Discussion about the similarity of the forms of the cities of Porto (Portugal) and Qazvin (Iran)

Mona Jabbari, Rui António Rodrigues Ramos
Department of Civil Engineering of the University of Minho, Portugal.
E-mail: monajabbari@yahoo.com, rui.ramos@civil.uminho.pt.

Abstract. *At present, in major cities, the lack of urban structure cohesion and connectivity promoted by the expansion of street network dominated by cars has increased dramatically. Hence, social life and citizen rights considering anthropocentric and human scale have been put at risk in many cities. "Old Towns" are perceived as urban structures of the past that are revitalized and given new significance in contemporary cities. The geometrical order of the cities structures shape diverse urban tissue and promote the development in several directions. However, the main activities of the cities occur in the places with the most social interactions. In this context, this paper presents an ongoing research that aims to compare the main areas of Porto (Portugal) and Qazvin (Iran), based on growth of the cities around its historic center, i.e. "Old Town". The urban form of the cities will be analyzed and assessed by a methodology based on street pattern identification. Also will be discussed the urban design and environmental quality. Research findings shows that the main areas of the both cities require new pattern solutions in order to promote connectivity through pedestrian network.*

Key Words: form, structure, pattern, Old Town

Introduction

Cities, like living organisms, are subject to changes and transformations. This condition has demanded the development of suitable and adaptive design solutions that require the full consideration of the spatial continuity of the city, its physical and social peculiarities, user needs, and desire for safe and healthy communities. In addition, architects and designers need to be familiar with the developmental stages of the city, including components that may have disappeared over time. It is therefore necessary to read different segments that constitute the city to reveal its historical, cultural, social, physical and symbolic features.

Yucel (1979) emphasizes that it is necessary to make some abstractions in order to handle the space conceptually and theoretically, addressing architectural theories on this subject in three categories. The first one is the functional approach which means that the realities of economic, cultural, historical, technological, ecological and social practices are sufficiently understood, in order to provide reasonable explanation of the spatial environment. The second involves placing the spatial elements within the principles of morphological elements that constitute the city image. The last refers to linguistic resources, with the idea that architecture creates a language, in order to comprehend the structural logic of the architectural space. This enables practices intended for spatial typology and urban morphology.

This study mainly focuses on the comparison between two cities in the 16th century. It is possible to describe different urban patterns and forms in many ways. Qualitative methods, as one of methods which describes different urban patterns and forms, include morphological and morphographic description (Conzen, 1988; Whitehand, ed., 2007; Gordon, 1984; Larkham and Jones, 1995). The structure of each city includes a set of paths and nodes, the overall structure of the city and its main activities. The network includes some places that the majority of people are in these places, and Sub-networks are connected by association or joint. The main purpose of this paper is to introduce the skeletal difference and provides the city's guidelines. In this context, it is essential to understand the different models in historical periods. This research studies on various forms of structure which can improve urban structure for pedestrian network.

Without any doubts, such investigations have a significant impact on structural integrity, restoration of social roles and activities in city.

Structure

Cities need the design and plan for social cohesion and cultural diversity. A complete understanding of social, economic, political and cultural characteristics of the city is needed for a successful plan. Finally they will be integrated into the daily life. Viewing economic opportunities in conjunction with other forms of political, social and cultural rights in societies is what builds capable social capital in cities. Therefore achieving the aims of inclusive cities requires an in-depth review of system, structure with the objective of changing the basis of individual engagement with others (UN-DESA, 2010: 15).

Structure as a main bond in urban tissue contributes by major public spaces linkages and has the most dynamism of public space. "Old towns" are perceived as urban structures of the past that are revitalized and given new significance in contemporary cities (Nyseth, T., Sognnaes, J., 2012).The geometrical order of structure builds urban tissue and development direction. The main activities of the cities occur in the places with the most social interactions.

A city is an organism that needs an underlying structure, such as a backbone, to secure its different elements around itself and enable their natural and logical development.

Change in the urban structure of Porto

Teixeria (2008b) focused on form of cities with Portuguese origins. He believed that morphologic of Portugal was divided into three parts. The first consists of the morphological characterization of the Portuguese of street system that include plan hierarchy, the main urban elements, the structure of urban blocks and plots, urban squares and the planning process. The second presents demonstrating how its form synthesizes Portuguese town planning of the sixteenth century. Lastly, the third part analyses the plan for the reconstruction of downtown Lisbon (Olivier, 2011). Between 15-16 century, Portugal had innovation of planning in urban network where central area of city is. It had composed of set blocks organized on a regular structure. This network had used cathedral and new tissues shall be a regular planned urban space (Bettencourt, 2007).

Important feature of previous study was the identification of the most important node of the overall city structure. The Porto Metropolitan Area is characterized by a coastal Atlantic landscape. The urban pattern is concentrated among the main nuclei (Porto and Vila Nova de Gaia) and scattered among many small rural towns and villages. Products, like Porto Wine, produced in the Douro valley, was already in the 13th century transported to Porto in Barcos Rabelos, add such identity to the city that is still known for them, even though Porto Wine is actually produced in Vila Nova de Gaia. However, what is really important it to understand the dynamics of the city and its evolution until times. The downtown of Porto can be defined by certain main landmarks – it is centred in Avenida dos Aliados (Silva, 2008: 63).

Porto is one of the oldest European cities. Archaeological research conducted in the Cathedral area reveal that the first traces of civilization in the space now occupied by the city of Porto dating from the late Bronze Age (3000/4000 BC). The city had its start on the hill of Penaventosa (Currently Morro da Sé), time was a good strategic advantage as it allowed good visibility on the estuary of the Douro, and was otherwise difficult to access and presented favorable topographical conditions the deployment of buildings. The hill encircled by a wall, known as Old Fence or Fence Romanesque (Cabeças, 2003 & Wikipedia, 2013).

Hugo awarded the first charter city residents (the Porto town) (Cabeças, 2003). The Porto of the 12th century was an episcopal town (with its unique cathedral parish), namely, the bishops were the owners of the town, with the right to apply justice, administer the lands and collect

taxes. During this 3-year period there was a tension between D. Hugo and the inhabitants of the Borough, which later lead to conflicts between the population and the bishops this century. For this reason, began the construction of the Cathedral by Bishop Hugo, it was an Old Fence important element, which affected the structure of the urban tissues of the town. Inside the building was filling the free spaces. The lack of space to build the interior led to the need to build enough away from the wall, creating needs for planning and advocacy. During the thirteenth and fourteenth centuries continued a period of expansion in the Port grew out of the old fence, around the Cathedral, and in the lower zone of the Ribeira, connected by an urban network that was High Density (Cabeças, 2003 & Wikipedia, 2013)

In the fourteenth century the port grew along the bank of the river Douro, reflecting the importance of trade and maritime activities. In that same century, during the reign of D. Pedro, began to be built a new outer wall that was completed in 1376, the New Fence or Wall Fernandina, covering an area of about 900,000 m2 and being completed in the reign of King Fernando (Azevedo, 2010:41).

The picture shows process change central city of Porto. It has been shaped in different periods of the history between 12th century and 16th century. In the center of structure, there is the open space which has been created mainly for the religious activities. During time, the ministerial activity was formed. This picture illustrates the structural changes of the city during three periods (Figure1).
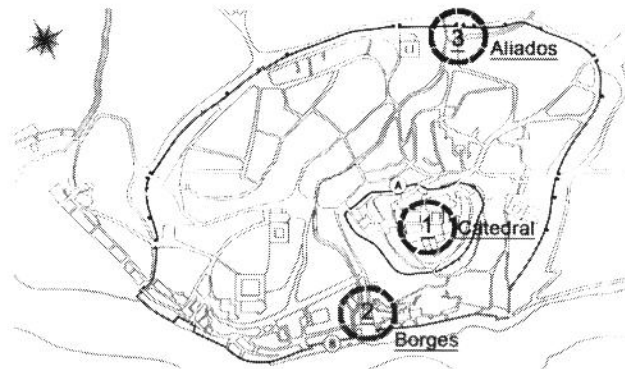

Figure 1. Analysis of Main Structure: Organization of the Territory in the Middle Ages (A - Wall of Bishop Hugo the Twelfth Century; B - Fernandina Wall the Fourteenth Century)(source: Azevedo, 2010:41).

Change in the urban structure of Qazvin

The expansion of city has depended on development the cities' spatial structure and commerce structure, while commerce tends to concentrate in agglomerations. Commerce is one of the most important functions of a city. A crucial idea states that the structure of traditional cities in Iran is based on its bazaar's economic and political factors. From early Iranian urbanization to the present time, different factors have been influenced in the formation of traditional cities. This composition has had its own form in each period, and the governors complete this combination to show their strength and understanding. Some scholars believe that bazaars are the main core of Islamic cities; others consider the "Jame mosque" as the city center; whereas some believe both are Islamic city concepts (Encyclopedia Islamica, 2012).

The structure of Iranian traditional cities reveals that a bazaar, which usually takes a linear shape, acts as the spinal column of the city and continues toward the main gates of the town (Assari et al., 2012). A bazaar is thus located in the main core of Islamic and Iranian cities. An Iranian city is frequently defined by a congregational Jame mosque and must have a chief

bazaar nearby. For economic and commercial activities in Iranian cities, the bazaar is the most important public space that has been used for development of city (Pourjafar, 2014).

The collection of the economic, social, religious, and main cultural centers of the traditional Iranian city is called a "bazaar", which is unique to Iran. The bazaars of old Iranian cities were fully prepared to accept much flexibility in terms of space and functionality. Bazaars are generally connected to the city gates through the main urban network. Residential neighborhoods are located in the spaces between the gates of the city and the bazaars. The bazaar complex is like the backbone rooted in the organic context of the city. Thus, In Iranian cities, the bazaar are connected to living space. One guarantees the other one, promotes its mobility. Bazaars in Iranian cities are the main artery of the urban life system and represent the center of social and economic activities. Bazaars provide cohesion among the different parts of cities, such as residential areas, as well as socio-political and trade centers. Bazaars as a unifying element connect the main urban functions and guarantee the city's economic and social life (Pourjafar, 2014). The cities have had some of the richest economic and cultural resources that influenced its underlying urban tissue. Cities were built on a pedestrian scale (Figure 2).
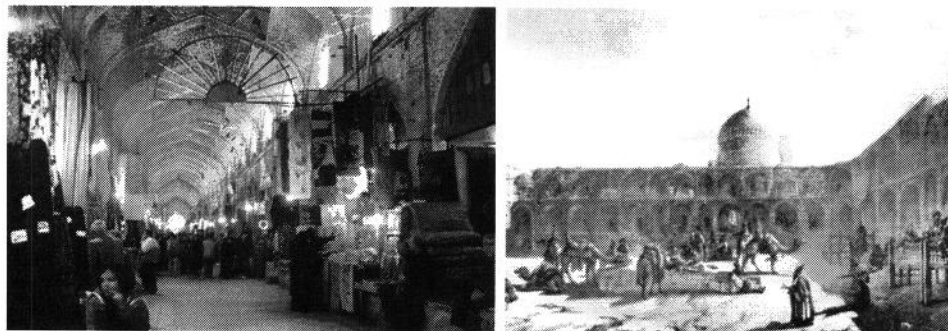

Figure 2. Bazaar in the Past and the Present.

Qazvin is one of the largest cities and capital of the Province of Qazvin in Iran (Wikipedia, 2013). Qazvin central position in Iran also preconditioned it to become the capital in the Safavid (1524–1576) period. It is a provincial capital today that has been an important cultural center throughout history. Archeological findings in the Qazvin plain reveal urban agricultural settlements for at least nine millennia. Qazvin geographically connects Tehran, Isfahan, and the Persian Gulf to the Caspian seacoast and Asia Minor. Hence it is a strategic location throughout the ages. Given the geographical position of Qazvin at the center of the Iranian plateau, it has been known as one of the most important trade centers of Iran. This position occasionally makes it the bridge between the East, West, South, and North. Its bazaar has developed in the parts of the city that are closely connected with producers and customers.

Before becoming the era capital, the main element of the city of Qazvin was a small bazaar located in the Southern part. In early Islam, the core or backbone of the city (along the East-Westh axis) was the Silk Road that ran through the middle of the city. The "Jame mosque" formed within this core and the bazaar, as a strictly linear element, extended from two sides of the core and along the main axis. During the Safavid period, the king decided to move his court away from the old city. He set up chogan square as the central core of his plan in the north margin of the city, and tied the old core at chogan square with Boulevard (Sepah Street) that extended the city along this axis. With the connection of the new bazaar around the chogan square and the old bazaar alongside the square, the invigorated socio-economic life of the city continued. In the next period, residential neighborhoods formed around the bazaar that became the heart and spirit of the town (Jabbari, 2007). This picture shows the structural changes of the city during three periods (Figure.3).
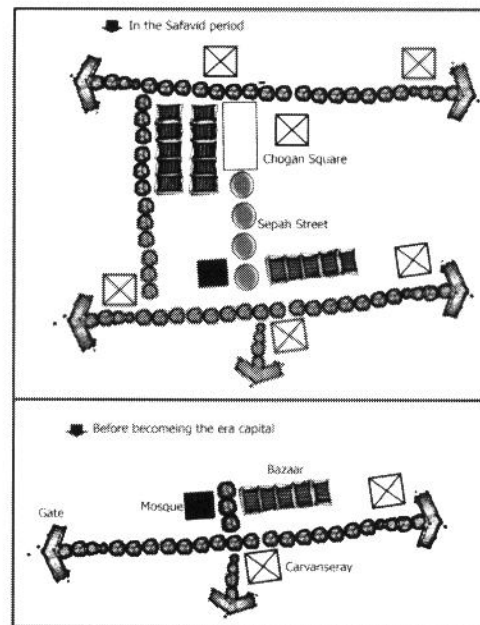
Figure 3. Analysis of Main Structure: Before Becoming the Era Capital and In the Safavid 16M.

Compare to two structure

The main structure of Porto is the nuclear. The nuclear structure is strong articulation and there is an intriguing connection between constituents of the nuclear and street. This structure provides further impetus to form other part of tissues and a pattern for future of Porto city. This pattern is based on open space that urban tissues formed around it organically. It can help pedestrian to find destination and finally it is suitable structure for social Interaction.

On the other hand the main structure of Qazvin is the linear. This is a path-dependent structure in which the initial shapes of cities have expanded. Linear structure influences on urbanized nodes to develop along the urban network. This pattern joins nodes in urban tissues. Overall, Qazvin bazaar had main pattern that use for development of urban tissues (Figure 4).
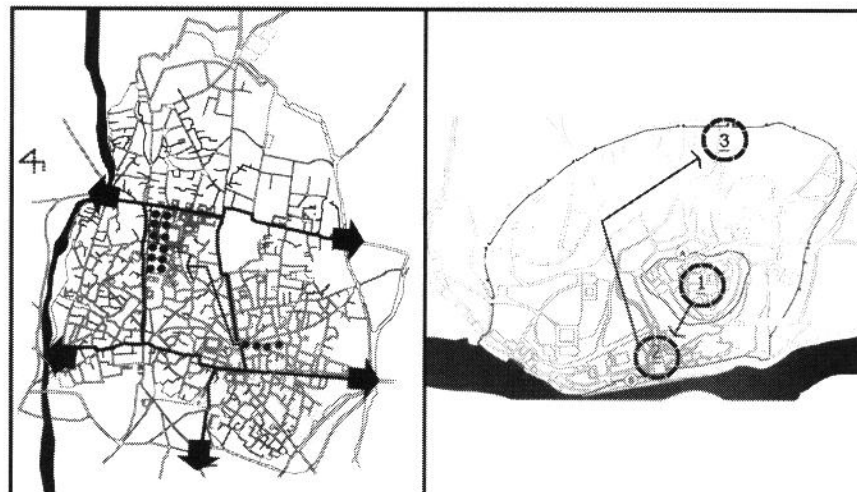

Figure 4. Analysis of Main Structure Qazvin and Porto.

Current Situation of Porto Structure

The preparation of the new municipal master plan for Porto started in 2001 and the plan was approved by the last executive in 2005. The strategic objectives of the plan are: the strengthening of the urban identity of Porto, the rehabilitation of the public space and of the built environment, the rationalization of the transportation systems, the reduction of the existing urban imbalances, and the promotion of the historic quarters and of the central area (Pinho & Oliveira, 2004). Considering to the existing potential, there is no cohesion structure in city center of Porto up to now. Active spaces do not have connectivity for pedestrian way. For example Santa Catarina Street and Cedofeita Street are separated from city center. The modernist work was the construction of radius streets beside city center. Afterwards, new plaid streets penetrated through the old organic urban tissue and divided its cohesive urban tissue into separated parts. Therefore, there was not coherence between the old and middle urban tissue of the city. In the next periods of the city formation, this coherence faded gradually. Developing city increase caused a functional-spatial disorder and gap in Porto and its historical center. Table 1 and Figure.5 shows features of structure at the present and previous.
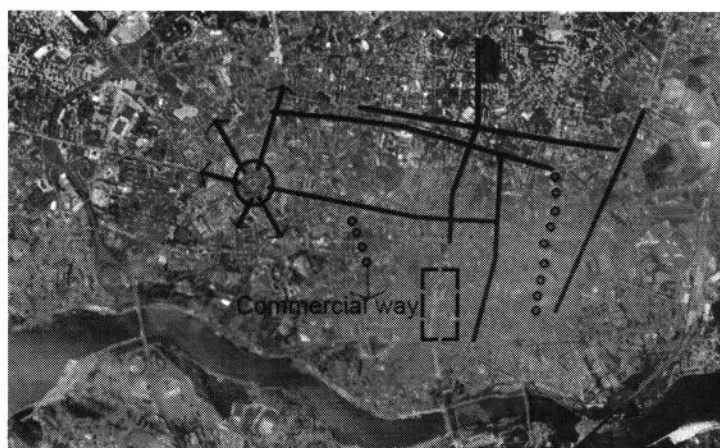

Figure 5. Porto in the Fourteenth Century

Table 1. Comparison of Adaptive Physical Properties in the City of Porto

Row	Title	Prior to The Contemporary	The Contemporary
1	Structure	Node (open space)	Decentralized
2	Function	Organized	Confusion
3	Access	Hierarchy	Without Hierarchy

Current Situation of Qazvin Structure

Qazvin in the past has a linear- nuclear structure. The structure nodes are the market, Mosque and the Safavid gardens, as articulations. They have been used in various scales of city for converting and connecting activities. With the beginning of modern urbanism, the functions and importance of the movement was through riding instead of walking in the city. Using the cars damaged human scale and visual space decreased in the city. New business in Khayyam St. formed a direction from north to south and the traditional market has faded during time. Green Plaza in the center of the main nodes of activity and socio - cultural city changed to traffic node in the city. Hence pedestrian local importance has been greatly weakened. Table 2 shows the

comparison between pre and post-modern era making changes in the anatomy of the eye focuses on different aspects of being. Figure 6 illustrations features of structure at the present and previous.
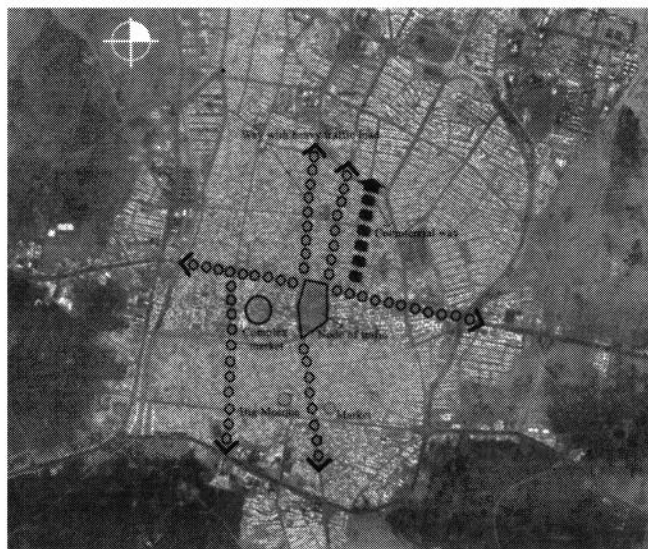

Figure 6. Structure in Qazvin.

Table 2. Comparison of Adaptive Physical Properties in the City of Qazvin

Row	Title	Prior to The Contemporary	The Contemporary
1	Structure	Node & Line (open space-way)	Decentralized
2	Function	Organized	Confusion
3	Access	Hierarchy	Without Hierarchy

The New Pattern for Network Pedestrian

Roads and nodes are one of the fundamental components of the physical structure of cities. In addition these elements effect on the perception and image of citizens. Nodes and streets appear in the minds of city residents like lines, which permit the connection in different areas of the city. They are always place the incidence of various events such as green space, trade, cultural exchanges, conduct religious ceremonies, etc. Thus they play an important role in social development, and responsible for cultural city.

Some roads and nodes act as the main structure, which major collective activities in the city are done in these areas. In modern cities with provided the roadway, the role of social and human scale of the street and the field are weakened. With enhanced pedestrian-oriented, skeletal elements can be converted, to the places which people have mental relaxation, and increase shelf space with putting options with the various activities with such an approach to urban restructuring and strengthening the articulations that link the urban citizens with civic life. Urban places and spaces can be expected that the quality and richness of improved physical, functional space and return them. Analysis carried out shows the link between old and new urban structure, physical integrity and urban tissue repair in structure town centers is essential for meaningful and strong articulations (Plut, 2008 & Peters, 2010).

This research studied stages of growing traditional city in past period that it is based on pattern of pedestrian movement and then showed current situation. In this part did not seen any unic in urban tissue. The new measures seem to work as well as the standard syntactic measures in modeling the manner in which the network affects pedestrian flows. The new pattern used in

this paper are inherently that there are important in determining how likely it is that a given space will attract greater flows of movement as compared to its surroundings. in historic center of town can be considered special in articulations, with special attention to their role, improved functional structure - Space City can be facilitated. Then other element join main way, which has a linear structure, with Development commercial activities in the main centers of activity are connected to each other. The articulation is a green plaza or open space, converter functions as a space for recreation and leisure, fill the gaps between the urban centers has been dispersed. Figure.7 shows features of structure .This pattern has specific tasks to fulfill:

1. To produce a map based on tradition pattern belong to the walking and biking routes;

2. Cooperation, motivation and networking of local businesses and other actors, such a property owners and property managers to improve the quality of the environment;

3. To enhance the interaction between the new and old urban tissues and to create new ways how the residents can participate in shaping up their own living environment;

4. To produce concrete development ideas for the two important walking and cycling routes in the area;
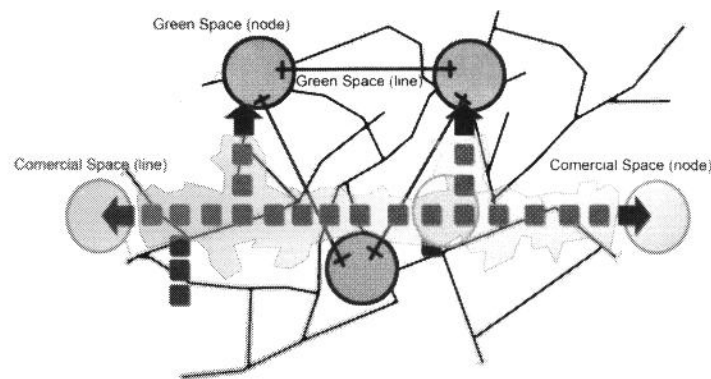
Figure 7. The New Pattern for Network Pedestrian.

Conclusion

This paper tries to provide a clear view of the development of spatial structures. This research intends to find the pattern of structures in two different cities. Traditional structure has been assessed by the distribution of internal characteristics of cities, such as Bazzar or Open space. Nowadays, Advances in transportation change the life styles of people and affect city structure. Based on the comparing results between the linear structure of Qazvin and nuclear structure of Porto, it can be possible to introduce old and mixed patterns in the future researches for improvement of nowadays cities. These new patterns can be helpful to make a connection between different urban tissues while keeping a coherent structure for the city by pedestrian network.

Finally, one of the main results was the pattern network for pedestrian showing the role of nodes and lines services available and the best of cycling and walking routes in the area. The urban and historic framework of the city center has thus been reconfigured into a pedestrian square capable of hosting cultural events and public meetings. New services have already developed within the area including art galleries, souvenir shops and cafes.

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