

The ‘Barcelona, City of Knowledge’ project and 22@ Barcelona

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I. Introduction

Since the engineer Ildefons Cerdà's plan for the reform and extension of Barcelona in 1859 (*Pla de Reforma i Eixample de Barcelona*), the city has undergone various urban development interventions of great scope that have made it a benchmark for scholars of urban phenomena. Some notable examples are the Jaussely Plan of 1905, Le Corbusier's Macià Plan of 1934 (which was not implemented, due to the Civil War), the General Metropolitan Plan of 1976, and the transformation that took place as a result of the Olympic Games of 1992. Major international events, such as the Universal Exhibition of 1888 and that of 1929 (on electrical industries) were also major drivers of economic and urban development.¹ The transformation of Poblenou that began in 1998, together with the opening up of Avinguda Diagonal to the sea and the Universal Forum of Cultures, constitute, in my understanding, an important link in this chain of plans and projects. In particular, what is known internationally as the 22@ Barcelona project has aroused great interest in the field of urban development and in that of local economic development.

The redevelopment of the industrial areas in the Poblenou-22@ BCN District of Activities must be considered within the context of economic and urban devel-

opment operations of greater scope, known as the ‘Barcelona, City of Knowledge’ project, which is promoted by Barcelona City Council.

The aim of this article is to identify the economic model underlying the urban development proposal of 22@. This model is characterized by the internationalization of the economy, the tertiarization of activity, the increasing flexibility of production, and the emergence of a new technological paradigm based on information and communication technologies.

Barcelona, which is one of the few cities in southern Europe that was in the front line of the commercial revolution in the fourteenth and fifteenth centuries and played a leading role in Spain in the industrial revolution during the second third of the nineteenth century², faced at the end of the twentieth century a new technological and organizational revolution known as the Knowledge Economy.³

The economy and urban planning must adapt to the new production context. In particular, zoning, which is one of the main instruments of urban planning, must be altered to fit the new reality of production. Zoning, which emerged as a central tool of functionalist urban development, must be adapted to the new reality, and along with it planning must be modified. We can no longer seek specialization in zones by defining uses on the basis of a classification of production sectors (specifically in indus-

1. Joan Busquets, *Barcelona*. La Construcción urbanística de una ciudad compacta, Ediciones del Serbal, Barcelona 2004.

2. Jordi Nadal has developed these arguments in different studies. On Poblenou and its evolution since the industrial revolution see: Jordi Nadal and Xavier Tafunell, *Sant Martí de Provençals: pulmó industrial de Barcelona, 1847-1992*, Ed. Columna, 1992.

3. For information on the knowledge economy and the city, and on measurement of the knowledge economy in urban areas and its application to Barcelona see: Joan Trullén, Josep Lladós and Rafael Boix, ‘Economía del conocimiento, ciudad y competitividad’, *Investigaciones Regionales*, no. 1, 2002, p. 139-161.

trials zones) into 'what' they produce. To generate increasing yields, we should not try to achieve vertical integration in large production plants, sector zoning and radical separation of uses. Instead, we should generate economies outside the company that come from different sectors and converge in the territory. The important factor is no longer 'what' is produced, but 'how' it is produced. As Giacomo Becattini stated, to understand the keys to contemporary economic development, the unit of analysis should shift from 'sector' to 'district'⁴.

Production has moved away from large industrial production plants that incorporate most of the production stages and added value. The focus has shifted from specialized industrial cities. Instead, the form of production in the knowledge economy shall essentially be flexible and have a considerable intangible component. In this form of production, the city plays an important role: it provides the urban dimension that generates economies associated with diversity; and economies of location are associated with the integration in a territory of groups of innovative companies dedicated to specific production activities.

The cities compete more than the companies.⁵ Therefore, the conditions need to be created so that dynamic external economies can emerge in the territory of a metropolis. The dimension of metropolis is relevant, as is the grouping of innovative companies into clusters and Marshallian industrial districts. These territorial factors are crucial to competitiveness.⁶

Therefore, old spaces with industrial zoning that are situated in central areas could be used for new production activities under certain conditions. This notion goes far beyond the concept of a digital or information city proposed at the beginning of the 1990s in some scientific circles. Here what we are talking about is the city of knowledge.

2. The 'Barcelona, City of Knowledge' project

The Barcelona, City of Knowledge project is the main focus of Barcelona's economic and urban development policy after the Olympic project. The Barcelona project gave rise to what would later become known as the 22@ Barcelona project. Joan Clos, who was chosen to replace Pasqual Maragall as Mayor of Barcelona in September 1997, made the concept of 'city of knowledge' a guiding principle of municipal government action:

Barcelona must be faithful to its tradition of modernity, which has been demonstrated so many times throughout its history, and must accept that the knowledge revolution shall be a driving force in this part of the world. Barcelona is in a favourable situation to position itself as a leader.⁷

In response to this idea, an ad hoc structure was created in October 1998 to promote the new project, with the appointment of two commissioners: one for urban planning and one for the economy.⁸ After the elections of May 1999, the post of councillor for the City of Knowledge was created and headed by Vladimir de Semir. The Municipal Action Programme 2000-2003 described the objective of making Barcelona a city of knowledge.

The economic context in which this proposal arose was strongly influenced by two fundamental factors: weakening of the major impetus of the Olympics, which boosted economic activity between 1986 and 1992; and the recession of 1993-1995, which had a severe effect on Barcelona until 1996. Barcelona needed to turn towards new objectives and the focus became the concept of the city of knowledge. The adoption of a proactive strategy has characterized municipal economic policy since 1998.

4. Giacomo Becattini, 'Del 'sector' industrial al 'districte' industrial. Algunes consideracions sobre la unitat d'anàlisi de l'economia industrial', *Revista Econòmica de Catalunya*, no. 1, 1986. Michael Porter's clusters or groups of innovative companies are concepts that are very similar to Becattini's notion of 'Marshallian industrial district'.

5. Roberto Camagni, *Economia urbana*, Antoni Bosch (editor), 2005.

6. Joan Trullén, 'Factors territorials de competitivitat a la Regió Metropolitana de Barcelona' in *Revista Econòmica de Catalunya*, no. 34, January 1998, p. 34-51.

7. Joan Clos. 'Una ciutat amb idees', Barcelona, Metròpolis Mediterrània, no. 1. Monograph on Barcelona, City of Knowledge, 2001, p. 4. The reference was to Richard V. Knight (1995): 'Knowledge-Based Development: Policy and Planning Implications for Cities', *Urban Studies*, 32.

8. José Antonio Acebillo, Director of Barcelona Regional, Commissioner for Infrastructure and Urban Planning, and Joan Trullén, Commissioner for Economic and Territorial Assessment and Diagnosis for the Barcelona, City of Knowledge project were appointed by Resolution of the Mayor's Office, 22 October 1998.

In this line, the economic strategy was based on the emergence of 'a new macroeconomic context from the time of integration into the monetary union, with a reduction in nominal and real interest rates that would facilitate the adoption of strategic changes, which would necessarily involve the mobilization of considerable financial resources'⁹. Unlike the pattern found in many Spanish municipalities, Barcelona would not prioritize residential construction, but a change in the economic basis, supported by new concepts of urban development.

Preparatory work on the new strategy began in the mid-1990s. In fact, the *Revista Econòmica de Catalunya* published two monographs in issues 33 and 34 on *La Barcelona metropolitana: economia i planejament* [Metropolitan Barcelona: economy and planning]. The issues contained eighteen articles that described the state-of-the-art in these matters and in other related areas such as finances, ecology, demography and mobility in the metropolis¹⁰. The aim was to identify elements that could be used to construct a new story after the Olympic project, which had put Barcelona on the world map for the first time. A change in scale of the Barcelona metropolitan area was detected, as well as Barcelona's new role as a central supplier of services to the network of metropolitan cities, and the considerable competitive capacity of a metropolis in which SMEs are predominant, due to the existence of territorial factors of competitiveness. A new story needed to be created to bring together the city's strategy. And this story would be defined in a new project for the city: Barcelona, City of Knowledge.

Next, we will highlight some of the main points of the urban development strategy.¹¹ First, the city of Barcelona's function as a central server for the metropolitan area was identified. In other words, the city needed to adopt functions of a tertiary nature, and consequently traditional industrial and logistic uses would be replaced by tertiary ones. Second, the city should expand not towards the west, as it had in the past, but towards the east. To achieve this, two actions were required: Avinguda Diagonal needed to be opened to the sea, and Poblenou needed to be transformed. The third point was to associate this new strategy with a major infrastructure decision: to make La Sagrera the central station for a new high-speed train, and thus opt to redevelop the Besòs area and the triangle Sagrera-Besòs-Front Marítim. A singular building (the Jean Nouvel water tower) would act as a sign of the new direction of urban growth of Barcelona towards the east.¹²

The economic and territorial strategy of the Barcelona, City of Knowledge project was drawn up between October 1998 and May 1999. An executive summary was subsequently published without the statistical workings in the monographic issue of the journal *Barcelona, Metròpoli Mediterrània*, [Barcelona, Mediterranean Metropolis] in 2001, which was dedicated to the City of Knowledge project.¹³

A description of Barcelona's economic model and a specific analysis of the city and the knowledge economy were published in 2001 by Barcelona City Council in the book *La Metròpoli de Barcelona cap a l'economia del coneixement: diagnosi econòmica i territorial de Barcelona 2001*

9. The new financial framework that was emerging was comparable to that found at the start of the twentieth century with the repatriation of capital from Cuba and the Philippines, which provided the opportunity to fund one of Barcelona's biggest urban development operations: the urban reform and construction of the Via Laietana road. This point had been debated in one of the last urban strategy councils chaired by Pasqual Maragall. The transformation of Poblenou was a project of comparable financial magnitude to the urban reform of Via Laietana eighty years earlier. On the funding of the reform and construction of Via Laietana, see Francesc Roca i Rosell, *Política econòmica i territori a Catalunya, 1901-1939*, Ed. Ketres, Barcelona 1979.

10. These issues were presented at Barcelona City Council's *Saló de Cent* in April 1998.

11. The urban planning strategy would mainly be defined by José Antonio Acebillo. The subsequent urban transformation project for Poblenou, led by Ramón García-Bragado, had to be in line with this strategy. Xavier Casas, the

deputy mayor and the president of the Commission for Urban Planning, Infrastructures and Housing would play a central role in the urban development of Barcelona between 1998 and 2008, particularly that of Poblenou. See Ramón García-Bragado, in the preface of the book *22@ Barcelona. 10 anys de renovació urbana*, Barcelona, 2011.

12. The group of specialists who drew up the Modification of the General Metropolitan Plan for redeveloping the industrial areas of Poblenou, approved in July 2007, was comprised of the Urban Planning Manager, Ramón García-Bragado (who proposed the 22@ name for the project), the architects Ricard Fayos, Àurea Guillén and Pau Batlle, the economists Rafael González Tormo and Joaquim Clusa, who drew up the economic and financial study, and the jurists Enric Lambies and Sònia Cobos. See the preface of the book *22@ Barcelona. 10 anys de renovació urbana*, Barcelona, 2011.

13. This monograph includes different contributions that together give an idea of the nature of the project. It includes studies on ICT (Tere Serra), R&D (Jordi

[The Metropolis of Barcelona Towards the Knowledge Economy: An Economic and Territorial Analysis of Barcelona 2001].¹⁴

The economic and territorial strategy is set out in the study 'Projecte Barcelona Ciutat del Coneixement. Informe Final. Elements per a una diagnosi econòmica i territorial' [Barcelona, City of Knowledge Project. Final Report. Elements for an economic and territorial analysis], published by the Department of Applied Economics, UAB, on 26 May 1999. This study was part of a programme of research on the urban and metropolitan economy of Barcelona.¹⁵ The main hypotheses and proposals are given below.

a) The importance of know-how and knowledge to explain the generation of added value in advanced economies and the continuity of production. Together with labour and capital, knowledge will gain relevance as a production factor. Intangibles such as education are increasingly important. The relevance of capital is diminishing. Codified knowledge is becoming less important.

b) Skilled labour is becoming more important than unskilled labour. 'Tangible' capital is increasingly important.

c) The growing importance of increasing returns in industrial and service sector production, which leads to further specialization of territories. The technical change is occurring both in industrial and service sectors. For the first time, economies of scale, scope and network are affecting the service sector considerably and increasingly.

d) The importance of territorial factors to explain the continuity of industrial and service sector production.¹⁶

The notion of a knowledge-based economy is further reaching than the concept of an 'information society'. It not only includes knowledge of a scientific nature or from advanced research, but also knowledge of different production areas. It distinguishes between information (codified knowledge) and non-codified or non-codifiable knowledge.¹⁷

In Barcelona, one opportunity to exploit was the existence of a strong tradition of industrial know-how, built on a foundation of arts and trades and a worldwide reputation in design and art, and in fields related to medicine and health, training and knowledge transmission. Some of these areas will be brought together in clusters or groups of innovative companies based in Poblenou.

On the basis of works by Masahisa Fujita and Takatoshi Tabuchi, a process of recentralization of knowledge-intensive production activities was identified in large metropolises, in contrast to trends in the 1970s and 1980s, which showed greater growth of medium-sized cities. Considerable economies of agglomeration would emerge that would generally boost the process of relocation of the most knowledge-intensive activities to the centres of large metropolises.

Behind the growth in economies of agglomeration lies: economies of scale in the provision of public services (international airports, major ports, large hospitals, large universities and research centres) and economies of location (through cross-fertilization as in Jacobs, spe-

Camí, 22@ BCN (Ramón García-Bragado), indicators for 'Barcelona, City of Knowledge' (M. Antònia Monés), urban ecology (Salvador Rueda), economic activity and employment in the Barcelona as a city of knowledge (Maravillas Rojo), culture (Ferran Mascarell) and education and training in the knowledge society (Marina Subirats). The Technical Programming Unit of Barcelona City Council, headed by M. Antònia Monés, drew up a series of indicators for central themes in the new strategy, including the penetration of ICT and the Internet, the quantification of advanced business services, knowledge centres, and ICT production, among others. A map of the city of knowledge was drawn up for Barcelona, which precisely identified the presence in the territory of educational centres, libraries, theatres, museums, auditoriums, exhibition rooms, and highlighted the uneven distribution in the municipality of the offering of these services, particularly in the Sant Martí, Nou Barris and Sant Andreu districts.

14. Joan Trullén, *La metròpoli de Barcelona cap a l'economia del coneixement: diagnosi econòmica i territorial de Barcelona 2001*. Ajuntament de Barcelona, Gabinet Tècnic de Programació, Barcelona 2001, with foreword by M. Antònia Monés.

15. This programme of research in the UAB's Department of Applied Economics resulted in various publications, such as the Pla Delta I. El

model econòmic i territorial de Barcelona (1995) and *Noves estratègies econòmiques i territorials per a Barcelona (1998)*. These studies were promoted by Narcisa Salvador until 1998 and by M. Antònia Monés from 1999, from Barcelona City Council's Technical Programming Unit. In addition, Carola Adam collaborated extensively (with Natividad Hernández, Hugo Fuentes and Guillermo Gandara, among others) and subsequently Rafael Boix (with José Antonio Santana and Rafa Porcar). Rafael Boix headed the study 'Barcelona ciutat del Coneixement. Economia del coneixement, tecnologies de la informació i de la comunicació, i noves estratègies urbanes', Barcelona City Council's Technical Programming Unit, 2004.

16. *Projecte Barcelona Ciutat del Coneixement*, May 1999, p. 17.

17. Knowledge includes both categories and codes for interpreting the information itself, abilities or specializations with tacit content, and solutions to problems or research of a heuristic nature that cannot be well defined by algorithms. See Moses Abramovitz and Paul A. David, *Technological Change and the Rise of Intangible Investments: The US economy's Growth Path in the Twentieth Century*, 1997.

cialization in certain activities or Marshall, Arrow and Romer externalities). In addition, the increasing importance of network economies has also been detected (Roberto Camagni, Carlo Salone).¹⁸

The 'Barcelona, City of Knowledge' study identified a change in economic base in Barcelona, and detected some trends, including the following:

a) Loss of relative importance of industry and its metropolitan decentralization. Two thirds of the metropolitan industrial base are outside of Barcelona. Consequently, Barcelona increasingly acts as a service provider for the metropolis.

b) Greater cyclical sensitivity in industry than in services.

c) Sharp increase in the demand for land for knowledge-intensive tertiary activities.

d) Poly-nuclear nature of the metropolis of Barcelona, with considerable concentrations of industrial activities in historic metropolitan towns and cities, and concentrations of the tertiary sector in Barcelona itself.

e) The metropolis is not a city of cities, but a poly-nuclear metropolitan area that is diverse in general, but specialized in certain production activities in its main nodes. Barcelona has strong economies of location for many tertiary activities. This is considered to be highly relevant in the new strategy of the city of knowledge, promoted by the municipality of Barcelona.¹⁹

f) Spending on research and development has been found to be insufficient in comparison with other European metropolises. Shortfalls have also been found in the stock of human capital per employee. Consequently, these areas need to be strengthened.

The strategic consequence of this evaluation is clear: 'Barcelona, as the central city of a poly-nuclear metropolitan region, must strengthen its specialization in knowledge-intensive activities'²⁰. This has an economic and territorial consequence:

The traditional urban economic strategy of Barcelona was based on the fact that the predominant economic

activity was manufacturing, and that zoning of land uses in the central city of the metropolis was essential to maintain manufacturing activities. To pass from an industrial manufacturing model to a model adapted to the technological revolution, it is essential to open up the 22a zoning to these new activities, to protect their production and employment base.²¹

The sixth section of the document is on 'Poblenou, Technological District'. It proposes the establishment in Poblenou - and within a new scientific, technical and cultural axis that covers Nou Barris, Sant Andreu and Sant Martí - of a new technological district to strategically locate productive, research, learning and development activities that are knowledge-intensive. The instruments proposed to meet this objective include those of a town planning nature and those of a university and research and development nature. Furthermore, to implement this proposal to attract new technological activities of a scientific, technical and cultural nature, a new industrial land policy needed to be defined to include these activities in the industrial zoning: 'The notion of sector must be replaced by that of activity, to promote knowledge- and employment-intensive activities in old zones with 22a designation'.²²

One of the main arguments in all of this debate is that the new knowledge-intensive activities are more employment-intensive than industrial manufacturing activities.

Together with a specific approach centred on land uses, we should focus on the importance of creating an environment with a high quality of urban development in the Poblenou zone that includes 'educational services to cater for a population from different countries and cultures with a high degree of mobility'.²³

To strengthen new research and development activities, a new university centre for teaching and research needs to be created in Poblenou. To achieve this, land must be provided to meet the space requirements of these uses, and new forms of managing these services

18. A later systematization can be found in La metròpoli de Barcelona cap a l'economia del coneixement: diagnosi econòmica i territorial de Barcelona 2001, Chapter 3.

19. Projecte Barcelona Ciutat del Coneixement, May 1999, p. 22.

20. *Ibid.*, p. 29.

21. *Ibid.*, p. 29.

22. *Ibid.*, p. 31.

23. *Ibid.*, p. 32.

will be needed to facilitate interaction with the environment, in a context of transition from the Humboldtian University to the post-Humboldtian.²⁴

3. Zoning based on the knowledge economy in the 22@ Barcelona strategy

The new economic and territorial strategy laid out in the Barcelona, City of Knowledge project has an important consequence for urban development: the need to increase the land available for knowledge-intensive activities, particularly in the municipality of Barcelona. However, much of the land available for locating economic activity in Barcelona is designated in the General Metropolitan Plan as industrial.

Studies on the location of economic activities in the metropolitan area indicate that the demand for industrial land in the municipality of Barcelona has decreased, whilst the demand for land for the service sector has increased considerably.²⁵ In addition, service sector activities have two essential characteristics: high employment density and high demand for centrality. This opens the door to reusing old industrial land for new service sector activities.²⁶

Furthermore, there was a considerable amount of industrial land available in central zones of the metropolis, particularly in the districts situated in the north and east of Barcelona. This land is classified as industrial and is designated as 22a in the General Metropolitan Plan (PGM). This is consistent with an economic model based on the specialization of Barcelona in manufacturing production.

The aim is now to modify this traditional zoning instrument to adapt it to the new strategy of Barcelona as a city of knowledge: 'To pass from an industrial manufacturing model to a model adapted to the new technological revolution, it is essential to open up the 22a zoning to these activities, to protect their production and employment base'.²⁷

However, the question was how to achieve this. The aim was not simply to expand the activities in the 22a zoning to include ICT activities, but to incorporate a wide range of activities that are 'knowledge-intensive'. Teams of engineers who worked on the definition of the @ activities, led by Miquel Barceló, had a vision that was focused on ICT in particular, and based on the constitution of a 'digital city', along the lines of cities such as Bangalore or projects such as that of Silicon Alley in New York or the Cyber district of Boston.²⁸ However, now the aim is to adopt a more general vision, based on the principles of the knowledge economy, and implemented according to the new paradigm.

Indeed, the classical zoning is based on the notion of a production sector defined by the characteristics of what it produces. The new zoning should be based on 'how' it is produced, in accordance with the criteria in the paradigm of the knowledge economy. If we had opted for a highly precise definition of @ activities as those that are strictly related to the production of information and communication technologies, then an extension of the existing list of activities of a manufacturing nature by incorporating ICT manufacture and services would have been sufficient. In contrast, if we adopt a vision of the knowledge economy, as foreseen by the OECD, then activities that produce ICT and those

24. Here the main reference was the OECD document *Science, Technology, Industry*. University Research in Transition, Paris, 1998, p. 7 and 8. A document by Pedro Conceição, Manuel V. Heitor and Pedro Olivera was also used, entitled: 'Expectations for the University in the Knowledge-based Economy', and published in *Technological Forecasting and Social Science*, 58, 1998, p. 203-214.

25. Joan Trullén (1998): *Noves estratègies econòmiques i territorials per a Barcelona*, p. 20.

26. On changes in employment demand in Barcelona see 'Tendències de l'ocupació a Barcelona a partir de INSS i LAE (1993-1997)', research agreement between *Barcelona Activa* and the UAB, Joan Trullén with Rafael Boix and Juan Antonio Santana, Department of Applied Economics, 25 September 1998, duplicated.

27. 'Introducció: la nova zona 22@ i la ciutat del coneixement', Chapter 2 of the 'Modificació del PGM per a la renovació de les àrees industrials del Poblenou-Districte d'Activitats 22@BCN'.

28. Studies that were first promoted by Miquel Barceló from the Catalan Institute of Technology and then by the 22@ Barcelona development company, on the introduction of ICT in Barcelona and in the metropolitan area, were essential to define the technological and business strategy of Poblenou, and, in particular, the initial list of @ activities. In addition, Barceló boosted the location of the Catalan Institute of Technology in Poblenou, and was behind the technological drive focused on information and communication technologies. A detailed description of the project and its relation with the model of the digital city can be found in Antoni Oliva, *El districte d'activitats 22@bcn, Aula Barcelona, Barcelona, 2003*.

that intensively use ICT and have highly qualified human capital should be included. This latter perspective requires new dynamics, and is supported by the 'Barcelona, City of Knowledge' document and other previous economics studies.

Therefore, on the basis of studies on the location of economic activity, it was argued that much of the demand for land in Poblenou would be for non-industrial activities that are mid- to high-tech or high-tech, and services in particular.²⁹ These activities have one fundamental characteristic: they have very high employment density.³⁰

Therefore, a proposal was made to adopt the OECD's notion of knowledge economy, set out in its document *OECD Science, Technology and Industry Scoreboard 1999: Benchmarking Knowledge-based Economies*. This led to the adoption of general criteria rather than just lists of the sectors and subsectors defined in national classifications of economic activities; and to the use of a method for approving proposals that required the formation of an advisory commission to evaluate whether proposed activities met the established criteria.

In its first document to propose how to measure knowledge-based economies, the OECD warned of the adoption of simplistic criteria:

The importance of technology-based activities has often been approximated by the share of high-technology industries in manufacturing. However, this approach focuses only on the main producers of high-technology goods.

It is desirable to include other activities that are intensive users of high technology and/or have the relatively highly skilled workforce that is required to benefit fully from technological innovations. Therefore, in

addition to the commonly identified manufacturing industries, service activities such as finance, insurance and communications are included here.

This approach went far beyond what was initially established and what emerged from the model of a digital city.³¹

These activities were identified by the acronym CITI and the categories 72 (communications), 8 (bank insurance, estate agents and business services) and 9 (community services, social services and personal services).

Consequently, a criterion was adopted that enabled a wide range of service sectors to be included in the @ designation.

Finally, the approved text included in detail a wide range of ICT manufacturing and service activities, and also referred in general to 'those other tertiary activities that are based on knowledge and increase competitiveness, according to the *OECD Science, Technology and Industry Scoreboard 1991*, page 18, particularly in technological, commercial and financial areas'.³²

This important amendment was accompanied by the adoption of a list of criteria that @ activities had to meet, which are as follows³³:

- a) Use production processes characterized by intensive use of new technology resources.
- b) Have a high employment density (number of workers or users/area).
- c) Generate high added value.
- d) Be directly related to the generation, processing and transmission of information and knowledge.
- e) Not pollute or be a nuisance, and be suitable for central urban environments.

The decision to include a reference to new knowledge-intensive activities and to potential changes in the OECD method, and to establish some principles or gen-

29. 'Noves estratègies...' p. 20 and 21.

30. A comprehensive study was carried out on the location of economic activities in Barcelona, in the district of Sant Martí and the blocks of Poblenou, based on the business tax and covering the period 1992-1997. The study revealed a trend of deindustrialization and tertiarization and examined at two-digit level the area of the blocks in Poblenou. See Joan Trullén and Rafael Boix, 'Tendències recents de l'activitat econòmica al Poblenou de Barcelona a partir de les dades de l'impost d'activitats econòmiques', collaboration agreement between

Barcelona City Council and the UAB, Department of Applied Economics, 1999.

31. See Miquel Barceló and Antoni Oliva, *La ciudad digital, Pacte Industrial de la Regió Metropolitana de Barcelona*, Beta Editorial, L'Hospitalet de Llobregat, 2002, p. 121.

32. *Modificació del PGM per a la renovació de les àrees industrials del Poblenou-Districte d'Activitats 22@BCN*, p. 249. Annex 1. Relació d'activitats @.

33. *Ibidem* Art. 7.2, p. 227.

eral criteria for assessing whether an economic activity was suitable for inclusion within @ activities, required the creation of decision-making procedures that were different to those that had been used up to that point in Barcelona's urban planning regulations. Specifically, it was agreed to create an advisory commission, comprised of people of recognized technical and professional ability in the area of ICT, the information society, and the knowledge economy. This commission would be appointed by the Mayor of Barcelona, and would have three objectives: report on the special plans that would have to develop @ activities, propose updates to the list of @ activities and assess, in cases of doubt or imprecision, whether or not an activity met the criteria established in the @ regulations.

4. Conclusion: Poblenou, 22@ Barcelona District of Activities

In this article, we focus on the inclusion of the process of redevelopment of the industrial areas of Poblenou and 22@ Barcelona in a broader project to transform Barcelona, which was drawn up between 1999 and 2000 and which is known as Barcelona, City of Knowledge. This project not only covers strategic aspects of economy and urban planning, but also a wide range of fields such as technology, research and development, culture, education, employment and information.

Barcelona's new strategy is based on economic and urban planning theories brought together in the principles of a new urban economy (the cities compete, according to Roberto Camagni) and a new theory of Marshallian industrial districts (the old criteria of classifying activities by sectors no longer apply, as many of the advantages are in the 'district', says Giacomo Becattini).

If the key is not the 'sector' but the 'district', then urban zoning must change. The old system of zoning designation identified the sector as the basic economic category. However, in the redevelopment of Poblenou a new classification of 'activities' is proposed that

includes ICT and service activities that are 'knowledge-intensive', according to the OECD definition.

To pass from an industrial manufacturing model to a model of knowledge economy, it is essential to open up the new zoning to these activities, to promote a new production base with high employment density. This will lead to the introduction of the new 'district of activities' 22@ Barcelona, within the general project of 'Barcelona, City of Knowledge', of which the district forms part.

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