BREAKING OF THE MEDIEVAL SPACE

The Emergence of a New City of Enligthenment

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0 Abstract

This paper studies the urban change occurred in the city of Lisbon after the 1755 earthquake. It discusses the morphological break that took place when the medieval spatial pattern was modified by the reconstruction of the city centre by Pombal, the King's minister who was responsible for the reconstruction of the city. The main goal is to analyse the morphological transformation made by Pombal and to identify the spatial strategies that contributed to the conception and formalization of this new City of Enlightenment. The study starts with the spatial description of the medieval cartography and the analysis of historical data concerning the functional and social use of space - main facilities, fairs, religious processions and royal festivities - as well as the evaluation and discussion of the six proposals designed to give shape to the new city. Space Syntax methodology is applied to historical analysis of spatial and functional attributes of the city enabling the process of spatial description of historical sources and the understanding of the impacts of projected change.

The paper concludes that not only medieval Lisbon is completely achieved and organised in terms of the relationships between functions and purposes of its spaces to its morphology - and vice-versa - as the Pombal plan dissolves the previous spatial configuration.

Keywords: medieval spatial pattern; urban facts; spatial and functional attributes; space syntax and spatial strategies.

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1 Introduction.

The paper intends to study the spatial layout of urban functions in medieval and modern Lisbon prior to the 1755 earthquake. It analyses, from the spatial and functional points of view, the moment of rupture associated with the elaboration of the reconstruction plans of the destroyed city - the Baixa (Downtown) - within the political context of the Portuguese Enlightenment.

The paper is divided in two parts. The first one concerns the spatial layout of the medieval city. It analyses the urban dynamics from its configurational and functional structure. The second part refers the intervention after the earthquake. It considers the way by which the diverse proposals organised the spatial rearrangement of urban functions in the new city.

The spatial description of the medieval city is based on Tinoco's map of 1650. It is considered the most remote cartographic source known; on that assumption it was also used as a base for the reconstruction of the city after the 1755 earthquake.
After identifying and analysing the syntactic properties present in Tinoco's map, the study continues by exploring the inferences at the level of its functional dynamics and the social use of space. Urban functions and social uses were assigned to corre-

sponding axial lines and subsequently related to the syntactic properties. Main commercial areas and activities (based on the spatial distribution of singular buildings and public facilities - palaces, convents and monasteries, institutional buildings, charities, fountains and whipping-posts) were identified. If fixed reference points are essential for a functional understanding of the city, occasional and ephemeral events offer clues to a wider understanding on how the urban universe is organised. Hence the analysis of rituals and celebrations - processions of faith, royal processions, marriages, funerals and others.

From the spatial description of the six proposals presented for the reconstruction of the Baixa, the proposed transformations at the level of the spatial and functional structure were identified. Through a comparative analysis similarities and differences between them were stressed as well as the way by which they present the future development of the city.

To proceed to a global analysis, these partial plans of the Baixa were inserted in Tinoco's map. These cartographic bases were subsequently transformed into axial maps and quantified in function of local and global syntactic first order measures.

2 Medieval Lisbon

2.1 The Values of the Medieval City

A medieval city's identity begins in its wall, - it is its prime value, its chief and more powerful image in real and metaphoric terms. The wall will always remain in Lisbon's urban history connected to a deeply medieval meaning. Only a cataclysm such as the 1755 earthquake will supersede it.

By defining the defensible, the wall will simultaneously define the constructible; and the construction of the 'administrative and political centre' outside city walls relates to its deepest symbolism and, - simultaneously -, elevates to a royal status the trend of late medieval cities to expand beyond city ramparts. The location outside the walls is the evidence of a new meaning given by the modern state. The decline of the defence role of the rampart - now ripped or submerged by housing - is one of the images of the late medieval city.

In the medieval urban space the street is a structuring value: it establishes directions, site hierarchies and functions as a space for the dissemination and staging of social order. It is also a result of the interplay between topography, the wall's gates and the location of symbolic buildings. In this case functionality overshadows the notion of regularity. This has to do with two determinant factors: first, the Islamic legacy of the irregular and narrow streets with its small alleys and lanes; second, the organising function that the setting of churches and convents brought about.

The square is also of utmost importance: it is, in most cases, structured by the presence of the church giving rise to a churchyard. It is a point of dissemination of the streets that connect this public space and its buildings, to one or various churches in the town, as well as to the main squares (Rossio or Terreiro do Paço) and also to the main commercial axis of the urban grid.

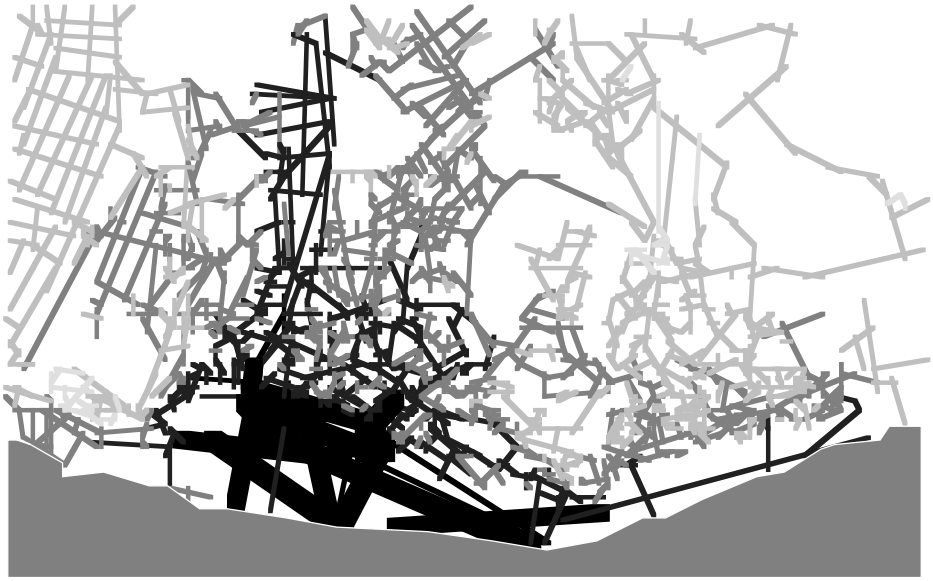

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Figure 1. 1650 Global Integration Map

2.2. Syntactic description of Tinoco's map.

The spatial pattern of Lisbon in 1650 reveals a morphological configuration based on two nuclei, differentiated by shape, occupied area and linear dimension of the axial lines. The main nucleus corresponds to the earlier settlement delimited by the 14th century Wall. It shows a sinuous layout, made by lines of reduced dimension, occasionally articulated with lines of greater dimensions running parallel to the river and defensive structures.

On the west, the second nucleus, - corresponding to the expansion of the 15th century - unfolds into a set of lines of greater linear dimension. It defines a rectangular grid of regular patterns. Lines of higher dimension spread in the north-south direction.

On fig. 1 it is shown the global dimension of the system. The lines of greater integration concentrate in the central area of the system. They tend to gradually decrease as they become more distant, thus showing the reduced accessibility of the peripheral zones of the mapped area.

The integration core is concentrated in the main nucleus, approximately in the middle of the system defining a central area strongly related to the embankment. It is limited in south by the river - acting as a natural barrier. It forms a continuous structure defined by lines of reduced linear dimension that extend eastwards through lines of greater dimensions parallel to the river banks. However, these lines do not penetrate into the interior of the system: they show a trend towards a certain degree of autonomy from the rest of the territory without being able to articulate the evolving areas.

Still, the integration core unveils the importance assumed by the Royal Residence (line 19) as well as by the areas of more intense commercial activity (lines 1 and 7), warehouses and shipyards (line 20). They contribute to make the area closer to the embankment as being the functional and institutional centre of the Tinoco's map. The lack of overlap of spaces defined by higher values of local measures with spaces

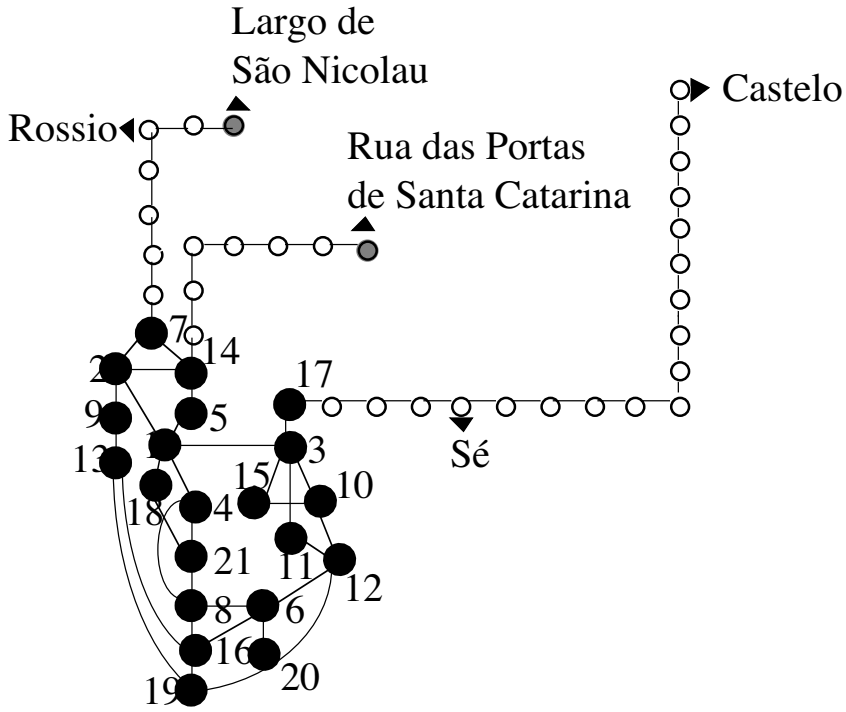

figure 2. Global integration core graph. It relations the global and local measurements cores. The vertices correspond to lines and segments to intersections

of stronger integration values denotes a tendency towards the creation of secondary nuclei. These are peripheral in terms of overall accessibility and are characterised by strong investment at local level. However, one should note an exception in axial line 1: the strong overall integration is countered by an even stronger local accessibility and control over the neighbouring spaces, which confers to this line spatial robustness and asserts its importance in the overall functioning of the city.
The situation described above translates the ineffectiveness of the global system to assimilate its various parts subordinated to their own internal organisational logic. These nuclei tend to organise around spaces that combine a strong control with either a high axiallity or a high degree of convexity. The axial graph (fig.2) stresses this notion.

The axial graph is made of multiple cycles, corresponding to a ringed configuration with peripheral branches. Distances between the vertices of this system vary between 1 and 6. The central ring (vertices 1, 4, 18 and 21) reveals a dominance over all others, becoming an area of great permeability. The central ring extends over one of the main squares, Terreiro do Paço (19) and commercial street (1). The other main square (Rossio) and the Cathedral, are external to the urban core, (with an average core depth of 8 steps) - located at the convergence of the greatest integration vertices. The medieval castle is further removed from the core at an average distance of 22 axial steps, revealing a reduced accessibility to the central areas of the city. Furthermore, one can verify that peripheral branches (vertices 7, 17, and 20) have their articulating potential reduced by their small dimensions and connectivity.

Furthermore, this posit is confirmed by a low global intelligibility value in the system, as shown by the correlation between connectivity and integration ($r=0.233; p<0,0001$). Actually, this value shows a complex fabric made by a set of parts with strong internal cohesion without being articulated among them.

2.3 Spatial Layout of Urban Functions

a Commercial activities:

In 1650, the most important commercial activities were located within the integration core. This centre overlaps with the most integrated axial lines and it is possible to verify that 90% of these spaces are situated in the interval with the highest integration values

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The spaces that make up the commercial centre are characterised by a high overall accessibility, not always associated to a strong local accessibility. This situation shows the importance of these lines as defining elements of a 'centre' in the sense of the spatial logic of the city as an autonomous area.

b Institutional Buildings:

With the exception of the Chamber, Senate and the Royal Mews, institutional buildings are located around the urban core in positions of high accessibility, (within the interval of the highest 20% regarding integration), while still occupying locations with strong local accessibility. Hence, they assume a structuring role at a local level.

c Palaces:

Palaces are peripheral to the integration core with two exceptions that are closer to or coincide with the spaces of greater overall accessibility. These buildings show high local accessibility values, thus revealing their importance for the local layout of the city. As a matter of fact palaces - as well as public institutional buildings - play the role of urban landmarks, operating as structuring elements of the urban fabric.

d Churches and Chapels:

Although disperse throughout the system, churches and chapels occupy sites with high local and overall accessibility. These buildings are located around the integration core in streets dignified by symbolic events, where paths of religious and royal processions take place. As social attractors they take up the role of diffusers to the natural movement in streets. From them streets spread in every possible direction; thus, they are the centre of radial systems that relate them to the whole city.

e Monasteries and Convents:

Monasteries are peripheral to the integration core. Only (3) near Rossio and both (16) and (9), dating from 1677, are located around the integration core.

f) Charities:

Charities are scattered all over the system with a special penchant to occupy sites of great accessibility - within the 20% higher integration interval.

g Hospitals:

Hospitals are disperse all over the spatial system, though there is some concentration in the vicinity of the integration core. Around 10% of the hospitals identified occupy positions of high overall integration.

h Fountains and Whipping Posts:

Fountains and Whipping Posts are - for the most part - on the Southern part of the city their location partially overlaps the most integrated axial lines.

i Celebration Paths:

Celebration paths were grouped into thanks giving, festive and burial processions. Fig. summarises the syntactic values of the spaces used. By matching the values given in the table with the location and distribution of the procession paths it is possible to verify their relation to the functional dynamics of the city:

* their tendency to encompass - and quite frequently to coincide - with the core;
* that the bearing towards Rossio is used with some continuity, stressing the peripheral involvement and approach to the core on popular peripheral areas;
* the line 1 is - without distinction- common to all this paths, affirming once again the importance of this axis;
* burial processions are circumscribed to the core, which shows their inclination as a celebration of political power;
* only the most archaic of the corteges is related to the Castle which opens the possibility that in those days the city may have had a different configuration, with the core located elsewhere.

The analysis allow us to conclude that the outline of 1650's Lisbon, more than just a response to topography and rampart results from the functional logic of spatial layout when confronted with these factors. The spatial layout generates multiple paths that connects its spaces where the various forms of medieval pilgrimage can be assigned to them in multiple ways permeating everyday life and giving rise to a spatial structure of the medieval town that is antipodal to the chaos most historiography assigns to it. Such an urbanity was built upon values of spatial, religious and commercial experience that resisted to the very last, that is to say, to the collapse of the functionality that arose by the earthquake. Within this context - and as it is clear in 1650 plan - churches have the dominant function of structuring not only the urban paths but also the built forms around them. Religious buildings were of paramount importance in shaping and giving a constructible program for the city's space.

If, on the one hand, the location of churches operates as a focus for structuring urban paths on the other, still has the role of promoting a symbolic function related with the hierarchical definition of axis in the urban fabric. Up to the 1755 earthquake, the symbolic construction of this urbanity is grounded in royal celebrations (acclamations, progresses) and religious (thanks giving, burial and canonisation processions). These established paths were coincident with the main commercial arteries. Within this symbolic context of spatial experience, where it is hard to distinguish ideologically the sacred from the profane, is quite natural the centrality of the Cathedral. Of the 13 different symbolic paths outlined in 1650 plan only one (1622) does not include the Cathedral. All these paths include the main commercial axis (line 1), elected by processions not only as the city's main artery, but also as a qualification and legitimisation of the event's importance.

It is also important to notice that these paths, organised in a hierarchy of streets, make up a synthesis of the unity of Lisbon's urban space. This was the city that the earthquake on the 1st November 1755 destroyed.

3 Lisbon After the 1755 Earthquake

After the earthquake, Lisbon was rebuild under the supervision of Manuel Da Maia, the chief engineer of the kingdom, appointed by Pombal.

Da Maia considered five hypothesis for the reconstruction of Lisbon, (an area of about 63 hectares) running from the reconstruction of the old town as it was (1); the correction of the old town by enlarging the streets (2) or by limiting the height of buildings up to two floors (3); the entire reorganisation of the downtown area (4); to the construction of a new city on the west side of the existing one (5).

The solution approved by Pombal regarded the demolition of the central area and its reorganisation (4). Da Maia called a group of six experiment teams of 'millitary engineers' to elaborate proposals according to his directives exposed on a long dissertation.

3.1 Syntactic Description of the six Proposals

The syntactic description considers the plans of the six proposals. Figure 3 shows a synthesis of the proposals, the corresponding urban grids - designated as graphic schema - and the respective axial maps.

By inserting the proposals into the old urban grid left, it is possible to assess the impact of each plan. Figures 4 to 7 show the axial maps of the six proposals embedded in Tinoco´s Plan as well as the global integration maps, the global integration cores (10% most integrating spaces), their axial graphs and the overlaid maps with the cores of the local measures: radius 3 (R3), connectivity (C1) and control (C2).

* (P1), designed by Gualter da Fonseca and Pinheiro da Cunha. It keeps the medieval heritage by defining a highly deformed grid. Religious buildings maintain is simbolism although the importance of streets are reduced. The integration core presents a ring configuration with peripheral ramifications either penetrating the interior of the system or limiting it. The integration core denotes the importance given to the square of Terreiro do Paço and to the main commercial axis with a location identical to Tinoco's Map. The Rossio occupies a segregated position in relation to the urban core.

* (P2), designed by Sebastião Poppe and Poppe Cunha. It defines a new urban morphology by disregarding non demolished parts. It is structured throuhg a main axis supported by secundary lines. The integration core is configured by three rings located in the centre of the grid with peripheral ramifications. This core denotes the importance given to the Terreiro do Paço (lines 7 and 9), as well as to Rua Nova dos Ferros (line 1) and Rua dos Douradores (line 2). They can be regarded as concessions to the urban memory since they are maintained in relation to the 1650 map.

* (P3), designed by Eugénio dos Santos and Andreas Cunha. It maintains the old pattern of churches, giving greater importance to S.Nicolau Church, which was articulated with a new main axis (connecting the Terreiro do Paço to the Rossio) not present on the Tinoco's Map. It gives shape to three segregated nucleus in relation

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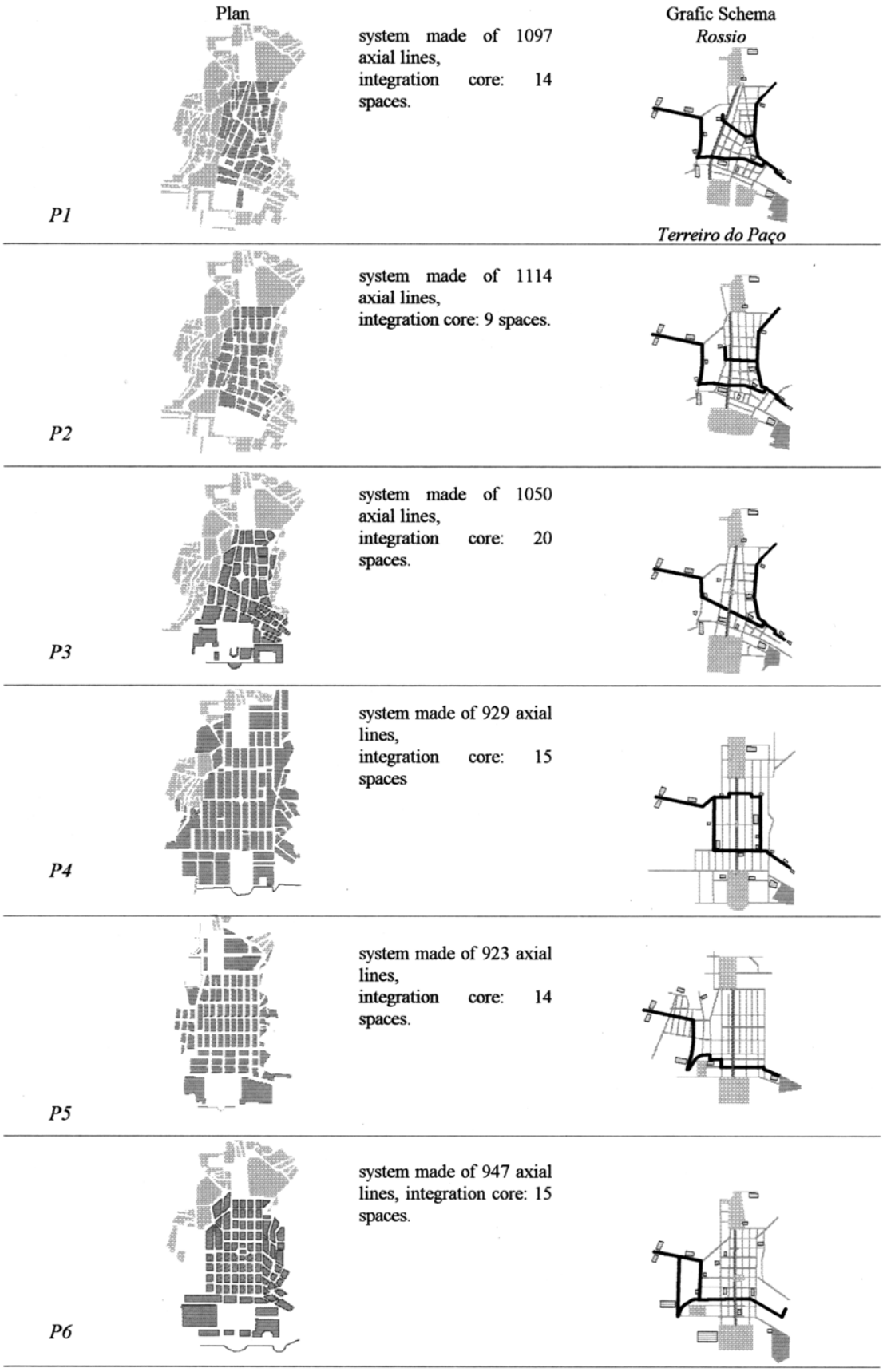

figure 3. Synthesis of the Six Proposals to Lisbon after the 1755 earthquake

to the system, resulting not only from the steeped topography but also from an organic growth of the city. The global integration core (represented in the axial graph) shows a configuration with multiple cycles without peripheral ramifications. Both Terreiro do Paço and the Rossio squares are integrated into this core.

* (P4), designed by Gualter da Fonseca Cunha. It represents the confrontation between the memory of the baroque city and the new city of enlightenment. It is based on orthogonal grid, forming a centralised structure with peripheral ramificationsThe integration core is coincident with the intervention limits in the central area of the system. The most integrated streets are located on the riverside, pointing out the importance of the Terreiro do Paço (corresponding to the 4th highest integrated value in the axial graph). . Terreiro do Paço square is realigned in relation to the Rossio and its layout is organized by two symmetric churches located on the north side.

* (P5), designed by Eugénio dos Santos. Based upon a modern and Cartesian model, it covers all the intervention area performing the smaller number of axial lines and the most geometrically ordered system. It shows a rather more military than urban plan, where the monotony is just broken by the different orientation of the blocks in relation to the two main squares. The core presents a cross-like configuration formed by two north-south axis. This core defines three different directions: to north through a new axe without correspondence in Tinoco's Map; to Southwest through the Terreiro do Paço and to Southeast. The orthogonal grid is limited by the Tagus River and by the Rossio square. Although the other proposals preserve the symbolic religious values of the past, this one values the presence of a new order by denying the medieval heritage still found in the Tinoco's map. Terreiro do Paço is now the most important square, while the churches are not located on the main axis of the city.

* (P6), designed by Sebastião Poppe. It relates the new spatial layout to the old historical centre, the Castle Hill, and all eastern part of the city. The integration core of the system is coincident to the Eastern limit of the intervention area, slightly dislocated in relation to the proposed grid centre. This core is formed by a central nucleus of small axial lines, from which are derived other axes to west (line 6), to north (line 9) and to east (line 8).

The proposal approved by Pombal in 1758 corresponds to a rectifcation and correction of P5.

Table 1 shows the average, maximum and minimum values of the local syntactic properties (integration radius 3, connectivity and control) and the global integration values for the Tinoco's map, as well as for the six proposals.
By sorting the Table 1 values, it's possible to indicate the following ordinal sequence of the data above::

Considering the average values of global integration, connectivity and radius 3, it can be concluded that the approved proposal (P5) is the closest to the Tinoco's map. Although an inversion occurs in this ordinal relation regardind the maximum values of local measures. It means that the new city of the enlightnment does not perform

Table 1

Prop./ Number of Lines		*Integration*	*Radius 3*	*Connectivity*	*Control*
Tinoco / 1449	average	0,447	1,631	2,8	1,000
	maximum	0,636	5,121	18	6,65
	medium	0,269	0,211	1	0,077
P1 / 1097	average	0,514	1,746	2,995	1,000
	maximum	0,775	5,318	21	7,644
	medium	0,311	0,211	1	0,048
P2 / 1114	average	0,540	1,741	2,968	1,000
	maximum	0,849	4,850	21	7,644
	medium	0,315	0,211	1	0,048
P3 / 1015	average	0,529	1,714	2,9332	1,000
	maximum	0,768	4,850	17	4,696
	medium	0,322	0,211	1	0,111
P4 / 929	average	0,532	1,721	2,967	1,000
	maximum	0,768	5,076	18	5,476
	medium	0,322	0,211	1	0,1000
P5 / 923	average	0,481	1,678	2,914	1,000
	maximum	0,688	4,770	14	4,666
	medium	0,318	0,211	1	0,100
P6 / 947	average	0,506	1,711	2,978	1,000
	maximum	0,750	4,769	16	4,667
	medium	0,319	0,211	1	0,125

Table 1 Average, minimum and maximum values of the syntactic properties of the Tinoco's map (T), as well as of the six proposals (P1 to P6).

Table 2

Global Integration	average	**T** < **P5** < P6 < P1 < P4 < P3 < P2
	maximum	**T** < **P5** < P6 < P4 < P1 < P3 < P2
	minimum	**T** < P1 < P2 < **P5** < P3 < P6 < P4
Connectivity	average	**T** < **P5** < P3 < P4 < P2 < P6 < P1
	maximum	**P5** < P6 < P1 < P3 < **T** < P4 < P2
Control	maximum	P6 < **P5** < P3 < P4 < P1 < T < P2
	minimum	P2 < P1 < **T** < P4 < **P5** < P3 < P6
Radius 3	average	
	maximum	**T** < **P5** < P6 < P3 < P4 < P2 < P1
		P6 < **P5** < P1 < P3 < P4 < **T** < P2

Table 2 Ordinal sequence of the Average, minimum and maximum values of the syntactic properties of the Tinoco's map (T), as well as of the six proposals (P1 to P6).

the same kind of spatial investment as the previous one. This can be understood as a consequence of applying an orthogonal grid which was dequalified in local terms altgough it reproduces in global terms the old urban grid.

Table 3 shows the correlation ratios between the global and local syntactic properties considering the Tinoco's map and the six proposals:

The global and local intelligibility values shown in Table 3 can be ordered sequentially (see Table 4):

Regardind the global intelligibility values (table 4) it can be observed that P5 is always located on an ascending position when compared to the Tinoco's map (T). The opposite also occurs considering the local intelligibility, except for Connectivity/R3. This suggests that the Tinoco's map is more locally intelligible, while the new proposal P5 is more globally intelligible.

Table 3

Plans	*Connectivity (C1)*	*Control (C2)*	*Radius 3 (R3)*
Tinoco			
global integration	0.394 (*)	0.100 (**)	0.502 (*)
connectivity		0.789 (*)	0.905 (*)
control			0.635 (*)
Proposal 1			
global integration	0.404 (*)	0.100 (**)	0.480 (*)
connectivity		0.757 (*)	0.931(*)
control			0.638(*)
Proposal 2			
global integration	0.394 (*)	0.100 (**)	0.502 (*)
connectivity		0.789 (*)	0.905 (*)
control			0.635 (*)
Proposal 3			
global integration	0.395 (*)	0.114 (**)	0.495 (*)
connectivity		0.772 (*)	0.915 (*)
control			0.648 (*)
Proposal 4			
global integration	0.439 (*)	0.117 (**)	0.542 (*)
connectivity		0.760 (*)	0.909 (*)
control			0.625 (*)
Proposal 5			
global integration	0.412 (*)	0.117 (**)	0.480 (*)
connectivity		0.693 (*)	0.933 (*)
control			0.613 (*)
Proposal 6			
global integration	0.493 (*)	0.113 (**)	0.562 (*)
connectivity		0.681 (*)	0.931 (*)
control			0.604 (*)

note: (*) with p<0.0001 or (**) p < 0.001

table 3 Correlation matrix between global and local sybtactic properties of Tinoco's Plan and Six Proposalfor the reconstruction of the city

Table 2

Global int. / connectivity	**T**	<	P2	<	P3	<	P1	<	**P5**	<	P4	<	P6
Global int. / control	**T**	<	P1	<	P2	<	P6	<	P4	<	P3	<	**P5**
Global int. / R3	**T**	<	**P5**	<	P1	<	P3	<	P2	<	P4	<	P6
Connectivity/ control	P6	<	**P5**	<	P1	<	P4	<	P3	<	P2	<	**T**
Connectivity/ R3	P2	<	P4	<	P3	<	T	<	P6	<	P1	<	**P5**
Control/R3	P6	<	**P5**	<	P4	<	P2	<	P1	<	P3	<	**T**

table 4 Ordered correlation ratios bctween global and local syntactic properties of Tinoco's plan and the Six Proposals for reconstruction of the city (P1 to P6)

In fact P5 represents the end of symbolism and urbanity with medieval roots which can still be detected in the other proposals. This corresponds to an increase of the global relations and to a decrease of local ones, confirmed by a higher global intelligibility when compared to the same properties of the Tinoco's map. The suppression of a significant number of churches and the orthogonality of the grid points out the Terreiro do Paço as a new central political place.

P5 is the one that shows the lowest number of axial lines. The average values the global integration are affected by the size of the system. While the 17th century axial map presents 1449 lines, P5 only shows 923, representing 64 % of the first one. Note that these values should be considered taking into account the size effect built in this measure. This problem can be exceeded by estimating the coefficient of variation of mean global integration which is not so dependent on the size of the systems so far analysed. These values are the following ones: T (0,185), P1 (0,185), P2 (0,196), P3 (0,184), P4 (0,172), P5 (0,153) and P6 (0,170).

According to the data given just above, P5 shows the lowest value for coefficient of variation. It reveals a more uniform distribution in relation to the global integration mean values. This is exactly the opposite of the Tinoco's map.

Table 5 ordinal relations of Global Mean Integration, Coefficient of variation for Global Integration and the number of lines of the axial aps of Tinoco's plan and of the other six proposals.

Table 5

mean Integration	**T**	<	**P5**	<	P6	<	P1	<	P4	<	P3	<	P2
Coef. Var. Int.	**P5**	<	P6	<	P4	<	P3	<	**T**	<	P1	<	P2
Number of lines	**P5**	<	P4	<	P6	<	P3	<	P1	<	P2	<	**P5**

The following table orders the values of the global mean integration, its coefficient of integration as well as the size of each axial map:

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In short, P5, proves to be more globally homogeneous and intelligible regarding the mean integration of the new grid, although it shows a lower local mean integration (R3) and much less diversified morphology than the Tinoco's map.

4 Conclusions

This paper aimed, on the one hand, to present the spatial and functional organisation of Lisbon before the earthquake and, on the other, to analyse the plans set for the rebuilding of the city after the earthquake using, in both cases, space syntax analysis methodology This methodology can, as Braudel (1958) says, be considered as "a last language, it is safe to say as a last family of models: the needed representation of the space possessed by of all social reality" and called by this author as lines of research that would allow to reach a first convergence of social sciences by " mathematical lines, spatial modelling, long term duration ".

As a matter of fact, when compared with the Tinoco's map the one that rises from the earthquake shows a system with a slightly greater global integration. However, the spatial symbolic potential of the past is now diluted due to a far greater homogeneous spatial configuration in terms of the distribution of axial lines integration values.

If the Lisbon city periods of time that were analysed can be considered the historian long term - based on the cartographic representations given by the 1650 map as well as by the six proposals for the rebuilding of the city - it is not less safe to say that the short term occurrences and events, the sociologists short term duration, near to Bachelard´s "dialectique de la Durée", also turned up under the form of spatial record over these maps. Events of very short duration, (royal entrances and religious processions), as well as of medium term duration (the instability of city wall's lines and configurational changes) were also recorded in these maps. They showed and represented a great deal of inertia to change over time when compared with those short and medium duration events. Therefore, by breaking the time span in two periods, before and after the earthquake, the space syntax methodology used can be considered fit to represent these changes over time.

Structure and order, spatial permanence and change as well as social conjectures are, therefore, approaches intimately interrelated which were able to show cross fertilisation in order to promote a discussion about the role played by medieval space in the configuration of the plans for city of Lisbon after the earthquake. This is more so in relationship with the myth of having a medieval Lisbon with an intrinsically chaotic spatial organisation when compared with the city rebuild after the earthquake as not being more than a pious rectification of the previous urban structure.

In conclusion, Medieval Lisbon is completely achieved and organised in terms of the fit of functions and purposes of its spaces to its morphology - and vice-versa. The city after the earthquake dissolves the previous spatial configuration, mainly if it is compared with the alternative proposals, which were not considered for the rebuilding of the city.

5 References

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