

Received 2015/08/02

Accepted 2015/21/07

An analysis of the physical space of Ahvaz city

Ahmad Pourahmd*

Bahar Habibian**

Mohamadreza Ahmadnia***

Abstract

One of the factors that distinguish the city from other human settlements is the physical dimension that always absorbs significant attention of managers, urban planners, residents and visitors and quality of it has an important role in quality of resident's life. The lack of program and immethodical development, especially in big cities, caused current physical quality failed to meet the needs of residents and many criticisms has risen about this subject; Ahvaz city is an example for this matter. The objective of this research is to investigate and analysis of physical space of Ahvaz city and also capabilities and weaknesses of that space for providing residents' requirements. Research method is descriptive-analytical with qualitative approach. The article was written in holistic scale and relies on the theory of main structure of city. In order to reach the objectives of the research, after primary reviews, three hypotheses developed: 1. diversity is the most important capability of physical space of Ahvaz city, 2.lack of inconsistency is the most important weakness of it and 3.the physical space of the city has conformity with modernism more than other schools. Then, required data about literature of subject gathered from library studies and by selecting a set of criteria from reviewed criteria, using survey observation and library data, some examples of capabilities and shortages of Ahvaz physical space investigated. The result shows the diversity is the most important capability of the physical space of Ahvaz and environmental factors, inconsistency and the lack of universality in the city are the most important problems of physical space of it. In total, the identity of city is strong and it is weak in environmental criteria and also in discipline. Physical components of city have relative conformity with modernism school.

Keywords

Physical space, Fabric, Urban space, Urbanization, Ahvaz.

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*. University of Tehran. apoura@ut.ac.ir

**.. University of Tehran. Correspondent author 00989166001104

Bahar.habibian@gmail.com

***. University of Tehran. Ahmadnia_1355@yahoo.com

Introduction

Urban space and its quality has always been an important subject of architectural, urban design and urban planning discussions. Creating a dynamic urban space consistent with social, cultural, environmental, psychological, and economic needs of population has been constantly a challenge for the practitioners in designing urban space. Space occupation and physical symptoms of city constructions presents a specific framework differentiating it from other communities including rural and migrating (Rahnamayee and ShahHosseini, 2008: 10). Following historical, political, economic, social, cultural, etc. evolutions, principally, city is a dynamic phenomenon getting a physical form in a geographical territory. It gets a spatial form in relation to other cities and produces a dynamic and changing system over time (Nazarian, 2009: 18). In addition to studies of social scientist, human scientist and architectures (mainly responsible for creating and processing city skeletons), the urban physical spaces have been studied from new perspectives, regarding the complicated dimensions of urban spaces. Because of emergence of visual and varied urban perspectives, urban physical space placed at the center of attention as a symptom of urban life. As an intermediary between human and environment, urban fabric shapes the human life in urbanization model and directly affects the human's quality of life. Emphasizing on the mutual relation between the quality of urban design and the citizens' life quality, Queen Lynch believes that an efficient urban design should raise the human quality of life by improving the quality of skeleton [structure] environment (Golkar, 1989: 43). Today complicated life has mixed up urban issues and altered the concept of many urban spaces (Rastbin, et al. 2002: 35). Like pre-modern urban spaces, postmodern urban spaces also show the live of their era, age of speed and machine and the dominance of economic powers. They represent the exploitation of nature and social crises (Soltani and Namdarian, 2011: 83). At the present, there is a deep gap between urban development programs and their

previous tradition. Urban spaces, their importance in urban liveliness and dynamism and the improvement of environmental qualities have not been, in fact, well attended. Today in most cities in Iran, general domains are not mostly responsible against human needs as a social creature (Rastbin, et al., 2012: 36). As a large industrial metropolitan considers as a service center in western south of Iran, Ahavz, in the first glance, has a heterogeneous fabric lacking plan that Despite having capabilities and strengths, it has not well processed and its citizens' needs are not well satisfied. From a new-comer's view or an unfamiliar person, Ahavz, for a unfamiliar visitor, probably, is considers as an unrelated community of some small and big inconsistent buildings and lacking defined urban centers. Lacking an appropriate fabric for social contacts, citizens' presence, and a systematic human relations have turned the city into a place without the spirit of urbanization (Mojtahedzade and Namaver, 2006: 233) Issues and problems like disorder in service providing, fabric turbulence, unplanned urban sprawl, lack of a logical link between urban fabric elements, symptoms inefficiency have led authors to study this subjects using the parameters of studying fabric quality. To concretely study these subjects, this paper aims to examine Ahvaz physical space and determine the strengths and weaknesses in order to satisfy citizens' needs.

Questions and Hypotheses

Regarding the research purposes, it struggles to find the qualities and parameters of the city physical space in responding citizens' needs. Accordingly, along the empirical and case study, the following questions are answered:

- What are the strengths and weaknesses of Ahvaz urban fabric?
- To which urban design schools Ahvaz urban fabric qualities are more similar?

And in this regard following hypothesis developed:

- Variation seems to be the most important strength of Ahvaz urban fabric.

- Lack of integrity is the most inefficiency of Ahvaz urban fabric.

Research Methodology

To reach the purposes and answer the research questions, in the first step, the urban physical space should be understood and introduced based on the assessment criteria. Then, capability or inefficiency of this space to satisfy the peoples' needs in Ahvaz, should be analyzed by selecting a set of criteria consistent with available conditions and data. To analyze second question, the physical space characteristics in different urbanism schools investigate and match with Ahvaz characteristics.

It should be noted that the urban physical space can be analyzed by subject-based (using questionnaire and interviewing with citizens) and researcher-based methods. This research has been conducted based on the second approach.

To perceive unknown subjects of city by this way, Jacobs propose an accurate consideration of senses and events, and attempt to conceive their meanings and also possibility of extraction of some principles from them.

He calls it public common issues (Garout and Wang, 2013: 340). Accordingly, this is an analytical descriptive research study based on a qualitative approach. The physical range of research is the urban service area of Ahvaz municipality. This is a holistic study emphasizing on the Theory of Urban Development. The theory of urban development is a megaapproach to the city texture and looks at its totality (Mirmoghtadaee, 2006). The principle structure, posed by several known urban designers such as David Creen, Edmond Bacon, Kristopher Alexander and Maki in 1960s and 1970s, means that the principle structure of the city can be divided into two main and subsidiary parts. The main fabric and backbones of the city represent the steadiness, continuous, and the identity of it. It refers to the main meaning of the city or the concept of transferring message. Other parts constitute other components representing changes, variation, freedom, and authority. The main

part can consist of elements such as relation axes, major open spaces, public buildings and likewise. However, neighborhoods and where the routine life occurs are the non-major part (Bahreyni, 1988). Introducing the state que and factors affecting the principle structure and the urban physical space in Ahvaz using library data and available statistics and information, the empirical part analyzes the physical elements in the context of selected criteria based on field observations and complimentary information. The capability or ineffectiveness of the mentioned concepts was also studied qualitatively.

Literature Review

Concept of Urban Physical Space

Urban space has been defined various in the territory of various specialties relating to city, each of which has different emphasis on the social, physical, or practical dimensions of this space. Undoubtedly, there is no definition being able to differentiate such dimensions of the human life and present an independent definition.

Since the early 60s up to now, referring to Camillo Sitte, Geddes, Mamford, and other culturalists, and the proponents of human planning in the city, (which have critical role in surviving the notion and the effect of urban space), the concept of the urban space relies on this inception that it is on of components of the city structure that have coordinated and continuous generality and an encompassing body in terms of physical dimension. This space should have order and beauty and be organized for urban activities. The city space is a principle element of urban structure that relates to the heart and the center of social strategies (Parsi, 2002: 43). Tavasoli and Bonyadi considered urban space as an element of spatial construction of cities being formed and changed by the history of a nation in different periods (Tavasoli and Bonyadi, 2007: 17). Pakzad considers the urban space as the physical manifestation of the culture of a society (Pakzad, 2007). Madanipour believes that the urban space is not the gap between buildings. According to him, it

encompasses fabric, activities, events and relation between them (Madanipour, 2005). In defining urban space, Rob Krier limits the perception values of the urban space in the object which is the outer mold of buildings. He adds that any review may be based on personal tastes, so different sensational habits in different times and places help facts to be perceived in the urban space with different values (Mirzakoochek Khoshnevis, 2006: 103).

To understand the concept of the urban physical space, the notion of urban fabric should be defined in a specific area. In the literature of urban design, the term 'fabric' is defined as the shape or the form of city. In his book, titled 'The Image of the City', Kevin Andrew Lynch defines city form as the physical and visible appearance of the city (Lynch, 1985). Lynch explains, in his book 'A Theory of Good City Form', that the form of a habitat usually called skeletal environment is the concept of the spatial model of big, static and continuous skeletal elements such as buildings, streets, equipment, hills, rivers or even trees (Lynch, 1985: 58). Some believe that urban fabric is a dish for urban activities and the possibility of their occurrence or a dish for human being and all his activities in the city (Bahreyni, 1986: 57, and Rahnamayee, 1986: 19).

Urban physical elements

The urban fabric consists of elements defined in different specialties with different concepts. The skeletal environment is formed by the mutual relations between these elements and a totality formed relating to human interactions and social and cultural activities. Regarding our research purposes, we can differentiate the following main elements of the urban fabric.

1. Form Elements

Sky line: it is the intersection between natural volumes and the city buildings with the sky. It makes the judgment about beauty and ugliness of the city possible.

City Profile: what is in the sundowner, when the light is at the back of the city, is observed as a flat view

by observer.

Edges: borders or cracks between two continuous parts of a city like the height difference between two neighboring parts, high walls beside streets or row buildings along the streets (Majedi, 2006: 401).

Empty void volumes: pieces filled with made or natural spaces and pieces empty of volumes their multiplicity affecting urban form and fabric.

2. Urban Signs and Symbols

Urban space are mostly recognized by signs and symbols generally or specifically differentiating cities from other types of habitats and any city from other city. They contribute in the formation of cities' identity and conceptual and communicating elements of cities.

Parsi believes that symbols are of the most important signs and elements of space form. As the civil life is a set of insights and attitudes indicating human supreme beliefs and those beliefs shared between human and the society and communicating them by the symbolic system of the society, signs, thus, are considered as the civil life according to their formal aspect and lead the space form (Parsi, 2002: 47). Bahreyni et al. consider signs as something which is seen. But if we find out other concepts and meaning by seeing signs, signs are converted into symbols (e.g. The Eiffel Tower and Statue of Liberty which were first signs and then turned to symbols over time (Bahreyni, et al, 1912: 198).

3. Urban Ways and Nods

Way is a factor that potential or actual movement is formed by it (e.g. pedestrian way, roads, underway, trains, etc.) (Mazini, 2004: 90). Urban nodes include cross sections, streets, squares, or points with dense buildings creating more activities and congregations (Majedi, 2006: 404).

4. Urban Views

In terms of scale and proportions, method of construction, structure, elements, color and the level of mastery, views play an important role in visual effects and are considered in studying volumes in the city fabric. Innovation and creativity in urban views can create a good

urban image (AdibiSaadineJad, 2011: 31).

5. Urban Furniture

Urban furniture is a set of equipment and facilities improving the quality and efficiency of life in cities and streets. Streets, allies, squares, parks, and the city on the whole are the origin of first types of furniture. The major characteristic of urban furniture is their public usage. In this case, one of the main needs is the citizens' comfort. The second factor, which is a part of landscaping design, create or modify urban spaces (Daroon Kollaei, 2006: 386).

Criteria of Studying the Quality of Urban Spaces

To study the state of each society and assess how consistent it is with defined patterns, the assessment criteria or indexes should be determined. Indexes are rigid applied to measure and assess the changes of variables over time (Asayesh, 1985: 29). Selecting an appropriate index for any statistical society depends on the condition of the society, planning purpose, policymaking, and finally the researcher's

decision. These indexes can be selected in qualitative and quantitative dimensions. In case of the quality of urban spaces, Montgomery believe that although it is easy to think about a successful place, going there, and understanding that such a place is good or not, it is not easy to say why this place is successful and how such success can be achieved by setting appropriate conditions (Montgomery, 1998). There are many scholars commented on the skeletal quality and the urban design. Table 1 presents some of the most important comments. In some cases, the designed criteria, in terms of urban design, do not have a theoretical depth for the quality of urban fabric. Regarding the relative comprehension and being easy to understand, they have though turned to one of the most important and professional references (e.g. the set of criteria suggested by the Urban Design Study Group of Oxford Polytechnic by Bentley et al. in Responding Environment (Golkar, 1980: 47).

In the history of urbanity, relying on different criteria and approaches, different schools and movements

Table 1. criteria of urban fabric quality.

Source: summation according to Bentley, 1985; Lynch, 1981; Rafieeian, et al, 2012; Carmona,2008; Carmona,2003.

Name	Index, Quality or Criteria
Jean Jacobs, 1961	Appropriate activities, mixed application, attention to the element of street, access of texture, social mixture and absorptivity of spaces
Kevin Andrew Lynch, 1981	Liveliness, meaning, proportion, access, monitoring, efficiency, fairness
Ian Bentley et al., 1985, Ian Bentley, 1990	Absorptivity, variety, legibility, flexibility, visual proportion, sensational richness, sense of belonging, sufficient resources, cleanness, life support
Alan Jacobs and Donald Appleyard, 1987	Livability, control and identity, nobility, meaning, public and social life, self-sufficiency, an environment for everybody
Green, 1992	Performance (relation, security, climate comfort, variation) Order (integrity, clarity, continuity, balance) Identity (forming centers, unity, personality, peculiarity) Attractiveness: (scale, visual and functional alternativeness, liveliness, harmony)
Brayan Goady, 1994	Liveliness, harmony, variation, human scale, absorbability, personification, visually, flexibility, wise alteration richness
Karmoona, 2008	access and communication, activities, comfort, and visual image

skeletally processed cities and each emphasized on a particular element and design method. These elements and methods cannot be accurately differentiated in terms of thinking border and time sequence. The scholars' views also cannot be attributed to a particular school. However, the results of each school are distinct in their peak era.

Urban beautification, relating back to a period after Renaissance or Baroque, flourished in 1960s against modernism to maintain the historic continuance of urban textures remained from the past. This style struggles to improve the visual and artistic quality using memorial elements and spaces (Bahrayni, et al, 2014). Urban generality and unity, beauty, comfort and magnificence, decorative elements and emphasizing on urban centers, parks, and streets are enumerated as its qualities (Ibid).

Modernism school arose from early 20th century based on Protestantism doctrine, Keynesian economic insights, industrial and technological advancement and needs that formed after World War I (Bahreyni, 2006). It encompasses the slogan of form efficiency and the compliance of form to function. Modernism also emphasizes on the simplicity and avoidance of decoration (Shoay, 1980), high density, relying on technology, differentiating the range of function, health, mass construction, ignoring inhabitants' views, and the comprehensive designs (Bahreyni, et al, 2014). It is highly criticized for ignoring behavioral sciences and inhabitants' viewpoints.

Symbolism is a 1880s and 1890s art movement which does not separate meaning from the environment. According to this movement, architecture, as a language or a communication tool, transfers meaning by means of form (Bahreyni, et al, 2014). From the perspective of urbanity, urban semantics studies social concepts of the available form in the city and the spacy of any oasis (Amiryarahmadi, 1988). In Lynch's urban studies, attention to the application of city symbols was a milestone. He introduced five factors of way, edge, nod, neighborhood, and symbol as components of city image (Lynch, 1960). He refers to uniqueness, being in the crossroad, spatial dominance, historical antiquity, having special

performance, having secondary qualities, sign continuum, scale, locating, setting, and avoiding from plurality as some principles of applying symptom and sign in urbanity and thinks that city has a better identity, unity and performance (Ibid).

Bahreyni et al. consider the structure and the general shape of city and its topography and the altitude situation as of other elements affecting the city image (Bahreyni, et al, 1994: 216-217). According to him, signs and symbols help cities with variation and richness (Ibid: 229).

Traditionalism, ecologism, and contextualism emphasize on keeping the relation between human and the environment, human-oriented urbanity relying on public spaces, domain and frontage (Bahrayni, et al, 2014), centralism (Tibaldez, 2001), variation, plurality, and unity (Shoumakher, 1973, and Tavasoli, 2002), the common model of symbol and sign, dichotomy and contrast, coordination, balance, functional and skeletal hierarchy (Bahreyni, et al, 2014). Post-modernist urbanity tries to disarrange the context of urbanity, namely artificial environment, theory, the act of urbanity, and making fundamental changes in it to create a new story and definition for urbanity in a global culture. This movement stresses on pluralism, engagement, ordinance, care to social affairs, intercourse, lack of concentration, lack of continuance, interruption and separation, and the plurality of urban center (Bahrayni, 2006).

As a result, by studying the skeletal qualities of any city, we can see to which school it inclines to. And if there is any weakness, which index can be used for satisfying inhabitants' needs.

Regarding the defined indexes affecting the skeletal space of a city and the mutual relation between these elements, the selected criteria were chosen by matching two groups of criteria suggested by Bentley and Green and the skeletal space of Ahvaz was analyzed according to the following model (Table 2).

Findings

Introducing the Studied Area

The biggest city in west southern Iran, Ahvaz is the center of Khuzestan Province. According to the

Function	Order	Identity	Attractiveness	Environment
<ul style="list-style-type: none"> •Relation •permeability and access •form and function variety 	<ul style="list-style-type: none"> •Unity •Continuity •Clarity •Visual proportion •Eligibility of signs 	<ul style="list-style-type: none"> •Centers and signs •Unity •Peculiarity 	<ul style="list-style-type: none"> •Scale •Visual alternation •Liveliness •Balance 	<ul style="list-style-type: none"> •Energy consumption •Cleanness and minimum pollution •Support of natural ecosystems

Table2. Selected criteria based on adjusting. Source: Bentley,1990 and Green 1992.

latest census, its population was 1,064,177 in 2011 (Khuzestan Planning Assistant, 2012);(Map1).

As a trade, service and health pole in western south of Iran, Ahvaz is also the center of oil areas in south, industries such as steel-making, tube making, sugar cane industries, and route for transiting products to western south ports. It also serves non-habitant exploiters. The daily floating population is estimated at 1,600, 000.

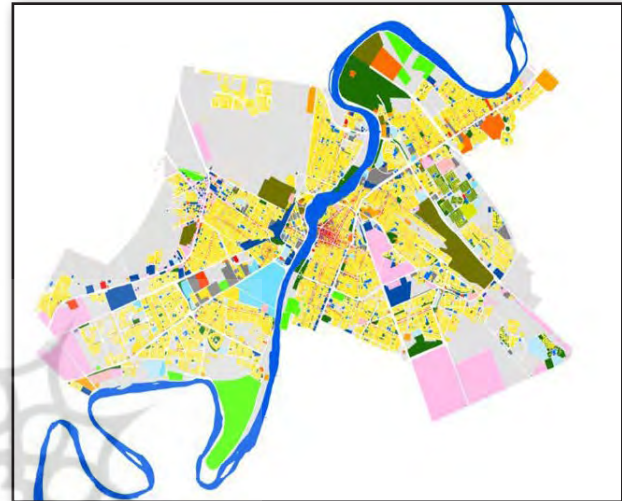
Ahvaz is one of the widest cities in Iran in terms of skeletal extension and with area of 22 hectares is the fourth biggest city after Tehran, Mashhad and Tabriz. It is in the seventh place in terms of population.

The city has been divided into two southern and western parts by passing Karun River in northern-southern direction. The primary kernel of the city is in eastern part. Map 1 indicates Ahvaz and its physical sprawl.

Factors Affecting the physical space of Ahvaz

The skeletal space is a set of factors, conditions and interactions, changed over time, and have created a unique representation of a dynamic phenomenon called 'city'. By studying the public conditions of Ahvaz, the most important factors affecting Ahvaz skeletal space are as follows:

1. Natural factors (Karun, hot and wet climate, lack of slop, soil, high hydrostatic level)
2. Population factors (changes resulting from the Imposed War and the following immigration, continued immigration from villages and small cities of the neighboring provinces, the severity of the first urban phenomenon as the center of the province).
3. Cultural factors (ethnic variation and the mixture of subcultures inside and outside of province,



Map 1. physical tract of Ahvaz. Source: authors.

inclination to modern elements in term of cultural mixture with western elements in the period of oil extraction, and the rural culture in the points added to the city)

Studying the population growth and the extent of Ahvaz has shown over time that although the population has grown 8.2 times from 1966 to 1996, the city area has increased 357.7 times. This indicates the uncontrolled physical extension. The topographical conditions including lack of considerable slop and lack of obstruction in the way of physical extension are all among the major reasons of the high speed of area growth comparing with the population growth during the mentioned years (Safaeipour, 1997, and Ahvaz Municipality, 1999).

Among other causes of physical extension, we can also refer to publicly offering the peripheral lands in 60s and 70s to housing cooperative unions for constructing dwellings. This has increased the horizontal growth of the city.

The slum areas are of the most important

physical features of Ahvaz. According to the study plan of empowering informal dwellings, 17 slum areas have been identified with population of about 400,000 in the study year. Accordingly, after Mashhad, Ahvaz is the second biggest city in terms of slum dwelling. This has wide skeletal and spatial effects both on these areas and on the whole city. Malformed housing without urban substructure, the extension of worn-out textures, cultural and social problems, the creation of ugly area and the development of law aversion are of these effects. Map 2 shows the dispersion of slum areas in Ahvaz.

Studying the physical space of Ahvaz

1. Function, Access and Permeability

Ahvaz has an urban texture including a cross-bar system. Lack of natural limiting factors like plant coverage, agricultural lands and rugged areas has caused the access grid, buildings and urban constructions to simply extend. If Karun did not pass through the city, the cross-bar lines may match with more urban areas. The presence of some twists in the way of river has caused crossing and perpendicular lines to be cut in the face of Karun and start to flow in another way and in another direction.

As most current urban constructions have been developed after 1951, linear constructional textures became the margin of the access grids

(Shahid Chamran University, Ahvaz, 2005: 111). Therefore, accessibility and the checked grid are of the benefits of the skeletal space of the city, especially in the western Ahvaz where there are conscious and preplanned constructions. Building numerous bridge over Karun and the eastern and western beach road have reinforced this feature.

Hierarchy in Communication Grid

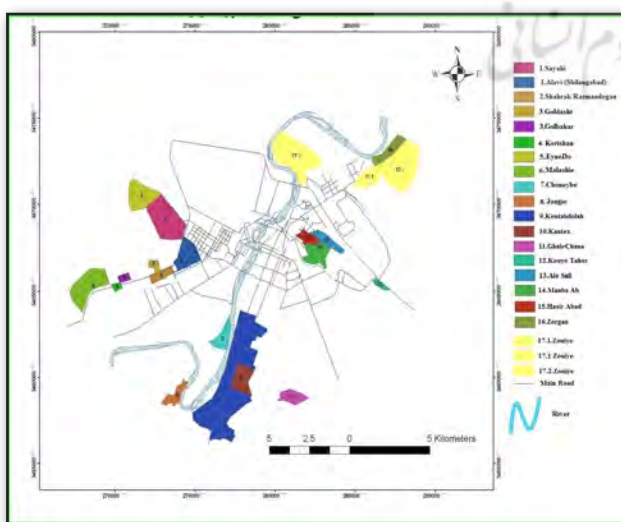
According to above reasons, there is a rather appropriate hierarchy in the communication routes. Although due to the population growth, the extensive increase of vehicles, and lack of management in crowded centers, some of the main roads can't afford the volume of traffic. Therefore, in peak hours, there are some traffic nodes and the most serious problems are in the city center. Construction of the east and the west belt route are notably effective for the reinforcement of the hierarchy of communication grid in Ahvaz route.

Communication

As said before, the communication grid in Ahvaz has checked form in most districts and it lacks of the complexity of organic grid. However, the city has some problems in terms of traffic in main ways making the communication and transfer difficult.

The growth of vehicles and population, increasing density, crowdedness of the city center, and the break of the city fabric by Karun and train lines are considered as some main factors of traffic problems. Badgering and vendors in route margins and shortage of parking spaces in city center are other ones. Inappropriate performance of municipality in relation to urban rules (e.g. issuing permit for building with shortage or lack of parking space instead of taking a fine in the number 100 commission) is another problem that affect traffic issues in Ahvaz (BeytSayah, 2013).

The major traffic nodes in peak hours include the central core of the city, Kianpars (Shahid Chamran Boulevard), Zeytoon Karmandi, Shahid Bandar Square (Chaharshir), Padadshahr Square, Shahid



Map 2. Suburban districts of Ahvaz. Source: Shahid Chamran University of Ahvaz, Deputy for research.

Chamran University Square and Amanieh. In these regions geometric designs or ways are not matched with their own role (access ...) and the volume of traffic.

Hierarchy

In spite of the fact that since last years, 1970s in particular, the city has been totally in a relocating state from a single-core development to a multi-core development due to over density of the central part and the extensive immigration of villagers and the city inhabitants during the Imposed War and after that, lack of wise policies has caused this movement not to be systematically attended as a good model for urban development. This, has, thus causes the horizontal growth of the city without the needed service providing.

Despite of this, the creation of independent service cores such as Kooye Enghelab, Hasirabad, Zeytoon Karmandi, Golestan and Kianpars providing the services inhabitants need and also service providing for other districts has reduced a part of the pressure over the central part. However, in these areas, the spontaneous formation which is not based on the primary skeletal design gives rise to some problems such as lack of grouped activities, shortage of applications including cultural, sport, green space (in case of anticipation, they have turned to another applications), heterogeneous accesses, heavy traffic in the central part of the core, and finally an imbalance face damaging the skeletal image of the city. As a result, the hierarchy of the skeletal spaces are not systematically observed in the city. Although

in some case a flash of it is being created, it should be wisely planned and organized.

Variation

Variation is another positive aspect of Ahvaz. In general, a few repeated view or space is observed. Even in organizational placed, there is a few/no view or building monotonousness. There are also too many different urban textures and this has even created incoherence in urban perspectives.

Karun and its different widths in different parts is one of the important factors of creating variation in urban landscapes. This has made the city fabric free of slope and monotony. Another factor relates to the oil exploitation period and the pertinent constructions. The internally constructing all exploited cities usually starts with a duality. The new part of the city is constructed by exploiters in European and Luxurious styles. This part takes advantage of an ordered urban plan, wide and green streets, night clubs, sport and recreation squares and is separated from other parts. In this part, houses usually have a beautiful floor with the required facilities (Shakooyie, 1980: 131). In this case we can refer to the texture contrast for two neighborhoods (Newside and Old Ahvaz) beside each other.

Ethnic and cultural variation is another factor creating variation in inhabitants' taste and affecting the city image. This capacity can be used in particular buildings such as mosques or Hussainias of particular inhabitants such as Qashqais, Azerbaijanis, Bushehries

1. Order, Solidarity, Generality, and Cohesion



Fig.1. Samples of urban texture diversity in Ahvaz. Source: Khouzeestan governor, 2013, IRNA agency.

The first problem of the Ahvaz fabric is the wide area of this city. Ahvaz is more than 220 km² about 140 hectare of which is considered as full and the rest is empty lands. In general, there are three main factors including Karun, The sudden surge in oil revenue as a result of industrial and service investment and the selection of this city as the political center playing a critical role in the immigration into this city and the physical development of this city. Due to the fast physical investment, the identity of the skeletal spaces and the integrity of the city texture were weakened. And as it is impossible to invest in parallel in the fundamental structures, the spatial requirements, bottlenecks and shortages have increased with population growth and the physical investment in all areas (Shahid Chamran University of Ahvaz, 2005: 106). The growth of industries such as steel, oil, army, and construction of dwelling and administrative complexes by mentioned unites in Ahvaz and around the city has also added to the disorders and discontinuity of physical fabric.

In addition to these issues, other problems such as providing services and communication have caused some incoherence in the physical spaces and a general and comprehensive structure is not seen in the city. Effectively, generality does not exist in the city image and the physical space of it.

On the other hand, the diffusion of social classes in urban textures in Ahvaz is not spectral like Tehran. The adjacent neighborhoods with obvious contradiction in their physical and cultural spaces are seen in city frequently. This is directly correlated with the diffusion of slum areas. One example is adjacency of Seyedkhalaf and Kianpars. Although this factor can be an advantage to create varied spaces, it has turned to a challenge due to obvious differences, cultural incongruity, the emergence of vandalism and the weak performance of parts delivering cross regional or even cross city services.

- Visual Harmony

As rural peripheral areas such as KutAbdollah, Eyndo, and Mallashie have appended to the city

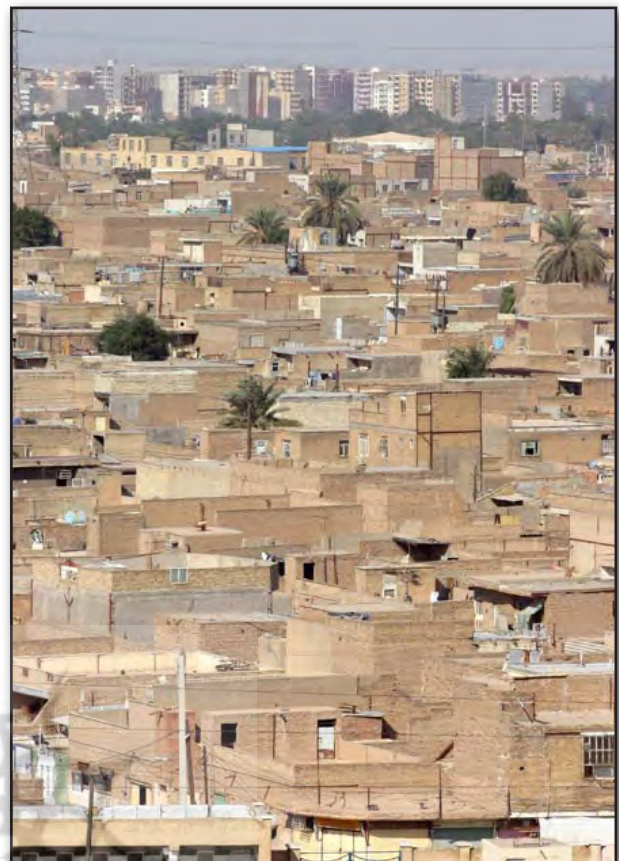


Fig. 2. Urban texture's contrast in Ahvaz. Source: Khuzestan governor, 2013, IRNA agency.

and due to the wide immigration of villagers and the growth of slum living, Ahvaz has faced many problems. Heterogeneous perspective and imbalance image are some consequences of mentioned issues.

- Legibility and Signs

Although Ahvaz takes advantage of a good geographical and cultural richness to create signs and inverting them into urban symbols, this capacity has not used in the city and most signs and sculptures have a concept not matching with the environment and they do not inspire a particular concept in the viewers' mind. An example of this can be observed in the square at the entrance of Andimeshk and Khorramshahr (Enghelab Square). There is also no proportion between the structure design and the location and function of the square. The square view has a geometric order just from the top view and it is meaningless for visitors from the sides.

Another sample is Shahid Chamran University

Square, which despite the notable position of this university in the city and region, the capacity of it has not been noticed in designing the University Square.

2. Identity Symbols

Although the historical antiquity of Ahvaz relates to very old historical periods according to historical documents and travel literature, But what happened to that city in those periods had not been affected by factors such as war, flood, and chaos. And in contrast to old cities like Isfahan, Yazd, Shiraz, and Tabriz, nothing has been left from the skeletal elements of this city from historic eras. The historic identity of the city is seemed to be completely destroyed and then renewed again. Old texture is mostly worn out and unvalued and face with understructure problems such as open streams, etc. The historic structures of

the city relate back to the Qajar dynasty, but none of them are known as a prominent symbol or building except the Literature College (triangle).

The most famous symbols of this city are Suspension Bridge (White Bridge) and Five Palm Square mostly applied as the memorial images of this city. Other known buildings seen as a symbol of urban districts include former Literature College (Molavi Square), Ali Ibn Mahziar Ahvazi Haram, and Ahvaz big silo.

The memorials of the Sacred Ware and the natural and artificial features using Karun River also provide a good capacity for creating new symbols. Opening the biggest artificial water fountains around the Seventh and Eighth Bridges as the biggest cable bridge in Middle East have been fulfilled by such possibility. Another factors of creating variation are that most



Fig.3. Obscurity and disproportionate of structures, Enghelab square. Source: Khuzestan governor, 2013; Authors, 2014.



Fig. 4. Shahid Chamran University Square, disproportionate of sign with place. Source: Authors, 2014.



Fig. 5. white Bridge and former literature faculty (triangular) as signs in Ahvaz. Source: Khuzestan governor, 2013.

inhabitants usually use night hours more than people of other cities principally because of the climatic conditions of this city in hot seasons. This makes using lighting features possible for creating varied and new spaces.

- Unity and Uniqueness

In the construction of the city, Karun, along with its eastern and western beaches and eight active bridge over it, is the most important unifying factor giving the city a unique and particular image. The varied texture and the particular architecture at the center of the city are also of factors making its physical distinctive. The mentioned symbols including bridges, five palm square, and city lightings at night and the night active space are of other distinctive factors of Ahvaz.

3. Attractiveness

Balance and Visual Alternation

Due to lack of a comprehensive approach to urban designing, the skeletal components are lack of alternation and balance. For example, buildings in the beach margins do not have any architectural unity and balance and the surreal drawings were painted on them do not match neither the identity elements of the city nor juxtaposition with the river. Particular buildings such as National Bank, Siloo, Central Library in the western axis, Refah Chain Store, and



Fig. 6. the largest artificial fall of Iran on 7th bridge of Ahvaz. Source: ISNA agency.

the historical buildings of the eastern axis, show off individually and without attaching to body. There are imbalance recreational facilities in beach axes. This accumulates visitors in some places and causes some other places not to be used. The green spaces in urban and neighborhood scale, public and recreational spaces have not been distributed harmonically. Lack of design and requirements to create harmony among components is generally observable.

- Scale

The available scale in Ahvaz skeletal space is generally of human kind. As mentioned before, Ahvaz lacks of historic buildings and a particular traditional architecture. Buildings, therefore, have been constructed based on a modernism approach and in human scale.

4. Environment; Supporting Natural Ecosystems

The most important natural component of the city is Karun River, which is not in a good condition. The severe reduction of pollutant flows in different periods has considerably lowered the biological variation and the river life is in danger.

- Cleanness and Prevention from Pollutants

Among the macro-pollutant factors we can refer to Karun water pollution because of domestic and industrial pollutants, air pollution because of adjacency with industries such as steel, agriculture, and sugar cane, unpleasant adore of secondary industries of sugar cane, lack of immunity from dust because of lack of green belt and vegetation of enclosing areas.

Micro factors include the problems of health and urban cleanness as a result of the accumulation of garbage in the vicinity of abnormal slum textures and destruction of the sewage system because of lack of a surface water drainage system.

- Energy Consumption

Regarding the hot climatic conditions most of the year, the energy consumption is very high in hot

seasons. The fabric space has not designed to reduce the energy consumption by environmental design such as double glazed window, sealed walls, deep balconies, tree shadow, passageways and directed

buildings. These schemes have used in some limited cases such as brick arcs of the main streets and the Imam Khomeini Bazar.

Discussion and Conclusion

Residing in a city has become not an inherent trend for some people to continue their life but a way to satisfy needs that are not met in other way of living. Buildings, streets, squares, facilities, green spaces, and other fabric components are an integrated physical and practical complex satisfying human's needs in cities that because of particular attention is paying to physical and visible elements of cities, many of urban experts study this area. In studies about Ahvaz and its skeletal space, variation and accessibility are the most important components of capabilities in Ahvaz fabric and lack of generality, weakness in the hierarchy and heterogeneity, inefficiency of signs and memorial, and environmental factors are of the most important skeletal problems of the city.

The rupture of the urban texture because of construction in different periods in a city like Ahvaz is an issue having a distinctive role in fabric designs of urban development. Planning in order to integrate urban elements and cooperate them in the fabric and the performance create a functional and effective identity in urban place. Current Ahvaz was formed gradually in a sporadic way by population growth and lack of distribution matching to the skeletal development and growth. Lack of solidarity in skeletal development has resulted in unplanned neighborhood with a depressed image of neighborhoods like Hasirabad and slums at the end of Chaharsad Dastgah.

Although Ahvaz inhabitants love their city and as the city creates a memorial place for its visitors because of its human and social interactions, the skeletal space cannot produce a unit generality in mind because of rupture and lack of cooperation between different sections. The separated units with distinctive and some case contrast qualities represent a different image of the city. The fabric space shows a some signs of inefficiency and also lack of beauty. It seems that there is no comprehensive plan for beautifying the city. The cultural capacities have not been used and symbols used in ways are mostly meaningless. Lack of coordination with the natural environment is one of the most important weaknesses of the city having irreversible effects in long-term and ignoring it in design has affect both on increased use of resources regarding the climatic condition and on inhabitant comfort and the city sustainability. As a result, the city is strong in identity, average in performance and attractiveness, and weak in order and environment (Table 3).

Studying Ahvaz fabric space also shows that any district with conscious and preplanned constructions has created more beautiful and efficient structure. Spontaneous or sporadic construction and adding non-urban

Table 2. capabilities and inefficiencies of the physical space of Ahvaz. Source: findings of study.

Index	Capabilities	Inefficiencies
Performance	Permeability and access, form variation	Relation, performance variation
Order	Clarity	Solidarity, visual proportion, legibility, and signs
Attractive	Scale, liveliness	Visual alteration, balance
Environment		Energy consumption, cleanness and minimum pollution, support from natural ecosystems

texture though have deteriorated problems. Our research hypotheses show that the first hypothesis or the variation of the skeletal space is confirmed. In the second hypothesis, although the generality and solidarity is one of the most inefficiency of Ahvaz skeletal space, the criteria of environment and the coordination of fabric with natural environment have not widely studied. Regarding the current conditions, the most important inefficiency is the incongruity of the skeletal space with environmental conditions. The second hypothesis is then rejected.

Comparing skeletal features with mentioned qualities in urban schools, Ahvaz skeletal space is more matched to Modernism. It is clear that the form follows function because of sporadic construction and emphasis on street without defining the function. Mass construction is also considerably welcomed in recent years. Ignorance and lack of planning in decorations and signs, ignoring people's views in planning, human scale and differentiating function and regardless of traditional architecture are of the city features fitting with modernism. Considering the cultural and new urbanity principles, some of these issues are considered as damage. Therefore, the third hypothesis is confirmed.

Note that understanding the urban space and new needs and wants of human being in this space, result from communication phenomenon and new technologies which can be directed and restored in the urban space. These needs are not exclusively for urban inhabitant but all inhabitants or the floating population are exposed to these needs and taking advantages of urban spaces. Thus, the following points should be considered more in the contemporary urban space:

1. Conscious directing of the correlation between human and the city skeletal space
2. Fluidity and dynamism of this correlation in the space and time.

According to studies, we can refer to the following points for improving Ahvaz skeletal space and satisfying citizens' needs:

- a) Planning to set a hierarchy in fabric divisions especially by constructing commercial complexes and regional and neighborhood recreational places;
- b) creating roofed pedestrian streets and other places;
- c) creating multifunctional spaces;
- d) using the capacity of night and dawn time regarding the climatic condition;
- e) compiling a comprehensive program for organizing the fabric image of the city;
- f) modifying and beautifying entrances of city and using memorial symbols inspiring the social cultural history;
- g) using inhabitants comments and tastes for beautifying schemes;
- h) using an inspiring element in designing fabric spaces using the capacity of sacred war;
- i) developing flexible programs consistent with the needs of society,
- j) matching environmental conditions and the design with climatic qualities,
- k) paying a special attention for protecting ecosystem resources by urban planning and designing putting emphasis on the condition of Karun River.

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