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MADRID URBAN PANORAMA: BIG PROJECTS FOR AN EXPANSIVE ERA

ECONOMIC BOOM AND BUST

Caused by the economic expansion that put Spain among the European leading countries, Madrid could overcome its historic deficiencies, and was able to renew its potentiality during the last decade until the economic crash by turning itself into an economic and cultural capital of international stature. While urban development has been appropriating peripheral territories, defining a new structural organisation, the city took advantage of economic buoyancy to improve its infrastructure. Flagship projects were the treatment of the M-30 highway to recover the banks of the Manzanares River as civil space, and new urban services, such as the Terminal 4 of Barajas airport. Besides, big companies built new headquarters, economic fortresses in the form of autonomous cities on the urban fringe, or spectacular skyscrapers along the Castellana axis in the centre of Madrid.

The current economic crisis in Spain is an opportunity to analyse all those projects and try to understand the present situation to rethink new ways of improving the urban panorama of Madrid.

In 2007, the structure of the city broke up to be reconfigured through multiple interventions. The growth of the Spanish economy surpassed that of Germany fourfold according an article published in the Financial Times. A study of rating agencies placed Madrid among the five first economic countries of the world according to a criterion that considers political, social and demographic factors, including development potential. The nine Spanish companies placed among the world's 500 largest have their headquarters in Madrid, putting it into the sixth position in one of the rankings of global cities. Madrid, already among the most important communities in terms of population or income level had advanced by several positions according to the indicators which had measured its

economic prosperity during the last quarter of the century. All these results showed that economic growth of the Community of Madrid was superior to the national average and that Madrid had a greater capacity to generate jobs within the private sector. The total job growth was higher than in the rest of the country although the increase of public work was clearly lower. At that time, caused by the growth of the economy, Spain was among the leading European countries.

All this lay at the base of Madrid's building buoyancy which stopped when the real state bubble suddenly burst. After the longer term, after decades of urban crisis revitalisation appeared before the current crisis. It could be interesting to analyse why this unexpected renaissance appeared or what conditions (geographic, economic or cultural) or urban planning policies made that revitalisation possible and how could be made to last. A closer analysis of some key issues of contemporary urban development in Madrid could shed some light.

THE THREE MAJOR PHASES OF MADRID'S EXPANSION

The modern transformations in the Madrid metropolis was a process which did not occur gradually but rather in stages. This process could be summed up in three major stages: first, the creation of the metropolitan area which meant extending the urban area beyond the limits of the traditional, compact and continuous city. This took place in the 1960s and 1970s. Secondly, the idea of Madrid as a polycentric city-region to overcome the simple relationship of dependence on the metropolitan centre occurred in the 1980s. Finally, the post-metropolitan era began in the 1990s when Madrid adopted a fractal spatial organisation built around large axes of supra regional development.

The first phase, spanning from the 1960s to the 1970s is characterised by a central area in which the radial concentric urban structure depends on the metro system and the M30 inner motorway ring and, on the outskirts, on the arterial roads and the railway system. In the central city, institutions and commercial services and tertiary activities were grouped together. They were surrounded by a peripheral urban residential area distributed into socially divided parts following a very simple pattern: higher income levels were concentrated in the north and west and lower income levels in the south and east.

Outside the borders of the city of Madrid satellite metropolitan centres and dormitory towns appeared, were growing fast and totally dependent on the structure of the old arterial roads connecting rural towns. These new suburban areas were almost entirely lacking basic infrastructure and were totally dependent on central Madrid for employment and services. So there was no balance in this kind of growth. Fragmented development led to a north-south division in terms of environmental quality and centre-periphery contradiction. These were determined by the inefficiency of the transportation system that created an imbalance in the distribution of employment and services which constrained the quality of life of the metropolitan population.

This context constitutes the basis of the reform of the urban planning system developed in the 1980. There was an emphasis on fixing the shortcomings of urban quality through a series of spatial policies. They included territorial rebalancing and redistributing major services (in particular universities); promoting decentralisation of services, and creating a metropolitan transportation infrastructure. The latter was an enormous undertaking. It started with the creation of the Consorcio

Regional de Transportes, in 1986 and continued with the construction of Metrosur subway line in 2003, one of the largest projects of civil engineering carried out in Europe. During that period, educational and cultural facilities were implemented on the southern edge of the inner city, where the greatest concentration of museums of Spain is located at present.

During the 1980s and 1990s, the most significant change in territorial organisation was the shift to a polycentric structure based on a set of key infrastructure investment, the completion of the large orbital metropolitan highways M40 and M45, the start of the outer ring road M50; increasing the capacity of arterial roads and railway modernisation. These infrastructure projects surpassed the mere function of consolidating outer settlements; they became true vectors of territorial colonisation. Owing to good accessibility conditions, all these metropolitan centres were strengthened and attracted more highly qualified economic activities (businesses and services). Another substantial transformation occurred during this period, the ex nova creation of nuclei in metropolitan access points. They consisted of high and middle income houses, followed by services (universities and hospitals) and later by leisure and commercial activities (shopping malls).

In this way the territory was colonised with interstitial nodes, far away from traditional urban centres but central points according to their accessibility. Examples are the creation of cluster grouping business and commercial activities along La Coruña highway; the development of industrial activities in the south along the campuses of Carlos III University and the Rey Juan Carlos University; a technological cluster developed in the south-east of Madrid, the del Henares corridor, and the techno-scientific innovation area in the north in the Tres Cantos neighbourhood and in the vicinity of the Universidad Autónoma.

IMBALANCES

However, the new injections of activities created new territorial imbalances. The rapid increase of developments on green field sites led to the decline of traditional downtown areas. Moreover, the increase of land occupation was higher than demographic growth and metropolitan GPD. Although this also occurred in European countries, what was especially dramatic in Madrid was that the area taken over by development had doubled since the mid 1970s. As a result rural areas started to disappear and, except for the Natural Park and specifically protected spaces, residual land earmarked for further development multiplied on the outskirts of developed areas.

Due to the high rate of migration from the city centre to these areas marginalised areas appeared in the urban centre, such as Lavapies or Valdeacederas. These older metropolitan centres started a process of commercial decline and social deterioration. Only later when these central areas were considered strategic by investors and public authorities did new projects appear as part of the planned revitalisation of Madrid's city centre, which included the extension of La Castellana to the north and the renovation of the Paseo del Prado in the South, as a kind of reinvention of the urban spinal axis, together with the M30 the inner ting road surrounding the central city.

Reconnecting the city centre with the outer city: Madrid M30

Madrid M30, or the Road 30 project, was focused on the inner ring road of the city which was in need of refurbishment to add more capacity. A total of 99 kilometres in length were constructed, of which fifty six kilometres were tunnelled. Construction started in September 2004 and took almost five years to complete. Major sections of roads were

rerouted under the city to improve accesses and circulation. Some of the world's largest Earth Pressured Balanced Tunnel Boring Machines were in operation at that time. It was crazy. The mayor of the city placed sensors on the tunnels to signal when the vibration of the earth surpassed the maximum permitted level and put immediate reaction into motion. The project also involved the clean up and regeneration of open spaces along the Manzanares River which runs north south on the west of the inner city. In that location the motorway was rerouted into tunnels. This freed a lot of land for level reconnection between the inner city and Madrid expansion and public facilities, recreational spaces, parks, etc. were created above the tunnels. For these large new areas, the municipality of Madrid held a two stage design competition in July and November 2005. The first stage was used to qualify local teams interested in the competition from which two were selected to join six other preselected firms in an international ideas competition.

The winners were a Madrid based group led by Ginés Garrido and Paco Burgos which included the architecture office of Fernando Porras Isla and Lacasta, Rubio Álvarez Sala, as well as the Dutch firm Westt 8 on matters of urban design and landscape. Their proposal included a sequence of spaces offering different opportunities for both large and small interventions, a sequence of bridges linking the two sides of the river and integration into adjacent neighbourhoods, public parks with a strong presence of vegetation that related to the existing urban fabric on either side of the river. All this provided a foreground from which to perceive the city as well as a new relationship with the Campo del Moro.

There were other proposals by Juan Navarro Baldeveg, for the area of Arganzuela park, or the Camino de las Flores by Herzog & de Meuron, suggesting a connection between and with the Royal Palace. Despite local controversialities, there are some worthy aspects of this mega project. The traffic circulation and accesses were improved, it created opportunities for the development of more public spaces, the ambient air quality improved (there was a significant reduction of emissions), on the surface there are gardens, parks and landscapes instead of a highway which severed the urban fabric. From a socio-cultural point of view, open spaces and community facilities appeared in a forgotten part of the city, neighbourhoods which were isolated because of the highway are now connected, and the riverfront of the ancient city was recovered, as well as some of the historic bridges.

The M30 project is similar to most projects which try to fix problems association with infrastructural interventions. However, it should not be seen simply as a road project but more as an excuse for the urban renewal and revitalisation of a neglected part of the city of Madrid. The basis of the design rests on vegetation, the pine trees placed all along the right bank of the river, guiding visitors through squares, parks, resting areas or playgrounds. This linear pine grove was created with different types of Mediterranean pine trees reminding the ancient wood that used to be there before. The left bank of the river was redesigned as an artificial topography that included some traces of ancient orchards, such as la Huerta de la Partida. Different kinds of materials were used for the pavements indicating different uses or areas in a sequence of spaces all along the river. The bridges include the refurbishment of historic bridges such as Puente del Rey or Puente de Toledo, the regeneration on the river lock and the construction of new bridges like the one designed by Dominique Perrault.

New skyscraper cluster on main Madrid axis

In another part of the city, on ancient plot of land which had belonged to the Ciudad Deportiva of Real Madrid Football Team four skyscrapers were erected, mainly for offices. They constituted an extension of landmarks along the main axis, the Castellana, which traverses the centre of Madrid north south. Along this axis, there are earlier skyscrapers, the Colon Towers by Lamela, the Kio Towers by Phillip Johnson and John Burgee in Plaza de Castilla; and surrounding them the hospital complex La Paz to the north and apartment blocks by Secundino Zuazo at the opposite side of the Castellana. The latest skyscrapers are positioned in a symmetrical arrangement parallel to the Castellana axis in two different alignments. Two of them are designed by American architects, Pei Cobb and Partners & Reid Fenwick for the Espacio Tower, and Cesar Pelli, Ortiz & Leon for the Mutual Madrileña Tower, based on canonical typologies. The other two towers are designed by European Architects, Norman Foster for the Repsol Tower, now called Caja Madrid Tower, and Rubio Álvarez Sala for the Sacyr- Vallerhemoso Tower, offering alternatives to conventional typologies.

The Caja Madrid Tower by Norman Foster was a design for Repsol YPF (the major Spanish oil company). Construction had started at 2004 but in the middle of the construction process, Repsol decided to change the location of its headquarters and to sell the building to Caja Madrid, a savings bank, for 800 million euros. It contains thirty floors of offices over fifty five levels, and is 250 meters high (the highest building in Spain, the fourth highest in Europe). It could be understood as an arc with connections and services. The nucleus is structural and placed in a way to leave an empty space free of supports in the centre and keep the façade completely open oriented to the city and the Sierra de Madrid. Three floor plan types are spread over the different levels of the Sacyr Vallerhemoso Tower; a double skin disappears on the lower floors to illuminate the inside courtyards. The geometry is based on tangent circles that appear from an equilateral triangle, aiming for the thinnest tower to solve the client's space requirement.

The Cristal Tower by Pelli is 249 meters high and has 46 floors for offices, five for mechanical engineering and a double skin to improve sustainability of the building. Eighteen supports located on the perimeter and a central core of concrete are leaving spaces for offices surrounding this area. The Espacio Tower is 227 meter high and is based on the idea of reproducing an organism which grows while it is going up. The tower looks like a sculpture. Ut contains 54 floors of offices, resting areas, technical floors and sports facilities surrounded by a double glazed curtain wall that provides natural light, good room temperature and humidity inside, without any noise.

Urban fragmentation enhanced by new headquarter of large companies

In the 1990s, the conventional dual city (centre-periphery) became a fragmentary tapestry of low spatial micro-segregation. That was the time of the construction of the new headquarters of big companies, such as City of Santander (a major Spanish bank or City of Telefónica (Spain prime telecom company), following the idea of creating autonomous company towns on the urban fringe according to the American model. The city of Santander is a simple closed unit near the new residential growth of Boadilla and the area of commercial activities in northern Alcorcón. All of them are considered isolated units inserted into an urban structure of great diversity and complexity, as these new units are mono-functional, typologically monotonous and homogeneous.

Kevin Roche's proposal for the City of Santander was based on the idea neoclassical architecture with all the axis of the whole building complex oriented towards the central dome of the main building. Although the main species of trees came from the north of the country, hundreds of ancient oaks and cypresses were planted in an artificial platform to mix the Mediterranean landscape with the northern one. Santander City is located in the extension of Boadilla del Monte, close to the new highway which connects it with Madrid city centre. The ancient area called Prado del Espino forms part of this new city, It houses all the central services of the institution in an artificial platform above the ground. Below it, are parking areas and public transport access to the city, above it there are three floors of offices surrounded by gardens, laid out in a geometrical grid with sculptures placed all around it. The main building lies in the middle of the complex. It is covered by a huge dome over the main hall as a metaphor of a sacred space that contains the art collection of the institution in the basement of the building.

Although proposal by Rafael de la Hoz for the City of Telefónica (Spain main telecom company) was not the first price of the competition for the new headquarters, it was the most convenient for the requirements of the company. Four prisms made of glass located at the four corners of the site create a fragmented but Cartesian space inspired by Mies van der Rohe. Located in Alcobendas, close to the M40 highway, the site plan consists of a huge square in the middle surrounded by the building complex.

OUTLOOK

The current economic crisis in Spain provides a possibility to analyse all these projects and to rethink the idea of 'fractality' which seems to underpin the current design fashion for the contemporary city. The problem is that this idea leads to a fast consumption of non-renewable resources, land and energy. The question is: how is it possible to increase the complexity of the city without increasing wasted resources?