

# CITIES AND RAILWAYS IN SPAIN IN THE 21ST CENTURY: INTEGRATING THE HIGH SPEED TRAIN IN THE URBAN ENVIRONMENT

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## I. THE INTRODUCTION OF THE HIGH SPEED RAILWAY IN SPAIN 1992-2011

The process of implementing the high speed railway (HSR) in Spain has received a notable impulse in recent years. The total length of high speed line in service reached 2,056 km in 2011, through 24 stations. This addition to Spain's high speed network makes it comparable with those of the European states with the most extensive networks: according to recent data from the UIC (International Union of Railways), France has 1,896 km of high speed line and Germany has 1,285 km.

Following the popularity amongst users of the first high speed service established in Spain, which connected Madrid and Seville in 1992 (Ureña, 2005; González, Aguilera, Borderías et al. 2005), a good deal of enthusiasm was kindled amongst public authorities, who saw this infrastructure as a potential instrument for economic development and urban restructuring. The HST can bring opportunities for socio-economic development which agents will know or be able to take advantage of, to a greater or lesser extent (Bellet, 2007). In general, forecasts linked to the multiplier effect and the economic dynamism that would result from it had to be moderated with time. Even so, the expectations generated by the second consideration: the possibilities offered for urban redevelopment, were reinforced to the point of them almost becoming the *leitmotiv* of local aspirations associated with the arrival of the new infrastructure. Its implementation has, above all, been interpreted as a great opportunity to restructure the city in the way that the arrival of the first railways did back in the 19<sup>th</sup> century.

## II. THE HISTORICAL IMPLEMENTATION OF THE RAILWAY IN SPAIN'S URBAN ENVIRONMENT

The configuration of new urban spaces in the 19<sup>th</sup> century as a result of the arrival of the railway was basically based on two spatial models of introduction (Cayón, Muñoz, Olivares,

2002). The first model involved constructing new railway infrastructure within the walled part of the city, opening gateways in the city walls, and demolishing buildings located on land chosen for the construction of the station and the whole railway complex. This was the pattern followed, for example, in the construction of Barcelona's Francia railway station, in 1850 (Alcaide, 2005). This model was frequently chosen when railway station terminals were constructed in central locations. The second model involved providing the same infrastructure, but this time outside the walled enclosure. This normally implied a location on the outskirts of the city, where it was easier to meet the territorial requirements of the railway. With time, this type of location encouraged the appearance of suburbs, neighbourhoods and population nuclei around the new station, which subsequently became incorporated within the main body of the city through newly created streets and/or avenues (Pérez, 1994; Santos, 2007).

With time, urban expansion almost inevitably engulfs the area around the railway installations and tends to do this in an unplanned way and without resolving the problem of how best to structure space, and indeed generating a whole series of new planning problems through the creation of urban barriers and what – as far as railways are concerned – constitute disfunctionalities (Santos, 2007). The city wraps itself around railway infrastructure without taking into account the nature and characteristics of this mode of transport; in some cases it turns its back on the railway, while in others, it simply fails to recognise it or ignores it.

As explained by Santos (2007), if we look at things from the present, the way in which railways have been integrated into many Spanish cities cannot be regarded as satisfactory. The railway is an urban element which, on account of its specific characteristics and given the nature of the transport function that it serves, needs to be compatible (able to be integrated) with the city. In cases in which serious disfunctionalities occur, it is therefore necessary to find technical and economic solutions that make this integration viable (Pérez, 1994, 79).

### **III. A NEW TRAIN IN A NEW URBAN CONTEXT**

#### **1. A post-Fordist means of transport «par excellence»**

The HSR has become part of the process of spatial differentiation and modern-day socio-productive transformation in quite a convulsive way: generating a tremendous dichotomy between spaces that are, and are not, served by it; structuring socioeconomic dynamics in discontinuous spaces (discontinuous metropolitanisation); and creating strong polarisations around station nodes. In this sense, the high speed train has reinforced the hierarching of cities and territories. Asymmetries and inter-regional contrasts will be exacerbated by increased accessibility and by effectively offering services to what is only a small part of a given territory. In fact, these hierarchisation processes are not uniform and form part of processes of spatial differentiation within modern-day large-scale socio-productive evolution (Klein, 2001).

#### **2. The opportunity to restructure urban spaces**

In a good number of cases, the arrival of the new train has been understood as a new opportunity to change the relationship between the existing infrastructure and the city. As a result, at the local scale, the introduction of the HSR may constitute a strategy for urban

redevelopment, forming part of a project capable of transforming the physical and functional structure of the wider whole (Bruinsma, et al., 2008; Van den Berg y Pol, 1998; Groupe Ten, 1993). The reorganisation of the railway system also offers opportunities to improve the integration of railway spaces within the urban layout, thereby palliating the barrier effect that railway installations have traditionally had when they have been absorbed by urban growth (Bertolini and Spit, 1998; Santos, 2007).

#### **IV. THE RELATIONSHIP BETWEEN THE RAILWAY MODEL AND THE URBAN MODEL IN THE CASE OF SPAIN**

##### **1. Railway model and urban model**

In order to explain the main characteristics of the introduction of the HSR, in each particular case, it is necessary to refer to how each project is managed and to decision-making processes in which various different agents intervene (Miralles, 2003; Feliu, 2005). The relationship between the different agents (local and regional administration, those responsible for administering infrastructure, and the *Ministerio de Fomento* (Ministry for Public Promotions)) and the strategies that these bodies develop during the decision-making process may help to clarify the extent to which the railway system is integrated within the urban environment. These strategies and actions explain the role of the railway model and/or, in other cases, of the urban/territorial model, in how the railway infrastructure is finally introduced in to the local environment.

The capacity of the local and regional agents to manage actions has not always been easily compatible with that of the administrator of the infrastructure. The latter normally has a different vision (and often a network-based vision rather than a node-based one) and is subject to other pressures. In contrast, the visions and objectives of local agents tend to focus on the node scale and on integrating this piece of infrastructure as well as possible within existing territorial structures. The different visions and pressures involved in the process largely explain the differences between cases, the different options for introducing the railway model, and its level of insertion in the urban/territorial model. Generally speaking, in territories with lower densities of population and activity, the railway model consideration usually imposes its logic upon the latter (Bellet, 2007).

##### **2. Typology of situations according to the role of the railway and urban/territorial model in the introduction of the high speed train service**

From an analysis of the implantation of the HSR in various Spanish cities, it is possible to identify five different typologies for implantation and for interaction between the railway model and the urban/territorial model.

###### *A) A new railway model for a new urban model*

The construction of external by-passes does not only generate strong processes that favour the renewal of central areas, but also great opportunities for the transformation of

the whole urban area. The elimination of existing tracks and the removal of certain other railway installations from central locations, or from others that are tangential to the main urban nucleus (workshops, repair-yards, storage, freight, etc.), has an effect on very intense renewal processes, facilitating the most ambitious of plans for redeveloping the whole of the urban structure. The introduction of new railway facilities therefore constitutes an important instrument in urban development, offering a great opportunity to carry out major reconstruction projects. This was what happened in the case of Ciudad Real and what was also foreseen for cities such as Burgos, Figueres and Pamplona.

*B) A transformation of the railway model that strengthens the existing urban model*

The construction of an external by-pass for passing traffic and the transfer of freight facilities and other railway installations to spaces outside the city centre free important areas of railway space in relatively central locations. In some cases, these processes make it possible to undertake projects implying large-scale urban transformation and development that almost inevitably result in major changes to the whole of the urban structure. This urban transformation is a result of both changes in uses and the freeing of, more or less centrally located, railway space, without the need to excessively modify the existing urban model. Zaragoza perhaps provides one of the best examples of this phenomenon. It is also possible to place the operations foreseen for Valladolid and those already undertaken in Seville in this same category.

*C) A slight restructuring of the railway model that improves the urban structure*

The burying of some stretches of track, the relocation of some other pieces of railway infrastructure currently in disuse, and/or the improved use of existing installations all lead to a better integration of the railway within the city, producing a notable improvement from an urbanistic point of view. This is what happens in cases in which a good part of the existing railway model is respected and an attempt is made to improve its integration within the urban structure, capitalising on the more or less central locations of stations and the fact that they house both old and new services. In the majority of such cases, the choice is to bury some sections of the track that run through urban areas and to move some railway installations to the periphery. Burying track implies eliminating historic barriers and improving connectivity within the city itself. This has been the case in many medium-sized cities that have either already received the high speed train, as in the case of Córdoba, or that will receive it in the medium term, as with Girona, or in the longer term, as in the cases of León, Ourense, Santander and Almería. It has also been the case of central stations in some larger cities such as Valencia and Alicante.

*D) Minimal changes to the existing railway model that focus on renewal of the area immediately surrounding the station*

In many cases, the choice is to take advantage of some existing central installations and to construct external by-passes for passing traffic. In such cases, advantage can be taken of

the remodelling of the railway in order to reinforce the structure of the central part of the city and to recover run down station neighbourhoods. This situation generates interesting renovation processes, which very much centre on the area surrounding the old station, without excessively modifying the existing railway model. In the majority of these cases, it is a question of looking to take advantage of existing infrastructure, trying to improve the integration of the railway within the urban layout, and almost always opting to bury at least a small part of the track. In this category, we can cite the cases of Lleida and Málaga, where the remodelling of the area around the station has already been partially completed, and the operations projected for Logroño, Murcia, Santiago de Compostela and Gijón.

*E) The logic of the new railway model is imposed on the urban model*

In the previously cited cases, we have seen how the railway model adapted its logic in favour of the needs of the city. In other cases, a totally different situation is found: it is the railway model that imposes its logic on the urban/territorial context. It is into this category that we could place the majority of peripherally located stations: Guadalajara-Yebes, Puente Genil-Herrera, Antequera-Santa Ana, Segovia-Guiomar, Camp de Tarragona, Cuenca and Requena-Utiel, whose peripheral stations, which are situated several kilometres from the urban nuclei from which they take their names, have been located thinking more about the course of the railway line than the urban context.

## **V. CONCLUSIONS**

At the local scale, in many cases, the arrival of the high speed train is being used as an excuse to undertake important redevelopment projects and to transform the urban environment, taking advantage of the freeing of space previously dedicated to railway uses. The restructuring of the railway system also introduces the opportunity to improve the integration of railway spaces within the urban layout, palliating the traditional barrier effect that some railway installations have had when they have been absorbed by urban growth. For this reason, in many of the cases analysed, this probably represents the greatest opportunity for urban transformation that has ever presented itself. This is seen, amongst other examples, in the cases of Valladolid, Burgos, León, Pamplona and Ciudad Real.

These operations of redevelopment and urban transformation have been planned in line with a financing model that largely depends on the crystallisation of a series of capital gains resulting from subsequent urban development. In Spain, this strategy originated at a time of expansion in the property market which was closely related to developments in the residential sector. In the current economic climate, which is characterised by a major market recession, more than reasonable doubts hang over the future of some macro-scale urban redevelopment operations. Even so, the new context offers a greater time margin which may permit the reorientation of projects and a rethinking the relationship between railway and city.

In this article we have offered a typology of models for introducing the HSR which is based on the level of coherence between railway and urban/territorial models. We can conclude that, in the majority of cases, the urban/territorial model tends, to a greater or lesser extent, to either impose itself on, or take advantage of, the basic logic of the infrastructure in question.

Indeed, in some cases, the notable transformation of the railway model acts as a motor for developing a deep-seated restructuring of the whole urban area. In others, the introduction of the high speed train can be interpreted as a great opportunity to transform the area around the station that receives the new services, without this implying an excessive modification of the railway model itself. The introduction of the high speed train service is therefore taken advantage of in order to reinforce the structure of the city centre and to recover run down station neighbourhoods, imposing the logic of the existing urban model.

On the other hand, there are cases in which the railway model is clearly imposed on the existing urban and/or territorial model. This is the case of the majority of externally located stations, and of most intermediate cities, as such circumstances allow the HSR service to be brought to these cities without causing a notable increase in journey time between the main nodes in the network in the process.

Over recent decades, in some particular contexts, the peripheral location of high speed train stations has suggested, made more visible, and indeed strengthened emerging territorial dynamics.

For the arrival of the high speed train to become a true instrument of dynamisation, it must be correctly integrated with its environment and must also be coherent with the existing urban/territorial model and with the medium and long term plans. To achieve this, it is necessary to structure the introduction of the high speed railway service through strategic and territorial planning. Only in this way will it be possible to convert the arrival of a new train service into a potential instrument for urban transformation capable of providing the basis for the construction of the city of the 21<sup>st</sup> century.