ANCIENT IRANIAN URBAN STRUCTURE AND ITS SITUATION IN CONTEMPORARY CITY

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ABSTRACT

The main topic of the article is based on studying the structure of historical Iranian cities. Most of the ancient Iranian cities have had recognizable skeleton and structure, which have been expanded from the most public places of the city such as Bazaars (market places) and Squares to the most private parts like neighborhoods. This type of unique organic structure organized the city form and the development of the city occurred within this framework.

There are lots of examples of such cities, that have maintained their main structure and their historical form can be easily identified even up to the last fifty years. Some cases of these structures and constituents (such as their axes and joints) are mentioned in this article.

However, if we consider the current condition of Iranian cities, we will see that the major growth of cities in the contemporary era- specifically in recent decades, has happened outside of the historical zone, whilst the physical structure of old city is suffering from severe erosion and disintegration, it is still coherently interwoven with the social structures and values. The disintegration and erosion of the old urban fabrics and diffusion of city landmarks, neither show the unified structure nor transform the valuable ancient pattern into a major issue.

The main pattern of the old city’s structural body and its basis which had been constant, have been transformed due to diffused and unorganized development of the cities. As a result of the disorganized but continuous urban growth, the pattern of city structures which had its roots in the history of the city underwent metamorphosis. The structures of ancient Iranian cities which have had unity, integrity and regulation are collapsing within this irregular growth and are remaining as broken frames of the city.

To find suitable strategy for dealing with historical cities which are collapsing internally and expanding towards their suburbs, we have studied the definition of the main structure of a city and the perspective of the theorists in this respect so that we can provide a framework for sustainable development for these historic cities.

Additionally, this paper studies the ideas of structuralisms and the definition of the structure of the city, structure of ancient Iranian cities and its component (joints and axes) through a few examples. Afterwards, it refers to some examples of expanding ancient cities. In light of these examples, it will present solutions and strategies to achieve sustainable development and structural regulations.

Key Words: Urban main structure, Iranian old city structure, joints and axes, sustainable development.

MAIN STRUCTURE OF HISTORICAL IRANIAN CITIES

A city structure is comprised of a main part, as a spine and a network of various land uses in addition to elements which integrate the city as a unity, its order extend & to the furthest urban fractions such as residential districts. The expression (urban main structure) is used regarding a certain part of the city, in which physical and behavioral centralization (density) takes place, and other constructions throughout the city fill the gaps between these main sectors following its order as fillers (Hamidi & others, 1997, p1) (Figure 1).

Figure 1: Comparison Structure of a city (old Tehran) and structure of a tree or leaf.

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In Iranian cities, locations of various physical main factors and elements regarding the city, its functional characteristics, access organization to the city (internally/externally), and access to different urban main elements indicate a certain type of urban “main structure”.

Some Iranian theorists have rendered theories regarding this kind of structure and its rules. Herein, I mention the theories of Nader Ardalan, extracted from his book “The Sense of Unity”:

Ardalan believes that the urban order is similar to crystal fractions, which have been polarized by means of a magnet. In traditional cities, this magnet is the Bazaar (old market), mobility system, and fractions are stores, karvansarais, schools, mosques and public baths. The market is begun and ended by gates or a canonic area such as a mosque. Different routes also are drawn from this main path. From his point of view, cities are similar to human skeleton and have certain structures.

This area is the center to the city but it’s not just a central point in space, rather it moves length wise as time goes, therefore, it produces the linear movement of the Bazaar (Figure 2). This paradigm provides the possibility of development and growth. In a comparison between this paradigm and a living creature, one can say that Bazaar begins from a point which is presumed as the head, and grows cell like a natural model, then continues to the heart of the city which is the Friday mosque, and then reaches the city’s gateway (Darvazeh). In this structure while the Bazaar grows as a spine for the city, pedestrian paths grow toward residential districts as ribs. Inside this structure, crucial urban organs such as; public baths, schools, guest houses (karvansarai), warehouses, bakeries, water storage rooms (Abanbar), cafes and merchants stores are situated and developed (Ardalan & Bakhtiar, 1973, p93).

Among Iranian cities, Isfahan is one where the structure is recognized as the most elegant and beautiful. In this city, the Bazaar, Naghsh-i-Jahan square and its quarter buildings, Charbaghstreet, Zayanderood River and its historical bridges form a main structure. It is interesting to know that this structure still holds complete adaptability and has been able to cope with all modern requirements therein (Figure 3).

Figure 2: Source: Ardalan & Bakhtiar, 1973, p 89.

Figure 3: The integrated structure of the city Isfahan. Source: Ardalan & Bakhtiar, 1973, p 127.
The main structure of the city broadly speaking maybe defined as a grid and axes, urban components and collections in which its fractions assume different roles with regard to each other, a role which they don't assume individually:

1. **Bazaar (Iranian traditional market):** It is a spine of the city structure in which commercial, social, cultural, religious and political urban activities take place.

2. **The city center complex:** Includes the city square and Jamia Mosque, in which social, cultural and religious urban activities take place. This collection is situated at the midst of the Bazaar.

3. **Arg (The castle) collection:** Includes the Arg, the Arg square and the government school and mosque. It is the political center of the city and is situated at the end of the Bazaar line.

4. **Urban main axes:** These axes on one hand connect residential districts to Bazaar by means of indirect access and on the other hand, provide access to the outer area of the city through the urban gates. Public functionality is the most important usage of the buildings on the edges of these axes.

5. **Residential districts:** These districts are the main urban units and by means of their main access connect to the main structure.

6. **Darvazeh (city gateway):** These are inlets which provide access to the city from outside or out of the city from inside by means of urban axes.

![Figure-4: The symbol sketch of an Iranian Urban Structure. Source: Miriran & Vaczi, 1989, p30.](image)

7. **Baroo (The tower and enclosure of the city):** This comprises the outer urban layout, encloses and integrates it (Figure 4).

Finally, it could be said that traditional structure of Iranian cities is comprised of various elements and axes which are interconnected by means of spaces called “joints”. There are some rules governing these joints which provide a certain special integrity and order of Iranian urban structure (Figure 5).

![Figure-5: Examples of Iranian ancient urban main structure.](image)
**Urban Connections, “Joints”, in Iranian Urban Structure**

As mentioned, the urban structure is comprised of urban axes, elements and collections which through the passage of time have been developed on the basis of the urban scale hierarchy, and have been interconnected by means of several joints, thus providing a coherent urban fabric. In this integrated structure, urban joints have supreme importance; these joints connect the urban spine and the market to urban accesses, and from there to district’s spinal cores and finally to residential districts, even in residential units and vice versa (Figure 6). Also in the past the growth of the structure occurred with adding new joints to the old structure. The growth of the Isfahan main structure in 17 A.C (Safavid period) occurred with constructing Naghsh-i-Jahan square as a new connection which joined the old part of structure to new constructed parts (Figure 7).

*Figure-7*: Expansion of Isfahan in 17 A.C. with Naghsh-i-Jahan Square as a joint between old city parts and new expansion. 

*Figure-6*: The symbol sketch of the scale ranking mechanism between urban joints.
Joints have four main rules within the urban structure:

1. Connection of urban axes to each other and to the main part of the structure (the Bazaar).
2. Changing the functional character of urban accesses from one point to another.
3. Linear development of urban axes.
4. Reorientation of urban axes and the urban main structure (urban development).

Since the joints are urban nodes and connect streets and axes, they contain the main activities and usage of the city according to the level of importance of the streets.

**Cases of Urban Joints in Iranian Old Cities**
Iranian Cities Structural Change

After Rezakhan (a colonel who brought down the Qajar dynasty and became the king) and the beginning of Iranian modernization, vast measures were taken regarding the physical changes in cities. These activities mainly began from 1931 and continued till 1951. It was in this period that most Iranian cities underwent shortsighted changes and variations not programmed and foreseen. These changes included: widening narrow and old streets, applying a rectangular grid with its main structure as new streets network, and also changing old districts, constructing new squares and buildings emulating the West. In general, one must say that all these vast changes in that period are the very clear sign of moving towards modernity discarding the historical concept of Iranian cities (Mashhadizadeh Dehaghani, 1995, p388) (Figure 8).

Streets at the beginning of the century, in addition to imposing a new urban structure, entered into the Iranian urbanism in opposition to spatial and functional old structure of cities, and still continue to exist. “The notion of rapid outward development of cities due to the declaration of the “Open Ports” Policy by the current government was another reason. These efforts were to discredit current structures, not starting any new” (Izadi, spring 2001, p35) (Figure 9).

Though by the arrival of the modern period crucifying old cities seemed unlikely, what's happening now in Iranian cities nevertheless is the continuation of the same thing. In addition, destructive development and fragmented restoration projects are rampant. So, a structure which has been developed over several centuries has undergone dramatic changes in recent decades, and urban development instead of going by its traditional structure, is now destroying it.

The structure of the Iranian ancient cities which have had unity, integrity and regulation are collapsing within this inconsequent and irregular development and are remaining as broken frames of the city¹.

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¹ Such dramatic changes that are still ongoing in Iranian cities are the results of comprehensive and detailed plans by companies and implementations of municipalities under the governmental approval and financial supports. These plans in recent years under the name of renewal and rehabilitation plans (1992-1994) and especial plans for problematic urban fabric (1993-1997) were done; this trend still is going on in many cities.
Some theories have been offered by some Iranian theorists regarding cities which historically and structurally are significant but are now being destroyed and transformed internally. These theories propose to give a proper theoretical framework and so that current and future urban changes and structural measures continue on that basis.

Accordingly the hypotheses of these theories are:

- A city as a growing whole (line and organ) must have a main structure of its important components and bases, supporting and strengthening the urban form.
- Due to today’s urban complexities and their problems, total planning is ineffective but by planning according to the main structure of cities, good planning could be achieved.
- The best way to face the present disintegrated and disjointed cities is to understand the structure features and its foundation.
- The main structure of cities as their organizer, in addition to making the city and its components coherent by its adaptability, keeps its integrity over time.
- The most appropriate structure for present cities is their traditional structure and a development on that basis.
- A correct organizing of urban main joints and axes as the main parts of urban structure enhance the public life and activities.
- A successful urban planning may only come true by allocating the historical urban structure to the main and principal activities therein.

In this article, it has been tried to prove these hypotheses by using structuralist scholar’s theories.

Theoretical Framework to Face Current Condition of Iranian Cities with Historical Structures

Nowadays cities are complex therefore, recognizing a city’s ordering forces and the struggle to organize it in relation to the cities components would ease developments and promote control over the city changes. (Hamidi & others, 1997, p32)

In contrast to functionalists, structurists approach the city as a whole (in their word: Gestalt). (Bazrgar, 2003, p55)

Advocates of this opinion rejected efforts to ascertain the final form of the city (total design), and offered the theory which says planners and architects must design main parts of a city, and the rest be left at the hand of people themselves.

Designers such as Christopher Alexander, B.V Doshi, Edmund Bacon, Fumihiko Maki, Aldo Rossi, David Crane, Roger Transik and others have offered theories regarding urbanism, on which brief discussions will be presented in this chapter.

Edmund Bacon and the Theory of “Organizing the Urban Main Structure”

Bacon believes that any project for any part of the city must be consistent with the main urban structure. Furthermore it must be flexible enough as to provide developmental possibilities if necessary. So, a powerful strength of unity is provided within the organization and buildings will be brought into a unity context.

According to Bacon the main structure is the organizer power of the city, and if the designer puts most of his efforts thereon, he'll be more successful.

He introduces the abstract of his theories in one single phrase:

"Though the leaves go and come each fall and spring, the trunk and branches of the tree remain, and it is they that determine the form of the tree."(Bacon, 1974, p306)

Christopher Alexander and the Theory of “The Growing Whole”

This theory is produced upon the concept of urban structure and structurism in design, and poses the feeling of vivaciousness in cities, a phenomenon which is a result of a certain way of designing and existed in historical cities.

Alexander thinks about the growing whole and says that, we feel this quality very strongly, in the towns which we experience as organic. To some degree we may know it as a fact about their history. To some degree we can simply feel it in the present structure, as a residue.

In each of these growing wholes, there are certain fundamental and essential features:

First, the whole grows piecemeal, bit by bit.
Second, the whole is unpredictable. When it starts coming into being, it is not yet clear how it will continue, or where it will end, because only the interaction of the growth, with the whole’s own laws, can suggest its continuation and its end.

Third, the whole is coherent. It is truly whole, not fragmented, and its parts are also whole, related like one part of a dream to another, in surprising and complex ways.

Fourth, the whole is full of feelings always. This happens because the wholeness itself touches us, reaches the deepest levels in us, has the power to move us, to bring us to tears and to make us happy.

All traditional towns have these features in their growth. But the modern practice of urban development does not have these features. It does not deal with growing wholes at all (Alexander, 1987, p14) (Figure 10).

Kenzo Tange and the Theory of “The Revitalization of the Current Structure of City and Linear Structure”

He believes that the boost in movement is not the reason for traffic problems in cities, but it is the urban structure which cannot afford to provide the needs regarding moving from point to point in cities. This phenomenon is worse in cities with the street pattern of central-radius, and leads to immobilization of urban functions.

We’ve understood that, in addition to functionality, we need some kind of a structure in the combination process of functional units. Nowadays, the combination of functional units is less inclined to unity, and more towards numerousness, and based on improvisation. We’ve learnt from our experiences that landmark and signs must be generated from, and within the process and measures regarding the organization of the structure.

He explains the necessity of this viewpoint as follows:

A large city with 10,000,000 people is a phenomenon occurring in the second half of the 20th century. And in order to survive, it requires a structure conformant, appropriate to this time. The medieval radius pattern of cities with a centralized traffic and a line of buildings is no more an appropriate structure; however, constructing a totally new city is not a solution, reconsidering the contemporary structure and revitalizing it could be one (Tange,1966) (Figure 11).

Figure-10: The growing whole.

Figure-11: The linear structure of Tokyo designed by Kenzo Tange. Source: Hamidi & others, 1997, p 13.
**Aldo Rossi and the Theory of “Urban Main Structure”**

He believes that cities have a main structure through which they are connected to the history. It is a collection of elements made by man, which has some sort of integrity. This is a man-made combination with its components integrated. He views cities as a collection of totalities, each of which consists of a complete entity on its own and which are connected to one another through the main structure components that have their unique identity but are interwoven to each other by means of the main structure. This main structure explains the historical urban evolution. Rossi believes that the main structure doesn't belong to a certain period and must be studied in the length of history. This main structure can adapt and make itself appropriate for each period (Rossi, 1986).

**Kevin Lynch and the Theory of “Landmarks Organization Network and the Image of Cities”**

He believes cities to be a physical unity which is perceived and observed by people therein. Mental order is necessary to make a cognitive map out of cities. So, the final image of a city in the mind represents clear images, identifiable landmarks (from city blocks and spaces) and perceptual ability to depict it. Differences and similarities influence the structure of a city. He believes that today’s urbanism must look for urban landmarks in each period, identifying a value organization and system of landmarks through the history (Lynch, 1960) (Figure 11a).

**CONCLUSION AND SUGGESTIONS**

The above mentioned theories could be integrated as a way of approaching the current condition of historical Iranian cities in relation to their structure.

According to the theory of Organic growth (Alexander), it is preferred to locate the further development inside cities rather than investing on outer lands. Bacon’s theory proposes organizing the structure of a city as the essence of city developments. Lynch emphasizes on the legibility of cities by considering the hierarchy of its perceptual elements as the most important step in designing cities. Rossi considers the historical structure of a city as its main structure. Tange points at conserving the current structure of cities as much as possible; in case it is not responsible for residential needs, he proposes reconsideration, which is adaptable to further developments.

In historical Iranian cities (as it was mentioned earlier) while there is a physical/functional efficient structure which after centuries is recognizable and functions, theories about structuralism are useful too. Linear structure with the ability to grow (as it has been growing during centuries) works as an organic growing whole where its components enhance its integrity. This structure due to its special physical, social, economic and cultural opportunities provides a context for sustainable development and it leads the trends of development towards internal lands.

As a conclusion, for completing city constructions among such cities the first and the most crucial step is to recognize the city’s structure and its role during the history. Understanding the structure and its features in different scale from the whole city to districts in addition to, analyzing its components (axes and joints) would be the best lead in prioritizing renewal actions and urban revitalizing and it is the best catalyst for the future developments orderliness. Here joint (conjunctions) are most important because revitalization of urban centers is a widely accepted way of leading developments.

To sum up, the conclusions are:

- Internal urban development and investment and efforts to develop a city from within instead of its outer development by keeping its traditional structure.

- Revitalizing the main urban structure which has developed throughout the history.

*Figure-11a:* A value organization and system of landmarks.
- Planning for the main structure of the city, allocation of its main spaces to important functions as public territories, and leaving the neighborhood’s developments to urban codes and construction’s guidelines.

- Urban linear development continues in order to provide coherent growth any time.

- Providing a legible hierarchy of urban landmarks can clarify the growth path of cities and create a better perceptual image.

**Cases of Historical Organizing Urban Fabrics Project According to Structural Concepts**

Comprehensive plans for revitalizing historical/cultural path which were to consider the organic structures culturally/historically in order to regenerate them, in addition to rehabilitation and renewal plans for historical fabrics are presented here, as improvement plans based on designing according to the historical structures.

The Year 1990 was the beginning for a new era in approaching the historical urban fabrics in Iran. Since then urban fabrics have been considered separated from the whole city plans.

From then onwards, multidimensional city structures and its context have been considered (IZadi, spring 2001, p38).

Considering this new approach, the commission of urbanism and architecture began revising the historical sites and plans based on following the structural order. Recognition of the structures and proposing guidelines in order to cohere the historical structure to the modern fabrics was the essence of them. The result of their attempt was primitive guidelines for Urban Design projects but some unreasonable expectations caused the failure.

Among these cities those who had a stronger structure gained better projects. That is why cultural and historical revitalizing and improvement projects in cities such as; Isfahan, Shiraz, Tabriz, Yazd, Kerman, Hamedan, were better due to their spinal cord structure, mostly as in the Safavid period cities, where the unity of physical structure is more evident. This is a principal reason approving the hypotheses of this article that the more coherent the structure of a city is, the more successful functions and order it gives to further developments. As a result, in cities that have lost their integrity with segregated spaces, plans especially regenerating plans should be concerned on the main structure of cities including axes and joints in order to be more successful.
**Organizing Cultural and Historical Main Structure of Shiraz and Revitalizing the Karimkhan Complex**

In this project revitalizing the spine of the historical city was intended which includes Bazar and Shahcheragh complex, as it is inscribed in the map; these two complexes are not well connected, there are some cuts between them by machine based streets.

Project suggestions which are according to the structure situation within the city of Shiraz include:

A. Enhancing and organizing the Shahcheragh complex.
B. Revitalizing (reviving) the Karimkhan complex.
C. Improving the quality of the space between A and B.
D. Developing the main structure.

**Reviving the Karimkhan complex:**

This project is inspired by the cultural and historical spaces of Shiraz.

Its objective has been re-establish unity between the two complexes and revitalize the Toopkhaneh square of Shiraz. Revitalizing and recreating spaces of the Zand period such as the artillery square, BagheNazar, and the frontier of the Vakil mosque, and also depiction of the arena of guest houses Roghani, Gomrok, and Ghavam, and reconnecting to the market, have been suggested in the project. It says that, the narrow Zand street which now crosses the complex would turn into a wide pedestrian walkway. Implication of the Zand access in the Karimkhan complex will result in recreation of the market and Karvansaray cut off thereby. The roadway between the Roghani Karvansaray to the municipality square has been proposed to turn into a subway. This project is under construction and the subway of the Zand Street is already finished².

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² Engineer adviser of Naghsh-i-Jahan Pars planning report, Summer 1998.
Revitalizing and Organizing the Cultural and Historical Main Structure of Isfahan’s Old Square Complex

The main structure of Isfahan is its cultural and social city spine which is a distinct example of structure in Iran. This path has always been structurally important and even now the main structure of the city is based on it. This complex starts southward, from the old square and the Ateeq mosque, and ends at the HezarJarib gardens in the slope of the Saffeh mountain. This is the place where Isfahan university and some branches of housing districts are located. Now the question remains: has any strategic planning had any role in the construction of these places?
Organizing Cultural and Historical Main Structure of Tabriz and Reviving the Saheb-ol-Amr and Bazaar’s Bridges
CONCLUSION AND SUGGESTIONS

The results from this research show that the historical fabrics of cities that now consist of the main part of the centers of cities, as structure of the city, would find a new existence. Therefore, connection between the old and the new structure of cities by following the principle of spatial organizing of its components in the holistic approach towards cities could be one of the best strategies in regenerating cities. Rearranging the structure of city development projects and defining the role of regeneration in this process would improve the outcome of plans.

For implementation of plans the first and the most crucial step is to recognize its structure during the history. A good perception and understanding of the main structure can be the best guide in prioritizing the revitalization plans. Also recognizing the main structure and analyzing it and its components (joints and exes) and revitalizing it as the public realm in different scales could be the best catalyst for future developments. Here joints are most important and revitalizing the city centers as city complexes and neighborhoods would lead the development to internal lands.

Tissdel & Oc in their article "Safer City Centers: Reviving the Public Realm" consider the role of public realm in the process of historical city center revitalization and they assess this policy as a motive for development. By taking this policy, in addition to enforcing the structure of the city, the unifying factor would be stronger.

Finally, setting up an organization or an appropriate management system in the current chaotic condition and settling organizational conflicts like those of the municipality and the cultural heritage agency in managing the historical fabrics, would prevent useless efforts and end up in more successful implementations.

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