

- 5 Juan, 1994
 6 Balme, 1995
 7 Báguena, 2001
 8 INTERREG is a programme within the framework of the Structural Funds of the European Union aimed at fostering cross border, transnational and interregional cooperation.
 9 Rivière, 2004
 10 As an appendix to the article, we include a brief description of the most significant experiences that, from a Catalan point of view, have fed the process of construction of the Mediterranean Arc.

TRANSPORT INFRASTRUCTURES CONCEIVED AS TERRITORIAL WORKS. The demands and strategies of territorialisation

Francesca Governa

Introduction

Infrastructure projects create varied and profound changes in territory, which must be planned, programmed and managed. However, the need to plan, programme and manage the territorial changes arising from infrastructure projects is faced with considerable difficulties, in both theoretical and practical terms. These difficulties are mainly linked to the difficult and often troubled relationship between sectorial logic and supralocal interests, in response to which infrastructure interventions take place, and the territorial logic and local interests in the places where these interventions are going to take place. Some recent cases, such as the Susa Valley "protest" in Italy against the high speed / high capacity railway line which should cross the valley to link Turin with Lyons as part of corridor V joining Kiev with Lisbon, show the difficulties involved in working in order to resolve these conflicts. Similarly, they show the urgent need to deal with them within a government system of territorial dynamics that is increasingly open and fragmented. As a consequence, the problem does not so much lie in the European or national high-speed railway project or macro-corridors on a continental scale, but instead in the significance taken on by the location of these projects in certain regional and local contexts (Albrechts and Coppens, 2003; Priemus and Zonneveld, 2003).

In any event, in order to pursue this objective it is essential to refine the analysis and interpretation methodologies which enable a view of transport infrastructure as interventions of a purely technical nature or relating to transport to be overcome, in favour of an interpretation of them as territorial works not only in relation to the geographical scale which justifies them being carried out, but also in terms of the structuring action that the work itself may have on hierarchically lower scales. Changing the way that transport infrastructure is interpreted also requires a new view of the relationship between infrastructures and territory in terms of

more consolidated interpretations, in which infrastructure is considered as a purely technical intervention related to transport, and territories as a "neutral" screen on which these interventions are projected. On the contrary, infrastructural intervention could be interpreted as an opportunity for transformation by the various territorial levels (Banister and Berechman, 2001).

Apart from that, the hypothesis of conceiving of infrastructural interventions not as a need with which the local or regional territories hosting them must live with on a more or less positive basis, minimising damage and maximising advantages, but rather as potentialities for reclassification and development even on a local and regional scale, even it is necessary to consider their theoretical and practical implications in greater depth, is beginning to gain acceptance in numerous European countries. This acceptance is linked to the role played by the common transport policy in Europe, which has introduced "new" keywords such as integration, co-ordination and interoperability into the public policy lexicon (EC, 2001). Likewise, the wideranging international debate on the subject of governance (ESPON, 2006), in which the change in the types and means of collective action in the urban and territorial field is highlighted, also identifies some directions for change in terms of infrastructure and transport policies¹. Overcoming the traditional approach to planning and consolidation - including in practice - of models of society and ways of co-operation between institutions, does indeed seem to prefigure the move towards negotiated processes in which by opening up decision-making forums, a large number of subjects appear, which belong to various levels of territorial hierarchy (from the most strictly local level to the EU) and a plurality of interests.

Our aim with this article, which discusses the central issues of this debate, is to present and discuss a possible interpretation as the basis for carrying out a re-interpretation of the relationship between infrastructure and territory which overcomes the logics, which are frequently reductionist and determinist, involved in the study of the territorial impact and/or effects of works. The central thesis of the article may be summarised as follows: transport infrastructures are normally seen as purely technical interventions related to transport, defined by a sectorial rationality (the fact of connecting). However, this way of looking at transport infrastructures creates numerous problems of both a theoretical and practical nature. In order to deal with them, it is necessary to change perspective, i.e. to see infrastructures also as an opportunity at both local and regional levels, and an opportunity for reconsidering sectorial policies - and policies relating to transport infrastructures in particular - as integrated policies, and to programme paths to local development. In other words, the questions for which we will try to provide an answer can be

summarised as follows. Can infrastructural interventions, despite being in response to sectorial logics and supralocal interests, become opportunities for the local/regional territories where these interventions are going to be located? How can we reconsider the relationship between infrastructures and territory to overcome a conception of infrastructure as a purely technical intervention related to transport, imposed by the supralocal level on the local level, on the environment, on citizens, on development strategies for places, and achieve the territorialisation of infrastructures? What action needs to be taken for this to occur? That is to say, what type of policies should be adopted? In the following paragraphs, we attempt to provide an initial answer to these questions.

1. The cross-scale territoriality of transport infrastructures

Let us start with the way infrastructures are considered and in particular, by asking ourselves what considering transport infrastructures as territorial works means. The first step in this direction consists of leaving behind a purely functional logic related to transport with its roots in the conception of transport infrastructures, and instead interpreting the territories that they cross or which they affect as a key variable in infrastructural interventions. However, this raises another question. What is the scale or the level of territory in which the territorial nature of infrastructure is defined? Indeed, infrastructure is a territorial work not only on the geographic scale which justifies it being carried out, which is in general supralocal (for example, the European Union for the TEN - Trans European Networks), but also at regional and more strictly local levels. In fact, infrastructural work does not only infrastructure territory at its own level, but also establishes relationships at lower territorial levels. It is enough to consider the places "crossed" by the High Speed/High Capacity railway network or those where the nodes of this network are located.

This apparently commonplace aspect has been neglected for a long time. Indeed, according to the hierarchical-functional rationality which covers the relationships between territories on a different scale (from the European Union to the neighbourhood), each infrastructural work has its own territorial level, which justifies its existence and its spatial structure in terms of its predominant territorial function. As a result, for example, the trans-European transport networks belong to the territorial level of the EU, while the relationship between these networks and the other territorial levels involved in their completion is neglected.

Normally, infrastructure works are therefore considered as territorial works in terms of the level at which they are decided, as they are a result of functional, geoeconomic and geopolitical reasons which make sense at

all these levels. In reality, infrastructural interventions of all types are always territorial works, even at local and regional levels. Their routes and nodes are presented as opportunities and threats for these levels, i.e. for the territories crossed by the networks, for those where the nodes are located or which are absorbed into the "externality fields" generated or modified by infrastructural interventions. Conceiving them as territorial works therefore involves looking at infrastructural interventions not only in terms of the geographical scale that justifies them being carried out (for example, the high speed train network as a factor in territorial cohesion on a European scale), but also with regard to the action (direct and indirect, desired and undesired, actual and potential) which this work may have on hierarchically lower scales. This means that infrastructural works are of interest not only in themselves, and not only due to the technical and functional reasons justifying them in their own territorial area, but also with regard to the significance of their location in the various regional and local contexts (Preston, 2001). If transport infrastructures are to be considered as territorial works, we must also as a consequence consider the many territories on different levels to which they refer. The territory of infrastructures is therefore an open and cross-scale territory, which as the French geographer G. Di Méo stressed (2000, p.41), "refers to various scales of geographical space: from the town to the nation-state and supra-national institutions".

2. From space as support to territory

If we conceive transport infrastructures as territorial works within the cross-scale perspective mentioned above, it is wise to consider which is the most relevant conception of territory for the understanding of relationship between infrastructure and territory in non-determinist terms. In more explicit terms, adopting a complex conception of infrastructure also requires the adoption of a complex conception of territory. As a consequence, it is necessary to go beyond a conception of territory as a simple support, a neutral screen upon which standardised infrastructural and/or industrial intervention packages are applied exogenously, ignoring the problems and specific opportunities for transformation, or as a range of resources for exploitation by means of interventions, which instead of adding any value, lead to the "destruction" of the specific features of places.

In the international debate, acknowledgement of the increasing importance of the local-regional level in various fields (economic, political-institutional, cultural, etc.) has led to the affirmation of a complex conception of territory². Modern studies at local or regional levels are significantly different from those of the 1970s and 1980s. In specific terms, they acknowledge local and

regional levels as territorial units in global competition and the importance attained by regional competition policies (Cheshire and Gordon, 1996); the emergence of global city-regions, i.e. local-regional systems able to present themselves as nodes in the global network of the world economy (Scott, 1998), even when cut off from the state level intercession (Le Galès, 2002); and the evolutionary conception of the region, taken as a specific historical and geographical unit (Allen et al., 1998; Paasi, 2002). Taken as a whole, this debate, with its various points of emphasis, has led to the recognition of centrality assumed by local levels and by the places at the heart of the globalisation processes, and focusses its attention on the role of the territory as an "actor" in development processes (Cox, 1997; Amin, 2002; Dematteis and Governa, 2005).

The territory, therefore, has become a central interpretative key to understanding transformation and development processes. However, how has it been conceptualised? If we look at the Italian debate, the predominant conceptions consider territory as *territorial heritage* (Magnaghi, 2000), with particular stress on the *values* which characterise the territory, and *territorial capital*, which mainly recognises the *resources* that a territory possesses, which nevertheless are considered to be common property that must not fall into private hands, but must instead be shared by a community (Dematteis and Governa, 2005).

The conceptions of territorial heritage and territorial capital are similar in many ways, but do not totally coincide. Without going into too much detail concerning the analysis of similarities and differences, what is important is to emphasise that they both enable territory to be interpreted as a multidimensional whole, in which resources and values, the "sense of place", subjective and symbolic, and the "conception of place", relatively objective and realistic, are interwoven (Entrikin, 1991). These interpretations therefore make clear the *relational* nature of territory: it is necessary to "position ourselves" at the crossroads of these relationships in order to understand territory (Dematteis, 1999). This forces us to stop interpreting territory as a given reality, which is strictly recognisable and which can be delimited on maps, and to conceive it as a dynamic and active area, a social structure arising from the interaction between the subjects and specific and fixed characteristics (*fixed assets*; cf. Amin, 2000), material and immaterial, of the various spaces.

In general, as a consequence, despite the differences between the many interpretations, some specific features of the territory and local actors are recognised as key ingredients in the transformation and development processes. Territory is thus the focus of analytical and operational concerns; it is the basis for the construction of policies and actions and is used to assess them; in

short, it is the cardinal feature around which conflicts and the opportunities for a potential treatment emerge.

3. Beyond the impact and the territorial effects of transport infrastructures

The relationship between infrastructures and territory can be interpreted in various ways; firstly, with regard to the conception of infrastructure (infrastructure as public works, as a public work in operation, as a territorial work, as a network and/or a node) and territory that is adopted. The change in the way of interpreting both transport infrastructures and the territory which supports it, or where the interventions are located, also requires a change in the way the relationship between both terms is analysed. How can we therefore consider the relationship between infrastructures and territory if infrastructures are considered as territorial works and territory is thought to be an inextricable unit of resources and values? To answer this question, it is first necessary to overcome a range of "common places" relating to the normal way of considering the relationship between infrastructures and territory.

3.1. Impacts and effects

In general, the relationship with territory of sector policies, and transport infrastructure policies in particular, is dealt with in terms of effects and/or impacts (Governa, 2001)³. Apart from the separation of impacts and effects, impacts are subdivided into economic, social, environmental, and energy impacts etc. and effects into cumulative, distributive, diffuse, etc. effects, or even into direct or indirect, short term and long term, and structuring and non-structuring effects.

The study of the territorial impact and effects of transport infrastructures was confirmed and consolidated by the spread of modern technical networks at the end of the nineteenth century. Over the years, the impacts and effects have been analysed in different ways, leading to an evolution of the approaches which has redefined and made more complex the purpose of the study: from direct effects onto economic variables to socio-economic-territorial consequences.

Today, the effects created in the territory as a result of new infrastructural interventions are sufficiently well known and studying them leads us to a theoretical-methodological framework which can be considered to be consolidated. In fact, the clarity and precision of the theoretical-methodological framework in question refers especially to analysis of direct effects, although it does not change a situation of general uncertainty in terms of the nature and the importance of indirect and long term territorial effects (Banister and Berechman, 2001).

However, the development of approaches to the study of the territorial impact and

effects of infrastructural interventions has not changed the theoretical outline in question. This refers mainly to a stimulus/response idea of direct causality. Transport infrastructures are considered to be the “cause” of unexpected transformations, whether these are an increase in wealth, a change in individuals’ behaviour and lifestyles, or spatial transformations (Plassard, 1997). As a consequence, the introduction of a new transport infrastructure is seen as a cause of territorial, social and economic transformations that can be recognised and evaluated beforehand, using procedures of an exclusively technical nature which relate a before (abstract) to an after (hypothetical).

The interpretation of the infrastructure/territory relationship as a relationship of cause/effect has received criticism from more than one source. J. M. Offner (1993), for example, stresses its theoretical inconsistency and practical inapplicability⁴. In particular, this criticism highlights the impossibility of considering the relationship between infrastructures and territory in terms of causality and of isolating the “transport infrastructure” variable from its context and from the social, political and economic conditions enabling it to be put in place. For Offner (2000), the role played by infrastructure in the development of a territory should also be studied not so much by comparing a before and an after, but instead by comparing the “real after” and the “virtual after,” thereby including the contribution made by other processes and changes.

3.2. Three simplifications

The study of the impact and/or territorial effects of transport infrastructures enables the role played by infrastructural intervention in social and economic dynamics to be stressed, and makes clear which are the main consequences that may arise from a given project being carried out in a particular context. However, this is based on some simplifications and has some limits.

The first simplification refers to the point of view adopted. Adopting only the infrastructures point of view means that the territory point of view is neglected, or to put it another way, the opportunity to adopt both points of view alternately is missed. This means that only the impact/effects of the infrastructures of the territory is considered and not the consequences that the territory may have on the infrastructures: the fact that economic, social and political organisation has a greater influence on infrastructural interventions than the latter on the former is not taken into consideration (Joignaux, 1997). Furthermore, only adopting this point of view of infrastructures leads to neglect the study of the strategies used by the various actors involved in the interventions process, thereby ignoring one of the central aspects of the relationship

between investments in transport infrastructures and economic development at local and regional level (Banister and Berechman, 2001).

The second simplification concerns the conception of territory which “penetrates” the analysis and the assessment of the interventions. In fact, territory is simply conceived as a medium on which policies and projects are projected and in which functions and activities are located, or in the last resort, as the place where a subsequent difficult recomposition of conflicts is experienced. This view limits opportunities for understanding the interactions which take place between infrastructural interventions and the territory, and is restricted to a reading of the consequences, whether positive or negative, of an intervention in a context which appears fixed and unchangeable, and one that is considered permanently incapable of interacting with dynamics outside it. As a consequence, it is only modified as a result of an intentional project, with the undesired, unanticipated and unforeseeable effects of any human action and, in particular, those of the policies and projects which transform the territory, broadly underestimated (Crosta, 1995; 1998).

The third and final simplification concerns the arguments used to analyse interventions in order to legitimise them. In fact, if a transport infrastructure is built, it is considered a “source” of advantages for the territory in which it is located, since it is able to ensure competitiveness and development. Nevertheless, this way of considering the problem tends to hide the complex distribution of advantages and disadvantages, as well as potential conflicts of a social and territorial nature, arising from the carrying out of any intervention in the territory and, in particular, from important infrastructural interventions (Graham, 2000). Although infrastructural interventions have a positive effect, by increasing the opportunities of subjects and encouraging the dynamics of development, they do not do so in the same way for all subjects, at all levels and in all territorial fields involved in the process.

3.3. Networks and nodes: two points of view, two strategies, many conflicts

The possibility of considering transport infrastructures as territorial works contradicts other difficulties, which are apparently well-known and commonplace, but which in practice have significant consequences.

The first difficulty arises with the use of the concept “network”. This concept has deep roots in urban and territorial studies, where it is used to indicate and describe very varied “things”: the development of settlements in certain periods, the location models of activities, inter-urban relationships and the definition of cooperative policies between urban

systems or, in short, mechanisms for collective action which are defined as the action of many actors in accordance with standard precisely reticulated models (*policy networks*) (Lippi, 2001). Furthermore, in territorial analysis the term “network” can take on different meanings: a literal and a metaphorical one. In the literal sense, networks are “continuous physical infrastructures (railway and road lines, canals, electricity cables, telephone line cables, etc.) or isolated ones (ports, airports, radio and television transmitters and hertzian waves, etc.) which are the route for the flow of materials (goods, people, etc.) or intangibles (information) between places” (Dematteis, 1996, p. 229). In terms of this type of *technical networks*, we can locate paths and quantify flows. In the metaphorical sense, the network loses a great deal of its material nature and becomes an abstract means of representing relationships and connections between subjects. In this case, networks “are structures of stable relationships and interactions between subjects (economic, social, cultural, services, control, etc.) thought as relationships between the places (nodes) that these occupy in a stable manner (regardless of the geographical flows that link them)” (ibid, pp. 229-230).

The superabundance of uses and meanings of the concept of network also has important consequences in terms of infrastructural networks. In fact, when we talk about a “Europe of networks”, the use of the term “network” is both literal and metaphorical (Bobbio and Morisi, 2001). From the literal point of view, the “Europe of networks” means that infrastructures in continental terms are organised in a reticulated manner (transport infrastructures, the production and distribution of energy, telecommunications, etc.). However, from the metaphorical point of view, the expression shows that it is possible to describe the series of relationships in the EU as a network and in more particular terms, that network is not only the characteristic of some European infrastructures, but also of the processes by which European policies are formulated. As assumed by Bobbio and Morisi (2001) when they paraphrase Sraffa, within the framework of infrastructures, we can ask ourselves whether it is possible to talk of “government of networks by networks”.

The second pitfall refers to the subject of conflicts. Infrastructural interventions alter the status quo and lead to the emergence of the typical forms of conflict which arise from works of collective interest being carried out: local versus global; disseminated interests versus concentrated ones, and economic versus environmental aspects (Bobbio and Zeppetella, 1999)⁵. Conflicts arising from infrastructural interventions can be explained by considering the “commitments” of infrastructural policies (Bobbio and Morisi, 2001): the *fluidity*

of networks (i.e. how communication, transport and exchange should take place) and territorial morphology (i.e. where communication, transport and exchange should take place). From the territorial point of view, the second commitment has very important consequences by virtue of the particularly selective nature of infrastructural interventions, which necessarily favour some nodes and routes. In terms of the actors and frameworks for decisions, the relationships between both "commitments" are scarce, and they are only rarely forced into a confrontation. From the point of view of the actors involved, the framework of European policies is activated above all for the first commitment (*how*); and that of national, regional and local actors, for the second commitment (*where*).

The second commitment also has an important difference: the territorial form of the network takes on a different meaning if it is conceived from the point of view of nodes or the one of segments, in the same way as the strategies carried out in places-nodes and places-segments are different. Indeed, all places want to reach the status of node or increase their importance within the hierarchy of nodes. Obviously, negative externalities are also created in nodes, such as congestion, but as a whole, the advantages outweigh the disadvantages. In terms of an infrastructural network, the territorial spheres (at different levels: national, regional and local) end up competing among themselves in order to obtain, consolidate or improve their node status and at the same time, are encouraged to form alliances ("to establish networks") with other territorial spheres that can be found in the same directive. In short, from the point of view of the node, the problem consists of attracting the network, establishing it or dismantling it, in terms of its own requirements.

The situation is radically different for the segments. Any place wants to become a segment: being a segment involves "being crossed," which entails a great deal of disadvantages and any or very few advantages. As a consequence, territorial spheres try to resist becoming segments, by blocking or hindering flows in the network, increasing costs and/or prolonging intervention times.

As a consequence, nodes and segments have opposing interests, in the same way as the strategies they implement are opposed: as an outline, we have an "opening strategy" of place-nodes and a "closing strategy," which is often considered in a reductionist manner as "localism" of place-segments.

4. Reconsidering the relationship between infrastructures and territory

While transport infrastructure is defined as a territorial work within the cross-scale perspective mentioned above and the

territory in which it is located is considered as an active operator at different levels, with its own specific nature and rationality, consideration of the infrastructures/territory relationship involves not so much carrying out a detailed assessment of the effects and/or impacts instead of the causality of more consolidated ways of thinking, but rather a discovery of the types of interaction between network logics (usually without a context) and node logics (local and contextual) (Dematteis, 1996).

4.1. The perspective of territorial congruence

In order to make this change, Offner (1993) proposes replacing the concept of structuring effect, which in substantial terms is inadequate for conceiving the relationship between infrastructures and territory in terms of non-determinist and non-linear interactions, with the concept of territorial congruence. By this, the author means the range of changes in a specific economic and territorial organisation which arises from the union between two systems, the transport system and the social-territorial system, which are both considered in terms of their complexity as a whole. The problem of the infrastructures/territory relationship can thereby be looked at in a completely different light than in terms of the simplistic interpretations and triple determinism (technological, economic and sociological) which support them (Offner, 2000). From the point of view of territorial congruence, the relationship between infrastructures and territory can no longer be described in terms of direct causality, and is considered mainly as a process of "structural pairing" in which "networks make possible the creation or strengthening of interdependencies between places, which can be considered as belonging to a territory. In other words, it is thanks to networks that territories make up a system." (Offner, 2000, p. 170). This is no longer interpreted by merely adopting the point of view of infrastructure and then subsequently studying the impact or the effects on the territory; it is mostly considered in terms of processes and sequences of actions found in the origin of infrastructural intervention and its anchorage in the territory. The relationship between infrastructure and territory is thereby studied from a procedural perspective, underlining the potentially difficult relationships between network logics and node logics and the interactions that infrastructural interventions establish with the many territorial spheres at different levels that are affected by the intervention, each one with their multiple logics and interests.

4.2. Interconnection and territorialisation of infrastructural interventions

If we adopt the viewpoint of territorial congruence, the relationship between infrastructural interventions and the territory, whether it is a purely

technical-organisational, political-social or urban-territorial relationship, becomes more complex than the usual way in which it is considered. In order to try and minimise this complexity, and to improve our understanding of what territorial congruence of transport infrastructures consists of, we can break down the relationship between transport infrastructures and territory into two different processes. There is one process in which transport infrastructures establish a relationship with territorial networks, i.e. the process of *interconnection*, and another process in which transport infrastructures establish a relationship with territorial contexts, that is *territorialisation*.

Initially, the concept of interconnection was used to describe the way in which a new infrastructural intervention establishes a relationship –by interconnection or not– with the pre-existing infrastructural system (Margail, 1995). Based on this conception, which studies the relationship with the existing system from a point of view that is technical-organisational above all, the concept of interconnection has undergone a profound evolution. The approaches relating to this concept have multiplied and there has been a gradual increase in the complexity of the phenomena that it can be described. In basic terms, two areas of innovation have been introduced: the increase in the type and level of the networks which interconnect and the attention paid to the result on the territory of such a process (Pucci, 1996). In this recent sense, interconnection is understood not only in a technical sense, i.e. as an intermodal connection or a connection between transport networks of various territorial scopes (for example, high speed and regional trains), but also as a connection between technical networks and immaterial networks acting in a given node (such as commercial and services networks, logistics networks, business networks, etc.). This also covers both the horizontal connection between networks belonging to the same territorial level and the vertical connection networks on different territorial levels (local, supralocal and global). In short, this does not lead to a simple merging or connection of networks, but mainly to an overall change in infrastructural and territorial systems which are interconnected (Governa, 2001). Thus, the process of interconnection describes the spatial articulation of multiple technical and territorial networks, multiple subjects, and multiple logics and organisational principles.

In order to define the process of territorialisation, it is useful to refer to the various ways of considering the relationship with territorial contexts. An initial means of understanding territorialisation is the intuitive one: territorialisation is the process of locating the infrastructural intervention in a certain and specific territory. In this case, the infrastructural intervention establishes a relationship with the territory exclusively from the physical point of view

and is limited to the exploitation of the location factors (such as the presence of areas) in it. A second way of considering territorialisation is the one in which the infrastructural intervention is territorialised in a local context, and not simply located inside it, but is instead linked to the projects and with the intentions expressed by the local subjects, establishing the same synergies and interactions, acknowledging and valuing the local territorial capital in terms of its intangible features (contextual knowledge, social capital, institutional capacity, etc.) (Governa, 2001; Dematteis and Governa, 2005). The infrastructural intervention, although it arises from logics that are external to each particular context, forms part of the territorial logics, has roots in the specific features of the place, starts up specific territorial potentialities, contributes to the construction of new territorialities (partly in the same places and in the same territories where it is located, and partly not).

5. Policies for the interconnection and territorialisation of infrastructure: the challenge of *multilevel governance*

The objective of interconnection and territorialisation processes for infrastructural interventions is to integrate the sectorial logics of infrastructural interventions, the urban and territorial planning logics and the local development logics. Integration, co-ordination and interoperability are the keywords for the common European transport policy (EC, 2001). However, it should be taken into account that these words have been interpreted in various ways. In transport policies, the potential for integration may be understood by referring to the integration between organisations, between various means of transport, between various actions, between various policies (infrastructure, transport, land use, environment, education, health, etc.) (Hull, 2005). The multiple facets of integration, and in particular the more complex ones, which according to Hull (2005) denote the highest "steps" of the "range of integration" (which goes from the minimum level of physical and operational integration of transport to the maximum level of intersectorial integration between policies and measures), are not reached spontaneously and cannot come about by market automatism; they nevertheless require territorial governance initiatives which enable the strategies adopted by the various actors to be interlinked (ESPON, 2006).

As a consequence, the interconnection and territorialisation of infrastructural interventions do not take place spontaneously; they both happen for at least two reasons. The first reason is related to the nature of infrastructural interventions: to produce transport infrastructures, action must not be augmentative, based on trial and errors; instead, choices of a territorial nature with irreversible consequences are necessary. The second reason concerns

the fact that infrastructural interventions are not restricted to assessing territorial situations such as the presence of a local production system or territorial and real estate resources, but may instead activate cumulative development processes (Dematteis, 2001).

The convergence of the sectorial logics typical of infrastructures with the territorial logic of local contexts is a problem that arises at all levels. It is therefore not only present at local level, but also in terms of institutional support and organisational management by intermediate territorial bodies and co-ordination with the state government. To be able to interconnect and territorialise infrastructural interventions, while complying with sectorial logics and supralocal interests, and to transform them into resources for development and reassessment at local level, it is necessary to construct synergies and interactions with projects and both active resources and those that can be activated at these scales, as part of a project which involves many subjects and interests⁶. As a result, in order to promote the interconnection and territorialisation of interventions, a transport infrastructures policy which complies with the logics of multilevel governance is essential. As part of this logic, the role of the public subject is modified but remains essential, despite having the mission of playing a role of pilotage, of direction or "accompaniment" of the interactions between subjects, rather than exerting direct regulation and control of transformations.

Faced with an infrastructural intervention project, the public subject shows a wide range of reactions, which obviously arise from the way in which the intervention has been considered, programmed and managed (Fig. 1). This behaviour ranges from a totally negative and defensive attitude up to a creative and active attitude. In the former case, the infrastructural project is considered as an external input with determinist effects on the local context where it is applied. The role of the public subject in this case is to anticipate and manage these effects, trying to minimise the negative ones, to obtain any possible financial compensation and redistribute the positive effects, reaching a balanced whole, without profits or losses. On the other hand, the creative and active attitude rejects a view of the territory as an "ordinary machine" and sees it as a complex system, able to organise itself and, consequently, able to interact with supralocal promoter subjects or mediators in infrastructural intervention. The latter is seen as a stimulus and an opportunity to value the specific features of the territory, by mobilising the project and self-organised resources characteristic of local subjects and implementing strategic visions and actions for internal integration (construction of the subjects' local network for the territorialisation of the intervention) and for external integration

(negotiation of interconnection conditions with the supralocal promoters)⁷.

6. Conclusions

In conclusion, it may be useful to try to summarise the lessons arising from the change of viewpoint in the way that programming, projecting and managing infrastructure works are considered. In fact, we have defined various methods of describing and interpreting the relationship between infrastructures and territory, whose differences depend firstly on the different way of defining the two key concepts. If various conceptions of infrastructure and territory are adopted, it will be possible to understand the diversity of processes and results defined in this relationship. The conception of infrastructure as a territorial work, and of the many territorial levels in which it is involved as dynamic and active institutions, describes the relationship between infrastructures and territory in interactive terms: a process of interconnection and territorialisation of interventions, the result of which may form a winning strategy.

This way of looking at the problem changes the most common interpretation of transport infrastructures and its relationship with territory, as well as the normal procedures for analysis and assessment of interventions. If we no longer consider infrastructural interventions as sectorial works arising from a technical rationality which relates to transport, in order to conceive them as territorial works within a cross-scale outlook, we must consider the technical-functional nature of infrastructures not as permanent, but as data which must interact with the rationalities and specific projects of various contexts. In fact, considering them as unchangeable leads to consideration of the problem of the relationship with territory only with hindsight, and it is therefore dealt with in terms of mitigating its impact. Furthermore, if we adopt this interpretation, the rationality of sectors cannot impose itself on local contexts (even if this is only due to reasons of efficiency and the speed of decision-making processes, which are in fact totally neglected in practice), but the specific characteristics of different places and the various rationalities present in each one must be included among the initial variables of the projects. The involvement of and the agreement on strategic choices by the various actors involved requires clearly defined ways and procedures to be found and action taken in the initial phases of the decision-making process. This way of looking at and dealing with the relationship with the transport infrastructures territory also changes the ways that infrastructural interventions are assessed. This should not be seen as the end of the decision-making process, as the final word enabling to validate or not the choices already made, as a tool subsequently mitigating

the impact of a work that was decided on beforehand; it should rather be seen as part of the process of definition and carrying out of interventions. As a result, the approximate outline is not built as a procedure of agreement with parameters defined beforehand, but is instead a procedure relating to features, which as described by A. Zeppetella (1999) "refuses to define general and abstract rules for decisionmaking and places the particular context and its specific features at the heart of the reasoning" (p. 158).

Obviously, these suggestions are not conclusive. There are still many unresolved problems, especially if the objective is to meet the practical needs of how to programme and project interconnected and territorialised transport infrastructures as part of a constructive relationship with characteristics, specific features and actors in the various contexts in which they are going to be introduced. As a consequence, the need to face with the practices is an increasing priority in order to be able to answer very pressing questions and clarify the operational aspects of the relationship between infrastructures and territory.

- 1 For the opportunities and limits on models of governance, which are taken to be public policy models stressing the horizontal and vertical coordination of projects, actors and territorial levels in the management of network infrastructures, see Offner (2000). The institutional framework situation with regard to the programming, projection and management of infrastructural interventions in some European countries is described in Dematteis and Governa (2001).
- 2 The debate on the role of local and regional economies in development processes is illustrative of this (Storper, 1997; Crouch *et al.*, 2001; Scott and Storper, 2003), in the debate on the crisis of legitimacy and efficiency of the central levels of decision making in many European countries, with the consequent beginning of the so-called regional "renaissance" (Keating, 1998; Le Galès and Lequesne, 1997) or even in the debate on the redefinition of territoriality levels brought about by globalisation processes (Brenner, 1999)
- 3 The difference between impact and effects is not strictly a terminological one. According to Offner (1993), impact is the direct negative consequences caused by the detonation and explosion of a previous balance; However, effects should be related to certain choices, whether these are the consequences, the collateral relapses - whether positive or negative, desired or undesired - of an action, of a policy, or of a project.
- 4 The structuring effect is considered to be a true "operational myth" which "authorises and legitimises the action of the person taking the decisions; this enables the production of sectorial projects, despite evidence of interrelations between public policies" (Offner, 1993, p. 241).
- 5 However, the local/global relationship is not the only area of confrontation and conflict. It is enough to remember the many varied and ultimately conflicting interests presented by the various actors involved, more or less directly, while the interventions take place, as a result of which possible conflicts also arise in the local framework and between the various territories involved.
- 6 That apart, the *European Spatial Development Perspective* (CEC, 1999) also covers this problem

in one of the first chapters and highlights the importance of appropriate co-ordination of sectorial policies with a territorial connotation on various scales.

- 7 Among the main aspects of a territorial *governance* action, Le Galès (1998) acknowledges the change in the role of public action, internal integration, external integration and orientation towards strategy, all of which are basic factors in carrying out the territorialisation of infrastructural interventions.

INFRASTRUCTURE AND TERRITORIAL PLANNING. Governance and management of multi-scale dynamics

Joaquín Farinós Dasí

1. Infrastructures, the basic element for regional development policies at any scale

By infrastructures I understand the part of an economy's global capital which, while embodying the characteristics of a public asset, is not supplied by the market or else is supplied inefficiently, being the reason why it has been mainly managed by the public sector. It is a key factor for and in Sustainable Territorial Development and the reason why it must be treated as a public asset and with public participation.

There are many different types of infrastructures. According to the tree diagram classification put forward by Gil, Pascual and Rapún (1998, pp. 462-463), infrastructures can be broken down into two main types: natural infrastructures deriving from the physical environment (such as rivers or valleys, etc.) and infrastructures deriving from anthropical endeavours. From among the latter, we need to distinguish between institutional and physical infrastructures. The physical ones break down into "social" infrastructures (education, public health, welfare and cultural centres, and buildings and installations used by governments or administrations) and "economic" infrastructures, also known as "basic infrastructures". The latter comprise public services (such as the supply of water, electricity, natural gas, refuse collection and waste treatment), telecommunication services (telephone systems, mail, cable, etc.), land management (improvements to drainage systems, flood preventions and other natural or technological hazards) and, finally, transport infrastructures (road, rail, waterways, ports and airports). In this article I shall focus on this last group.

I need hardly dwell on the idea that transport infrastructures continue to be considered a priority strategic element for territorial development and cohesion, be it at a European or regional scale. Transport infrastructures are a key factor, albeit still requiring development, in regional policies arising from the 1988 Structural

Funds reform, the document on European Spatial Development Perspective (the second of its three basic guidelines)¹ and from the objective of territorial integration in the enlarged EU, which attempts to make growth and cohesion compatible. Infrastructures alone do not generate development, but their lack of development (either non-existent or inadequate in terms of quantity and quality) can impede appropriate exploitation of the potential of each territory (Biehl and Muenzer, 1986).

The attention given over to infrastructures, or rather to mobility and accessibility within the EU territory, is still a current issue. But infrastructures themselves also continue to be a fundamental consideration to the degree of constituting a priority not only for the European Investment Bank and the European Commission, but also for the member states as a whole². The "Guiding Principles for Sustainable Spatial Development of the European Continent" (CEMAT, 2000, p. 16) also notes in its recommendation (35) that a more balanced policy of town and country planning must ensure improvements to the interconnection of small and medium-sized towns, rural spaces and island regions to the main transport centres and axes (railways, motorways, ports, airports, intermodal centres) and eliminate intra-regional link deficiencies³.

There is no doubt that the present-day approach to infrastructures reveals a new focus, such as the importance of sustainability, which is now associated with intermodality as a way of: alleviating road traffic congestion and at the same time the consumption of fossil energy and release of greenhouse gas emissions into the atmosphere following the Kyoto protocol guidelines; reducing costs and improving quality of life in grid spaces (with incentives to use the railway for transporting passengers and freight); and even promoting alternative development projects for coastal areas in decline by reclaiming the role of ports⁴.

The importance which the member states continue to give to transport infrastructures is reflected in a recent final report from the ESPON project 2.4.2 "Integrated analysis of transnational and national territories based on ESPON results". In an attempt to bridge the gap between existing territorial policies developed at a state and European community level, questions were addressed to experts participating in the project and to representatives from Member States themselves in the ESPON programme Monitoring Committee (generally speaking experts from, or closely associated with, government departments), namely, what were the present and future policy priorities of each state *vis a vis* territorial development objectives. Their response is clearly illustrated in figures 1 and 2: the priority issue which concerns Member States regarding territorial development is, overwhelmingly, accessibility and transport, much more