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Beyond Moving People: Excavating the Motivations for Investing in Urban Public Transit Infrastructure in Bilbao Spain

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ABSTRACT *This paper explores the context and contradictions that have brought Bilbao Spain, a city of some 1 million inhabitants, to its stature as a leader and model of contemporary public transit. The decision to invest in public transit infrastructure is situated within an urban context that includes historical, economic, urban design, social, environmental and political motivations. From this contextual rooting, public transit projects are examined for their potential to achieve both a tangible set of objectives and an intangible symbolic meaning that presents transit projects as being about more than just moving people.*

Introduction

It seems unlikely that a relatively medium sized city of some 380,000 tucked into a surrounding urban community of 1 million would be a leader in modern urban transit. Yet in recent years, the city of Bilbao, Spain has emerged as one of the world's paragons of urban public transit systems. Evidence of the city's newfound stature is reflected in its receipt of the 2000 European Union Public Transit Award which recognized the well designed system of public transit in Bilbao. Between 1995 and 2003, Bilbao initiated three projects: a 27 stop, €600 million Metropolitan Railway (Metro Bilbao) which opened in 1995; the first line of a proposed city-wide Tramway network inaugurated in late 2002 at a cost of €20 million; and a €280 million, 5 stop metro extension that opened in April of 2002. Simultaneously, fare and service integration across the entire public transport landscape has been promoted through a reorganization of the city's

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extensive commuter train and bus networks. This paper explores the context and contradictions that have brought Bilbao to its stature as a leader and model of contemporary public transit.

A study of public transit investment in Bilbao is intriguing in several respects. First, what explains why a relatively small city has made such a large capital investment in public transit? For example, while larger cities such as Liverpool have been unable to implement intra-urban rail systems to date, Bilbao is the third smallest city in the European Union to operate both a metro and a tramway (Jane's Urban Transport Systems, 2003). Therefore, the case of Bilbao may be instructive for other communities if it were possible to uncover the mix of factors that explains the extraordinary commitment to public transit.

However, explaining investment in public transport based solely on the spatial and temporal coalescence of contextual variables is certain to reify a situation that was in fact far more nuanced and complex. Thus in attempting to capture the dynamism of Bilbao's experience with constructing mass rapid transport, there is also a necessity to explore the planning process that was undertaken to bring the system from its initial conception through to completion.

This paper draws on an examination of original planning reports, published marketing material, commemorative accounts of the project and newspaper articles, which were complemented by a series of in-depth interviews with city and transport planners in Bilbao in May 2003.[1] The result is a presentation of the development story of Bilbao's new Metro system. Along the way, issues of city and regional history, economics, urban design, sociology, and politics will all be introduced as variables which guided the process and gave shape to the fixed rail transport system that exists in Bilbao today.

We will see that this story has two versions: the official account as packaged for public consumption in glossy pamphlets, multilingual coffee table books and official web sites; and a less well known story of public transit investment as a driver of uneven intra-urban development and New Deal type economic stimulation of declining industries which permeate this post modern project. Finally, as a conclusion to the rail based transit development story in Bilbao, the outcome of the Metro project will be studied in an attempt to assess the system's success with respect to patronage and its impact on urban design. This will facilitate broader conclusions about how Bilbao's experience can be expanded to other cities around the world that are interested in implementing mass rapid transit systems.

Background

The official story of the conception and construction of a rail based mass rapid transport system in Bilbao is couched in a meta-narrative of urban regeneration, historical homage, improved regional communication, the re-branding of a national identity and technological progress. Once a leading manufacturing and port centre within Spain, global economic restructuring has brought about a prolonged period of urban decline. Between 1975 and 1996, the number of jobs in manufacturing declined by 47%, and unemployment remained constant at around 25% of the labour force (Rodriguez & Martinez, 2003).

To stem the urban degeneration that had affected Bilbao for over two decades, a series of endogenously conceived projects were undertaken to initiate the process of revitalization. In particular, Bilbao has gambled on a strategy that relies on large scale, emblematic redevelopment projects as a means of reinvigorating the economic, political, cultural and

environmental landscape. Improvements to Bilbao's transport infrastructure in the form of a metro underground and a proposed regional tramway network have comprised a central tenet of this strategy (EuskoTren, 2001).

Through the undertaking of mega projects, leaders of Bilbao are actively trying to redefine the regime of capital accumulation in the city from one based on primary resource extraction and manufacturing to a more knowledge driven, tertiary based economy complete with an active financial sector and a vital tourism industry. To date, this strategy has been successful, with unemployment declining to 15% in 1999, a drop of 12% from the early 1990s. Over 55% of the city's gross output is derived from the tertiary sector, while the contribution of manufacturing has declined to 28% (Rodriguez & Martinez, 2003). Furthermore, the bold design of the Guggenheim museum and accompanying wave of urban renewal projects have placed Bilbao on the international tourist map, attracting some 1.4 million visitors to the city annually who generate nearly €194 million in revenue (Plaza, 2000).

Adding Space to the Analysis: The Urban Context

The Bilbao Metropolitan Area lies in a narrow valley between two mountain chains, bisected by the Nervion River (Figure 1). Covering some 370 kilometres square, the population of Bilbao sprawls down both banks of the Nervion until it meets the Atlantic Ocean. With a population density of 2,251 people per square kilometre, Metropolitan Bilbao comprises 78% of the province of Bizkaia's population (for which it is the capital city), and 43% of the population for the entire Basque Autonomous Community (BAC) (Bizkaia Transport Consortium, 1996).

With its high population concentration, Metropolitan Bilbao serves an important economic function for the entire region. Its total output of 1,400 billion pesetas in 1996 represented half of the GDP for the entire Basque Autonomous Community (Rodriguez *et al.*, 2000). Additionally, Bilbao employs 42% of the BAC labour force, of which 59% works in the service sector and 36% is employed in industrial and manufacturing activities (Bizkaia Transport Consortium, 1996).

While an aerial view of the economic condition of Bilbao indicates a strong position within the regional economy, an intra-urban exploration indicates that the economic restructuring that has occurred since the 1970s has not taken place in a homogeneous manner within Metropolitan Bilbao. On the contrary, uneven impacts within the city have been prevalent, as municipalities on the left bank which relied on heavy manufacturing to support working class neighbourhoods have experienced the greatest pains of transitioning towards a post-modern economy. As a result, they bear the highest concentration of unemployment, poverty, physical deterioration, housing problems and environmental degradation (Rodriguez *et al.*, 2000).

Thus at a regional scale, Bilbao's primacy within the BAC dictated the need for a fast and flexible transport system which was diverse and integrated internally and throughout the region (Bizkaia Transport Consortium, 2003). Locally, as the manufacturing decline experienced after 1970 sent the left and right banks on widely divergent economic paths, the river had become more of a barrier for communication between the different communities in Bilbao. The declining industrial and port facilities that lined the river banks as well as a lacuna of bridges and public transport routes that crossed the river near its estuary ensured that contact between the two communities was minimal

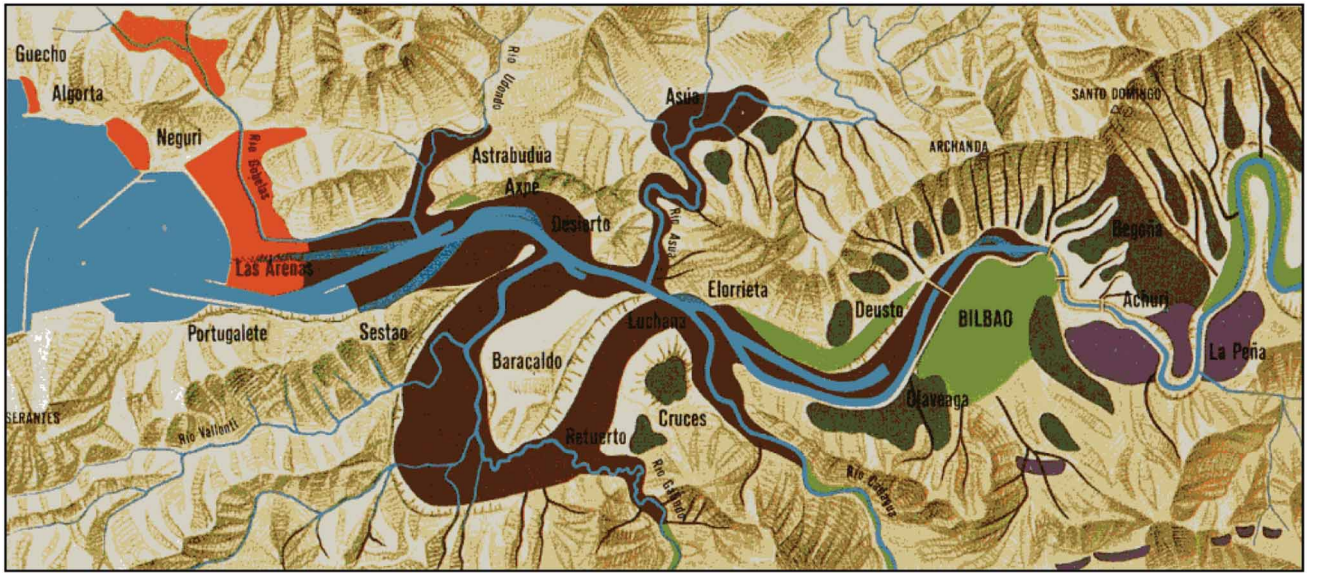

Figure 1. Spatial Overview of the Bilbao Metropolitan Area (Source: Letamendia *et al.*, 1998)

(IMEBISA, 1998). Thus the river presented a natural obstacle to the development of a unified strategy for urban revitalization in Bilbao. Investment in public transit would seek to redress this disconnection.

The Transport Environment Prior to New Investment

Local attitudes play an important role in shaping the development and usage of an urban public transport system (Hill, 1995; Edwards & Mackett, 1996). Such civic attitudes towards public transit do not form overnight, but are cultivated through decades of interactions and experiences with urban public transport. Thus in understanding how Bilbao has rallied support for its immense investment in mass rapid transport, it is necessary to explore the historical relationship that the citizens of Bilbao have had with public transport within their community.

The Rise and Fall of a Transit Riding Metropolis

Bilbao has a strong tradition of being at the vanguard of mass public transit investment and innovation in Spain. In the early 1890s, Bilbao was the first city in Spain to install an electrified tramway, which reached a maximum 109 kilometres of service in the 1920s. In the 1940s, Bilbao was the first large city in Spain to install electric trolleybuses, which carried 37 million passenger trips per year by the mid 1950s (EuskoTren, 2001).

However, as Bilbao's population grew and the city sprawled geographically, the traditionally close residential-work repartition began to expand, resulting in significant journey duration between home and work (IMEBISA, 1998). Consequently, motorization rates increased consistently (EuskoTren, 2001), and both the tram and the trolley bus were subsequently relegated to history as an anachronism and a symbol of an old urban order. Nevertheless, the provision of efficient and affordable public transport throughout the city and surrounding region has remained a strong source of civic pride.

Detailing Bilbao's Transportation Constellation Pre-Metro

In the years immediately prior to the inauguration of the Metro, Bilbao's public transport system became characterized by depreciating service quality and a general inability to meet the evolving transport needs of the community. This can be explained by a variety of factors. First, the province of Bizkaia lacked a single institution responsible for public passenger transport. Instead, jurisdiction over individual components of the transport network was diffused across different levels of government which contracted service provision to a variety of public and private transport operators.

Each operator had its own fare medium, pricing scheme, zoning system and scheduling (Bizkaia Transport Consortium, 2003). Thus the transport network operated in a manner that was based on a geographically isolationist strategy where each level of government attempted to maximize the commercial exploitation of its jurisdiction. As a result, public transport in the Bilbao conurbation was confusing, disintegrated and generally of a low quality, characterized by inefficient resource allocation as competition existed between commercial enterprises on the same route. Such institutional redundancies were viewed by the public with disapproval and contributed to an erosion of the historically positive perception of public transport in the community (Bizkaia Transport Consortium, 1996).

In addition to the institutional constellation, physical characteristics of the urban landscape in Bilbao limited the quality of public transport service that could be provided by both the bus and train networks. For buses, service quality was hindered by the increasing incidence of automobile usage which was causing significant road congestion (Bizkaia Transport Consortium, 1996). With regards to rail transport, Bilbao had a dense network of train routes, that rely primarily on two lines which passed along each bank of the river. However, the network failed to provide adequate urban accessibility and mobility since evolutions in urban land uses had superseded the functionality of this century old infrastructure. On the right bank, the route passed through the most densely populated parts of the community but failed to connect with a station that was centrally located in Bilbao. On the left bank, the alignment which was originally planned to service the heavy industries along the waterfront, failed to pass through the main population concentrations of the region which had migrated inland. Additionally, each of the main lines failed to cross the river and directly connect the adjacent communities (IMEBISA, 1998). Therefore, while architect Secundino Zuazo identified railways as the natural mode of transport for linearly arranged cities constrained by mountains as early as the 1920s, the train network in Bilbao failed to provide a suitable alternative to accessing the city centre or moving between the river banks (Letamendia *et al.*, 1998).

As a result of inadequacies in Bilbao's bus and rail network, public transport was unable to provide a level of service quality and reliability that could compete with the automobile. Consequently, of the 1.15 million motorized passenger trips per day generated by Bilbao prior to the inception of the Metro, 500,000 (43%) were made by public transit: 245,000 by bus, 185,000 by rail and 70,000 by other means. The remaining 650,000 (57%) daily trips were made by car. It should be noted that by international standards, Bilbao moves a high proportion of its population by public transport.

Nevertheless, the road network in Bilbao was incapable of coping with such high traffic volumes (Bizkaia Transport Consortium, 1996). The narrow valley within which Bilbao was situated left little space for road expansion, and the lack of a sufficient number of bridges connecting the two banks of the river near its mouth meant that all traffic seeking to traverse the river had to travel inland to a bridge that was located in central Bilbao. Thus the increasing emphasis on private transport led to significant road congestion both within the city and on main arteries that access the provincial capital, creating perpetual traffic jams, high levels of fuel wastage, noise and air pollution (Bizkaia Transport Consortium, 1996).

In light of the city's constrained urban environment and congested roads, solutions to the car-city problem that relied on increased road construction or intensification of the bus network were deemed unviable (Letamendia *et al.*, 1998). Improving the existing surface rail network was also explored as an alternative, however such a scheme was unattractive as it required the mass appropriation and conversion of land that was under other uses. Exhausting these traditional alternatives, focus then settled on a more radical off-road solution to the transport problem in Bilbao: a metro system and later a network of trams within an integrated transport environment (Bilbao Transport Consortium, 1996).

Metro Development: The Official Story

Within the context of a high profile urban renaissance and a community that had a historical affinity for rail based mass rapid transit, strategic investments in intra-urban transport

projects have been a literal and symbolic driver of change in Bilbao. It is this coalescence of the tangible and the intangible that explains why capital intensive rail based transit solutions were selected over other modal alternatives such as an intensification of the existing bus network.

Motivations for the Metro: The Tangible Variables

In 1989, after 15 years of debate, the commencement of construction on Metro Bilbao became a first tangible indication of the urban revitalization that was to be undertaken. As explained by Josu Sagastagoitia (2003, p.27), Managing Director of Metro Bilbao:

> 'the basic aims of the metro were obvious – to facilitate travel in the city and reduce the density of vehicles on the roads. But there were also wider interests – promoting investment in the city and equipping it with a new set of the high-quality public spaces which people gain pleasure from using'.

Thus first and foremost, the Metro project was conceptualized as a medium to reduce auto congestion. For example, studies on traffic volume indicated that the Metro and its accompanying public transport reorganization would decrease the number of vehicles on the city's roads by 17% to 250,000 (Bilbao Transport Consortium, 1996). Such decreases would improve traffic flow while reducing air and noise pollution. Furthermore, the inauguration of the Metro would act as a catalyst to rethink the design of local communities to improve both environmental and social sustainability. As elucidated by Ms. Isabel Sanchez, a Bilbao City Councillor,

> 'The new Bilbao Metro has created a viable alternative to driving a private automobile in our city ... However, Bilbao Metro's actual contribution has proved to be far reaching by empowering local elected officials to improve urban quality, constrain excessive use of the automobile and appropriate road space in favour of pedestrians and of surface public transport' (Stockholm Partnership, 2003, p.1).

In attempting to realize this dream, local communities across Bilbao have taken a holistic approach to the car-city problem. A coherent strategy emerged that combined public transit investment, reduction of car lanes in favour of larger pedestrian areas and bike paths, traffic calming mechanisms and restrictive parking policies with community design improvements to plazas, streetscapes and the areas surrounding the Metro.

The initiatives have been relatively low tech, small scale and low cost, making them feasible across the city. Thus while public transit provision and the reduction of auto dependence lay at the core of this scheme, a direct link was made with redesigning the urban landscape to make it more amenable to conviviality and community cohesion (Stockholm Partnership, 2001). Secondarily, improved regional accessibility provided by the Metro has catalyzed urban redevelopment and gentrification in areas that have been connected. Suburban residential communities such as Erandio or Barakaldo exemplify this trend.

Motivations for the Metro: The Cultivation of a Symbolic Meaning

From its conception, Metro Bilbao was designed to be more than simply a new mode of transport that would reduce auto congestion while simultaneously driving urban

redevelopment and providing environmental benefits. As noted by Rodriguez and Martinez (2003, p188), "the Metro became a symbol of the new dynamism driving public intervention in the city and of Bilbao's evolving image." For Sagastagoitia (2003, p.27), the project was meant to "act as a major reference for the city, as does the Guggenheim Museum," providing "a most tangible expression of the optimism shared by the people [of Bilbao]." Finally, as expressed by many of the speeches made by politicians at the Metro's inauguration ceremony in 1995, the provision of the city's first direct rail connection between the opposing banks of the Nervion signified a reordering of Bilbao's urban system which finally overcame the river as a natural barrier to communication (Bizkaia Transport Consortium, 2003). Thus symbolically, Metro Bilbao was intended to display a renewed modernity and urban vitality, moving the city well beyond its industrial past, its persistent reputation as an environmentally dirty city (The Economist, 1993) and the decades of economic decline.

Cultivating the symbolic meaning of the Metro project in Bilbao was by no means accidental and manifested itself in many ways. First, rooted in the philosophical work of Henri Lefevre and encouraged by the planners' observations of existing metro systems around the world (Letamendia *et al.*, 1998), Basque officials came to recognize that the potential success of their transit system resided in its ability to combine functionality and aesthetic quality. Only when these two objectives were combined would it be possible to achieve their more tangible ideals, namely enticing travellers from their cars to the Metro to reduce road congestion.

To realize their dual mandate of functionality and aesthetics, great emphasis was placed on finding a world class architect to design the stations. Subsumed in the lofty ideal of obtaining the best design available was an understanding that the high profile architectural competition added local and international legitimacy to the project. With the selection of British architect Sir Norman Foster, the Metro project in Bilbao had associated itself with one of the most recognizable brand names in modern architecture. Foster's design conceived of the stations as cavernous waiting halls, providing a feeling of comfort without making passengers feel constrained (IMEBISA, 1998). With its sleek use of steel, glass and concrete, the Metro was rooted in the imagery of Bilbao's industrial past, while symbolizing optimism for the future (Figure 2).

Analysis of the Motivations for the Bilbao Metro

With the overwhelming success of Metro Bilbao's Line 1 in achieving both its literal and symbolic goals, construction began on Line 2, which opened its first five stations on April 13, 2002. The line will further serve the heavily-populated left bank of the Nervion estuary, thus connecting parts of the urban population to the city centre that are currently underserved by existing transport modes (Bizkaia Transport Consortium, 2003). Additionally, Line 2 will provide the first direct rail link between the two banks of the river. As avouched by Josu Bergara Etxebarria, the Deputy General of Bizkaia and President of Metro Bilbao,

> 'With the introduction of line 2, all of us are going to be more together and more close to one another: the inhabitants of the left bank will be better connected with the entire metropolitan area and as well, and it is important, the entire community will be better connected with the left bank because the path which is opened has two directions' (Metro Bilbao, 2001, p.8).

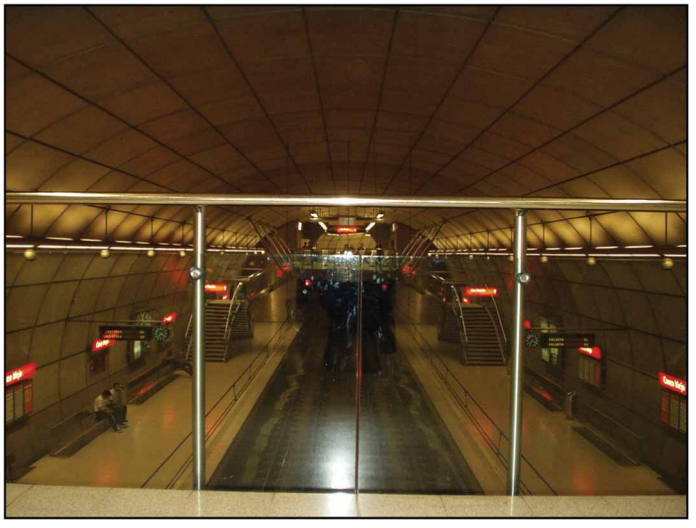

Figure 2. Metro Bilbao Station Design (Photo by Matti Siemiatycki, 2003)

As such, Metro Bilbao has contributed to the internal cohesion of different population centres within the city by enhancing the societal equity of mobility (Gomez Uranga & Etxebarria, 2000).

Constructing Mass Rapid Transit: An International Perspective

Although the contextual and planning environment in Bilbao is unique, the official objectives for constructing the Metro are similar to those identified in other cities around the world. In 1998, based on a survey of 30 mass transit systems in 11 countries, Mackett and Edwards identified six key objectives that motivated investment in rail based mass rapid transit: reduced traffic congestion, general improvement of public transport, better access to the city centre, improvement of the environment, stimulation of economic and property development, and other factors that included symbolic motivations. Of these six objectives, most system planners identified one variable that was salient in their case, while the greatest number of variables cited was five, by the planner at the Miami Metro.

However in Bilbao, all six of the key objectives identified by Mackett and Edwards (1998) have been widely noted by the planners of the Metro as being important in guiding their decision to invest in such a system. As demonstrated in the previous section, each project was tangibly driven by a desire to reduce road congestion, stimulate urban development, make the city centre more accessible and mitigate damage to the natural environment. Symbolically, each project contributed to elevating the spirits of the local residents by portraying an image of urban mobility and inclusiveness, while attracting international attention to the city. This understanding of the robust set of benefits that mass rail transit can deliver in Bilbao reflects the strategic nature of the local redevelopment process, which views public transport investment as both a means of moving people and as a critical element in the wider scheme to revitalize this once decaying industrial centre.

Finding the Initiative and the Funds

Given the immense initial capital cost and limited potential for full financial return on the capital investment and system operating costs, finding funding for fixed rail based public transport projects has traditionally been extremely difficult. In many jurisdictions around the world, funding for mass rapid transport is shuffled between different levels of government with none wanting to take responsibility (OECD, 2002). Concerns about profitability and return on investment have made private sector investors equally unwilling to take equity shares in urban rail schemes.

Yet in Bilbao, the city and region's unique status within a reconfigured Spanish polity engendered a favourable environment for stimulating large scale infrastructure investment. Bilbao is now part of a complex governmental structure occasioned by the rise of both centralizing and devolutionary forces in Europe. To enumerate them, one can identify five levels of government that could have a hand in transportation decision making in Bilbao; from smallest to largest they are the local municipal governments that comprise the Bilbao Metropolitan Area, the provincial government, the BAC government, the Spanish Central Administration and the European Commission. The realization of a Metro system in Bilbao costing some €881 million to develop, and a regional transportation network that now costs over €187 million to sustain annually, has necessitated joint involvement and cooperation between multiple levels of government (EMTA, 2002).

The predilection for cooperation has been the driving force behind the availability of funds and initiative for rail based urban mass transport in Bilbao, and can be explained by three factors embedded in the region's institutional regulation structure: fiscal and political autonomy of the BAC, dispersed jurisdiction over taxation and transportation within the BAC, and a policy driven economic recovery strategy that favoured investment in large scale transport infrastructure projects as a catalyst of urban revitalization.

Financial and political autonomy of the BAC

Following the demise of the Franco Regime in 1975, Spain underwent a process of administrative decentralization that resulted in the formation of the BAC, which is made up of the historical territories of Araba, Gipuzkoa and Bizkaia. The outcome of this process was a new legal charter for the BAC, the 1979 Statute of Autonomy, which transferred a high level of jurisdictional and financial authority from the Spanish Central Government to the Basque Government. Thus in addition to gaining decision making capacity to administer a large part of its earnings from taxation and public expenses, the Basque Government was granted jurisdiction over transport policy, infrastructure construction, industrial policy, culture and innovation (Gomez Uranga & Etxebarria, 2000). This devolution enabled local Basque actors with intimate familiarity of the transport needs of the community to conceive and allocate revenue for internal projects without requiring approval or funding from Madrid.

Dispersed institutional competencies within the BAC

While at the national/regional scale, the BAC had been granted pervasive fiscal and jurisdictional autonomy from the Spanish Government, within the BAC, responsibility for taxation and competency over transport issues was widely intermingled between different levels of government. Financially, powers to establish and collect all taxes except import-export duties were carried out by the provincial government, which then delivered part of

the revenues collected to the Basque Government, which then partly redistributed funds to the local governments (Gomez Uranga & Etxebarria, 2000).

Institutional jurisdiction for issues related to the Metro project in Bilbao was equally intermingled. In particular, while planning powers resided at the local level, the rate of taxation and hence the potential revenue of the Autonomous Community was determined at the provincial level while fiscal powers over transport investment were the jurisdiction of the Basque Government. Furthermore, the financial viability of such transport infrastructure projects was widely dependent on derelict property redevelopment, which was overwhelmingly owned by public firms and institutions of the central administration (Rodriguez & Martinez, 2003). Due to the interrelated and varied governmental responsibilities for taxation and transport in the BAC, any major urban transport project in Bilbao was to require cooperation between all four levels of government with an interest in the region. Finally, investment in transport must be seen within a wider supra-national context where the European Commission has been instrumental in funding urban redevelopment schemes in Bilbao, including transportation projects.

An emphasis on infrastructure building in the BAC

The high level of political and fiscal independence ascribed to the Basque Autonomous Community in the 1979 Statute of Autonomy has created a policy thrust that places great emphasis on large scale infrastructure projects. In 1991, following a series of debates regarding the future of the Basque Country initiated by the Basque Government, a Strategic Plan was drafted that identified mobility and accessibility, and urban and environmental regeneration amongst a list of eight critical issues needed to dynamize the Basque region (Gomez Uranga & Etxebarria, 2000). Keeping these broad goals in mind, the construction of integrated urban transportation infrastructure goes a long way to fulfilling each of these necessary stipulations. Thus as the largest concentration of population, businesses and recreational activities in the BAC, Bilbao became a main outlet for transportation infrastructure funding, which accounted for 3.9% of the total Basque Government budget in 2000 (Basque Government, 2000).

From Institutional Structure to the Metro Planning Process

The actual process that took place to make transit investment in Bilbao a reality was a direct manifestation of precepts codified by the institutional structure. In other words, the process that occurred in Bilbao is an outcome of human agency and contestation within the existing institutional regularities in an attempt to favourably shape the surrounding environment.

The metro that exists in Bilbao today is the result of more than 17 years of study and planning for the transport needs of the region. Having identified a growing traffic problem as early as 1971, the Bizkaia provincial government, the Bilbao city government and the Bilbao Chamber of Commerce formed a Commission to study the state of transport in Metropolitan Bilbao (Letamendia *et al.*, 1998). In its first in-depth report released in 1974, the President of the Commission concluded that:

> 'We think that the solution [to Bilbao's transport problem] lies in a means of collective transport which would be frequent, safe, fast and comfortable' (Bizkaia Communication Commission, 1974, Prologue).

With this statement, the dream of a metro system in Bilbao was officially born and its terms of reference defined. As the Basque country was still under the direct rule of the Franco Regime, the Bizkaia provincial and municipal institutions lacked the legal competency to actualize the proposal on their own. Thus on a recommendation of the Spanish Government's head of construction, planning and funding cooperation between the Spanish central administration and the Basque provincial and municipal institutions was legally woven into the fabric of the Metro planning process through the creation of the Bizkaia Transport Consortium (IMEBISA, 1998).

The constitution of the Bizkaia Transport Consortium holds a key to understanding the financial sources and institutional drivers of the metro system. At the time of its inception in December of 1975, law number 44/75 established that funding for the Bizkaia Transport Consortium, which was to pay for the development of Metro Bilbao, would come from three sources: 2 billion pesetas from the Spanish State Government (50%), 1 billion pesetas from the Bizkaia provincial government (25%), and 1 billion pesetas from the city councils involved in the consortium (25%). Additional money would be raised through credit financing by the Consortium, and amortized through passenger fares (Bizkaia Transport Consortium, 2003).

The management structure of the Bizkaia Transport Consortium is an attempt to coordinate policy between different levels of government, with the predominant weight of influence clearly in the hands of the senior level of government. The highest governing body is the General Board of Administration, which has final deliberation and decision making authority on all policy of the Consortium. The General Board of Administration is comprised of 26 appointed members, of which 13 are from the superior level of government, 2 are from the Bizkaia provincial government and 11 are from the local member city councils. Together with the General Board of Administration is the Executive Commission, which is a permanent organ that oversees debates, decision making and implementation activities of the Consortium. The Executive Commission is comprised of 9 members: 5 from the superior level of government, 1 from the Bizkaia provincial government, 2 representing municipalities that are members of the Consortium, as well as the Secretary General. The Chair of both boards is the head of the Bizkaia provincial government, and the vice chair is the mayor of Bilbao, which provides local officials with some authority to guide the direction of the Consortium. Nevertheless, power to guide the decisions of the Consortium resides with the superior level government, for they hold the largest share of seats on both of the organization's managing boards (Bizkaia Transport Consortium, 2003).

In 1977, the first construction plan was completed and approved by the Bizkaia Transport Consortium. However, two factors stunted its implementation. First, when the plan was placed on public display as is mandatory in the Spanish planning establishment, it provoked an avalanche of suggestions and allegations calling for a far more extensive route which should be primarily underground (Letamendia *et al.*, 1998). Second, concurrent to the writing of the Metro construction plan, the Spanish State run Administrative Company of Greater Bilbao was developing a general plan of urban reorganization for Bilbao which modified some of the conditions underlying the construction plan. In light of these factors, the approved construction plan was recognized by the Executive Committee members of the Bizkaia Transport Consortium to be deficient (IMEBISA, 1998).

Relaunching the Metro project coincided almost exactly with the ratification of the 1979 Statute of Autonomy, which transferred competence for railways to the Basque

Government and also abolished the Administrative Company of Greater Bilbao. This radical change in Bilbao's planning environment generated optimism that a suitable plan could be achieved (Letamendia *et al.*, 1998). However, the new institutional arrangement took time to settle in the BAC. A fresh plan in 1981 which proposed a condensed metro network, combined with increased prominence of the existing train and bus network failed to unblock the situation.

Additionally, determining how the project cost should be distributed between the multiple levels of government within the BAC became contentious. In line with their expanded competencies in the Autonomous Community, the Basque Government agreed to assume the 50% share of Metro funding that the Spanish State had held by taking over their position on the Bizkaia Transport Consortium. However, local councils hit hard by the regions economic crisis were finding it difficult to raise the necessary funds to pay their 25% portion of the project.

In 1984, another proposal was brought forward which called for a combination of metro and railways. Despite its similarity in alignment to the rejected plan of 1977, the new metro proposal was far more focused on the superficial design than earlier proposals. Through the selection of a design by Norman Foster, greater emphasis was placed on system aesthetics and the addition of functionality by bringing the stations closer to the surface level to make them more accessible (IMEBISA, 1998). Gaining positive feedback from the planning authorities, a new construction plan was completed and submitted to an extended period of public information. The varied suggestions made by the public were then reviewed, and some were integrated into a new construction plan. Finally having been given a favourable opinion by the Bizkaia Transport Consortium, the new construction plan was approved by the Basque Government in 1987 (Letamendia *et al.*, 1998).

In addition to completing the project configuration, details regarding the financing of the project were also solidified. Following many years of negotiation, Jose Maria Makua, the president of the Bizkaia Transport Consortium and head of the Bizkaia Provincial Government decided that the province would assume the 25% share of the Metro project cost that the city councils had initially assumed. This shift in the funding arrangement has occurred without an accompanying change in the governance structure of the Consortium, meaning that the local councils maintain greater representation on the administrative boards than do the Bizkaia provincial government.

Thus the €600 million cost of Metro Line 1 was split evenly between the Basque and the Bizkaia administrations (Bizkaia Transport Consortium, 2003). Construction on the Metro began in 1988, and the first 27 stations were opened in 1995. In 1997, using the same funding formula, construction on the €434 million Line 2 began, and the first 5 stations were inaugurated in 2002 at a cost of €281 million (Figure 3) (EMTA, 2002).

More recently, the Bizkaia Transport Consortium has turned to a philosophy of financing future investment entirely through borrowing, while money from the Basque Government and the Province of Bizkaia should go towards defraying annual operating costs and overheads. In addition to the issuing of Bilbao Metro Stocks and bonds, they have also borrowed directly from the European Investment Bank (Bizkaia Transport Consortium, 2003), which is the European Union's financial institution that lends money for capital projects on favourable terms. To this end, Metro Bilbao has been the recent beneficiary of a supra-national policy thrust to promote integration, balanced development and

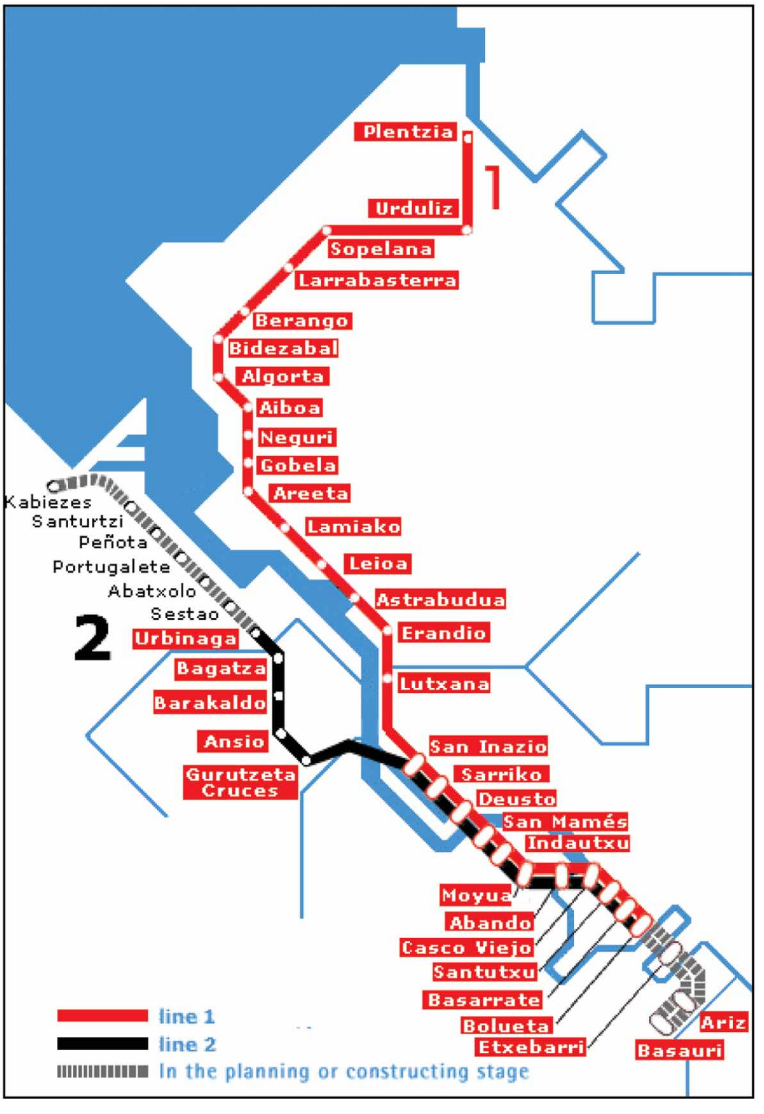

Figure 3. Metro Bilbao Route Map (Source: Metro Bilbao, 2003)

economic and social cohesion within member countries of the European Union (European Investment Bank, 2004).

While the long gestation period of the project was partly the result of a technocratic super-rational planning model relying on extensive feasibility studies (IMEBISA, 1998), it was also the product of a dynamic planning environment where both the urban landscape and the institutional structures where in a constant state of upheaval. Navigating this evolving environment took time and tenacity. In the 10 years between the initial planning designation of a metro proposal in 1977 and the final approval of a plan in 1987, there

were three different governments in office (of varying ideological affiliation) at the all-important BAC level, with four transport ministers. Nevertheless, each of these individuals understood the underlying need to reorganize the transport system in Bilbao, and the merits of the practical solution for a metro system that had been developed (IMEBISA, 1998).

In attempting to link the circumstances which brought about the construction of large-scale transit investments in Bilbao to theoretical perspectives on the planning process, it appears prudent to suggest that the realization of a mass rapid transit system in Bilbao is an example of the interplay of several theoretical models. From the regulation theory (Boyer, 1986), the internal political structure of the BAC and the local planning framework encouraged cooperation between different levels of government, while minimizing the importance of civil society. Within this context, it was government agents and the civil service who were critical in moving the project along. This therefore suggests that it was a State centred model of urban governance which drove the metro construction in Bilbao, not public choice, growth machine or regime models which have guided transit investment in other cities such as London or Birmingham (Forster, 2000). Yet it is evident that both the movement of people, the stimulus of the economy and the amelioration of the natural environment were prime motivations for state officials promoting transit investment in Bilbao.

Metro Development: The Unofficial Development Story

In the official story, the complex web of contextual factors influencing transit investment in Bilbao were untangled, and the process that was carried out to realize the dream of a multi-modal mass rapid transit system in the city was explored. Yet understanding the transit investment environment in Bilbao cannot simply be viewed as presented by the hegemonic dominant forces in the city, as a fluid process without externalities. On the contrary, a critical view must be taken which scrutinizes the official story, searching for inconsistencies by omission or commission. Thus the following section will present the unofficial story of urban mass rapid transit in Bilbao, excavating latent criticisms that lie just below the surface. Instead of embodying a single narrative, the unofficial story of transit investment in Bilbao reflects the cacophony of voices which can be faintly heard providing opposition to the saccharine rendition of the official story. This dissonance is embedded in both the community and the institutional setting.

Guided from Above: Collaboration and Participation in the Basque Region

As presented in the official transit planning story, the responsibility for Metro planning decisions were aligned and synchronized between all levels of government through the formation of the Bizkaia Transport Consortium. However, while the consortium ensured funding cooperation, the Basque Government's sole competency for rail based transit in the BAC gave them supremacy on decisions regarding the specifications of the Metro being built. Thus the Basque Government took a leading role within the planning consortium since they controlled 50% of the seats on the executive boards (Bizkaia Transport Consortium, 2003); they commissioned the majority of the technical and planning reports regarding the future of rail based public transport in Bilbao following their creation in 1980; and they created a directly subordinate engineering and project

management firm called IMEBISA in 1988 to guide the Metro project (IMEBISA, 2003). Through these measures, the potential for meaningful intergovernmental cooperation that was facilitated by the presence of the Bizkaia Transport Consortium was superseded by the will of the Basque Government.

However, while cooperation was at least formally encouraged between different levels of government who shared an interest in the new transit systems being proposed, there was little effort to meaningfully include public participation in the transit planning process. The Basque planning system, which is a derivative of the Spanish system, requires that all major infrastructure plans be subjected to a period of public viewing/information where comments are welcomed from the community at large (Riera & Munt, 1991). In the official rendition of the Metro development story, the role of the public through this participation process was projected as being a key element in shaping the system that emerged.

However, a closer examination of this formal system of public participation indicates that since it is sequentially positioned at the end of the planning process when an official construction plan had already been designed (Letamendia, 1998), it fails to foster an *a priori* discussion about critical issues such as the need for the proposed transit project, the funding strategy, the transit mode of choice or the systems specifications. Instead, the comments, received after years of work have already been invested in the project, seem to be merely used to make cosmetic system alterations.

Therefore, while the official celebration of the public role in the planning process is factually correct, two important points require addressing. First, negative publicity in the media played an important role in informing public opinion and influencing significant changes to the construction plan. For example, following the release of the first construction plan in 1977, critical articles appeared daily in the local newspapers illuminating the faults of the proposal (IMEBISA, 1998). Without an official forum for public discussion during the planning process, such public scrutiny placed great pressure on the political establishment to re-evaluate the Metro specifications.

Second, even if it can be argued that public participation through the formal consultation process was important in leading to a total re-evaluation of the Metro specifications (Letamendia, 1998), the route alignment that was actually constructed remained nearly identical to the initial proposal of 1977. Thus critical questions must be asked not only about the inclusion of public participation in the planning process, but also how the public input is then integrated into the final project design. In Bilbao, it appears that public input was purely cosmetic, subordinate to the interests of the technical experts.

Despite inadequacies in the participation process illustrated above, the hegemonic discourse has attempted to emphasize the inclusiveness of the planning process. This was systematically undertaken by appropriating and internalizing the critical public debate that actually occurred outside the official planning process. Additionally, a slick marketing campaign for the Metro has cultivated an image of government cooperation and community engagement. For example, Metro Bilbao teams up annually with local Non Government Organizations to put on a children's fair, thus cultivating an image of public transport in Bilbao as connected to the community (Metro Bilbao, 2001). Yet this is an ersatz impression. The image of cooperation and inclusiveness has been carefully stage managed and tacked on to the end of the Metro project to obfuscate the reality that transit planning in Bilbao has been a top-down technocratic process.

Public Transport and Uneven Urban Development

The Metro was constructed in two phases: Line 1 through the city centre and down the right bank was built first; upon its completion, Line 2 which joined the city centre to the left bank was undertaken. There were numerous rational explanations for this construction sequencing. First, construction on the right bank was technically easier and less disruptive to the community (IMEBISA, 1998). Second, the demographic composition of the right bank was wealthier, and consisted of more residents who had white collar jobs in the city centre. Third, new communities on the right bank and Upper Coast area had begun developing that required a connection to the public transit system. Thus the Metro would have an immediate market and a better chance of financial success than had it been constructed first on the left bank.

On the left bank, a large proportion of the population worked locally in occupations such as manufacturing, meaning that there would be less immediate patronage for a new rail connection to the Bilbao city centre. Furthermore, the left bank already had a train connection to Bilbao city centre. Although this rail alignment failed to pass through the main settlement centres on the left bank which minimized its utility, finding a new route that would satisfy future urban development patterns was difficult. In the early 1990s, the left bank was in a period of severe economic restructuring, with many abandoned industrial areas that did not have clear future uses. In this environment of great uncertainty, the development of any transit alignment risked missing new population centres.

Despite these rational explanations, the sequencing of the Metro implementation must also be seen as one variable amongst a variety of factors that has promoted uneven urban development in the Bilbao Metropolitan Area. Underpinning the official motivation for Metro investment in Bilbao was an assumption that improved accessibility provided by fixed transport infrastructure is a catalyst for local economic and property development. This fits with an urban renewal strategy that has shifted from spatial and strategic planning to project-led revitalizations, where development sites are selected partly based on propinquity and accessibility (Rodriguez & Martinez, 2003). The seven year gap between the inauguration of Metro Lines 1 and 2 provided the Bilbao city centre and right bank with a head start on attracting redevelopment investment, exacerbating uneven spatial development and social opportunity between the two river banks.

Only since 1997, with the left bank Metro alignment set and construction approved, has the area begun to attract major urban redevelopment projects that rely on accessibility. The decision in 2000 to build the new Bilbao Exhibition Centre on an abandoned industrial site adjacent to Ansio Metro station reflects an early example of the potential for transit to not only complement, but also stimulate urban renewal on the left bank.

'Basquing' in the Limelight of a Successful Urban Transit System

In a region that has been embroiled in a long and public nationalist struggle, it may be thought that the recent revitalization of Bilbao through emblematic projects could draw attention to the legitimacy of the Basque drive for independence from Spain. However, as it relates to the Metro, a more nuanced analysis is necessary, one that accounts for the specific context of Bilbao and the varied motivations that drive public transit investment. First, as a metropolis that has been integrated into the world market for

many centuries, Bilbao has become the least ethnically Basque area in the BAC. Successive waves of immigration from across Spain in the twentieth century has added significant ethnic diversity to the populous of Bilbao, and the region records the lowest proportion of Basque speakers in the BAC (Zulaika, 2000). This weakened Basque identity in Bilbao makes investment in the city somewhat ill-suited to form the foundation of a nation building project.

Second, the chronology of events related to the conception of the Metro indicates that the project genesis occurred in 1971 when the management of Bilbao was under the direct control of the Franco regime. Thus contrary to any surreptitious motives, the Bilbao Metro was at least initially conceived as a means of alleviating the city's stifling congestion problem. Even following the creation of the Basque Autonomous Community, when the Basque Nationalist Party (PNV) came to dominate the political landscape at the all important regional level of government, the project remained grounded in a highly rational planning process that stressed the utilitarian benefits of metro investment.

Nevertheless, metro investment in Bilbao was about more than just utilitarian benefits. At a time when the Basque nation in Spain was going through a fragile transition period towards autonomous legitimacy, public infrastructure investment that would provide a lasting impression were important in promoting the confidence and recognition of a small, vulnerable nationality. Thus drawing heavily on the metro building experience of Montreal Canada in the early 1960s (McKenna & Purcell, 1980), Basque officials hired architect Norman Foster to redraw the original design plans to fulfil their vision of a system that would be a cathedral to modern transportation.

The expression provided by Metro Bilbao does not have to be linked to independence. Instead Metro Bilbao provides more of a basic reaction, one of community and local pride which is on display for the world to see. The functionality and architectural splendour of the Metro symbolizes that the Basque people have the technical proficiency, institutional stability and long-term vision to carry out large scale public work projects. Furthermore, the Metro project is a concrete sign of modernity, and the active process of recovering from an economic recession that had crippled the local economy and shattered the city's social stability.

Linking the Future to the Past

Buried in the grand ideals of the urban renaissance that has gripped Bilbao is a latent irony which few in the city are willing to openly admit. For all of its glittering iconic buildings, for all its sleek transport infrastructure, the undertaking of public sector building projects has been widely used as a means of stimulating local industries of the past economic era. Specifically, while infrastructure investments broadly stimulate the economy, they specifically target just the old Fordist industrial sectors of the economy that were officially being given less emphasis as part of the region's economic base. Thus construction contracts were granted to local private firms, building materials were procured from local sources, and technical expertise and machinery was obtained from indigenous manufacturers. Therefore at a time when the local industrial sector had been ravaged by a crisis of over accumulation which resulted in unemployment that hovered around 25%, promoting modernity (in mobility and image) was equally balanced by a desire to support the local industrial sector and create jobs.

Such New Deal type policies represent a major subsidy to private industry, as the state coordinates massive pools of funds which drive private wealth creation. Through economic trickle down, this pool of resources gets redistributed throughout the broader economy. Thus investment in fixed public transport is thought to indirectly stimulate economic activity in tertiary sectors such as retailing, which may explain why the Bilbao Chamber of Commerce was one of the original institutions advocating in favour of constructing a mass transit system in 1974.

Yet in Bilbao, questions have been raised about the distributive benefits that such infrastructure projects have had for the working class. Specifically, labour unions and assemblies of the unemployed have accused the government and their contracted construction firms of putting economic interests ahead of worker safety. They argue that due to high unemployment in the sector, construction workers have been unable to demand minimum standards in terms of safety and hygiene for fear of being made redundant. They also claim there has been a general pattern of enforcing extraordinarily long work days. This increases the risk of accident by physical and mental fatigue and the chance of professional disease from prolonged exposure to chemical polluting agents (CNT de Barakaldo, 2002). Nevertheless, the government continues to promote large scale infrastructure projects for their stated purpose of driving urban modernity and their potential to generate wealth and jobs.

Power Politics

As an ex-industrial city with a reputation for being grimy, one benefit cited by Metro planners was that it is powered by electricity, making it emission free at the point of operation. This provides localized benefits for congested urban centres where dense car usage creates concentrated air pollution. However, the production of electricity is not without its pollutants and ecological externalities. Whether electricity is created by coal burning, hydro, nuclear fission or wind, its generation causes side effects that adversely impact both people and the natural environment, be it through air pollution, land flooding for hydro dams, the risk of a nuclear disaster or noise and visual obstruction from wind turbines.

Furthermore, electricity generation is typically not carried out directly in the urban centres where it is primarily consumed but is instead produced either on the fringe of cities in the case of nuclear power or in places that are geographically suitable in the case of hydro and wind. Hence in undertaking an urban mass transport system powered by vast quantities of electricity (for example the Bilbao Metro consumed 46 GWh of energy in 2001) (Metro Bilbao, 2001), the issue of pollution is not eliminated; instead it is simply transferred spatially between the urban dwellers who benefit from improved air quality and the population where the electricity is actually generated who bear the negative externalities of power production without directly receiving the benefits derived from its usage.

In Bilbao, this issue of the negative externalities of using vast quantities of electricity (even for the purpose of powering mass rapid transport) is magnified by the fact that the region has been in the midst of a protracted debate about the impacts of power generation, particularly as it applies to hydroelectricity. The debate has been spurred by the Itoiz dam project (commencing in 1985) in the neighbouring Navarra Autonomous Community, which is also part of the historic Basque peninsula. Specifically, the 52 GW/h project has been criticized for the social and environmental damage that will be caused

by land flooding for the dam's reservoir (Barcena & Ibarra, 2001). Thus in the context of the greater Basque region, the case of the Itoiz dam project has brought attention to the negative externalities caused by the generation of electric power and made this a very public issue.

While it is difficult to draw a direct link between the electric energy requirements of the new transit system in Bilbao and the construction of new power generation sources in the region, the Bilbao Metro is part of an economy that is driven by the availability and affordability of energy. In this vein, to imply that electric powered mass transport systems are free of environmental externalities due to their lack of point source emissions is a vast oversimplification of a far more complex issue.

Conclusions

As illustrated in this paper, the decision to invest in fixed public transit infrastructure in Bilbao has been officially motivated by a range of objectives including a desire to reduce car congestion, stimulate economic development, improve the natural environment, and raise awareness about the city. To meet these goals, institutional collaboration was embedded into the planning process through the empowerment of a strategic consortium. Yet just below the surface, the transit experience in Bilbao echoes with a number of recurring ironies and unfolding paradoxes.

1. The officially constructed post modern objective and symbols of the projects were juxtaposed against their underlying Fordist imperative of propping up declining manufacturing/construction industries and fuelling speculative property development that took a distinctively modernist urban form.
2. Marketing of the metro in Bilbao presented itself as a very public planning process that engaged the community in the transit experience, but the actual process of designing the system was not really participatory or inclusive at all.
3. The exclusive top down transit planning process that actually took place in Bilbao created an end product that is revered by the public and responds to the diverse transit needs of the community. Since its inauguration in 1995, system ridership has increased annually to over 56 million passengers per year (Bizkaia Transport Consortium, 2003) and the Metro has a 92% operating cost recovery ratio, one of the highest in Europe (EMTA, 2002). Furthermore as a sign of the system's popularity within the community, many mayoral candidates in the 2003 election used the desire to see a third Metro line constructed as a platform to attract voters (Marzo, 2003). This further illustrates that the Metro has become a truly integrated and important component of the Bilbao urban landscape.

Traditionally, the field of transport studies has viewed decisions to invest in new infrastructure as being guided by hyper-rational analysis. However, by peeling back the layers and exposing the ironies and internal contradictions that were embedded in the Metro planning process in Bilbao, a new dimension has been added to the study of urban transportation investment. Specifically, a theoretical framework is infused into the field of transport analysis. When public transport projects are presented as being about more than just moving people, it becomes impossible to detach rational planning procedures from the wider regulatory environment and the role of individual agents.

The case of Metro investment in Bilbao provides a generally optimistic outlook for future public transit projects around the world. It indicates that sustained spending on public transit can significantly boost ridership, with attendant improvements to road congestion, air quality and access to urban mobility. Transit investment can also be architecturally significant, and contribute to a city's self confidence and global image. In spite of these potential benefits, spending on public transit cannot be viewed as intrinsically positive. Quite the contrary, we must continue to deconstruct public transit initiatives, exposing how such large scale projects have varied spatial and social impacts.

Notes

1. For background and contextual purposes, a series of eight confidential interviews were conducted with individuals involved in or familiar with the Metro Bilbao planning process. These included four transportation planners, two city planners and two Bilbao based academics.

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