en Barcelona 1872–1914', *Ciudad y territorio* 94 (1992), pp. 107–23.
- 7 Oyón, 'Transporte caro y crecimiento urbano', p. 108.
- 8 S. Eisner, A. Gallion and S. Eisner, *The Urban Pattern* (New York, 1993).
- 9 Yago, *The Decline of Transit*.
- 10 K. J. Button, *Transport Economics* (Aldershot, 1993), p. 18. A. Grübler, *The Rise and Fall of Infrastructure: Dynamics of Evolution and Technological Change in Transport* (Heidelberg, 1990).
- 11 J. Sorribes, *Comprendre i gestionar la ciutat: un assaig d'economia i política urbana* (València, 1997). G. Giuliano and K. A. Small, 'Is the journey to work explained by urban structure?' *Urban Studies* 30 (1993), 1485–1500. I. Masser *et al.*, 'A framework for research on transport, communications and mobility', *Environment and Planning C* 6 (1988), 127–30.
- 12 Sorribes, *Comprendre i gestionar la ciutat*, p. 179. Button, *Transport Economics*.
- 13 P. Sica, *Historia del urbanismo: el siglo XIX* (Madrid, 1981), p. 46.
- 14 T. C. Barker, 'Towards a historical classification of urban transport development since the later eighteenth century', *Journal of Transport History* 1, 1 (1980), p. 75.
- 15 T. C. Barker, 'Urban transport', in M. J. Freeman and D. H. Aldcroft, *Transport in Victorian Britain* (Manchester, 1988), pp. 134–70. In the United States, right up to the 1980s, historical developments fell into a technological paradigm, according to which urban transport was seen as a set of technologies which evolved independently of the societies in which they had an impact. See J. F. Konvitz, M. Rose and J. A. Tarr, 'Technology and the city', *Technology and Culture* 31, 2 (1990), p. 288. For a comparative view of urban transport development in Britain and the United States see M. D. Reilly, 'Urban electric railway management and operation in Britain and America, 1900–1914', *Urban History Yearbook* 16 (1989), pp. 22–37. M. D. Reilly, 'Promoting the subway: New York's experience in an international context, 1890–1914', *Journal of Transport History* 13, 1 (1992), pp. 95–114.
- 16 H. J. Dyos, 'Urbanity and suburbanity', in D. Cannadine and D. Reeder (eds), *Exploring the Urban Past: Essays in Urban History* by H. J. Dyos (Leicester, 1982), pp. 19–37.

- 17 Moreover, 'research on the inter-war period has only just started' recently. B. Schmucki, 'The city and urban transport: a bibliographic overview', in M. Hård and T. J. Misa (eds), *The Urban Machine: Recent Literature on European Cities in the Twentieth Century*, a 'Tensions of Europe' electronic publication (July 2003), www.iit.edu/~misa/toe20/urban-machine/, p. 97. See C. Divall, 'Transport, 1900–1939', in C. Wrigley, *A Companion to Early Twentieth Century Britain* (London, 2003), pp. 286–301, and C. Divall and W. Bond (eds), *Suburbanizing the Masses: Public Transport and Urban Development in Historical Perspective* (Aldershot, 2003).
- 18 For a different view see W. A. Bond, *The British Tram: History's Orphan. The Centenary of Electric Traction, 1879–1979* (London, 1980), who considered that the tramway had been neglected by academic historiography and urban planning.
- 19 Schmucki, 'The city and urban transport', p. 99.
- 20 For Britain see A. D. Ochojna, 'The influence of local and national politics on the development of urban passenger transport in Britain, 1850–1900', *Journal of Transport History* 4, 3 (1978), pp. 125–46.
- 21 C. McShane and J. Tarr, 'The decline of the urban horse in American cities', *Journal of Transport History* 24, 2 (2003), p. 182.
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- 40 Before the Spanish Civil War twenty-eight cities began to introduce their tramway networks. Valenzuela, 'Los orígenes de los transportes urbanos', p. 8 ff. F. Fernández, *El tranvía* (Madrid, 1981), p. 22. A. López, *Los transportes urbanos en Madrid* (Madrid, 1983), p. 29 ff. C. López, *Tranvías de Madrid* (Madrid, 1986).
- 41 Schmucki, 'The city and urban transport', p. 99. The first horse-drawn tram ran in New York in 1832, and was soon copied, although fares were too high for low-income groups. McKay, *Tramways and Trolleys*, p. 14. R. C. Post, *Street Railways and the Growth of Los Angeles: Horse-Cable-Electric Lines* (San Marino CA, 1989). S. Molloy, *Trolley Wars: Streetcar Workers on the Line* (Washington DC, 1996). P. Bairoch, *Cities and Economic Development, from the Dawn of History to the Present* (London, 1998), p. 281.
- 42 A public limited company with a private capital of 350,000 pesetas. In May 1901 it had obtained a state concession for the installation of the tramway in the town. A. Martínez and C. Piñeiro, 'Empresas e servicios públicos: a creación dunha infraestrutura de transporte urbano, A Coruña 1876–1925', *Revista galega de economía* 10, 1 (2001), pp. 1–29.
- 43 The management was relatively inefficient. At that time, the company briefly passed into the hands of foreign capital. The firm Sociedad Anónima de los Tranvías de Galicia, which was founded in Brussels in March 1907, and which controlled the trams of La Coruña and Vigo (then under construction) took over the business. The company returned to its original owners in 1909, when the financial situation was at its most delicate. (Martínez and Piñeiro, 'Empresas e servicios públicos'.) The presence of foreign capital was quite common to the transport systems of both southern European and developing countries. See A. Kostov, 'Le capital belge et les entreprises communales de tramways et d'éclairage dans les Balkans : fin du XIXe et début du XXe siècle', *Etudes balkaniques* 25, 1 (1989), pp. 23–33. R. García, *Transportes, negocios, y política: la Compañía Anglo-Argentina de Tranvías 1876–1981* (Buenos Aires, 1994). C. G. Boone, 'Streetcars and politics in Rio de Janeiro: private enterprise versus municipal government in the provision of mass transit, 1903–1920', *Journal of Latin American Studies* 27, 2 (1995), pp. 343–65. R. Esquivel, 'Economía y transporte urbano en Bogotá 1884–1930', *Memoria y sociedad* 2 (1997), pp. 39–61. A. Martínez, 'Belgian investment in tramways and light railways: an international approach, 1892–1935', *Journal of Transport History* 24, 1 (2003), pp. 59–77.
- 44 M. J. Santos, 'Estudios de localización industrial: el caso de La Coruña', *Revista del Instituto José Cornide de Estudios Coruñeses* 23 (1987), pp. 173–98.
- 45 Santos, 'Estudios de localización industrial', pp. 176–8.
- 46 Schmucki, 'The city and urban transport', p. 99.
- 47 After their peak in 1923–24 the decline of tramways in Great Britain probably owed more to their high capital costs than to improvements in bus technology. R. J. Buckley, 'Capital cost as a reason for the abandonment of first-generation tramways in Britain', *Journal of Transport History* 10, 2 (1989), pp. 99–112.
- 48 By the 1920s the automobile, bus and truck were beginning to replace rail transport. In Britain 'the tram's fate was sealed soon after the First World War, when the bus emerged as a serious rival'. (H. J. Dyos and D. H. Aldcroft, *British Transport: an Economic Survey from the Seventeenth Century to the Twentieth*, Leicester, 1969, p. 371.) The revolutionary changes that were taking place in transport (especially the invention of the electric motor and the internal combustion engine) around 1900 dramatically affected economic, social and intellectual patterns of life. (D. H. Aldcroft, 'A new chapter in transport history: the twentieth-century revolution', *Journal of Transport History* 3, 3 (1976), pp. 217–39. T. C. Barker, 'The world transport revolution', *History Today* 46, 11 (1996), pp. 20–6.)

- The movement accelerated after World War II. (T. C. Barker, 'The international history of motor transport', *Journal of Contemporary History* 20, 1 (1985), pp. 3–19.)
- 49 McKay, *Tramways and Trolleys*.
- 50 A. Martínez and C. Piñeiro, 'La actividad empresarial durante el primer franquismo: la Compañía de Tranvías de La Coruña 1936–1962', *Estudis d'història econòmica* (forthcoming). From the early 1930s trolleys provided a means of phasing out trams without having to dispense with the electrical supply infrastructure. In the United States there is considerable evidence of a concerted effort by the bus and oil companies to take over ailing tramways and replace them with buses. K. T. Jackson, *Crabgrass Frontier: the Suburbanization of the United States* (New York, 1985). J. P. McKay, 'Comparative perspectives on transit in Europe and the United States, 1850–1914', in J. A. Tarr and G. Dupuy (eds), *Technology and the Rise of the Networked City in Europe and America* (Philadelphia, 1988), pp. 3–21. Besides which there were other places where tramways, despite being profitable, were replaced by a bus system. This usually took place for political reasons. See Esquivel, 'Economía y transporte urbano en Bogotá'.
- 51 See for Britain C. F. Klapper, *The Golden Age of Tramways* (Newton Abbot, 1974), 2nd edn, and R. J. Buckley, *History of Tramways: from Horse to Rapid Transit* (Newton Abbot, 1975).
- 52 Urban trams continued to operate efficiently, although the company's balance sheet began to reflect a tendency towards stagnation. In fact, in the 1930s, the firm went into crisis due largely to a policy of under-pricing, a reduction in income from the Sada line, the collapse of the urban lines and cost inflation. C. Piñeiro, 'Análise financeira no longo prazo dunha empresa de servicios: a Compañía de Tranvías de La Coruña 1901–1963', unpublished degree thesis (A Coruña, 1996), p. 112.
- 53 As Shaw has remarked, during the nineteenth century 'the arrival of tramways stimulated ribbon development, often with distinctive functional roles'. G. Shaw, 'The role of retailing in the urban economy', in J. H. Johnson and C. G. Pooley (eds), *The Structure of Nineteenth Century Cities* (London, 1982), p. 180.
- 54 Barker, 'Towards an historical classification'. D. Larroque, 'Apogée, déclin et relance du tramway en France', *Culture technique* 19 (1989), pp. 54–63. The exceptions were city systems such as Glasgow and Liverpool, which enjoyed a relative post-war renaissance of trams. C. G. Pooley and J. Turnbull, 'Commuting, transport and urban form: Manchester and Glasgow in the mid-twentieth century', *Urban History* 27, 3 (2000), pp. 360–83. I. L. Cormack, *A Century of Glasgow Tramways* (Glasgow, 1972). T. J. Martin, *Liverpool Corporation Tramways, 1937–1957* (Liverpool, 1972, 1980). S. Palmer, *Liverpool in the Age of the Tram* (Peterborough, 2002). The post-Second World War period has very recently become a growing research area. See J. Armstrong, 'From Shillibeer to Buchanan: transport and the urban environment', in M. Daunton (ed.), *The Cambridge Urban History of Britain III, 1840–1950* (Cambridge, 2000), pp. 229–57. P. Bagwell and P. Lyth, *Transport in Britain: From Canal Lock to Gridlock* (London, 2002), chapter 7. C. Divall and B. Schmucki (2003), 'Introduction: technology, (sub)urban development and the social construction of urban transport', in C. Divall and W. Bond (eds), *Suburbanizing the Masses: Public Transport and Urban Development in Historical Perspective* (Aldershot, 2003).
- 55 See Yago, *The Decline of Transit*. B. Schmucki, 'On the trams: women, men and urban public transport in Germany', *Journal of Transport History* 23, 1 (2002), pp. 60–72.
- 56 Martínez and Piñeiro, 'La actividad empresarial durante el primer franquismo'.
- 57 In 1951 a second line was opened, provoking the closure of the existing tramline. From that date onward only two lines remained, and these were unconnected, and closed down in 1956 and 1957. Piñeiro, 'Análise financeira no longo prazo dunha empresa de servicios'.
- 58 In Spain trams disappeared altogether from urban townscapes between the early 1960s and mid-1970s. The last tram ran in Zaragoza in 1976. Alvargonzález, *Los tranvías de Gijón*, p. 22. J. Peña and J. M. Valero, *Los tranvías de Zaragoza* (Zaragoza, 1985). In Britain, for example, the last tram system to close was that of Glasgow in 1962.

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