The Five Plans for the Aftermath of 1755 Lisbon Earthquake: The Interplay of Urban Public Spaces

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Abstract:

In the aftermath of the 1755 earthquake that swept the city of Lisbon, and the south of Portugal, Manuel da Maia, the chief engineer of the king D. José I, ordered several plans for the reconstruction of the city to be made. Six plans were produced. We analyze them and try to understand how those plans answered the challenges of a modern city of the XVIII century that had to be built from scratch.

In the plans that were made, squares and churches had different roles in the urban morphology of the city. The connectivity between the city and the river in each proposed plan is different. We will show how these urban elements interplay in the different plans with each other. For this We'll use network analysis and geospatial agent based simulation to show the different nuances of the proposals for the reconstruction of Lisbon and try to answer the same questions by the perspective of the XVIII century urban planner.

Introduction

The city study can't be separated from the living of the city. The uses that people take from the public space are not totally predictable at the drawing board. The urban project acceptance and appropriation by the population, although technically well thought and developed, is always an unknown.

Although the reactions of the populations to the urban complexes might be unpredictable, there are some rules, almost universal, that allow us to draw the modern city and that were already present at the illuminist city. Today, due to the evolution of science, it is possible to create virtual systems that allow the prospection and exploration of the possible outcomes of the population reaction to a certain public space.

In the present text one puts in evidence the morphological differences, via a multi-agent simulation, inherent to the proposed plans for the reconversion of the downtown of the Lisbon city in the aftermath of the 1755 earthquake.

Taking into account the morphological similarities between the different plans we present in the following sections a detailed reflection on:

- the urban historical framework of the city of Lisbon of the XVIII century;
- the role of the religious buildings in the morphology of the different plans;
- the connectivity between the city and the river in each proposed plan at the time of the reconstruction.

Historical Perspective

Figure 1 – Terreiro do Paço (pre-1755)(oil on canvas), by Dirk Stoop; in "Museu da Cidade"

The earthquake

The 1755, November 1st earthquake that stroke the city of Lisbon (AAVV, 2008), wasn't an isolated event in the city's history. Other catastrophes, equally violent, had occurred in the past, as was the case of the earthquake of 1531, January 26th (AYRES, 1910).

Several studies on the historical seismicity of Lisbon showed that the seismic activity was sensed and recorded through the centuries in Portugal. The 1755 earthquake affected Lisbon, but was also sensed in other regions of the country and even in foreign countries, although with different intensities. How did the earthquake news spread in 1755? From the different ways the astonishing news spread, one would like to emphasize the news published at the time by the "Gazeta de Lisboa" (a newspaper) and the letters that Switzerland traders sent to Geneve (BELO, 2005). Also, the British consul, eyewitness of the earthquake, described the event in a letter sent to London in the fortnight following the tragedy (MARAT-MENDES, 2002).

"The first shock begun about a quarter before 10 o'clock in the morning, and as far as I could judge, lasted six or seven minutes, so that in a quarter of an hour, this great city was laid in ruins. Soon after several fires broke out, which burned for five or six days. The force of earthquake seemed to be immediately under the city… It is thought to have vented itself at the quay which runs from the Customs House towards the king's palace, which is entirely carried away, and has totally disappeared. At the time of the earthquake, the waters of the river rose twenty or thirty feet" (MAXWELL, 1995, pp. 21-23)

The 1755 earthquake acted as a powerful transformation agent on the Lisbon transformation. It acted as a deciding catalyst in the growth of the illuminist ideas and it's importance is such that Raquel Henriques da Silva calls it "urban earthquake" (SILVA, 2005).

The contrast between the before and after of the earthquake is very significant. Lisbon public spaces are reformed according the emergent social and urban bourgeois values. The intelligent way how the city reacted to the terrible seism and its consequent developments, through a well thought urban plan, isn't resumed to a moment of inspiration, but to a methodic proposal that demonstrates and leverages the know how acquired through history.

Several previous experiences occurred in Portugal and abroad, might have been used as references for the Lisbon reconstruction. There is the case of Rennes (the fire of Renne occurred between the 23 and 29 of December of 1720) and the case of Catania where two violent seisms stroke the 9th and 11th of December 1693.

It is interesting to verify that the text of the decree of 1758 May 12th, that specifies the uses of land and the ways of the reconstruction for the Portuguese capital, isn't fundamentally different from the one that the senate of Catania wrote in 1694. When one considers the urban space, the administrative and judicial proceedings implemented in Lisbon in 1758 are very similar to those adopted by Catania in 1694 (RAYMOND, 1997).

The Manuel da Maya Thesis

The XVII century showed a Portuguese Monarchy regulating the Lisbon urbanism. With D. João V (1707-1750) this process continued, and the urban image of the city

improved. The grandiosity of the Lisbon aqueduct "Aqueduto das Águas Livres" (1728 -) represents a high moment in a reformist process (MARAT-MENDES, 2007). Through its monumentality and the way it helped structure the urban territory, the aqueduct gave the city a new emphasis. Other projects, like the royal palace and the convent and "Tapada das Necessaidades" (1742 -), also contributed to the enrichment of Lisbon.

Due to this, by the November 1st 1755, there were in Portugal a considerable number of craftsmen, both Portuguese and foreigners, which contributed to the renovation of the city of Lisbon. From that period one can evidence the as the main craftsmen the following architects/engineers:

António Carlos Andreis, Carlos Mardel, Elias Sebastião Poppe, Eugénio dos Santos de Carvalho, Joze Domingos Poppe, Pedro Gualter da Fonseca, João Carlos Bibbiena, João Frederico Ludovice, Manuel da Maya, Matheus Vivente de Oliveira, Miguel Ângelo de Blasco and Reinado Manuel dos Santos.

The well-developed military engineering school and the "Portuguese urbanism school", which existed before the earthquake, helped in the resolution of the problems facing the city when the catastrophe happened. As a consequence of the expansion and the need to defend new territories, the art of developing the urban space improved. Schools were founded where it was taught geometry, sailing, cosmography and the art of fortifying. At that time the treaties were the most important knowledge transmitters (one should regard the importance of the French treaties in the development of the Portuguese urban and architectural thinking of the XVIII century).

With the earthquake, Sebastião José de Carvalho e Mello, the future Marquis of Pombal, had the opportunity to stand and reinstate his political ideals. From the vast team, previous stated here, it was the chief-engineer of the kingdom, Manuel da Maia (1678-1768) who would have the strategic role in the tactical and technical definitions for the city reconstruction. The "Memória" – dissertation – that he presented, acted as a true program for the production of the final plan of downtown Lisbon (pre-plan of April 19th 1756 and latter the plan of Jun 12th 1758).

The dissertation of Manuel da Maya, besides being a descriptive memory of all the project hypothesis for the reconstruction of the downtown, is, also, an great example of early transfer of development rights.

The dissertation of Manuel da Maya is divided in three parts, according to Cristóvão Ayres. The first two parts are at the Public Library of Évora and the third is at "Torre do Tombo" in Lisbon. There are some clues that a fourth part was planed but Manuel da Maya never wrote it.

Manuel da Maya established five directions to the reconstruction of the city (AYRES, 1910):

1. Rebuild the city as it was before the earthquake

2. Rebuild the city keeping the heights of the original buildings, but enlarging the widths of the streets, avoiding covered passages.

3. Rebuild the city diminishing the heights of the original buildings (to a maximum of two floors above the ground floor) and increasing the width of the narrower streets

4. Rebuild the city by destroying what was left after the earthquake and redrawing the streets and height of the city in a "proper" way.

5. Abandon the city and build a new on in the Belém area (mostly unaffected by the earthquake)

After reflection over these entire hypothesis, Manuel da Maya presents by December 4, the first part of his dissertation for Lisbon reconstruction to the duke of Lafões, or better to the king, or finally to the Marquis of Pombal[1] (FRANÇA, 1987). Although Manuel da Maya prefers the last hypothesis of changing the city to Belém, the final decision belonged to the king and the choice felt on the fourth alternative, keeping the city in the same place but starting from a "clean slate".

Although Manuel da Maya regrets the loss of his library with the earthquake, it is clear his knowledge of the reconstructions of other cities in Europe, as it was the case of London or even Turin.

"*Maia was inspired in his ideas by the revitalization of London after the Great Fire of 1666 and the plan for Turin developed for King Sarno by Ivvaro. What specifically he gained is unknown. it is known that Wren's plan for London, despite having been created in the previous century, addressed many of the problems facing Lisbon. Is is also known that Pombal was familiar with London, having served as Portugal's ambassador to England. Concerning Turin, the concepts applied to that new city would have had direct application if the capital were relocated to Belém. The Turin plan called for building a new capital immediately adjacent to the old. However, neither example offered help in terms of addressing the personal hardships of the people."* (MULLIN, 1992, p. 164)

Walter Rossa agrees also with the theory that Portugal had foreign influences that had conditioned the drawing of the new Lisbon. He states the relation of Lisbon with Turin and London weren't useful from the urban point of view but, according to the author, the references are mainly observed in the architecture nature of certain

[1] At the time, Sebastião de Carvalho e Melo didn't hold the title of Marquis of Pombal, that was only given to him latter in is life, but as it is the common treatment by which he is known, we adopted the designation in this paper.

aspects of the city and prove them with the composition of the buildings of "Terreiro do Paço" (AZEVEDO, 1990; ROSSA, 2003, 2004).

Manuel da Maya organizes, in the third part of his dissertation, different project teams with different objectives, as if they were in a public contest for the drawing of a plan for Lisbon reconstruction. He reunited five man of it's trust, António Carlos Andreas, Elias Sebastião Poppe, Eugénio dos Santos de Carvalho, Francisco Pinheiro da Cunha, Jozé Domingos Poppe e Pedro Guatler da Fonseca and defined teams for the drawing of several plans. He devised six plans in this way (from these, the plan number 5 is missing).

For the plan n.º 1 he selected Pedro Gualter da Foncêca and Francisco Pinheiro da Cunha.

For the plan n.º 2 he selected Elias Sebastião Poppe and is son Jozé Domingos Poppe

For the plan n.º 3 he selected Eugénio dos Santos de Carvalho and António Carlos Andreas

For the plan n.º 4 he selected Pedro Gualter de Foncêca

For the plan n.º 5 he selected Eugénio dos Santos de Carvalho

For the plan n.º 6 Elias Sebastião Poppe was selected.

Manuel da Maya defined specific programs for the drawing of plans to be developed by each team. The first three plans had more restrictions in the program. They should respect the line forces of the old urban fabric. The latter three plans (4,5 and 6) had more freedom. This conditioned the drawing of the former plans making the latter more regular.

Churches in the urban fabric

Manuel da Maya had the clear notion how to build the city. First, the public building should be built and only afterwards should the residential ones be implanted[2]. *"(...) me parece se deve principiar a renovação da cid.ᵉ de Lix.ᵃ pelos edifícios públicos (...)*".(AYRES, 1910, p. 30)

Because of this, Manuel da Maya establishes two sets groups of plans for the reconstruction. In one set churches should be kept in the pre-1755 placements, while in the other set of plans he allowed the project leader to draw the churches wherever they felt fit.

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[2] A schematic representation of this method is show in the text "Construir cidade com espaço público" in the magazine Waterfront of Art III (SAMPAYO, 2003).

In this sense, D. José I continues the work of his father. The monumental Lisbon, as Rome, is put in evidence through the establishment of the power of churches proposed in the different plans by Maya.

The papal Rome was built upon the ruins of the old Rome through a plan drawn by Sisto V in 1588 with the collaboration of the urban architect Domenico Fontana. This papal plan for the reconstruction of Rome had the objective to potentiate the mobility of the pilgrims between the seven main churches that would give them the indult. In this way, the churches location was strategic and they should be very visible in the urban fabric.

Figure 2 – Left: Rome, 1588 drawing of the street scheme with its monuments. Right: Rome Plan in the XVIII century, indicating the straight streets opened by the popes in the XV and XVI centuries (BENEVOLO, 1994, pp. 296,297).

In a careful reading of urban history, one notices that the implantation of public buildings is usually associated with important public spaces of the city. Making a survey over several cities it is possible to see that institutional buildings have an implantation logic, with many being placed in squares, at the end of important roads or in places of high visibility like topographic elevations.

From an historical perspective, one can also see that there are differences in the way these public buildings are placed through time and it's different concepts of the city. Comparing the renaissance and the baroque with the medieval period, one can see a significant change of attitude, mainly in what to perspective issues are concerned. Benévolo, when referring himself to the European city of the XVI-XVIII centuries,

states the search of adequacy of the city to the rules of perspective that were born in the Italian renaissance in the beginning of the XV century (PESSOA, 2001).

The exploration of perspective, through the placement of buildings or monuments, in the lines of the streets, or as focal points of squares, became a characteristic of the renaissance and baroque cities.

As José Pessoa tells us, in this new concept of city, the streets have the architectonic monument as a background:

> *With Bernini, the perspective is used to create dynamical spaces, which direct the eye to the great architectonic monument. The Berninian experiment of the column in the St. Peter Square at Vatican represented the marking of this new tendency that will flow through out Europe, stating the relation between palace and churches with the urban environment. The eye broadens, and the new streets have the architectonic monument as a background that starts to subordinate the urban plan(…)*(PESSOA, 2001)[3]

Due to the fact that the churches in the several plans of downtown Lisbon, obeyed different criteria, the analysis of their influence in the urban fabric is very important, because it catalysis different synergies with the city.

The city relation with the river

The connectivity of the city with the Tagus River is analyzed and quantified. Through history the relation of cities with its rivers wasn't always the same. In several cities with waterfronts, it is evident the parallel and perpendicular disposition of streets in relation to the waterfront. This is justified from the economical perspective (allowing for a stronger connectivity with the river), aesthetic reasons and also due to scientific reasons.

The post-earthquake plans for the downtown of Lisbon are apparently more connected with the river (if compared to the pre-1755 city)[4]. There is a strong presence of streets perpendicular to the river in the plans. This option can be

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[3] *"Com Bernini a perspectiva avança no sentido da criação de espaços urbanos dinâmicos, que direcionam o olhar para o grande monumento arquitetônico. O experimento berniniano do projeto da colunata na Praça de São Pedro no Vaticano representou o marco desta nova tendência que se difundirá por toda a Europa, marcadamente na relação dos palácios e igrejas com o tecido urbano envoltório. O olhar se amplia, e as novas ruas têm como fundo o monumento arquitetônico que passa a subordinar o traçado urbano (…)"* in the original.

[4] The work of others (Kruger, 1998; Heitor et al. 1999) show a different view of this connectivity as it has been analyzed under the space syntax framework.

understood by the aesthetic view, economic view, and by seismic reasons. Cristovão Ayres asks about this matter and evokes Kant:

> *Is it possible that the great Marquis of Pombal, at the time that he was drawing the new plan of Lisbon, noticed the important advice from the illustrious philosopher: that the arteries of the great threatened cities shouldn't be built parallel to water lines (in the case of Lisbon from West to East), because the movement of the shake follows that same direction and prolongs itself through the river bank?*(AYRES, 1910)[5]

The urban design, adopted by the Portuguese military engineers for Lisbon can be explained on the light of the seismology knowledge that they had. This is also put in evidence by the existence of the book "História Universal dos Terramotos" (Universal History of Earthquakes) by Joquim José Moreira da Mendonça in the private library of Eugénio dos Santos (OLIVEIRA, 2007).

More or less connected with the river, the city of Lisbon was, until mid-XIX century a waterfront city, by excellence. Is natural then, that we see represented its political power and economical power through buildings and symbolic spaces.

With the change from the medieval city (introspective and defensive) to the modern (open) city, through the move of the Royal Palace from the castle high zone to the riverfront downtown (by decision of the king D. Manuel I), several changes occurred. With the Royal Palace near the river, several other are built.

Work Methodology

We'd like to clarify an aspect the we've verified isn't taken into consideration, or isn't from the knowledge of others researches that dedicate themselves to the study of the plans of downtown Lisbon of this epoch:

The researches in the Portuguese urban cartographic archives revealed the existence of several copies of the same plans with subtle differences. In the "Gabinete de Estudos Arqueológicos da Engenharia Militar"(GEAEM) there are four plans (although França indentified five during the 60s, meaning that one is missing): Plan 1, Plan 2, Plan 4 and Plan 6; In the City Museum there are the following plans:

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[5] "*Teria o grande Marquês de Pombal, na epoca em que delineava o novo plano de Lisboa, noticia do seguinte importante conselho do illustre philosopho: que as arterias das grandes cidades ameaçadas não se devem construir paralelas ás vias fluviaes (isto é, emquanto a Lisboa, do Occidente para o Oriente), porque o movimento do tremor segue essa direcção e prolonga-se pelo curso dos rios? (pag. 404). A sciencia já então tinha feito esta e outras descobertas».*" In the original.

Plan 1, Plan 2, Plan 3 (two identical versions), Plan 4, Plan 6 and also the plan of downtown before the earthquake.

There are some problems to fulfill this study as the Plan 5 is still missing and on the other hand there's no registry of which of these plans were used in the third part of Manuel da Maya dissertation.

The fact that plan 5 is missing is known to almost all the researchers that studied the post-earthquake Lisbon[6]. On the other hand, the duplicity of some of the other plans (like 3) has passed unnoticed through out the years.

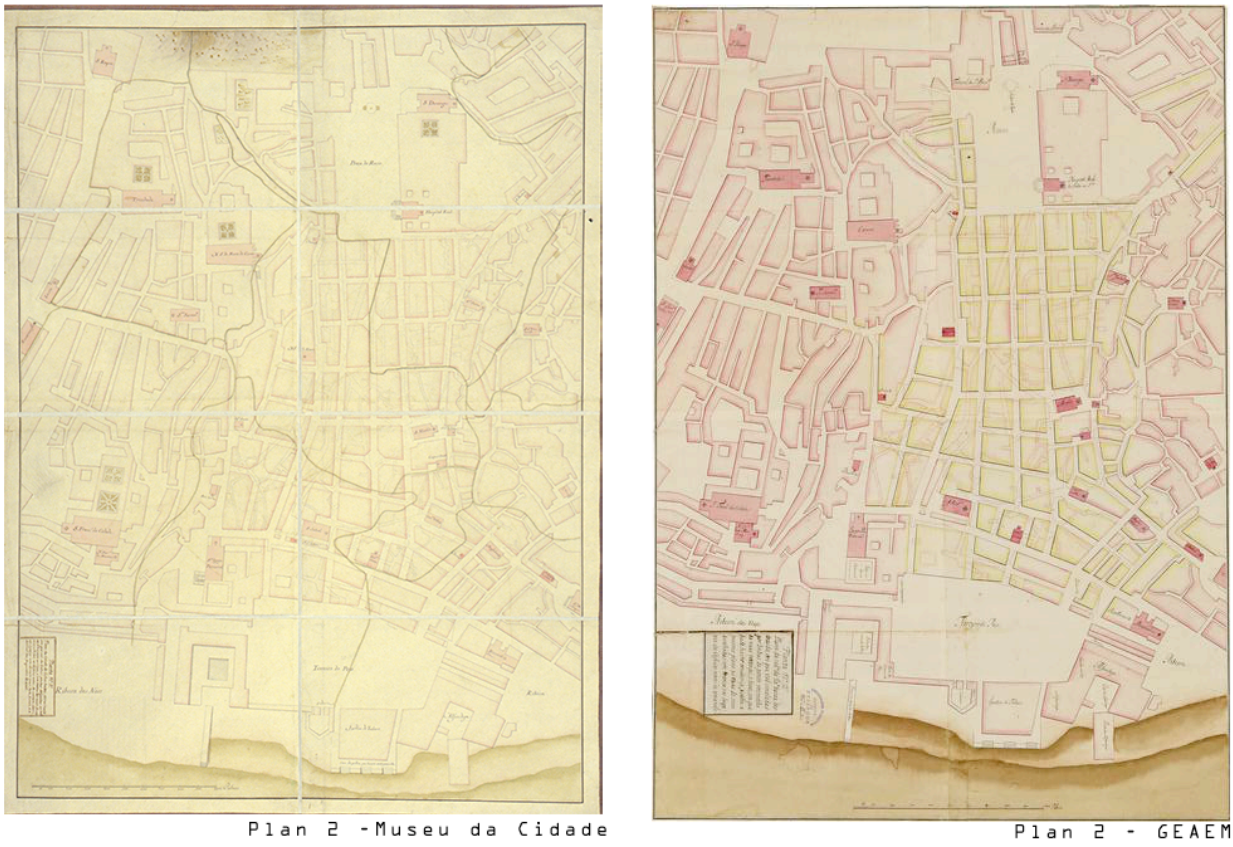

Figure 3 – Different versions of the Plan 2. The left one is in the City Museum of Lisbon and on the right the one at GEAEM.

Comparing the different plans from different archives from GEAEM and the City Museum one can see differences in the copies. This is most evident in the Plan 2 where the central squares of the plan are drawn in one of the copies and missing

[6] This fact is also noticed by Vítor Manuel Vieira Lopes dos Santos (SANTOS, 1994).

from the other (the squares are present in the City Museum plan and missing from the GEAEM plan).

These differences are also noticeable in the configuration of the plans legends, in the placement of the scale in the drawing and even in the colors used.

Because of these differences, we chose the plans in the City Museum as the base for this work. The plans were digitized and rescaled to allow the comparison of features between the 5 plans (1, 2, 3, 4 and 6). When superimposing the 5 plans, we noticed that there are small misplacements of common buildings, mainly in the Plan 2. This is possibly due to the different precision of the drawings at that time (when compared to modern age) and this is even put in evidence by Manuel da Maya when he advised that during the reconstruction, the plan and the place had to come together reconciled.

The study of the city can be made at different levels and using different tools. Graph theory, had it's first application in the solving of a urban problem: the problem of the Königsberg bridges was solved by Euler in 1735 (Euler, 1741)[7]. During the 1980-1990s, Space Syntax has taken a new revitalized approach of graph theory to measuring city features(Hillier & Hanson, 1989). One aspect of this theory of particular interest is that of defining the volumes of space seen from a point in the city, called Iosvist (Benedikt, 1979). More recently Agent-Based simulation has gained particular interest, as some non-linear features are not possible to account with traditional reductionist approaches (Batty, 2007). The non-linearity of social aspects of life systems is also manifested in the cities and the mathematical analysis of urban spatial networks as been given a particular attention with the work on random walks by Blanchard and Volchenkov (Ph Blanchard & D. Volchenkov, 2008; Philippe Blanchard & Dimitri Volchenkov, 2008).

In this work we took two of these practices and developed it's concepts to study the plans produced in the 1755 reconstruction. The first approach was to extend the notion of Isovist, in a way that could account for the impact of a building instead of a single point. The second was to use an agent based simulation to quantify the relative pedestrian connectivity of the two main squares of the city and consequently the intricacy of the streets in between.

The analysis of the importance of religious buildings in the city plan was made through the visual impact that those buildings would have in the public space. We used a variation of the Isovist process that allowed to raytrace the Isovists as if the entire building was the focus of the raytracing. The main difference from traditional isovist creation is that instead of having a focus point, one considers the entire mass of the building of interest as being filled with focus for those isovists.

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[7] For an historical introduction to graph theory and network analysis see (Rodrigues, 2009).

The connectivity of the city with the river, or more precisely the connectivity between the two main squares of the city (Rossio and Terreiro do Paço) was studied with the help a computer agent based simulation. The basic idea behind this process is to use a stochastic random walk process to identify the strength of the connection between the two zones.

Model description:

The several plans of the city were prepared with two defining painted zones. This two zones (green and red) mark the departure and destiny zones. This zones were drawn in the Rossio (green) and Terreiro do Paço (red) squares, and the average distance of runs from one to the other gives a measure of the intricacy of the urban fabric in between and its population mobility.

The sub-model for the description of the pedestrian random walk measure is given by the following rules:

- agents follow a straight line up to finding an obstacle;
- when in face of an obstacle, agents will invert direction choosing a new direction randomly.

This stochastic process has similarity to that of a gas inside a container, where molecules move freely and in this way filling the entire are in time. When applied to the plans, and noting that we are removing agents at the destiny zone a re-feeding them to the departure zone, we are able to calculate over time the average time / distance an agent as to take to go from one zone to the other.

The simulation is started generating a certain number of agents (in this case 250) in the green zone, each with a random heading. From there at each timestep each agent moves according to the pedestrian stochastic random walk sub-model. The distances walked are tracked and each simulation is stopped when the average speed stabilizes in a plateau. In this case for consistency, we let the simulation run further to the point were we would have 10000 runs between Rossio and Terreiro do Paço.

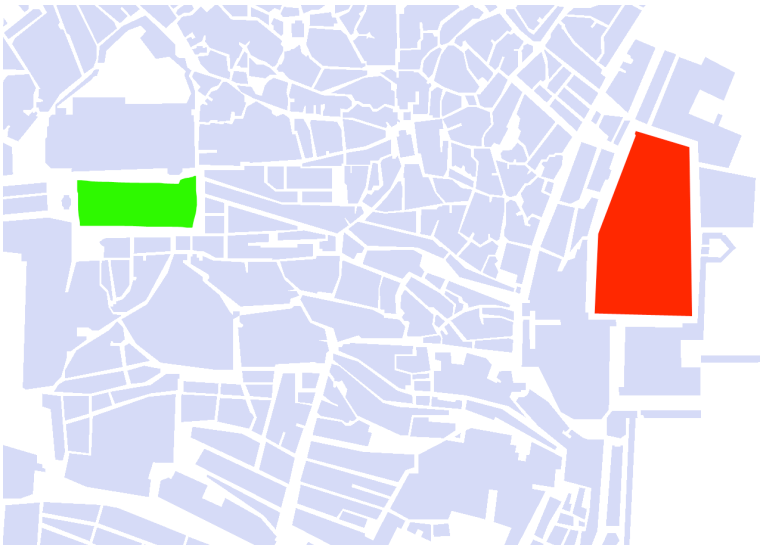

Figure 4 – Plan of the city of Lisbon before the 1755 earthquake, showing the departure zone in green and the arrival zone in red.

The definition of the two zones was made in a way that they would cover the most part of the squares, and consequently all entries and exits of those squares.

Results of the Computer Analysis

Churches impact in the public space

The analysis of the churches impact in the public space was calculated through the occupied area of the visual cones via the modified isovist technique.

Table 1 – The visual impact of churches in different plans

	Visual impact	Total área	n.º churchs
Pre-1755	30%	11%	25
Plan 1	46%	20%	22
Plan 2	42%	19%	26
Plan 3	52%	19%	24
Plan 4	51%	20%	26
Plan 5	-	-	
Plan 6	65%	25%	28
Chosen	31%	8%	15

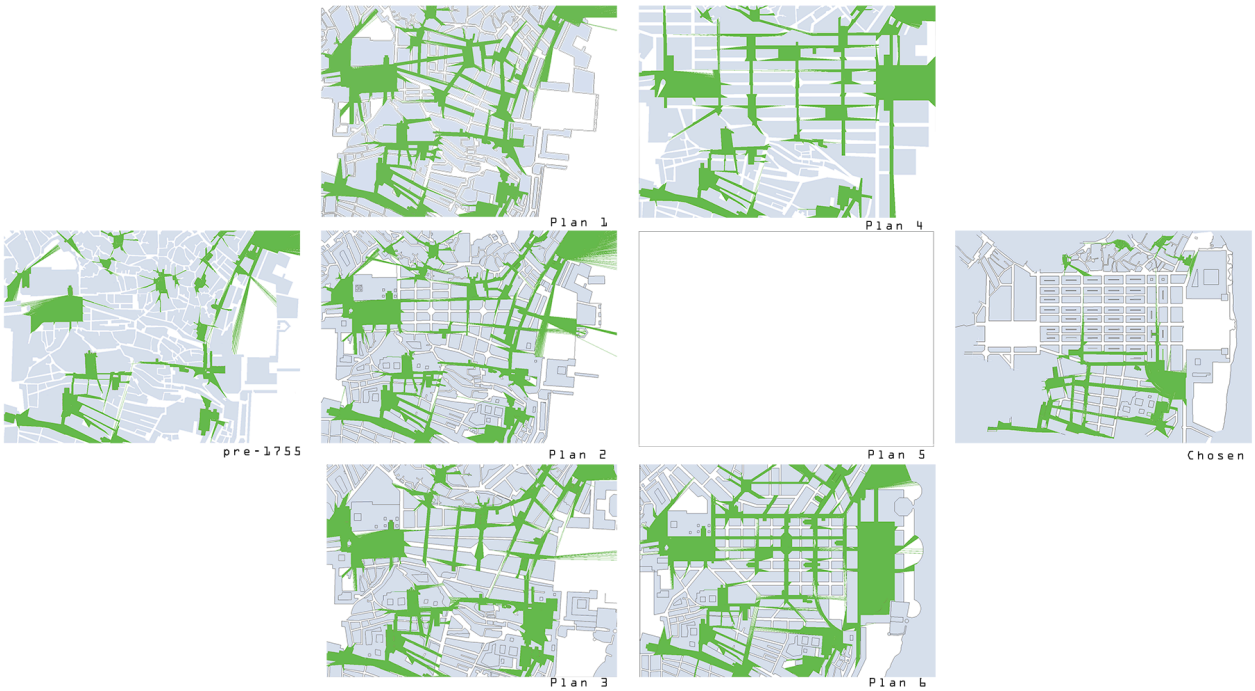

Figure 5 – The Isovist constructions for the religious buildings of Lisbon for the different plans as also for the pre-1755 city

These results show that all plans, except the chosen one, had a greater visual impact of churches in public space. This was due to the placement of those churches combined with larger rectilinear streets. In plan 6 this influence was taken to extreme with the proposal of a patriarchal church in Terreiro do Paço. In the opposite direction the chosen plan shows a similar visual impact of churches in the plan as the pre-1755 city. This was accomplished through the removal of all churches from the mains streets and integrating them inside the city blocks. This plan presented a similar level of visual impact, comparable to the pre-1755, but with a completely different approach to the street drawing.

Connectivity between the main squares

The results of the connectivity between the two main squares of the Lisbon plans (Rossio and Terreiro do Paço) were obtained via simulation based in the model described. An average distance was calculated for the random walk of 10000 agents that traverse from Rossio to Terreiro do Paço. Considering the pre-1755 Lisbon as the basis for comparison of the other plants one observes the results of Table 2.

Table 2 – Average distance index of the connectivity analysis between Rossio and Terreiro do Paço via the Random Walk method of Agent Based Model

	Av. Distance Index
Pre-1755	100
Plan 1	25
Plan 2	22
Plan 3	21
Plan 4	10
Plan 5	-
Plan 6	15
Chosen	10

In Table 2 the Plan 5 couldn't be simulated, as the plan is missing. As the Plan 5 was the one that was chosen, we did run the simulation on the plan of another drawing. This drawing didn't include all the detail that the other 5 plans had, and one has to take the results with some care. From this results it's easy observable that all plans show a significant reduction in the average distance for travelling from Rossio to Terreiro do Paço. It is also noticeable a difference between the two sets of plans. Plan 1,2 and 3, that were constrained by the pre-existences, show a higher value for the average distance than the values for the latter plans (4,6 and chosen).

Conclusion

This study showed how the different options for the reconstruction of the city of Lisbon would have impacted the city being rebuilt. We confirmed that a paradigm shift in the drawing of the city through the historical analysis and confirm this through an agent-based simulation. The aftermath of the 1755 earthquake, allowed for the total rebuild of the city and through that to restate the power balance in the kingdom. The new city changed importance of the church as a central aspect of its living. As observed through the historical analysis, the city model of the medieval city is different from the renaissance and baroque city. The placement of churches assumes a different role in each of those views. This was confirmed in the simulation by the determination of the visual impact of the churches in the public space. The percentage of the visual impact shown in Table 1 clearly shows a difference between the old city and the new one. All the plans showed a greater visual impact of the religious buildings, except for the chosen plan. It seems, in accordance to Mullin (1992), that the church and the state were equal in power. The option between the chosen plan and plan 6, represented the choice between giving more power to the church (as for example via the proposed patriarchal church in Terreiro do Paço) or the control of the church by the state, making the role of churches less important. The Marquis of Pombal clearly wished to restrain the Church (Pombal expelled the Jesuits, for example). The chosen plan allowed him, at least symbolically, to do precisely that.

Also, the plans drawn for the city of Lisbon meant a departure from the medieval model of city in terms of mobility. The intricacy of the old city was greatly reduced in the new plans and connections between different areas were substantially improved. The results from the simulation of the random walk model, showed that the plans that still kept the main force lines of the old city (1,2 and 3) were the ones that had the less improvement in terms of mobility. The plans that had greater freedom from Manuel da Maya (4, 6 and the chosen one) are, by contrast, much easier to navigate and the chosen plan presented a 10 time diminishing effect on the distances between the two main squares of the city.

In the end the city of Lisbon had a plan to its reconstruction that included a shift in the traditional notions of mobility of the city and the power of the church in the daily lives of its citizens.

The chosen plan was, and still is, a success from the urban point of view. It's success is so evident that de Groer words resonate still today in our minds. The XVIII century plan is the "dorsal spine" of the Portuguese capital:

> *"Les artères du plan, établi à ce moment, forment jusqu'à présent l'ossature de la capitale portugaise et lui impriment son individualité."* (DE GROER, mars-avril1936).

References

AAVV (2008). *The 1755 Lisbon Earthquake: Revisited* (Vol. 7): Springer Netherlands.

AYRES, C. (1910). Manoel da Maya e os Engenhieros Militares Portugueses no Terramoto de 1755.

AZEVEDO, J. L. d. (1990). O Marquês de Pombal e a sua época. *Obras completas de J. Lúcio de Azevedo*.

BATTY, M. (2007). *Cities and Complexity: Understanding Cities with Cellular Automata, Agent-Based Models, and Fractals*: The MIT Press.

BELO, A. (2005, 2008). *A notícia do terramoto no sistema de informação de antigo regime.* Paper presented at the XV CURSO DE VERÃO - 250º Aniversário do Terramoto de 1755 : História e Ciência da Catástrofe Lisboa.

BENEDIKT, M. L. (1979). To take hold of space: isovists and isovist fields. *Environment and Planning B: Planning and Design, 6*(1), 47 – 65-47 – 65.

BENEVOLO, L. (1994). *Histoire de la Ville* Paris: Parenthèses.

BLANCHARD, P., & VOLCHENKOV, D. (2008). Exploring Urban Environments By Random Walks. *0801.3216*.

BLANCHARD, P., & VOLCHENKOV, D. (2008). *Mathematical Analysis of Urban Spatial Networks*: Springer.

EULER, L. (1741). Solvtio Problematis Ad Geometriam Sitvs Pertinentis. *Commentarii academiae scientiarum Petropolitanae, 8*(53), 128-140.

FRANÇA, J.-A. (1987). *Lisboa Pombalina e o Iluminismo*. Lisboa: Bertrand Editora.

HEITOR, T. K., Mário; MUCHAGATO, J.; TOSTÕES, A. (1999). *Breaking of the medieval space:*

The Emergence of a New City of Enligthenment. Paper presented at the Spaces Syntax Second International Symposium, Brasilia.
HILIER, B., & HANSON, J. (1989). *The Social Logic of Space*: Cambridge University Press.
KRUGER, M. (1998). A Sintaxe da Cidade de Lisboa *Contribuições Para o Desenvolvimento da Cidade*. Coimbra: FCTUC.
MARAT-MENDES, T. (2002). *The Sustainable Urban Form : A comparative study in Lisbon, Edinburgh and Barcelona.* Unpublished Tese de Doutoramento, University of Nottingham, Nottingham.
MARAT-MENDES, T. (2007). *Do Aqueduto de Lisboa aos novos Vazios*. Paper presented at the SEU (Seminário de Estudos Urbanos) : Vazios Uteis - Lisboa 19-21 Julho 2007 from http://seu2007.saau.iscte.pt/Actas/Actas_SEU2007.html)
MAXWELL, K. (1995). *Pombal. Paradox of the Enlightenment*. Cambridge UK: Cambridge University Press.
MULLIN, J. R. (1992). The reconstruction of Lisbon following the earthquake of 1755: a study of despotic planning. *Planning Perspectives 7, 7*, 157-179.
OLIVEIRA, M. L. M. F. (2007). *Eugénio dos Santos, arquitecto e engenheiro militar (1711-1760) : Cultura e prática de Arquitectura.* Universidade Nova de Lisboa Faculdade de Ciências Sociais e Humanas, Lisboa.
PESSOA, J. (2001). *Cidade barroca ou tardo medieval? A arquitectura na definição dos traçados urbanos da América portuguesa.* Paper presented at the III Congreso Internacional de Barroco Latino-Americano, Olavide.
RAYMOND, H. D., Liliane; NOTO; Val di (1997). Histoire des idées ou histoire des mentalités. In U. d. S. R. D. d. A. e. A. d. Città (Ed.), *Le città ricostruite dopo il terremoto siciliano del 1693. Tecniche e significati delle progettazioni urbane* (pp. 65-70). Roma.
ROSSA, W. (2003). A Baixa de Lisboa no Contexto do Urbanismo Português. *Jornadas A Baixa Pombalina e a sua importância para o Património Mundial*, 28-39.
ROSSA, W. (2004). Do plano de 1755-1758 para a Baixa-Chiado. *Monumentos, nº 21*, 22-43.
RODRIGUES, D. M. d. S. (2009). *Detecção de comunidades no sistema de correio electrónico universitário.* Departamento de Ciências e Tecnologias de Informação – *ISCTE, M.Sc.*, Lisbon.
SAMPAYO, M. G. T. d. (2003). *Construir Cidade com Espaço Público*. Waterfornts of Art III - Public Art & Urban Design: Interdisciplinary and Social Perspectives, 44-46. Retrieved from http://www.ub.edu/escult/epolis/WaterIII.pdf
SANTOS , V. M. V. L. d. (1994). *O sistema construtivo pombalino em Lisboa em edifícios urbanos agrupados de habitação colectiva. Estudo de um legado humanista da segunda metade do Século XVIII. Contributos para uma abordagem na área da recuperação e restauro arquitectónico do património construído.*, Universidade Técnica de Lisboa, Lisboa.
SILVA, R. H. d. (2005, 2008). *Da destruição de Lisboa ao arrasamento da baixa : o terramoto urbanístico de Lisboa.* Paper presented at the XV CURSO DE VERÃO - 250º Aniversário do Terramoto de 1755 : História e Ciência da Catástrofe Lisboa.

Sixteenth International Seminar on Urban Form
Guangzhou, China, 4 - 7 September 2009

Urban morphology and urban transformation

城市形态与城市转型

第十六届国际城市形态论坛

International Seminar on Urban Form
国际城市形态论坛
School of Architecture, South China University of Technology
华南理工大学建筑学院
Guangzhou Urban Planning Bureau
广州市规划局
State Key Laboratory of Subtropical Building Science
亚热带建筑科学国家重点实验室
Guangzhou Urban Planning Association
广州市城市规划协会

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Sixteenth International Seminar on Urban Form
Guangzhou, China, 4 - 7 September 2009

Conference Programme

Conference Venue: Liwu Building of Science and Technology (Liwu Centre), South China University of Technology, Guangzhou

Basement: Room B103 (International Conference Hall)

Room B101 (Huang-De Hall)

Room B102 (Zheng-De Hall)

Room F102 (Qiu-Shi Hall)

First floor: Room 105 (Jiang-Xue Hall)

Eleventh floor: Room 1103 (Principal conference room)

Twelfth floor: Room 1202 (Ming-Lun Hall)

Room 1203 (Ming-Xin Hall)

Friday 4 September 2009

Registration and Help Desk:

Foyer of the Xihuyuan Hotel, South China University of Technology

Opening Times:

4 September	10.00 – 18.00
5 & 6 September	08.30 – 17.30
7 September	08.30 – 16.30

Help Desk:

Foyer of Ramada Plaza Hotel

Opening Times:

4 September	10.00 – 17.30

Help Desk:

Foyer of Liwu Centre

Opening Times:

4 September	12.00 – 17.30
5 & 6 September	08.30 – 18.15
7 September	08.30 – 12.15

Walking Tour of the Campus (led by Liming Tang): 14.00 – 15.10

Those participants who are interested a short 'orientation' tour of salient features of the campus, should meet in front of the Xihuyuan Hotel at 14.00

ISUF Editorial Board meeting (Board members only)	13.00 – 13.45	Room 1202
ISUF Council meeting (Council members only)	13.45 – 15.30	Room 1202
Welcome address by University President	**15.45 – 16:00**	**Room B103**
A. Plenary session (chaired by Yinsheng Tian):		
Jingtang He, 建筑、雕塑与城市环境的和谐统一 (A harmonious way of architectural design and urban environment)	**16.00 – 16.40**	**Room B103**
Piper Gaubatz, Reconceptualising the Chinese city: urban form in the context of rapid change	**16.40 – 17.15**	

Welcome reception and conference dinner (Welcomed by Yimin Sun)	**18.15 – 20.15**	**Foyer of Xihuyuan Hotel, South China University of Technology**
Shuttle bus to Ramada Plaza Hotel	**20.45**	**Meet in front of Xihuyuan Hotel**

Saturday 5 September 2009

Room B103 **B. Plenary Session: Defining character areas in cities (chaired by Kai Gu):** **(9.00 – 10.15)**	**J.W.R. Whitehand** **Michael P. Conzen**	**Making sense of urban landscapes: enhancing research and practice** **The secret life of urban fringe belts: a global comparison**

Tea / Coffee break (10.15 – 10.35)	**Foyer of Liwu Centre**

Room B101 **(10.35 – 11.55)**	**C1. The evolutionary process of urban form** **Chair: Nicola Marzot and Jian Zhang**	
10.35 - 10.55	Michael Barke	Urban transformation in an inner city area: morphological processes in Shieldfield, Newcastle upon Tyne, UK
10.55 – 11.15	Ian Morley	The Victorian morphological terrain: transitions in the face and plan of British urban cores, *c.* 1880-1914
11.15 – 11.35	Hui Ka Man and Woo Pui Leng	Defining permanence and change in the urban transformation of older districts: the case of Sham Shui Po in Hong Kong
11.35 – 11.55	Thomas Chung, Hendrik Tieben, Pui-leng Woo, Tsang-chi Yuet	Urban transformation of central district as a place of living 1843-2008
Room B102 **(10.35 – 11.55)**	**C2. Urban morphology and conservation of historic places** **Chair: Kai Gu**	
10.35 - 10.55	Zhang Tianxin, Pierre Gauthier and Yamamura Takayoshi	Urban morphology, heritage preservation and the control of transformations - a case study in the World Heritage City of Lijiang
10.55 – 11.15	Shu-yi Wang	The evolution of the townscape of the ancient

		city of Pingyao in China
11.15 – 11.35	陶伟 (Wei Tao)	岭南古村落中持久聚落要素的形态变化 (Morphological change of the persistent elements in ancient villages in the Lingnan region)
11.35 – 11.55	Wei Dong	Chinese ancient urban cartography theory and its significance today: an analysis of Pei Xiu's 'six graphic-approach' of the 3rd century AD
Room 105 **(10.35 – 11.55)**	**C3. Urban fringe and change** **Chair: Jeremy Whitehand**	
10.35 - 10.55	Stael Alvarenga Pereira Costa and Marieta Cardoso Maciel	Fringe belts in planned cities: do they exist?
10.55 – 11.15	Marjut Kirjakka	From rural to fringe to urban: the development of Espoo, Finland
11.15 – 11.35	Derry O'Connell	Satellite morphotopes in the expansion of small towns
11.35 – 11.55	许昊 (Hao Xu)	转型时期的城乡边缘带空间形态演变——以北京市管庄地区为例 (The evolution of rural and urban fringe in the period of socio-economic transition: a case study of Guanzhuang, Beijing)
Room 1103 **(10.35 – 11.55)**	**C4. Urban transformation of the Chinese city** **Chair: Beisi Jia**	
10.35 - 10.55	Marco Maretto	Urban morphology and urban design in 21st century new urbanism: two Chinese case studies, Beijing and Quingdu.
10.55 – 11.15	Robert Adams	Background Beijing urban house: Qing Shui Yuan and linked hybrid, and non-identical typological twins
11.15 – 11.35	Tat Lam and J. Cressica Brazier	Redefining superblock urbanism: the transformations of 'bigness' from historical urban structure to modern development in Beijing
11.35 – 11.55	郭聪 刘彤彤 詹远 孙德龙 (Cong Guo, Tongtong Liu, Yuan Zhan and	城市形态学在城市边缘化地区更新中的应用 (The application of urban morphology in urban redevelopment)

	Delong Sun)	
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10.55 – 11.15	Arnold Bartetzky	The invention of heritage: architectural reconstruction projects in central and eastern Europe
11.15 – 11.35	Kumi Eguchi	A comparative study on urban heritage and change concerning the activities of the intermediate groups for preservation in France and Japan from the second half of the nineteenth century to the first half of the twentieth century
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10.35 - 10.55	Yanliu Lin and Bruno de Meulder and Shifu Wang	The roles of key actors in the morphological transformation of Shipai Village in Guangzhou, China
10.55 – 11.15	魏开 (Kai Wei)	资本化与结构化——一个中国乡村城市化社区的空间形态演变研究 (Capitalization and structuralization: morphological research on an urbanizing rural community)
11.15 – 11.35	Robert Mangurian and Mary-Ann Ray	Beijing off centre: Caochangdi village - people's space in the early 21st century Republic of China
11.35 – 11.55	Liu Ye and Tai Yuting	The mode of reformation in urban villages of Guangzhou and its cultural significance

Lunch	**12.30 – 14.10**	**Foyer of Xihuyuan Hotel, South China University of Technology**

Room B101 **(14.30 –**	**D1. Research on urban form of Chinese cities** **Chair: Fei Chen**

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14.30 – 14.50	Laurence Wei-Wu Liauw	Contemporary urban types in Chinese cities: learning from Shenzhen
14.50 – 15.10	Shulan Fu	Ideal form of Shan-shui City in China: a case study on Hangzhou
15.10 – 15.30	熊国平 (Guoping Xiong)	90 年代以来中国城市形态演变的基本总结 (A review of contemporary research on urban form in China)
15.30 – 15.50	刘捷 (Jie Liu)	当代中国城市形态发展模式的探讨 (An exploration of morphological models of Chinese urban development)
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15.10 – 15.30	叶浩军 (Haojun Ye)	基于地铁上盖物业开发的微观尺度下经济价值观对城市形态的影响分析 (The influence of economic values on urban morphology of microcosmic scale based on the metro station property development)
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14.50 – 15.10	Karin Schwabe Meneguetti and Gislaine Elizete Beloto	Maringe urban project: form, function and land value appreciation
15.10 – 15.30	Luiz Amorim and Mauro Normando Barros Filho	Urban space and image: converging configuration and texture analysis
15.30 – 15.50	Gahramanova Shahla	Typological zoning and transformation of city quarters of the central zone of Baku
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14.50 – 15.10	Hajo Neis, Jenny Cestnik and Trevor Jones	The irregular block morphology in Portland, Oregon
15.10 – 15.30	Sam Griffiths, Catherine Emma Jones, Laura Vaughan and Muki Haklay	A morphological approach to the historical persistence of socio-economic activity in three suburbs of Greater London
15.30 – 15.50	Renato Leao Rego and Karin Schwabe Meneguetti	Planted towns and territory organization in perspective: a morphological study of a settlement process
Room 1203 **(14.30 – 16.10)**	**D6. Understanding Brazilian cities** **Chair: Stael Alvarenga Pereira Costa**	
14.30 – 15.50	Rômulo José da Costa Ribeiro and Frederico de Holanda	Geospatial analysis in support of sustainable architectural and urban morphology
14.50 – 15.10	Lucia Capanema Alvares and	Urban form and landscape

	Robson Arujo Filho and Mario R Aguilar Neto	transformation in Brazilian slums
15.10 – 15.30	Vera R. Tangari and Jonathas Magalhaes Silva	Integrated open spaces and green areas plan for the regional distracts of Jacarepagua and Cidade de Dues, in Rio de Janeiro, Brazil: a conceptual proposal
15.30 – 15.50	Rogerio Goldfeld Cardeman and Vera Tangari	The best and worst results of transports expansion in Rio de Janeiro City in the 20th century

Tea / Coffee Break (15.50 – 16.20)	**Foyer of Liwu Centre**

Room B101 **(16.20 – 17.40)**	**E1. Urban form analysis and design** **Chair: Shuyi Wang**	
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16.40 – 17.00	Jean Michel Deleuil and Thai Son Pham	From villages to narrow-lane districts: a case study of spatial and social transformation in Hanoi
17.00 – 17.20	Paul Sanders	Consonance in urban form: morphogenetic analysis of architectural elements within urban forms
17.20 – 17.40	Jitesh J. Brahmkshatriya	Changing social organisation and its influence on the design of buildings, networks and cities: Ahmedabad, India
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16.20 – 16.40	卞素萍 (Suping Bian)	巴黎城市空间形态解析 (Interpreting the spatial morphology in Paris)
16.40 – 17.00	莫浙娟 (Zhejuan Mo)	Synopsis of the great culture of ‘urban project’ in the French manner
17.00 – 17.20	Thomas Chung	Paradox of a ‘peaceful country’: on urban

		form, landscape and monuments in central Tokyo
17.20 – 17.40	Angeliki Koliomichou	Augmented waterways
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16.40 – 17.00	Mafalda Teixeira de Sampayo and David Rodrigues	The five plans for the aftermath of the 1755 Lisbon earthquake: the interplay of urban public spaces
17.00 – 17.20	Maria Fernanda Derntl	Method and art: urban changes in the captaincy of São Paulo and Portuguese colonial policies
17.20 – 17.40	Marta Vukotic Lazar	The pioneering ideas of a planned expansion of Belgrade, 1815-1910
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16.40 – 17.00	Davisi Boontharm	The existing urban form and its value in emergent creative precincts of Tokyo
17.00 – 17.20	Michael S.Y. Lin	The changing urban forms in Kaohsiung over a century：1908-2008
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	Xiaolan Yang	
16.40 – 17.00	Bruce Hucker, Mark Davey and Samantha Brown	The Auckland city-region: rapid change, growing diversity, and governmental reform
17.00 – 17.20	Tonya Tang	Urban Fringe belts and Planning: Exploring Urban Landscape Management in Auckland
17.20 – 17.40	魏羽力 (Yuli Wei)	速度景观中的当代城市形态 (Urban form in the automobile age)
Room 1203 **(16.20 – 17.40)**	**E6. The changing face of the urban landscape** **Chair: Jason Gilliland**	
16.20 – 16.40	Woo Pui Leng	Looking backwards at the future – a case study of Hong Kong's block buildings
16.40 – 17.00	Wanpen Charoentrakulpeeti	Housing consumption of upper-middle class and its influence on urban form
17.00 – 17.20	Marcílio de Oliveira Sudério and Valério Augusto Soares de Medeiros	Beyond the 'rubber boom' city: Manaus urban morphology and social exclusion from 1910 to 1970
17.20 – 17.40	Sergio López-Piñeiro	The blank meander

Dinner (18.30 – 20.30)	**Foyer of Xihuyuan Hotel, South China University of Technology**
Shuttle Bus to Ramada Plaza Hotel at 20.45	**Meet in front of Xihuyuan Hotel**

Sunday 6 September 2009

Room B103 **F. Plenary Session: Typological approaches to urban form (chaired by Kai Gu) (9.00 – 10.15)**	**Gian Luigi Maffei** **Nicola Marzot**	**The Caniggian School: analysis and design case studies** **Theoretical basis of the Caniggian School in relation to the Italian typological tradition**

Tea / Coffee break (10.15 – 10.35)	**Foyer of Liwu Centre**

Room B101 **(10.35 –11.55)**	**G1. Urban form and urban fortifications** **Chair: Jeremy Whitehand and Jian Zhang**	
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10.55 – 11.15	Jiang Feng	天朝军队的城市——读晁错《募民实塞疏》中的营邑立城策略 (Chao Cuo's petition to the throne about strategy to found a frontier city in 169 B.C.)
11.15 – 11.35	Mireille Tchapi	The images of fortification systems on the banks of Chao Phraya River
11.35 – 11.55	王琳峰 张玉坤 (Linfeng Wang and Yukun Zhang)	明长城"九边"军事防御体系之镇城形态解析——以宣府镇为例 (Urban morphology and military defence system in the town of Xuanfu)
Room B102 **(10.35 –11.55)**	**G2. Conservation research on historic towns in China** **Chair: Feng Song and Ning Yin**	
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10.55 – 11.15	黄 翼 (Yi Huang)	赣州古城的历史文化保护与城市形态发展 (Ganzhou city's historical culture protection

		and urban form development)
11.15 – 11.35	胡敏 (Min Hu)	榆林卫城城市形态演化研究 (A study on urban morphological evolution of Yulin walled city)
11.35– 11.55	朱竑 邱丽 程建军 (Hong Zhu, Li Qiu and Jianjun Cheng)	水系与城市空间——明清广州水系变迁与城市空间形态发展 (Water ways and urban space: the case of Guangzhou in the Ming and Qing period)
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10.55 – 11.15	Cristina Soares Cavaco	Public and private influences on the transformation of urban form: the recent history of Almada
11.15 – 11.35	Maria Vitiello	Metamorphosis of architecture : the old and the new between tradition and creativity
11.35 – 11.55	Zhao Jing	Private and public spaces under globalization: a case study of Xi'an downtown
Room 1103 **(10.35 –11.55)**	**G4. Development and management of residential areas** **Chair: Piper Gaubatz**	
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10.55 – 11.15	Kwang-Joong Kim and Jeong-Eun Lee	Urban form change in ordinary neighbourhoods in Seoul
11.15 – 11.35	Jing He	FAR shifts of TAL housing lands during 2001-2005 in Shanghai
11.35 – 11.55	解丹 (Dan Xie)	天津租界区五大道居住建筑现状的研究与概念设计 (A study of five old streets in Tianjin based on conceptual design)
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10.55 – 11.15	黄耀志 (Yaozhi Huang)	生态视角下的城市结构形态发展变化作用力研究——对道萨迪斯人类聚居地作用力的再思考 (An urban ecological perspective on the forces underpinning urban structural change)
11.15 – 11.35	Faris Sh. Hameed	Urban planning and sustainable development: a 3rd World case study in Iraq
11.35 – 11.55	Ning Huang and Robert Vale and Brenda Vale	How big is the land area for supporting Auckland's transport?
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10.35 – 10.55	Marco Massa	The town and territorial Rehabilitation in Europe and China: a foreword, and the italian study case
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11.15 – 11.35	Carlos Rosa Jiménez	The Malaga research program
11.35 – 11.55	Zhang Qingpin	The Chinese research program

Lunch (12.20 – 14.10)	**Foyer of Xihuyuan Hotel, South China University of Technology**

Room B101 **(14.30 – 15.50)**	**H1. Cities in transition: a political-economic perspective** **Chair: Mathew Novak and Jeffery Ho**	
14.30 – 14.50	Cassidy I-Chih Lan (藍逸之)	Urbanity just for huge profits? Deconstructing the production of space under neo-liberalization in Macau
14.50 – 15.10	黄慧明 (Huiming Huang)	城乡土地产权关系视角下的空间形态研究——以佛山顺德为例 (A land-economy perspective on urban form: cases from Foshan and Shunde)
15.10 – 15.30	任健强 (Jianqiang Ren)	珠三角地区外商投资对区域经济影响格局的时空演变 (The influence of foreign investments on the regional economy in the Pearl River Delta)

15.30 – 15.50	Ramón Reyes-Rodríguez	Liberal restructuring and morphological transformation of the city of Monterrey, Mexico, 1890 – 1970
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14.50 – 15.10	Zhenlong Zhang and Guoqiang Ma	Exploring the patterns of urban spatial growth in Nanjing City: a method based on GIS and spatial analysis
15.10 – 15.30	Mauro Normando Barros Filho	Detecting intra-urban morphological patterns through lacunarity-based texture analysis of satellite images
15.30 – 15.50	Cheng-fang Wang	Optimization of urban morphology for comprehensive disaster prevention supported by GIS
Room 105 **(14.30 – 15.50)**	**H3. Understanding Brazilian cities** **Chair: Michael Conzen**	
14.30 – 14.50	Gisela Barcellos de Souza, Carla Martins Olivio, Cristiane H.Suzuki, Ellen Goto and Isadora Ruiz Dias	Morphogenesis of rural-urban landscapes: research on the spatial and cognitive implications of the designation of Brazilian small rural county-towns as 'cities'
14.50 – 15.10	Antonio Carlos Machado Guimarães and Marco Antonio Villarta-Neder	Defragmentation of the urban landscape and deletion of historical meanings
15.10 – 15.30	Leonardo Barci Castriota , Stael Alvarenga Pereira Costa and Marieta Cardoso Maciel	The urban morphological features of Serro MG, Brazil: typological research, planning and design
15.30 – 15.50	Andréa Q. Rego, Julieta Souza, Rogério Cardeman, Mônica B. Schlee, Maria Angela Dias and Vera R. Tangari	The open space system in the Rio de Janeiro state in Brazil: the administrative frontiers shaping the territorial landscape
Room 1103	**H4. Urban planning and form of the Chinese city: a review**	

(14.30 – 15.50)	**Chair: Kai Gu**	
14.30 – 14.50	Fei Chen	A new framework for the typomorphological study of Chinese cities
14.50 – 15.10	Feng Song	城市形态学派理论在中国的流变 (Conzenian thinking in China)
15.10 – 15.30	黄立 李百浩 孙应丹 (Li Huang, Baihao Li and Yindan Sun)	转型与转移背景下的 1949-1978 年城市规划与城市形态演变 (Urban planning and urban form between 1949 and 1978 in China)
15.30 – 15.50	邱国潮 段进 (Guochao Qiu and Jin Duan)	国外城市形态学三大学派的兴起、发展与整合 (The development and integration of international research on urban morphology)
Room 1202 **(14.30 – 15.50)**	**H5. Space, place and built form** **Chair: Stael Alvarenga Pereira Costa**	
14.30 – 14.50	Jürgen Lafrenz	Linggang: an exorbitant model city of European planning tradition in China
14.50 – 15.10	Stephen Duff, Howard Davis, Jenny Young and Donald Corner	The missing fine-grained structure in Noll's 1748 map of Rome
15.10 – 15.30	Tareef Hayat Khan	Bylaws and Informal Traditional Practice as complementary rule systems to develop traditional urban residential form: A case study of Dhaka
15.30 – 15.50	Ashlesha Kale and Kiran Kale	A comparative analysis of the urban morphology of Indian cities
Room 1203 **(14.30 – 15.50)**	**H6. New urban developments in Chinese cities** **Chair: Feng Song and Tonya Tang**	
14.30 – 14.50	周霞 高国平 金灿 (Xia Zhou, Guoping Gao and Can Jin)	汶川县水磨镇灾后重建之路 (Reconstructing Shuimo, Wenchan after the Sichuan earthquake of 2008)
14.50 – 15.10	范建红 (Jianhong Fan)	城乡结合部景观空间演变的文化解释——以珠江三角洲为例 (A cultural interpretation of spatial change to the rural and urban fringe: a case study of the Pearl River Delta)
15.10 – 15.30	姚圣 唐怡 (Sheng Yao and Yi Tang)	深圳华强北中心区街廓空间形态演变的启示 (The implication of streetscape change in

		Huaqiangbei, Shenzhen)
15.30 – 15.50	韩林飞 (Linfei Han)	转型中的痛苦：城市记忆的丧失 (The loss of urban memory in the process of urban transition)

Tea / Coffee break (15.50 – 16.20)	**Foyer of Liwu Centre**

Room B101 **(16.20 – 17.40)**	**J1. Urban form and special urban zones** **Chair: Michael Barke**	
16.20 – 16.40	Mathew Novak and Jason Gilliland	Retail's changing place and face in the urban landscape
16.40 - 17.00	Jenny E. Young	The role of schools in the development of urban form and the sustainability of community life
17.00 – 17.20	利峰 (Feng Li)	蒙特利尔华人社区空间形态的演变 (The morphological evolution of a Chinese community in Montreal)
17.20 – 17.40	Hee Sun Choi	Place identity in 21st century new town development: the case of the multifunctional administrative city, South Korea
Room B102 **(16.20 – 17.40)**	**J2. Spiritual places in the city** **Chair: Yinsheng Tian and Ning Yin**	
16.20 – 16.40	Loes Veldpaus	Church building – social representation in the modernist city
16.40 - 17.00	周祥 (Xiang Zhou)	中国传统城市形态的精神功能——以广州为例 (The spiritual function of traditional urban form: the case of Guangzhou)
17.00 – 17.20	何韶颖 (Shaoying He)	广州历代佛教寺庵分布特征研究 (Research on the distribution of religious sites in historical Guangzhou)
17.20 – 17.40	周春山 (Chunshan Zhou)	广州的城市形态结构演进 (Urban morphological change in Guangzhou)
Room 105	**J3. The form and change of rural settlements in China**	

(16.20 – 17.40)	**Chair: Jieming Zhu**	
16.20 – 16.40	段进 揭明浩 (Jin Duan and Minghao Jie)	世界文化遗产宏村传统城市形态演变解析 (The form and change of Hongcun, a UNESCO World Heritage site)
16.40 - 17.00	Xiaoling Dai and Li Li	A morphological study of rural settlements in Tai Lake area, China
17.00 – 17.20	张以红 (Yihong Zhang)	耀华坊面面观——开平碉楼村落的个例 (An investigation of Yaohuafang, Kaiping)
17.20 – 17.40	王浩锋 (Haofeng Wang)	村落空间形态与步行运动: 以婺源汪口村为例 (The walkable form of Wangkou village, Maoyuan)
Room 1103 **(16.20 – 17.40)**	**J4. Understanding Brazilian cities** **Chair: Stael Alvarenga Pereira Costa**	
16.20 – 16.40	Valério Augusto Soares de Medeiros and Frederico de Holanda	The form-space of Brazilian cities: between the intention and the *savoir-faire*
16.40 - 17.00	Peter Ribon Monteiro	São Paulo, Pinheiros and Tieté: reflections on the movements of the marginal rivers-avenues system
17.00 – 17.20	Mônica Bahia Schlee and Vera Tari	Slope landscape protection in Rio de Janeiro City, Brazil
17.20 – 17.40	Bernardo Nogueira Capute, Camila Marques Zyngier and Paula Balli Cury	Urban form and *genius loci*
Room 1202 **(16.20 – 17.40)**	**J5. An analytical approach to urban landscape change** **Chair: Jean-Bruno Morissette and Fei Chen**	
16.20 – 16.40	Jingnan Huang, Qingming Zhan and Ling Tian	A time-series investigation of multi-scale urban form changes in a mountain environment: a case study of Chongqing, China
16.40 - 17.00	Teresa Marat-Mendes	Urban-rural transformations: the real scale of its morphological anatomy
17.00 – 17.20	孙翔 (Xiang Sun)	广州宋代城市空间形态格局初探 (Traditional

		urban form in Guangzhou in the Song period)
17.20 – 17.40	李建 (Jian Li)	杭州旧城空间形态演变实证研究 (Research on the morphological evolution of the historical core of Hangzhou)
Room 1203 **(14.30 – 15.50)**	**J6. Urban form research and practice** **Chair: Shuyi Wang**	
14.30 – 14.50	Marshall Brown	Mash-up city: the hybridization of urban morphology
14.50 – 15.10	Denise Antonucci	The Urban Morphology and Legislation of São Paulo, Brazil: comparative study of two districts - Higienópolis/Santa Cecília and Indianópolis/Moema
15.10 – 15.30	和文戟(Jeffrey Ho)	中国江南水乡公共空间和类型形态学的探讨 (Typo-morphological ideas and issues on contemporary public places in Jiangnan water towns, China)
15.30 – 15.50	Ning Yin	Bringing the qualities of traditional streets back into the core of Chongqing central area

Dinner	**18.15 – 20.15**	**Foyer of the Xihuyuan Hotel, South China University of Technology**
Shuttle Bus to Ramada Plaza Hotel	**20.30**	**Meet in front of Xihuyuan Hotel**

Monday 7 September 2009		
Room B103 **K. Plenary Session: The Guangzhou case (chaired by Yinsheng Tian)** **(9.00 – 9.40)**	**Dong Wang**	**广州规划与发展 (Urban development and planning in Guangzhou: retrospect and prospect)**

Tea / Coffee Break (9.40 – 10.00)	**Foyer of Liwu Centre**

Room B101 **(10.00 – 11.20)**	**L1. *Danweis*, gated communities and planning in China** **Chair: Kai Gu**	
10.00 - 10.20	Guillaume Giroir	The phenomenon of gated communities in China: assessment and prospects (1978-2008)
10.20 – 10.40	Xiaoling Dai	Learning from existing urban forms: exploration of the morphological frame of Hong-kou area, Shanghai
10.40 – 11.00	张汉 (Han Zhang)	中国体制转型背景下的单位制社区变迁 (The evolution of *danweis* in transitional China)
11.00 – 11.20	Qiang Dou (窦强)	From small districts to gated communities: the evolution of neighbourhood morphology in Beijing
Room B102 **(10.00 – 11.20)**	**L2. Reading and interpreting urban form** **Chair: Jürgen Lafrenz and Jeffery Ho**	
10.00 - 10.20	Li Hu and Beisi Jia	Three-sectional analysis of the vertical city of Hong Kong
10.20 – 10.40	Naoto Nakajima	Intentions and transitions of 'contrast' in urban spaces of modern Tokyo: a case study of 'syntax approaches for multilayered urban spaces'
10.40 – 11.00	Shin Nakajima	Morphology of the co-ordination of the grid pattern of the Japanese city: a second case study of 'syntax approaches for multilayered urban

		spaces’
11.00 – 11.20	Mohamed Gowaid	Sport-Urban form in Alexandria, Egypt
Room 105 **(10.00 – 11.20)**	**L3. Characterising the urban landscape** **Chair: Mathew Novak and Ning Yin**	
10.00 - 10.20	Hagar Spiro	The impact of urban morphology on spatial perception and behaviour
10.20 – 10.40	Peter Lynch and Sergio Martín Blas	The image of the contemporary city
10.40 – 11.00	撒莹 (Ying Sa)	历史文化对云南侨乡城镇形态的织补 (Historical culture and form of the small towns in Yunnan)
11.00 – 11.20	徐萌 (Meng Xu)	Urban form identifiability: perceiving identity in historical districts
Room 1103 **(10.00 – 11.20)**	**L4. Rediscovering historical cities and places** **Chair: Manfredo Manfredini**	
10.00 - 10.20	Arie Sivan and Horacio Schwartz	The revival of Utopian theory and implementation in the boulevards of the World Heritage City of Tel Aviv
10.20 – 10.40	傅娟 肖大威 魏成 许吉航 (Juan Fu, Dawei Xiao, Cheng Wei and Jihang Xu)	古代岳阳城市空间形态演变 (Urban spatial form evolution of ancient Yueyang)
10.40 – 11.00	Flavio Jose Nery Conde Malta and Alessandra Martins de Castro	Tourism development and its impact on the historic centre of São Luiz do Paraitinga, São Paulo, Brazil.
11.00 – 11.20	Mohammad Taghi Pirbabaei	Urban form and the state in pre-modern Iran
Room 1202 **(10.00 – 11.20)**	**L5. Chinese cities in transition: introduction to excursions in Beijing and Shanghai**	
10.00 - 10.20	Yinsheng Tian	Chinese classical cites: an analysis of their physical structure
10.20 – 10.50	Feng Song	Beijing

10.50 – 11.20	Daisy Dai	Shanghai
Room 1203 **(10.00 – 11.20)**	**L6. Chinese cities in transition: introduction to excursions in Hong Kong, Shenzhen, and Guangzhou**	
10.00 - 10.20	Haojun Ye	Guangzhou
10.20 – 10.50	Ian Morley	Shenzhen
10.50 – 11.20	Beisi Jia	Hong Kong

General Meeting of ISUF	**11.30 – 12.00**	**B103 (International Conference Hall)**

Lunch	**12.10 – 13.45**	**Foyer of Xihuyuan Hotel, South China University of Technology**

Notes: Speakers and chairs of conference sessions are required to arrive in meeting rooms at least 5 minutes before their session begins. Presentation files should be uploaded to the computer in the meeting room in advance of the session. Speakers should allow a minimum of 5 minutes for discussion at the end of their presentations. Speakers and chairs must follow strictly the schedule in the programme.

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The five plans for the aftermath of the 1755 Lisbon earthquake: the interplay of urban public spaces

In the aftermath of the 1755 earthquake that swept the city of Lisbon, and the south of Portugal, Manuel da Maia, the chief engineer of the king D. Jos´e I, ordered several plans for the reconstruction of the city to be made. Five plans were produced.

In November 1975 a letter from Satoshi Watamori to the Mayor of Lisbon questioned him on several important questions on the Lisbon squares. The questions were: What Is the expected role of squares in Lisbon? How are they designed, administrated and kept? In what manner are the squares of Lisbon accepted by its citizens?

The answer was given by Architect Jos´e Tudela in a long and personal letter and by the 1975 perspective. In this paper we do a reflexion on this same questions when applied to the five plans that were produced in the aftermath of the 1755 earthquake. We analyze them and try to understand how those plans answered the challenges of a modern city of the XVIII century that had to be built from scratch.

In the five plans that were made, squares and churches had different roles in the urban morphology of the city. We will show how these urban elements interplay in the different plans with each other. For this, we'll use network analysis and geospatial agent based simulation to show the different nuances of the five proposals for the reconstruction of Lisbon and try to answer the same questions by the perspective of the XVIII century urban planner.

Keywords: urban morphology, squares, agent based simulation, network analysis information diffusion, urban form, urban planning, urban design, XVIII century