



## URBAN COHESION: A PUBLIC SPACE NETWORK ASSESSMENT<sup>1</sup>

Ana Júlia Pinto Centro de Sistemas Urbanos e Regionais (CESUR - IST) a.julia.pinto@ist.utl.pt

Antoni Remesar Centre de Recerca Polis (CRPolis – UB), aremesar@ub.edu

Presentado: 12/02/2014 (Italia) Aceptado: 17/03/2014 (Italia) Publicado: 20/07/2015

### ABSTRACT

Urban territories frequently face problems related to the lack of cohesion - a working fact for planning and urban design processes. If a certain territory is not accessible or visible and is not socially and economically balanced, its chances of urban success are practically non-existent. Aiming to tackle these problems, we argue that “city making” must incorporate urban cohesion processes involving two dimensions: [1] the city’s form issues; and [2] its socio-economic and socio-cultural factors.

Our conviction is that public spaces play a fundamental role in the processes of urban cohesion. We consider public space a complex set of elements, linked and related in a dynamic way. Therefore, it is this complexity of spaces, connections, dynamics, relationships and complementarities that makes necessary to consider public space network as a key point for the advancement of urban cohesion.

Intending to contribute to the strengthening of urban cohesion (Pinto & Remesar, 2012a), we propose a method capable of assessing the cohesion of public space networks, not only within the neighbourhood, but also their links to the surrounding city networks. With this method we intend to identify the main critical points where urban cohesion fails, paving the way for the definition of intervention strategies promoting cohesion.

This assessment method, is not limited to the study of the morphological factors, but also includes the social and economic dynamics generated by the public space network. For this reason we do not propose a strictly quantitative methodology, but instead we include qualitative factors, once we consider the dynamics generated by social appropriation and urban functions vital to evaluate urban cohesion processes.

---

<sup>1</sup>This paper was choos by peer-review at the Past Present and Future of Public Space – International Conference on Art, Architecture and Urban Design Bologna (Italy), June 25 – 27, 2014. Conference theme: A – Morphology and Design – Quality of architecture and urban design. Nevertheless the organization just published the book of abstracts, so we edit this revised version of the paper



With this in mind, we have analysed one study case in Barcelona – the Barceloneta neighbourhood, a historic quarter outside the old walled city that is now part of its consolidated urban fabric.

The analysis of this case allows us to assess both (1) the role that the urban layout plays in the configuration of the public space network, forcing us to reflect on the role of “boundaries” as fundamental elements in the articulation among the local and overall public space networks in the city; and (2) the role of several socio-economic dynamics affecting to the everyday life of these neighbourhoods.

**Key words:** Public Space; Urban Cohesion; Public Space Network; Assessment Method.



## THE ROLE OF PUBLIC SPACE PROMOTING URBAN COHESION

The strong urban transformations, characteristic of the last decades of the twentieth century gave rise to the emergence of new urban contexts, introducing new features and dynamics. Some examples are dispersed, polycentric, discontinuous urban areas, or also, the transfer of functions to central urban areas.

These transformations cause changes in the urban structure, introducing a new variety of types and characteristics, important in the current context of territorial dynamics, with direct impacts on urban life. Some problems also appear, associated with these new urban contexts, such as lack of connectivity; physical fragmentation; social segregation and marginalization; lack of diversity of functions or loss of identity and of social and economic dynamics.

Although there are different types and levels of impact for these weaknesses, depending on the urban reality where they occur, we believe that they have a common denominator: the fact that challenges to the cohesion of urban space are introduced, for which it is necessary to find appropriate answers. It is with the aim to better understand these problems and challenges that we concentrate on the cohesion concept genesis, firstly introduced under the designation of Territorial Cohesion, by the policies of the European Union (European Commission, 2004).

Upon the reflection developed around this concept, we stress especially the fact that the idea of cohesion is associated with two complementary dimensions (Faludi, 2006):

[1] that of territorial balance, linked with the physical form of the city and its connections ;

[2] that of the social and economic balance, connected to the equal access to goods and services, but also to the diversity of functions and cultures.

We thus emphasize that promoting cohesion of urban space is not only related to aspects of its morphology, but is also strongly linked with the existing social and economic dynamics.

Therefore, we ask ourselves what answers can we present to face the challenges placed to the cohesion of urban space?

The potential value of public space emerges in this context. We understand public space as a place for the collective expression of the city, able to link and articulate urban territory. We consider public space to be the structuring element of urban fabric and urban life, with an important role in shaping spatial structures, being cumulatively, the support for social and economic dynamics (Jacobs, 1961; Lefebvre, 1974), and playing a crucial role in the processes of appropriation and symbolization of the city (Borja & Muxí, 2003).

In this sense, can public space can be an "agent" capable of promoting cohesion? A quality public space ensures the continuity, permeability and mobility of citizens, benefits processes of identity, structuring the whole city, being able to create and maintain "places" (Borja & Muxí, 2003; Remesar, 2007). To consider the public space as a determinant factor in the process of urban cohesion, meeting the ideas



advocated by Gates (2011) and Borja et al (2003), presupposes the understanding that this space is organized in a systemic way, and not as a sum of isolated spaces. In other words, public space is a set of elements within an articulation logic, forming a coherent whole, being the support for the implementation of new structures of different kinds (economic, social, morphological) (Carmona, 2003), forming a network of public spaces.

Considering public space as the agent that promotes cohesion, our conviction is that the cohesiveness of urban space can be the basic concept, contributing to the guidance of urban interventions and facing current problems and challenges. This belief has led us to develop the concept of urban cohesion (Pinto & Remesar, 2012b; Pinto, Remesar, Brandão, & Nunes da Silva, 2010), in order to analyse the factors that directly affect the processes of urban development. This concept results from the application to an urban scale of the territorial cohesion concept (Comission of European Communities, 2004), with the goal of advancing from territorial strategies to the implementation of specific measures on a city scale (Pinto & Remesar, 2012a).

#### **AN URBAN COHESION ANALYSIS**

As it was defined by the European Union (Comission of European Communities, 2004) our use of the cohesion concept involves two important dimensions (Faludi, 2006):

- > Territorial balance.
- > Social and economic balance.

The concept of cohesion is quite recent and therefore, its definition is not yet fully stabilized, mainly outside the scope of the European directives. We assume that the concept of urban cohesion (Pinto & Remesar, 2012a) only makes sense from the perspective of multi-scale integration. It is extremely important to define strategies of territorial cohesion at a larger scale, but we argue that it is fundamental to outline specific measures which enable intervention in the territory, only possible if we define and analyse cohesion at the urban scale.

In this sense we try to understand, factually, what characterizes a cohesive urban space. Considering that a cohesive urban space should be inclusive, accessible and attractive (Borja, 2003; Project for Public Spaces, 2000) it must:

- > Ensure continuity and permeability of the network of public spaces, making sure that all areas are easily accessible.
- > Be provided with functions which, for their location, the activities they offer, or the social and economic dynamics they promote, are able to attract users
- > Provide a balanced variety of urban functions (housing, facilities, trade, services, etc.), generating dynamic uses of space and promoting equity in access to goods and services.
- > Be able to attract and accommodate different user profiles (age groups, cultures, social classes, etc.), i. e. the coexistence of different actors and the multiplicity of activities/ uses performed by them.
- > Enable the formulation of collective and individual representations of space by its users.



Thus, departing from the classic work of Lynch (1966) we define four values which we consider to be essential in promoting cohesion in the urban space, based on the premise that public space is the engine for its valorisation<sup>2</sup>:

- [ 1 ] Continuity ;
- [ 2 ] Attractiveness ;
- [ 3 ] Diversity ;
- [ 4 ] Identity.

These values are the basis of the cohesion analysis methodology we develop in the following section.

An analysis of cohesion allows planning technicians and designers to understand the problems and potential of a given area, which can facilitate the process of formulating intervention measures and to find adequate answers for its fragilities.

From our perspective, the methodology we present aims to analyse, both the physical connectivity of a public space network, and the phenomena of appropriation and use of public space, or the dynamics they generate. Indeed, the main goal of this analysis is to find the critical points where cohesiveness fails, understanding exactly what are the main problems of cohesion of a public space network, enabling and facilitating the intervention measures and balanced solutions (Pinto & Remesar, 2012b).

It is important, then, to stress the reason why there is a need to build a methodology of this kind? What does this method of analysis adds?

Given that urban cohesion is a concept that involves multiple dimensions and is based on a perspective of multi-scale integration, a methodology of analysis should also be based on this premise. Most existing methodologies evaluate each project for public space on its own, devaluing the relationship of these public spaces with their surroundings. From the perspective of an analysis of urban cohesion, a methodology that takes into account public spaces in an integrated network perspective is necessary, considering that each public space is part of a broader/more comprehensive network, forming a "network of networks". Thus, the proposed method analyses a network of public spaces at a defined scale, but also includes how this network connects and relates to the surrounding ones.

On the other hand, to deepen the "multi -dimensional" perspective, we propose an analysis of the aspects of network connectivity and the phenomena of appropriation and experience of space, seeking to understand the relationships of complementarity and dependence that are established. Contrary to some evaluation methodologies of urban networks (Hillier & Hanson, 1984), under this method, we considered that the physical characteristics are valuable sources of information

---

<sup>2</sup> We are conscious that all the Works that try to evaluate public space trough values, are rooted in the work by Lynch (1960, 1981). To develop his theory Lynch argues that the study should start from intentional behaviours that unfold in a settlement form, "*connecting values of very general and long-range importance*" (Remesar, 2015 pre-print. See also Remesar – Esparza, 2014).



about the cohesion of a network but yet; do not capture the perceptions of its users, nor how they experience space. These experiences establish complex and subtle relationships with the morphological characteristics (Ewing & Handy, 2009).

Additionally, although such an analysis can be applied at any stage of planning or urban design process, it is considered that it will be especially useful to implement as an ex-ante methodology of analysis, primarily functioning as a diagnosis method of the existing public network space. A diagnosis of the problems and potentialities of the public space network to be intervened, allows for the adaptation of the intervention so that it can fit into, with whatever pre-existed in its territory.

The proposed method should be based mostly on a qualitative analysis departing from the study of the morphological factors of the network, but also including the social and economic dynamics generated (Brandão, Carrelo, & Águas, 2002; Project for Public Spaces, 2000; Whyte, 1980). Although some criticism may be aimed at the qualitative analysis, especially about the objective nature of the results (Ochoa, 2011), to address this subjectivity, we propose a judicious method, supported by descriptors that guide the analysis, as well as a theoretical and methodological control and of the interpretation process.

Many of the methodologies for evaluating public space use a set of data difficult to collect, either because they require a large amount of information, because the process of getting them is too complex, or too costly. Thus, we intend that the data collection is as accessible as possible, supported mainly by fieldwork, valuing and privileging direct contact with the territory. On the other hand, it must also be action-oriented. In this sense, we want the criteria of analysis that support this methodology to promote its operability and facilitate the formulation of balanced solutions.

A methodology for the analysis of urban cohesion such as the one we now propose, involves a certain degree of complexity due to the number of factors involved and the relationships established between them. Thus, it is important that the results are legible and easily understandable. This is particularly relevant in diagnosing a particular territory and supporting decisions about the urban interventions to develop, since they have direct impact on the area and what happens therein. Therefore, it is important to map them, not only in order to understand where are the main points where cohesion fails, but also what are the reasons for their failure, the relations with other existing dynamics and their respective degrees of influence.

### **THE METHOD FOR ASSESSING A PUBLIC SPACE NETWORK**

The method presented focuses mainly on an analysis at the neighbourhood scale, attempting to assess the cohesion of their internal network, but also the connections to the surrounding urban fabrics, reinforcing the idea of a "network of networks" (Pinto & Remesar, 2012b). It allows us to analyse the relationship and integration between local networks and those of higher hierarchy in which it is integrated (eg.: the global network of public spaces in the city). With this evaluation methodology, we intend to formulate a set of guidelines capable of guiding the planning and design of public spaces for urban cohesion.

The methodology proposed for the public space network cohesion analysis is divided into three distinct steps:



- > Identification of the primary public space network of the neighbourhood, as a basis on which the entire analysis will focus.
- > Analysis of the network, consisting of three distinct phases, where, in the end, we want a clear and detailed diagnosis of the problems and potentialities of the analysed public space network.
- > Outputs of the analysis, where the guidelines for the processes of urban intervention are defined.

In order to better illustrate the effectiveness of the proposed method, we will be using the application in a practical case - the neighbourhood of *Barceloneta* - which will accompany the explanation of the distinct steps of the analysis. *Barceloneta* is a historic neighbourhood of Barcelona, with a past connected to the fishing industry, which grew outside the city walls. It is characterized by a morphological structure based on the principles of military urbanism of the eighteenth century, being an important part of the heritage of the city, integrated in the consolidated urban fabric of Barcelona.

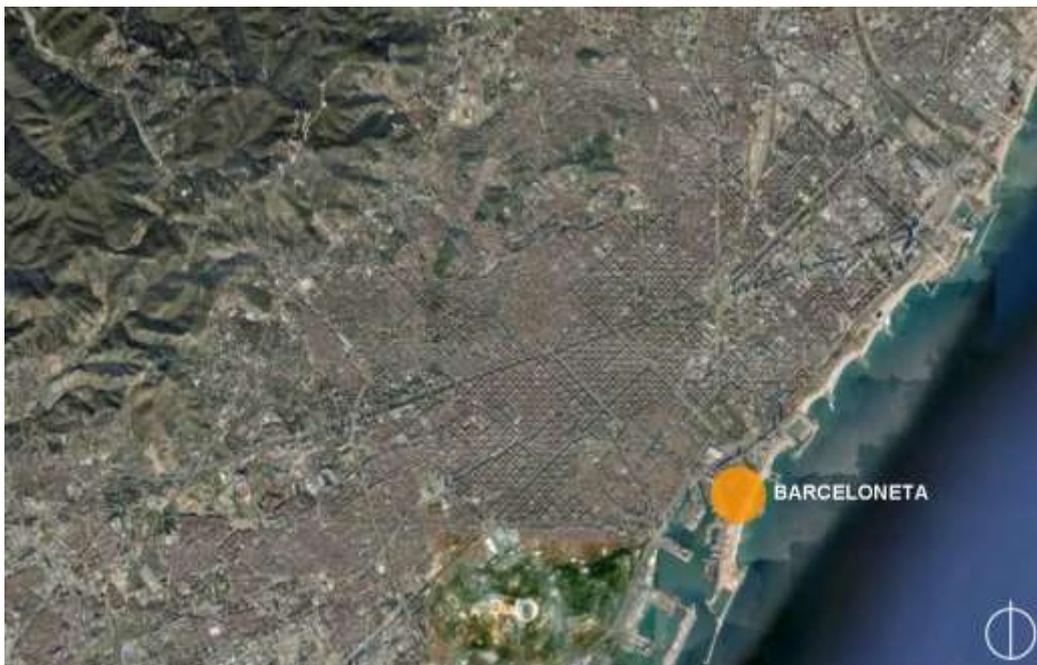


Figure 1. *Barceloneta* neighbourhood location.

### **Step 1: Public space network identification**

At this stage we identify the network of public spaces on which the entire analysis will be focus. For the delimitation of this network, the first step is to identify the areas that play a pivotal role, acting as anchors, i.e., as nodes of attraction or generators of dynamics, able to attract users of the neighbourhood as well as of other areas of the city. These are spaces that, either by their, the activities they offer or the social and economic dynamics they promote, function **as anchors**, structuring the entire network of public spaces. They are identified according to four main criteria:

- [1] Location and morphology;



[2] differentiated supply;

[3] points of confluence;

[4] Attraction potential.

Once the main anchor spaces are identified, it is important to analyse the primary connections between them. These connections, together with the identified anchor spaces, constitute the primary network of public spaces in the neighbourhood, where the largest and most diverse number of activities and functions is concentrated, thus generating the major social, cultural and economic dynamics.

Moreover, this methodology must take into account the characteristic of multi-scale integration. For this reason, the proposed methodology, takes into account the integration of the neighbourhood in the surrounding networks of higher hierarchy. It is also important to identify the main connections between the internal public space network and external networks, not only from the perspective of the mobility of citizens, but also with regard to the diversity of dynamics that are capable of promoting relationships of complementarity with the various networks of the city.

In short, the network of public spaces, on which the analysis of cohesion will focus, consists of [1] a set of anchor spaces (local scale and the scale of the city), [2] the main links between these anchor spaces; [3] the primary connections between the internal network of public spaces in the neighbourhood and external networks. The sum of these spaces constitutes the basic "grid" for the analysis of urban cohesion of the neighbourhood, as we consider that it is on this network that occur the main factors capable of promoting cohesion or cause fragmentation.

The primary network of public spaces in the *Barceloneta* neighbourhood is shown in Figure 2.



Figure 2. Public space network of Barceloneta neighbourhood.



### ***Step 2: Cohesion analysis***

At this stage the central body of analysis is developed, taking as input the previously identified public space network of the neighbourhood.

Meeting one of our fundamental objectives: building an operative analysis, it is necessary to define specific descriptors that allow an expedite application to the territory. In line with the defined values for urban cohesion, the analysis is structured on four key dimensions:

- > Form and Legibility - An easily readable urban fabric, which promotes continuity at the expense of fragmentation, that is balanced in its dimensions, allowing the existence of reference elements, contributes to the network cohesion.
- > Access and Connections - A cohesive network is easily accessible, allowing the movement of their users to be clear and comfortable, making it pleasant to use.
- > Uses and Activities - The uses and activities are the basis of social and economic dynamics generated in a network, without which it is not possible build a cohesive territory. They are the generators of flows and movements of users in the public space network.
- > Sociability and Identification - Sociability, i.e., relationships and interactions that users establish among them, in public spaces, is an essential condition for the cohesion of the network.

These dimensions allow us to move to the formulation of the descriptors that will operationalize the proposed methodology, using fieldwork (favouring direct contact with the territory).

A descriptor aims to specify how to measure the fulfilment of objectives, serving as a basis to describe, as objectively as possible, the performance of the alternatives compared to the same criteria (Bana e Costa & Beinat, 2005; Batista e Silva, da Graça Saraiva, Loupa Ramos, & Bernardo, 2013). In the specific case of the methodology proposed, the descriptors are formulated in order to describe the performance of a given territory (eg., if the network of a neighbourhood is easily accessible and walkable).

On the other hand, formulated descriptors are qualitative in nature, as they integrate (beyond the physical/ morphological aspects) factors related to the existing social and economic dynamics, i.e. how users live and appropriate space, the activities they develop, etc., in short, the software of the public space.

We define a set of descriptors for which the information is collected, favouring direct contact with the territory and trying to facilitate the process of collecting the data necessary for the analysis development. Also, in order to make the methodology as operative as possible, we want the set of descriptors not to be too extensive, but still to be comprehensive enough to ensure that all crucial factors for cohesion are covered and are taken into account. A too extensive and exhausting set of descriptors, in addition to hinder the process of collecting the necessary information, also makes the interpretation and processing of this information more difficult, thus limiting the effectiveness of the analysis. The attempt was made that



the proposed set of descriptors was consensual, comprehensive, concise, independent and operational.

In Figure 3, the descriptors that compose the proposed method are presented, structured along the dimensions of analysis that originated them. A set of questions is also presented, to which we intend to answer, through each of the referred dimensions, which describe the set of descriptors formulated.

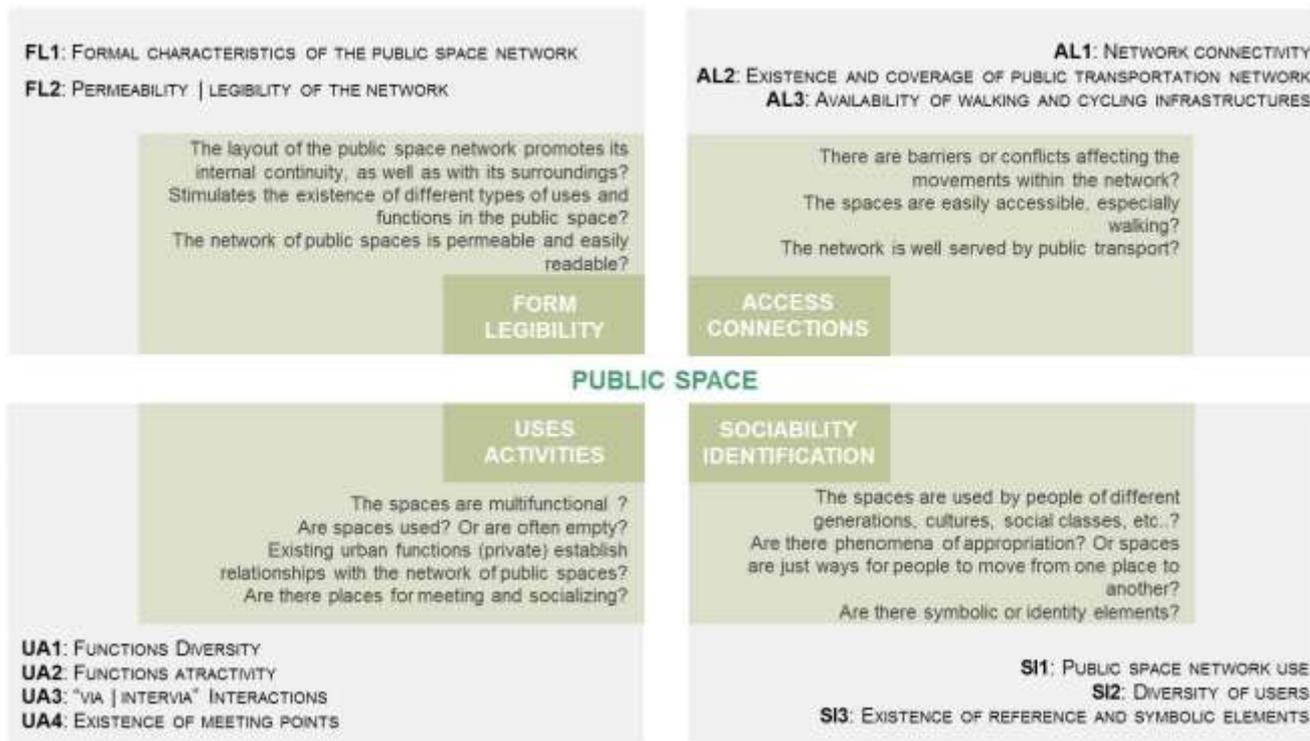


Figure 3. Schematic representation of the analysis dimensions and descriptors.

The information required for each of the descriptors is collected through fieldwork, territory being the primary source. For each of these descriptors, we map each one of the variables (see example of the maps developed for *Barceloneta* in Figure 4), through the construction of interpretative maps, later identifying the main problems and potentialities found, considering the descriptor in analysis.

The analysis of *Barceloneta* public space network shows us that this neighbourhood has features that enhance its urban cohesion - both in terms of morphological characteristics, and with regard to the users experience and phenomena of appropriation - a wise balance between internal and external dynamics being noticed. However, there are some weaknesses in terms of cohesion of the public space network, which are shown in the following table.



Figure 4. Interpretative maps examples for Barceloneta neighbourhood.

PROBLEMS - BARCELONETA	
FORM AND LEGIBILITY [FL]	<p><b>FLa:</b> The narrow streets and tall buildings (between 4-5 floors), characteristic of this neighbourhood, restrict the entry of light into its streets and can convey feelings of insecurity.</p> <p><b>FLb:</b> The orthogonal layout with narrow streets, limits the access and movement of users with disabilities.</p> <p><b>FLc:</b> There are some points where the permeability of the neighbourhood network is broken. These barriers are mainly due to blocks which are closed by seals that restrict permeability, restricting   limiting access.</p> <p><b>FLd:</b> The <i>Ronda Litoral</i> is a strong physical barrier marking the entire northern boundary of the neighbourhood.</p>



<p>ACCESS AND LINKS [AL]</p>	<p><b>ALa:</b> In some parts of the neighbourhood, connectivity and permeability of the network are limited, namely two squares in which the fact that they are practically closed limits the continuity between these areas and the rest neighbourhood.</p> <p><b>ALb:</b> The increasing number of users, in conjunction with the location of the <i>Barceloneta</i> metro station makes it difficult and uncomfortable to use the seafront.</p> <p><b>ALc:</b> The narrow profile of the neighbourhood streets, associated with allowed parking on many streets, conditions the movement of people with disabilities.</p> <p><b>ALd:</b> The strong physical barrier that is <i>Ronda Litoral</i> restricts connectivity to the surrounding networks, the movement of users and the experience of the space.</p> <p><b>ALe:</b> The neighbourhood connects with its surroundings only through two opposite points (where the metro stations are) and which are located in the limits (east and west) of <i>Barceloneta</i>.</p>
<p>USES AND ACTIVITIES [UA]</p>	<p><b>UAa:</b> On the section of <i>Carrer Salamanca</i>, between <i>Carrer de Ginebra</i> and <i>Carrer de la Maquinista</i>, the street shows morphological characteristics favourable to the existence of urban functions and activities. However, this is currently an area of passage that could be used to "open" to the neighbourhood network the two blocks ahead where there are currently some weaknesses in terms of the permeability with the rest of the network of public spaces.</p> <p><b>UAb:</b> There are some weaknesses in terms of interactions "via   intervia" (Cerdá, 1867) in some parts of the neighbourhood. One of these points is the Park of <i>Barceloneta</i>, which, though it is a public space with huge potential (both for its typology and its location), has a scarce utilization.</p> <p><b>UAc:</b> There are few meeting spaces within the district, including spaces adapted to the elderly population (<i>Barceloneta</i> currently has a very aged population).</p> <p><b>UAd:</b> The high attractor potential of various functions and activities present in the neighbourhood (eg. Beach; <i>Passeig Maritim</i>; marina) causes high flows of users in certain periods, originating congestion in the public space, restricting the comfort and limiting its use.</p>



SOCIABILITY AND IDENTIFICATION [S1]	<p><b>SIa:</b> In the blocks that are essentially closed between buildings, there are some problems of lack of socialization spaces, making space for phenomena of social exclusion.</p> <p><b>SIb:</b> Because of its extensive use, some public spaces do not always provide the most adequate hygiene conditions for use.</p> <p><b>SIc:</b> In some areas of the district network, including some of its main streets, the generational diversity of users is limited due to the difficulty of access.</p> <p><b>SId:</b> The fact that these areas attract a large number of users causes, in some periods of the year, an excessive amount of capacity for the users thereof. This adversely affects its use and appropriation.</p>
--	---

Table 1. Cohesion problems of Barceloneta neighbourhood analysis.

Given the diagnosis allowed by the analysis carried out, it appears that although this is a consolidated neighbourhood, which is considered to be well integrated in the surrounding networks, we identify some weaknesses that pose challenges to urban cohesion, for which is important to find appropriate responses.

By identifying these problems, it is possible to understand which areas need and urge of intervention, but also their integration with the surrounding networks. The goal is to understand both the factors involved and the main geographical area affected by them.

However, as we can see by applying the methodology to the *Barceloneta* neighbourhood, the set of problems identified can be quite comprehensive and complex (see Table 1), making it difficult for the planning and urban design technicians to understand what are the priority interventions. In this context, it is important to understand, among of the identified problems, which are determinant for having greater influence over the others, i.e. , those that, being solved, are better able to influence change in others. By understanding what are the most influential, and, by contrast, also the most dependent problems in a perspective of causality and dependency (Guerra, 1999) it is possible to intervene at the level of the first ones, thus contributing to minimize the impacts of the second.

This process of identifying the key problems and the corresponding relations of causality and dependence is done through an adaptation of the method of Structural Analysis - MICMAC (Lipsor, 2004), "(...) to identify the key variables of the system, highlighting its hierarchy , and detecting the actors who are the source of its evolution" (Guerra, 1999).

For the methodology proposed, the tool developed by Godet (1999) becomes particularly interesting, since it allows us to understand the relations of complementarity and interdependence that are established among the various problems encountered. It thus facilitates the identification of those that function as key factors in the neighbourhood network, and may play a key role in its process of cohesion. We believe that this identification is critical in order to support the formulation of strategies and intervention measures.



Using the list of the main cohesion problems identified in the *Barceloneta* neighbourhood, the next step is the construction of the structural analysis matrix, in which the degree of influence that some problems exert on others is identified, questioning "what influence does a change in a given problem has on others?". Understanding these relationships leads to the identification of determinant and dependent problems on the *Barceloneta* neighbourhood. This identification is presented graph below.

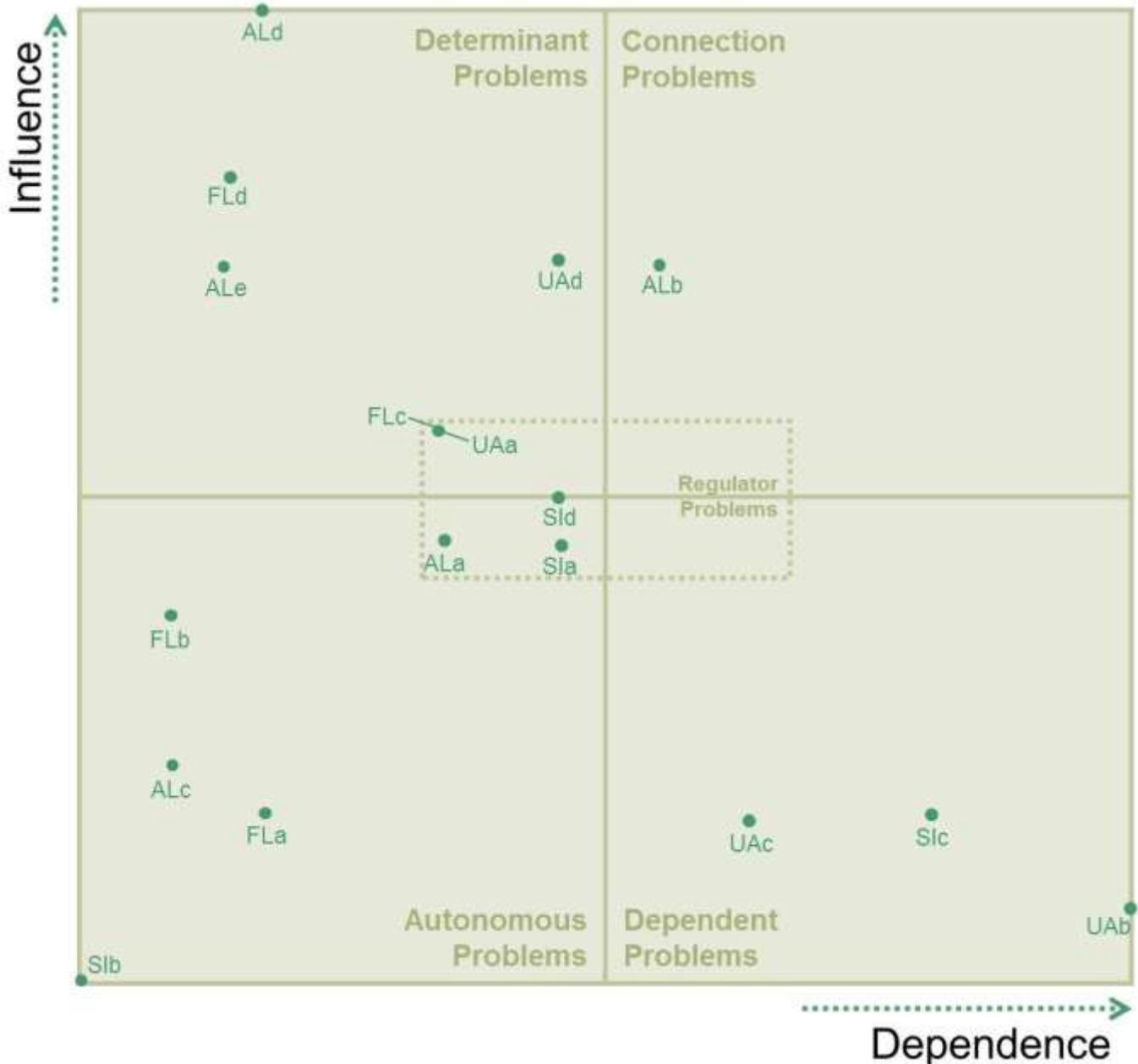


Figure 5. Structural analysis graph – Barceloneta neighbourhood.



Analysing the graph, we notice that the problems with the highest degree of influence in the *Barceloneta* neighbourhood, are related to:

- > The **strong physical barrier that forms the *Ronda Litoral***. This barrier effect is reflected in various ways in the network of public spaces of the neighbourhood. The most direct impacts are the limitations it imposes on the connectivity and permeability between the network of the neighbourhood and external networks. However, it also has direct implications on the movement of users, conditioning them in the links between the district and its surroundings, as well as on the experience and dynamics of the network, especially in this area.
- > The **limited access to some public areas of the neighbourhood network**, (namely *Pompeu Gener Square*, *Square D' Antoni Genesca i Coromines* and *Carrer de la Maquinista*), which are practically closed, with a limited access at night. This limits the permeability and connectivity between these areas and the rest of the neighbourhood network, also restricting the interactions with the environment, that is, its uses, activities, experience, and how users appropriate space.

Thus, intervention priorities should focus on those weaknesses, seeking to maximize the effects, minimizing the extent of the interventions.

### **Step 3: Final outputs**

The last step of the proposed method corresponds to the definition of guidelines for intervention, capable of contributing to strengthening cohesion of a public space network. This is the ultimate goal of the developed methodology, resulting as final output, through the application of the methodology to a specific territory.

Going back to the previous step, we identified the determinant problems, i.e., those who were able to exert greater influence over the remaining, and have, therefore, a greater potential to generate dynamics of change in the weaknesses of the public space network.

At this point it is also important to identify the existing potentialities in the public space network of the neighbourhood. Knowing these potentialities, connections can be established with the determinant problems (on which interventions are privileged), so as to formulate action strategies that take greater advantage of the specific characteristics of the territory.

This approach allows not only to minimize the mobilization of resources and reduction of the costs involved, but also to maximize the adaptation of interventions to be developed to the specific characteristics (physical as well as social and economic) of the network in question.

Returning to the practical case of the *Barceloneta*, we consider that one of the priorities of intervention is to **improve the connections between the internal network of public spaces in the neighbourhood and external networks**, namely, trying to cross the barrier effect constituted by *Ronda Litoral*, creating more points of contact between the neighbourhood and its surroundings.

One of the strengths of this network is the duality of dynamics, allowing it to keep the neighbourhood characteristic way of living, while attracting a large number of



tourists and visitors from the outside. One of the challenges in improving grid connections between the neighbourhood and its surroundings is to keep this duplicity. The morphological characteristics of its internal network contribute greatly to keep this duality, since its tall buildings and narrow streets inhibit the "entrance" of users from the outside into the network. Another factor that contributes to strengthen this duality is the fact that the road traffic within the network is very limited and several home zones (30Km/h zone) were even recently created to reinforce the neighbourhood way of living.

In order to improve the links between the neighbourhood and the surrounding networks, and analysing the identified potentialities, we think that an intervention measure may be to **establish a connection between the Park of Barceloneta and Park of Ciudadella** (Figure 6 - No. 1), a connection (through a bridge) that was initiated, never having been completed. The realization of this link would help to create dynamics of use in *Barceloneta Park*, contributing to the emergence of new uses and activities, fostering greater and more intensive use of this space (Figure 6 - No 2).

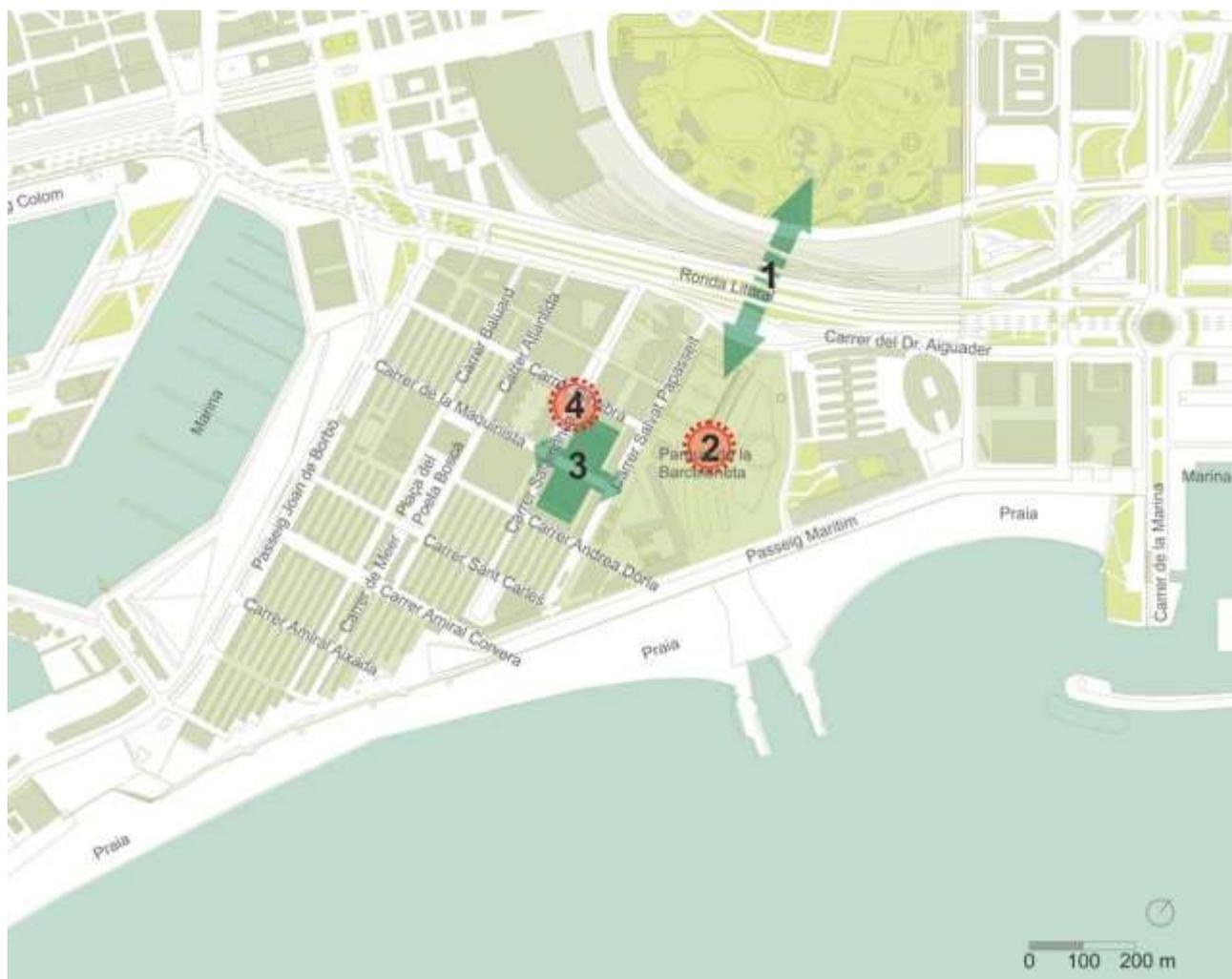


Figure 6. Proposed intervention measures – Barceloneta neighbourhood.



Another intervention measure should **be to "open" the blocks that are practically closed** and which currently condition continuity and permeability with the remaining network of public spaces (Figure 6 - No. 3). An intervention at this level would not only improve the physical links between these spaces and their surroundings, but also minimize the feeling of insecurity associated with them, in addition to creating a new dynamics in the interactions and use of surrounding areas. On the other hand, to intervene in the sense of "opening" these spaces, would also help to stimulate other areas of the neighbourhood network that present weaknesses at this level (Figure 6 - nrs 2 and 4).

## CONCLUSIONS

The method we propose makes it is possible to diagnose the urban cohesion problems within an area of the city, enabling to understand the specific reasons why cohesion is lacking and its precise location.

Therefore, we believe that this type of diagnose can contribute opening the way to the improvement of urban cohesion through public space interventions. Such guidelines may be useful in developing new urban projects, but also in regeneration or "consolidation" of scattered urban areas, empowering both decision makers and designers, but also by engaging citizens.

Additionally, this analysis seems highly relevant in the context of minimizing intervention costs, since it enables the maximization of results, intervening only at key factors that act as the "engine" of the system. On the other hand also allows to formulate an intervention strategy, setting priorities and introducing flexibility to the plan or project, in the sense that the measures may be adjusted to meet the changes that occur, through time, in the public space network.



#### ACKNOWLEDGEMENTS

The authors gratefully acknowledge the support of Fundação para a Ciência e a Tecnologia (FCT) under the PhD grant SFRH / BD / 62640 / 2009 and the Spanish project HAR2009-13989-C02-01, HAR 2012-30874 and the Catalan project 2009SGR0940.

#### REFERENCES

- Arcade, J., Godet, M., Meunier, F., & Roubelat, F. (1999). *Futures Research Methodology, Version 1.0*. Millennium Project del American Council for the United Nations University.
- Bana e Costa, C. A., & Beinat, E. (2005, November). Model-structuring in public decision-aiding. Monograph.
- Batista e Silva, J., da Graça Saraiva, M., Loupa Ramos, I., & Bernardo, F. (2013). Improving Visual Attractiveness to Enhance City–River Integration—A Methodological Approach for Ongoing Evaluation. *Planning Practice and Research*, 28(2), 163–185.
- Borja, J. (2003). *La ciudad conquistada*. Alianza Editorial.
- Borja, J., & Muxí, Z. (2003). *El Espacio público: ciudad y ciudadanía*. Diputació de Barcelona, Xarxa de Municipis.
- Brandão, P. La imagen de la Ciudad. Estrategias de Identidad y Comunicación. Barcelona. Servei d'Edicions y publicacions de la Universitat de Barcelona, 2011
- Brandão, P., Carrelo, M., & Águas, S. (2002). *O Chão da Cidade – Guia de Avaliação do Design de espaço público*. Lisboa: Centro Português de Design.
- Carmona, M. (2003). *Public Places - Urban Spaces*. Taylor & Francis.
- Cerdá, I. (1867). *Teoría general de la urbanización y aplicación de sus principios y doctrinas a la reforma y ensanche de Barcelona - Libro IV: Razon histórico-filosofica de la manera de ser de la urbanización actual*. Madrid: Imprensa Española.
- Comission of European Communities. (2004). Third Report on Economic and Social Cohesion: A partnership for cohesion. Serviço de Publicações da União Europeia.
- European Commission. (2004). A new partnership for cohesion: convergence competitiveness cooperation - Third report on economic and social cohesion. Office for Official Publications of the European Communities.
- Faludi, A. (2006). From European spatial development to territorial cohesion policy. *Regional Studies*, 40(6), 667–678.
- Guerra, I. (1999). *A baixa pombalina: diagnóstico, prospectiva e estratégia de actores* (1a ed.). Oeiras: Celta.
- Hillier, B., & Hanson, J. (1984). *The social logic of space*. Cambridge [England]; New York: Cambridge University Press.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Random House.
- Lefebvre, H. (1974). *La production de l'espace*. Paris: Anthropos.
- Lipsor. (2004). MICMAC (Version 6.1.3). França: Lipsor.
- Ochoa, A. R. (2011). Cidade e frente de água. Papel articulador do espaço público. Tesis Doctoral en Red. (<http://tdx.cat/handle/10803/52893>)
- Pinto, A. J., & Remesar, A. (2012a). Public Space networks as a support for urban diversity. *Open House International*, 37(2), 15–23.



- Pinto, A. J., & Remesar, A. (2012b). Urban cohesion: a guiding concept for new urban realities. In *Ambivalent Landscapes Sorting out the present by designing the future*. Lisboa: FAUTL.
- Pinto, Remesar, A., Brandão, P., & Nunes da Silva, F. (2010). Planning public spaces networks towards urban cohesion. In *Sustainable City, Developing World*. Nairobi, Quenia: ISOCARP.
- Project for Public Spaces. (2000). *How to turn a place around: a handbook for creating successful public spaces*. New York, NY: Project for Public Spaces.
- Remesar, A. (2007). PUBLIC SPACE IS NOT DEAD. *On the W@terfront*, (10), 5–6.
- (2015) City Aesthetics to and Fro. On New Urban Decorum? in Kazimierska-Jerzyk Wioletta & Gralińska-Toborek, Agnieszka. *The Aesthetic Energy of the City*, Cambridge Scholars Publishing, 2015 (not yet print)
- Remesar, A - Esparza, D. "El diseño del suelo y la imagen de la ciudad: La Calçada Portuguesa (City ground and the Image of the City: The Portuguese Calçada." *On the w@terfront [en línia] Urban Design: Interdisciplinarity & City-making*, no. 32 (2014): 5–36.
- Whyte, W. H. (1980). *The social life of small urban spaces*. New York: Project for Public Spaces.