New Approaches to Spatial Planning
Lisbon's EXPO'98 project and Social Housing in Oeiras

1.   Introduction

The word "*Sustainability*" itself appears in many and varied contexts since the United Nations "Earth Summit" held in Rio de Janeiro (1992) from which resulted the "Agenda 21", and it is a "must" in all political speeches.

But what contributed mostly to its massive use, were transformations made in cities all over the world, which affected directly the common man's life. So, the word "*Sustainability*", in the city context reached the citizens that use and inhabit our cities everyday, the ones that suffer more with the lack or poor environmental conditions of our urban habitats.

The search for new centrality's in the city or in the surrounded cities of the metropolis became a very serious concern for every big city authority, as a measure to alleviate the pressure of daily car movements that compromise the city life as a social environment, where people should meet and exchange experiences.

Public space is the arena where people of all ages, sex and culture can socialise between themselves. Those who live, work or just visit the city need this contact with each other and with space itself and with what it has to offer them: fun, discovery, identification, quietness relaxation, and safety.

In this sense, public space plays an important role in contributing for the sustainability of cities, the social, economical, environmental, development and for the safety of the streets itself.

Figure 1 – Location of Lisbon and Oeiras Municipalities in the Metropolitan Area.

The following two case studies presented in this paper intend to be an example of the different ways to analyse and address the renovation of the city of Lisbon and Oeiras, by planners. This two examples represent some of the new approaches to urbanism and city planning, that take in consideration people's motivations and aspiration for the city space and

its use. They are valuable tools for professionals; "participated urbanism" and Space Syntax, are the basis of the new town and urban planning.

2.   Case Study 1 - Lisbon

Going back some decades, we can easily conclude that most of the urban development of Lisbon has been the result of a "syncoped Urbanism". Before the 80´s, the last major change in Lisbon's urban shape and functionality was the 40´s and 50´s intervention in Avenidas Novas.

The following decades, residential use was pushed away to the periphery while services and commerce remained in the city's central areas, both activities spreading through former residential buildings without many boundaries.

During the 80´s, despite the existence of an approved Master Plan (1977), the city grew almost without control, suffering major urban disasters that led to the classification of Lisbon as one of the most congested cities in Europe.

Only in the 90´s the municipality awoke for the unsustainable situation in which the city had fall into:

- Decaying housing conditions;
- Lost of population to the surrounding suburban towns;
- Need for infrastructure and service provision;
- Lost of competitiveness in attracting private investment.

This consciousness led to a serious of actions that were materialized through a number of planning instruments, such as:

- Strategic Plan (1992);
- Master Plan (1998);
- Detailed and Local Plans for specific priority areas;
- Other Studies and Projects, on different issues.

And, for the first time in Portugal, the figure of plans assumed an important role in the protection of cultural and natural values.

In Portugal, it was the Expo'98 urban project, the responsible for the outspread of the concept sustainability associated to urban territory, and for the first time, a new image of Lisbon was reborn.

This event gave an important impulse to the country, by acting as a role model for other cities of inner Portugal. It was the example of modernity, care for the environment and a big economical opportunity for Lisbon, so every town wanted their own Expo.

2.1. Expo'98

The organization of the World Expo in 1998, gave Lisbon the chance to rethink the city, looking into the future. Similar to what took place in other European cities, like London, Barcelona and Paris (among others), Lisbon started taking seriously the need to recover their dockland areas, with the intention of regaining the public esteem for the river shores.

The city strategic planning was engaged in giving Lisbon a new image promoting it, both inland as well as abroad, as a modern and growing European metropolis capable of attracting people, investment and tourism. It was seen as a chance to promote the city as a European Atlantic Metropolis, as well as becoming the "display case" of contemporary Portuguese architecture and urbanism.

To reach this ambitious goal the city council, in a process never seen before in Portugal, involved the participation of different sectors of society as public and private institutions,

population representative groups and investors. All together represented the opportunity of giving new life to a long abandoned part of the city, but also a response to a challenge to our innovation and work capacities, while giving birth to a collective vision of progress and modernity. This is what we consider as "participated urbanism".

The renewal site is a long continuous stretch of land, 600 m wide and 4 500 m long spreading along the river Tagus bank. North-South oriented, this total area of 340ha, was conceived taking the opportunity of a very visible event, such as a World Expo, to develop a new centrality for Lisbon and it's metropolitan area.

When the idea of Expo'98 project started taking shape, all the major Urbanization Plans of Lisbon incorporated it within their concept, drawing and legislation.

One of the principal singularities of the Expo'98 project was the intention of creating a new part of consolidated areas for Lisbon, and not an ephemeral cosmetic operation due to last only during the 5 months of the exhibition.

The goal was ambitious. In 5 years a modern and attractive site, for people and investors, was to be built from a totally abandoned and long excluded area of Lisbon's urban life.

Planners understood that the success of this urban renewal was connected with more and better urban spaces (both public and private), appealing to people, where they could live, work and spend time enjoying themselves. So, the main guideline to the area's Plan was the continuing of the Expo dynamics, offering people the good quality, clean and fun public areas resulting from the exhibition, surrounded by activities attractive to public life.

The strategic followed to justify this investment was based on the benefits inherent to the renewal of the long abandoned industrial site spread along almost 5 km of river shores. This intention was too interesting both from the urban as well as the financial point of view. If we add to this the important environmental and social benefits, than the whole strategy had all the ingredients to galvanize the support of civic, private and institutional representatives.

Debates and presentations were promoted in order to involve the common citizen in the discussion, presenting them with new concepts and ways of rethinking the city as a more participated and open way of planning that included the opinion of the common man.

From this discussion result the following 3 main strategic goals:

  a) An excellent urban and environmental quality must result from the projects and to be maintained in the future;
  b) Secure a quick development of urban activities in order to diminish the transition period from World Exhibition to a part of the city of Lisbon;
  c) Maximize the liberation of financial opportunities in order to obtain the costs – benefits ideal pre-planned by planners.

With the purpose of accelerating the process, the public company *Parque Expo s.a.* was created by the Portuguese central government with all the benefits and autonomy of any private company. It was their responsibility the autonomous coordination and management of the whole area, as well as its urbanization plans and the development of the exhibition project.

The *Parque Expo s.a.* Company benefited from important tax facilities and had total power to conceive and approve of all urbanization plans for the area. The financial model adopted was based on the principle that the project, made with money invested by the government, would pay itself in the following 10 years period, in which private investors would participate in the process, contributing for the infrastructures and taking advantage of the excellent location and urban concept of the Expo'98 area. So far, it has revealed itself to be a very successful urban marketing initiative.

2.2. A Sustainable Urban Plan

It is known that the majority of the population of economical advanced countries live in urban areas. Portugal is no exception. Lisbon concentrates 3 million inhabitants in it's metropolitan area, 30% of the country's total population, but the city itself has only 600 000 people living in it.

The vitality of an urban economy depends very much upon the balance of beneficial concentration and the costs, which include the environmental costs associated with it, so the economical urban performance of an urban area is directly connected with its environmental situation [1]. In the presented case, it costs too much to Lisbon the gradual lost of inhabitants and the growth of abandoned areas, so the solution is not in growing more but in recovering those sites to urban life and economy, attracting more population to the city centres.

The main aspects of this *Parque das Nações* project can be resumed in a table. (Table 1).

Strong Aspects	Weak Aspects
- Metropolitan scale of the intervention; - Site Plan as a result from the dialog between different social representatives with the official authorities; - Attractive for private investment; - Good public transports connecting *Parque das Nações* with the old central areas (Subway, BUS, train); - Symbolic places and memories from the past of this area were maintained (as Petrogal Tower) as a monument; - Quality architecture; - Adequated urban parameters traduced in the quality of built and free areas; - Well planned and maintained public space; - Increase and recuperation of natural and recreational areas; - Soil decontamination; - A new CBD integrated in a new housing development with equipments and public services and facilities; - Creation of the *Parque Expo s.a.* Company.	- Didn't showed much of a social sensitivity to the problems of the population from the nearby neighbourhoods, living in social houses in degraded economical conditions, with much unemployed that won't have the chance to become many jobs in the new CBD; - Still a lack of equipments to respond to the necessities of the *Parque das Nações* surrounding neighbourhoods.

Table 1 – Strong and weak aspects of the Expo'98 Project.

After the end of the World Exhibition, was created the *Parque Expo s.a.* that is still in charge of promoting the next phases of the plan. Five years passed since the Expo'98 event and now, at six years from the deadline to conclude this development (2010), the construction and occupation predicted by the plan is practically finished. As an example, over 80% of the housing predicted for the whole area, is now licensed, concluded or about to be finished.

3.   Case Study 2 – Social housing in Oeiras

The Space Syntax as a new method of Spatial Planning, works as a discipline that take in count the impact of human activity on the physical, economic and environmental elements of the urban space. As a pro-active method, it understands and predicts the causes of human activity in physical urban space. Using this Space Syntax method, we have made an essay of a case study, in order to evaluate how this new discipline of urban planning, can act as a high performance of town planning instruments, to achieve more and more the concept of sustainability related to our cities.

Oeiras is one of the most dynamic and wealthy municipalities in the Lisbon Metropolitan Area. The Municipality has invested a lot over the last years, in the integration of the poorest, providing them access to basic needs, such as home, education and health conditions. However, the local authority recognizes that something more must be done in terms of their integration in the social patterns; to conquer not only the well being of those people, but also to guarantee the sustainability of the Municipal Territory. The interactions of citizens in social housing public spaces, is still a matter of concern, in order to stop segregation in urban life, which unfortunately is still a reality.

The main goal is to demonstrate if there is a relationship between urban configuration, land use patterns and pedestrian movements in urban space. As Hillier et al firstly demonstrated, urban configuration influences urban attraction and movements, attraction and movement may influence each other, but not both attractions or movement affect configuration [2]. The objective is to define the role of the public space in the public life, evaluating if it is a socializing or a segregated one.

3.1. Methodology

The methodology adopted in this case study is supported by a public space analysis, in two social housing neighbourhoods, in the Municipality of Oeiras; using a GIS (Geographical Information System) based on the mentioned above, Space Syntax Method.

The Space Syntax, as a method that analyses and describes spatial relations through axial analysis will support the investigation on urban configuration. The syntactic measures: **integration**, **connectivity** and **local area effect**, will quantify and evaluate the behaviour of each street in relation to the urban grid.

The integration analysis named global integration (**radius n**) measures the integration of one street in comparison to all the streets of the system. On the other hand, the local integration (**radius 3**) analysis measures the integration of one street in relation to its three adjacent streets.

Connectivity of a street is a concept that refers to the number of times one street is crossed by other streets. The study area has low connectivity, because in the area system, composed by 74 axial lines or streets, only three of them have the maximum score for connectivity (20) in a ranking from 0 to 20.

Besides the morphological analysis, we have also analysed what kind of outdoor activities took place in that neighbourhood. Supported by a movement analysis, the point was to see how these activities interfere with the social interaction of the public space. The movement analysis was supported by the **gate method**, counts that were used to record observations of moving people in the public space [3], in order to estimate the pedestrian flow in the grid. The procedure is to record observations of moving people that cross an imaginary line - the gate, disaggregating them by gender, age and activities practiced during the dislocation, such as talking on the mobile phone, taking the dog for a walk, eating, smoking, practicing jogging or ridding the bike, among others.

3.2. The study area

An area of 9 ha (90.241 m^2) was considered as object of study. This area corresponds to two social housing neighbourhoods, named as *18 de Maio* and *Encosta da Portela*. (Figure 2).

The first neighbourhood is exclusively first floor housing, and is occupied by Portuguese people, natural from other regions of the Country. The second has other land uses besides residential, like retail, facilities and food shops, and its inhabitants are mainly rotating generations of African immigrants from Guinea, Angola, Cabo Verde and Mozambique, living in three and four floor buildings.

Figure 2 – Axial map of the study area.

Some problems and handicaps were detected in the study area. In the neighbourhood *18 de Maio* public spaces are mostly linear, and because of that, they are basically used as circulation channels. The fact that the neighbourhood is exclusively habitation also led to a restricted occupation of it public space. The outdoor space in this neighbourhood is characterized by being neglected in organization, shape and configuration. In addition, there are many obstacles to movement in public space, submitting people to physical risks, like old people jumping walls, for instance. In terms of the urban grid configuration there is a disconnection between the neighbourhood and its surroundings.

On the other hand, in the neighbourhood *Encosta da Portela*, the reality is very different. Despite the fact that obstacles also exist, public space is much more used as an area for social interaction, because of the diversity of land uses.

3.3. Findings

Considering exclusively the morphology of the urban space, the local area effect results from the relation between the syntactic measures Global Integration (**radius n**) and the Local Integration (**radius 3**). This new measure reflects whether there exists a strong global and local integration at the same time. (Figure 3). Observing the graphic we notice that the study area has a low value for local area effect (r^2=0,6068), because the global integration does not follow the same behaviour as the local one; the study area is more locally integrated than globally.
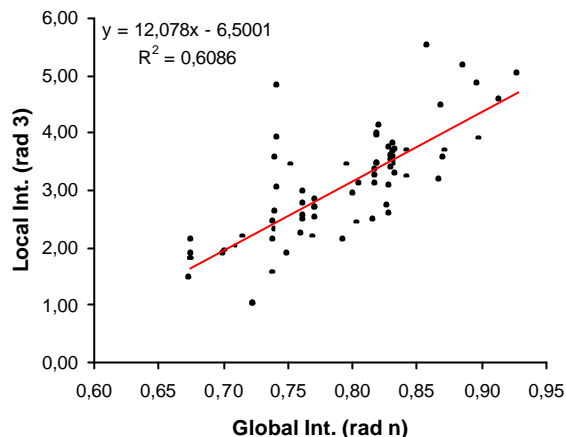
Figure 3 – Local area effect.

Besides the configuration of the urban grid, the land uses and urban activities are also very important issues to guarantee the life of a town, city, or place, because these are considered more or less urban attractors, which make people, circulate in the public space, in order to reach them. In fact, greater diversity of land uses and urban activities will help to create a more liveable city [4]. Because of this importance, we have analysed the functionality of the study area. (Figure 4 and 5). The figures on the right contain the relation between the local and global integration, the pedestrian movements and the location of facilities, food shops and retail (dots in black).
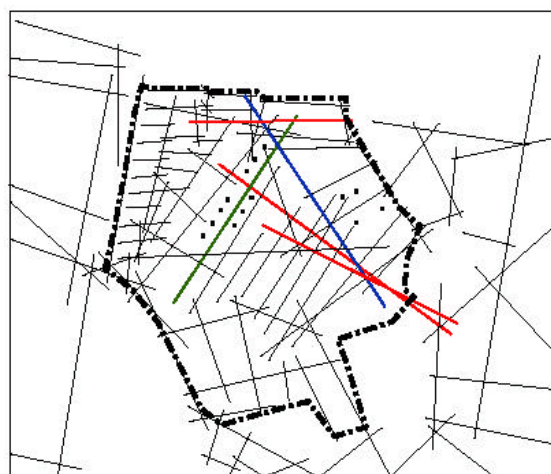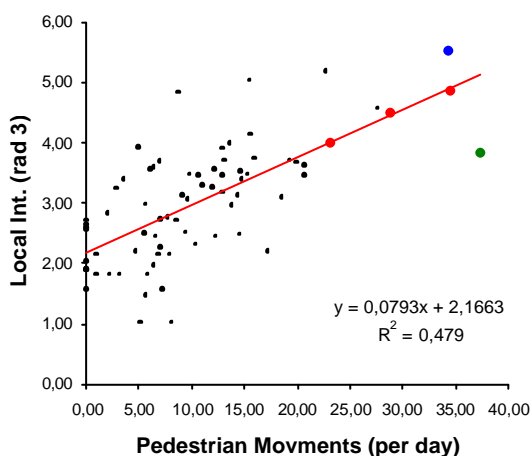

Figure 4 – Relation of Local Integration (radius 3) and pedestrian movements.
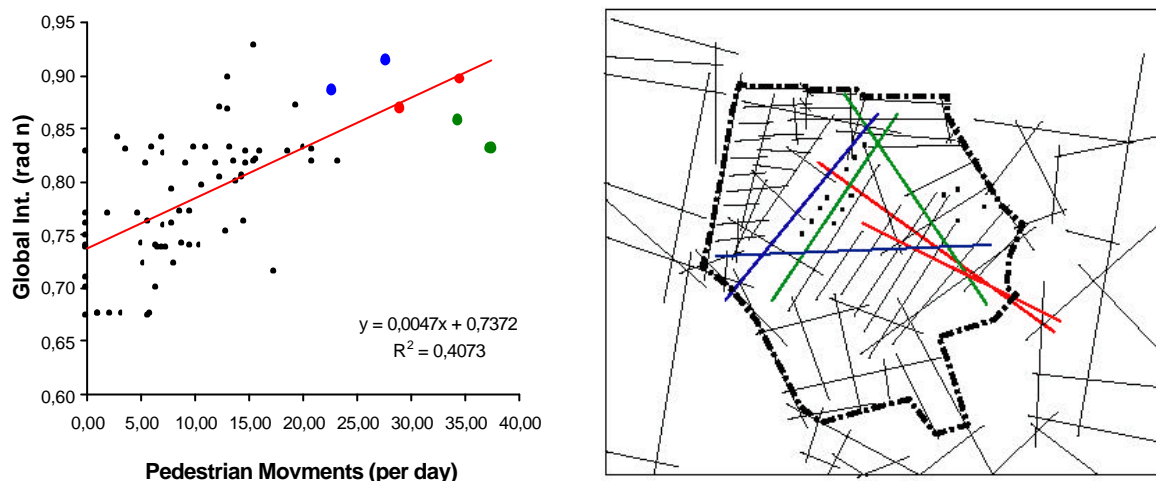
Figure 5 – Relation of Global Integration (radius n) and pedestrian movements.

As we can see, the correlation between the two variables is very low, for local integration r^2=0,479 and for global integration r^2=0,4073; this means that it is not the integration measures that explain the pedestrian flow in the study area.

According to Figures 4 and 5, we can identify some streets that (1) have the balance between integration value in the grid and the pedestrian flow that occur there (red dots and lines); (2) there are more movements than the predicted for their integration value (green dots and lines); and (3) the scores for integration are the highest in the system, and pedestrian flows also, but these ones were supposed to be even higher (blue dots and lines).

What we could observe during the fieldwork was that the study area had few pedestrian movements, contributing to a feeling of absence of urban life and urban activities. That might have been the reason for the segregation of some outdoor spaces, where inhabitants and passer-by's feel insecure while using public space [5]. As the neighbourhood *18 de Maio* is basically residential use, the public space is almost desert; when there are no attractors, people don't find any reason to stay in the outdoor space.

On the contrary, in neighbourhood *Encosta da Portela*, there are fewest other land uses than residential, yet those are enough to generate some pedestrian movements in the streets near by. As we can see (Figures 4 and 5), in the streets in green, there is retail, food shops and facilities, and pedestrian flows are the highest scored in the system. The streets in red represent the balance between streets that are as much integrated in the grid as the pedestrian flows that occur there, that is, the pedestrian movements are adequate to the integration of the grid. The blue streets are very integrated in the system, but still there are fewer movements than the expected.

What we can conclude by this case study is that the streets with more pedestrian flows do not match the most integrated ones. This effect seems to be caused by the location of bus stops (main transport system used by the inhabitants) and the flows from the surrounding neighbourhoods accessing them. But, in order to evaluate the effectiveness of these relations (transport system, pedestrian flows and surrounding movements), a more detailed study of these particular issues ought to be done.

4.   Conclusions

Initiatives such as Expo'98 constitute an occasion to innovate urban areas and the planning methods in use [6]. The consequences of such interventions in a city such as Lisbon is still yet to know, but so far, it has been very well received for the population and investors in general. Nevertheless, the simple intrusion of a new urban development may not benefit the city as a whole, but that is yet to be seen in what concerns to both case studies. It is important to retain the idea that new urbanism should be a participated process, benefiting both private and public interests.

As we could see by the case study in Oeiras, both morphological and functional properties of the urban grid explains some of the pedestrian movement flow. However, in the light of that specific case, it seems that the location of the land uses were not used in the best way, in order to promote a better urban environment and flows.

As a successful instrument of urban planning, the Space Syntax method demonstrated a high capacity to evaluate the effect of human activity in the territory. In terms of achieving the sustainability of the city, this is a revolutionary and very important method that should be taken in count by the local and regional authorities, in order to study impacts and repercussions of intentions of city and regional plans.

References

[1] Button, J.K. and Pearce; D.W. (1989). *Improving the Urban Environment: how to ajust national and local government policy for sustainable urban growth.* Oxford: Pergamon Press.

[2] Hillier, B.; Penn, Alan; Hanson, Julienne; Grajewski, Tadeusz and Jianming, Xu. (1993). *Natural Movement: or, configuration and attraction in urban pedestrian movement.* Environment and Planning B: Planning & Design. Vol. 20/29-66.

[3] Major, M. D.; Stonor, T. (1997). *Designing for Context: the use of 'space syntax' as an interactive tool in urban developments.* Proceedings of the 14th Inter-Schools Conference on Development. Edinburgh.

[4] Tibbalds. F. (2001). *Making People – Friendly Towns. Improving the public environment in towns and cities.* New York: Spon Press.

[5] Jacobs, J. (1961). *The death and life of the great American cities. The failure of town planning.* Middlesex: Penguin Books Ltd. Harmondsworth.

[6] Indovina, Francesco e Ferreira, Víctor M. (1999). *A cidade da Expo'98.* Lisboa: Editorial Bizâncio.