

THE ROLE OF PHYSICAL IDENTITY OF CITY IN URBAN SUSTAINABILITY (THE CASE STUDY: YAZD, IRAN)

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ABSTRACT

Tackling with environmental social-cultural urban crisis is one of the subjects that many cities are involved with it. Although in the past years changes and transformations in urban development occurred gradually and the facilities and variety of instruments, materials, and technology were limited, but dominant rules of urban planning and design led to ideal cities with harmonic, sustainable well-formed image and responsive spaces.

But nowadays in spite of growth and development of science and technology and creation of modern concepts in sustainable development, unfortunately we are tackling with increasing destruction, unfair and unstable cities. The lost of identity that plays a vital role in urban structure, is one of the problem of modern urban spaces. The importance of this concern is related to socio-cultural and conceptual aspects of urban spaces as a context of urban life. Therefore urban sustainability is a challenge that not only should be considered from environmental concepts, but also both of its physical and conceptual aspects are important to present an integrative framework in urban planning and design. Moreover one of the most effective ways to achieve a sustainable urban form is using physical identity characteristic and hidden feature of traditional cities in order to using their design pattern and updating them along modern movements.

Therefore, first, in this paper the role of identity in quality of city is considered and then some general physical indicators of sustainable city with an approach to traditional Iranian cities are presented. Secondly, one of the traditional sustainable cities, Yazd, as a case study is selected and analyzed according to its physical identity factors. Finally, this paper concludes the importance of sense of identity and physical elements in urban sustainability, particularly in traditional urban spaces.
Keywords: Identity, physical structure, sustainable city, indices

INTRODUCTION

Cities are always going through motion and alteration. Changes which appear in everywhere and everything over time have quite affected formation and development processes of cities. These changes have caused various urban problem in social, physical and economical and also led to arising of unqualified environments deprived of technical infrastructure, livable areas and meaningful places. Today urban identity in general and old-historical regions in particularly

are being threatened, physically degraded, damaged or even destroyed by the impact of globalization in societies everywhere. Thus, the changing trends and developments in technology have negative socio-economic impacts on the historic districts. Since sustainability is about the quality of life in a community and has physical, economic and social dimensions, sustainable urban identity can be achieved by the reinforcing, revitalizing or improving the quality of economic, social and especially physical structures of such areas. To this end, the urban designers and planners shall put a particular emphasis on the positive role of old urban identity in different occasions and this can be followed by the analysis of the significant and key indicators of urban identity (Tavakoli, 2009). There is no doubt, that the creation and continuity of the expected urban identity, without provision of essential bases is not possible and affordable (Zadrafiei, 2005). Nonetheless, identity is a dynamic notion and diagnostic mean, which cover a particular sense in community and urban spirit (Piran, 2005). Urban identity is an index for the quality of civilization and the social spirit of each nation and is the result of the people's decisions and thoughts about it (Ghavampour, 2008).

Identity as an objective-subjective concept is not only a complex topic but also the most important factor to reach urban sustainability (Tavakoli and Zarabadi, 2009). Physical identity can influence on dependency, conformity and interest of people in a place, where help people to connect with other places. Review the impact of physical environment on human's activities and perceptions shows that physical environmental characteristics are pivotal terms to motivate concrete spirit and identity in a city through creation of meaning and spatial perceptions (Groeter, 1996). The historical context of a city is part of its cultural property, reflecting its identity and visual values through forming the inhabitants' collective memory and showing the lifestyle of their ancestors. (Ghavampour, 2008).

In this paper Yazd as a traditional, historical-cultural city, situated in the central part of Iran with one of the most arid territories will be analyzed and considered by identifying the principles and concepts of sustainable design in the old fabric according to its sustainable physical identity. Despite natural restriction and lack of modern technologies in the past, the inhabitants of Yazd have created a city assisted by many creative methods, where is famous as "Bride of desert" in Iran.

METHODOLOGY OF STUDY

The issue of identity in Iran and especially in old Iranian cities is not a new topic, but in designing new cities, where tradition and modernization conflict each other, is an essential tool to create meaningful, structural and livable city. In pursuing this aim, the methodology aims to evaluate the urban physical identity according to urban sustainability. So, in theoretical part, the paper briefly considers the concept of urban identity, sustainable urban indicators and criteria of Iranian traditional urban identity with analytical method. Then in practical part, first, the structure of city "Yazd" as a case study will be analysed concerning some of its main physical components in the old zone through a field study. Secondly, based on results obtained from theoretical part, the paper attempts to consider the form and feature of Yazd related to its sustainable factors and urban identity. At least the paper concludes the sustainable physical elements in Yazd. The results confirm that old district of

Yazd has especial characteristics such as physical identity, historical signs, harmony, unity and meaning. This paper investigates the impact of historical-physical forms on built environment and design of urban type in Yazd as a sustainable sample.

THE CONCEPT OF URBAN IDENTITY

The concept of identity, which is considered in this paper as a physical criteria, shows its importance in tackling with undesired effects of modern urban design, which is almost meaningless and without any unique identity. Urban identity is a major issue in contemporary urban planning, due to ongoing deterioration in older districts of cities worldwide. Loss of place-identity causes harmful effects on cities and their users. Recognising the value of a place as a fundamental component in urban identity serves as a reference point both in terms of the wishes of the society and in preserving and constructing a sustainable urban image. The design quality of cities and their spaces in the public realm can have a profound effect on the quality of life experienced by communities. Moreover, urban identity can instill a sense of civic pride in residents and convey a much improved social image to visitors to the area (Author).

Identity as a normative concept can be evaluated in many different ways. It can be observed in line with the physical structure of city. Historical urban fabrics show identity, culture, system and values of society, economy and environment of each country. Here it is aimed to identify how historical cities respond to sustain urban structure. These criteria are developed via morphological approach, integration of main structure and urban fabric. Consequently, the indicators for evaluation of physical identity in a city are:

1. Difference and similarity: difference from others and similar with itself.
2. Continuity and evolution: connect to the past (continuity of the original meanings and values) in line with innovation, creativity and reflecting the contemporary status (to preserve its origin, but not remain in the past)
3. Unity and multiplicity: the relation between different, heterogeneous and various components. (Mirmoghtadaee, 2005)

Moreover, in order to gain urban identity and architectural identity the following terms are essential:

- A comprehensive definition of urban and architectural identity and explaining the theory of identity for modern society.
- Reinforcing the factors of identity and recognition them.
- Creative factors which reflect urban identity and ignore meaningless elements.
- Reduce turbulency of urban feature and preserving similar spaces.
- Constitute close relationships between people and urban society through direct and routine contacts.
- Designing symbolic components, elements and famous architectural signs in built environment (Bazrgar, 2003)

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Several factors are effectual to form Iranian urban feature and its identity as shown in Figure1. In addition to, urban structure with qualified distribution of elements coherent with their logical relevance can play vital role in urban identity. Continuity in urban structure is one of the issues that obtain an integrated form in the city .With correct and powerful connection between urban elements can create a meaningful unity, which at least leads to structural identity in that place. Also the orientation of each factor in the city helps to better recognition of city. The elements not only preserve their unity and integrity, but present their quality as well. It is also mentionable that this unity and integrity do not result in monotony or dejection in city (Darabi, 2003).

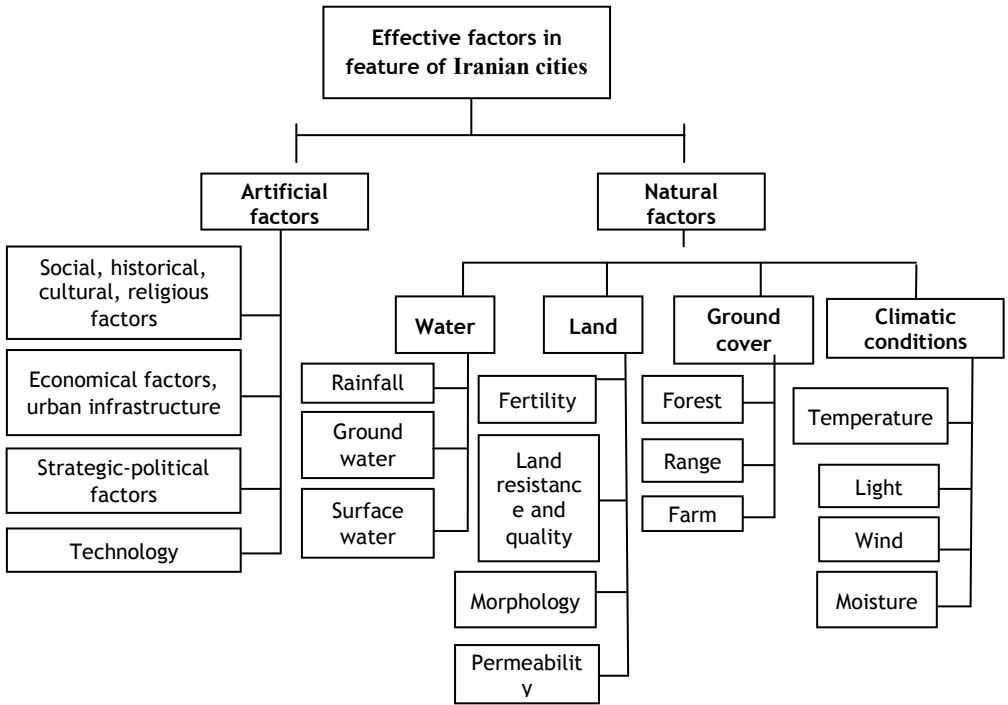


Figure 1 Effective factors in feature of Iranian cities (Farjami, 2003).

SUSTAINABLE URBAN CRITERIA

Sustainability is about integrating economic, social, cultural and environmental considerations to create a more livable world today and in the future. Sustainable urban design is a kind of changing in environment that attempts to invent new solution which have balance with environment and other mentioned purposes. City is an organic and alive system that its form and function have decisive effect on human’s moral and satisfaction. By the way, according to meaning of sustainable development all important and effective

elements in fields of urban sustainability should be analysed. For this reason the most principal indicators of sustainable city are classified in Figure 2 (Tavakoli,2010). Thereafter it is found that the main factors of sustainability are demonstrated in Iranian historical cities.

THE RECOGNITION OF TRADITIONAL URBAN IDENTITY

The important point of traditional urban identity is, its powerful convergence in social and physical environment. Traditional cities include suitable pattern of urban management, organized public participation and social determination in body of the city, which are caused by human's moral solidarity with urban society. The form of such city has distinctive physical signs, which have direct and complementary relation with its surrounded environment. Furthermore local architecture in old city is proportionate to its habitant's behaviour, culture and needs. The base of recognition urban identity can be classified in three level with special indicators: Indicators of urban identity in Major, middle and minor level (Zadrafiei,2005)

- I. Indicators of urban identity in major level:**
 - Historical structure of society
 - Civil structure of society
 - Urban tourist capability
 - Urban management
 - Employment basis
 - Sustainable environmental base of city
 - Stability of urban population
 - Unity and integrity of urban society
 - Behavioural pattern of urban communities
 - Historical culture of citizens
 - Legibility of urban economical-political information
- II. Indicators of urban identity in middle level:**
 - Urban scale
 - Speed of urban expansion
 - Legibility of urban physical spaces
 - Efficiency of urban transport
 - Potential of low energy networks
 - Sustainable natural resources
 - Cultural-tourism network
 - Living opportunities
 - Analytical characteristics of sky line
 - Spatial and visual integrity
 - Continuity of public urban spaces
 - Urban morphology
 - Urban physical scale
- III. Indicators of urban identity in minor level:**
 - Analytical characteristics of city centers
 - Mixed uses in the city

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- Sprawl rules in urban spaces
- Quality of urban buildings and architectural signs
- Prominent architecture
- Visual symbolological elements
- Spiritual spaces and elements
- Presenting places of vernacular cultural productions
- Coexistence of city with natural resources such as mountains, forests, ect.
- Colours and smells
- Contact of people with nature
- Memorable spaces
- Calm and secure spaces

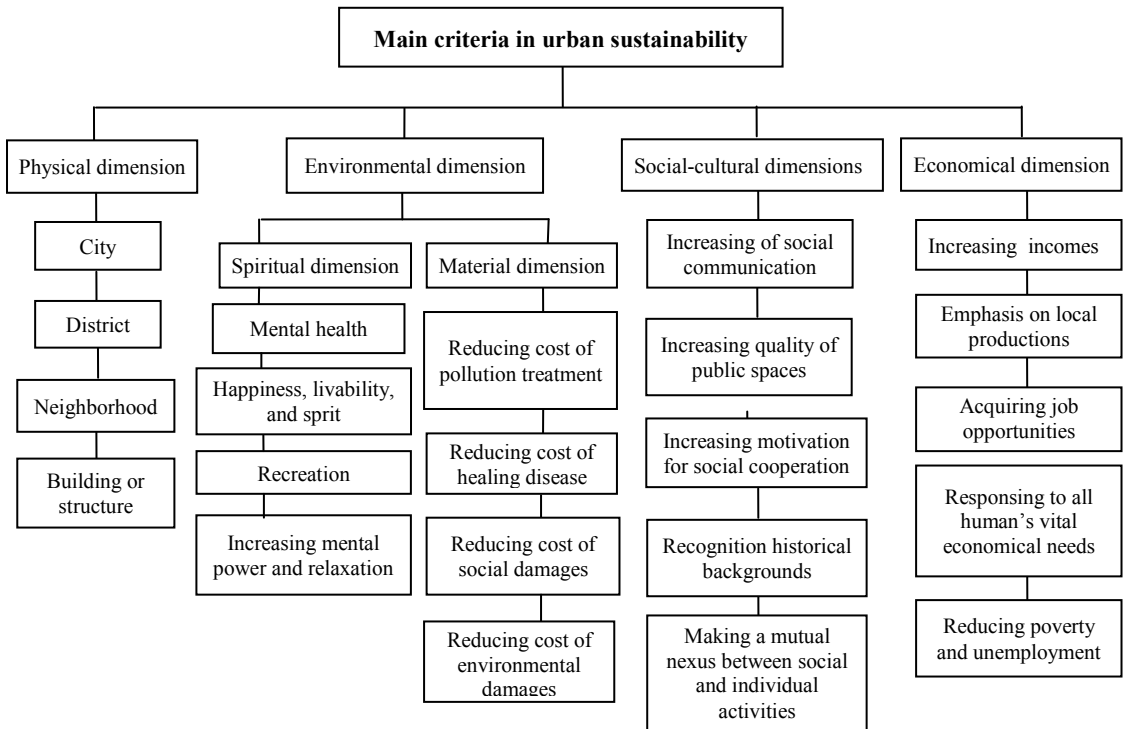


Figure 2 Effective factors in urban sustainability(Tavakoli,2010).

THE TRADITIONAL ARCHITECTURE OF YAZD

Yazd is located to the east of Isfahan and to the south of Kavir-e-Loot in the central part of Iran (Bonine,1980). Yazd is the center of heritage,culture,art,and creativity since thousands years ago and includes many singular architectural sites and urban structures.Some of the most valuable and

historical physical structures in old zone of Yazd ,which should be took into cosideration and play significant role in the old feature,are studied as below.

□ Qanat (underground water canal):

Average annual rainfal of Yazd is about 59 mms on the plains and 112-470 mms in mountain areas.For an extensively arid area as Yazd,this little rainfall has afflicted the region with austere water resources.The most outstanding infrastructural and historical feature of Yazd is its underground water canals"Qanat" (Figure3).These canals are,in fact,the basis on which the foundation of urban development has been laid in a very logical way. (Ghoreishizadeh,1997).This system which brings water to ground level land through a simple traditional technology,can transfer water to gardens, dwellings and public services. In these areas water is stored separately for each neighborhood (1983,Kamiar).

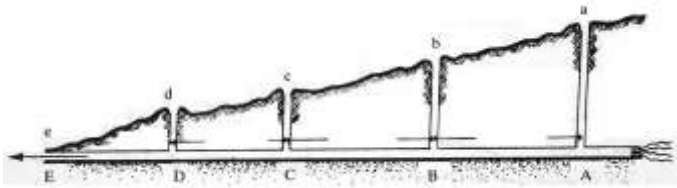


Figure 3 Diagram of a typical Qanat (Zarabadi and Karimi,2008).

□ Baadgir (Windward shafts):

These traditional cooling structures are among the most conspicuous features of Yazd,giving the city a totally distinct appearance from other Iranian cities (Figure4).Old residential quarters,some mosques and the city's traditional water reservoirs have Baadgirs,which are indeed the breathing outlets of Yazd.These structures are small towers which are designed in such a way as to blow the natural air current into the building.These ventilation shafts are worthy of being mentioned as best examples of efficient clean energy systems.The shafts have four parts:body(or trunk),air shelves,flaps and roofs (Ghoreishizadeh,1997).

□ Sabaats (roofed alley ways):

Sabaats are the roofed alleys and passageways in Yazd (Figure 5).The main objective behind their construction was to help the heat stricken passengers coming from hot saharas cool off in their shade,although it enriched the sense of neighbourhood among the citizens (Ghoreishizadeh,1997).



Figure 4 Baadgir (Author)



Figure 5 Sabaat, roofed alley

ways(Author).

□ Underground water storage:

These structures are usually located at the center of the city neighbourhoods and consist of four main parts: 1) a reservoir, which is cylindrically shaped and located below the ground surface. The water coming from underground canals, pours into this storage; 2) a dome built over the storage, which keeps the water cool; 3) Pasheer, the platform, which is used for taking water from the reservoir; 4) Badgir, a windward shaft for bringing in the air in order to protect the water from spoiling (Figure 6).

□ Mosques:

Yazd's mosques bear a tremendous significance in terms of historical, artistic and architectural features (Figure 7). The neighbourhood mosques, which are located at the center of each neighbourhood, are modest and simple. These small mosques are usually roofed with arches (Taagh). Masjed-e-Jame stands out among other grand mosques across the whole province, and has a great importance because of the historical evolution of its Iranian-Islamic architecture, design and decorations. The high entrance, very proportionate domes, the allocation of various spaces to religious services, etc. reflect the Iranian artist's talent, artistic acumen and skills (Ghoreishizadeh, 1997).



Figure 6 Underground water reservoir (Author).
(Author).

Figure 7 "Jameh" mosque

□ Old Bazaar

There are two kinds of roofed Bazaars in Yazd which are built on the principles of traditional architecture and civil engineering:

1) Bazaarcheh (the small Bazaar) :

These small Bazaars usually form the center of the urban old neighbourhoods and the scope of the activities of these small Bazaars is the neighbourhood and they include one or few small workshops, traditional apothecary, a mosque, an underground water reservoir

2) Bazaar:

The network of Yazd's old Bazaars is an extensive urban architectural complex located at the south of the city and includes several Bazaar passages, trade compounds and houses, mosques, squares, Hussainieh, schools, underground water reservoir, carvanserais and workshops. This complex operates on a regional- and to some extent, national-basis (Figure 8).

□ Zoroastrian relics and buildings

The zoroastrian religion dates back to 2500 years ago. Main parts of their heritages are numerous Atashkadeh (fire temples) and other religious sites. At the temple altar which is built on a raised platform, fire burns. Around this altar are located several rooms wherein worshippers may offer prayers (Figure 9).



Figure 8 Bazaar & Bazaarcheh (Author).



Figure 9 Fire Temple (Author).

URBAN FORM OF YAZD

The old form of Yazd is simple, clear and has social unity, spatial continuity, monochrome, balanced and harmonize. The most prominent indicators of urban form in Yazd are turquoise-coloured domes and minarets in a khaki background. Spaces in the city have been such designed to balance any accumulation. The old urban form and its spaces have been never changed or transformed. Generally it has some important characteristics as follows:

1) Harmony between nature and human's being

In the past, people perceived their environment well. There was a balance between human with him/herself and nature, which formed his/her conceptual territory. It was also a source of respect to the nature, unity with it, being happy and has realistic perception, which caused creativity and initiative (Ortegay Gasset, 1997).

2) Spatial regularity

Conceptual regularity shapes spatial regularity and forms the city too. This arrangement includes similarity, contrast, unity and homogeneity. Such well-formed conceptual system creates systematic and regular urban spaces in Yazd and it has influence on human's perception, so both of them are effective for urban development. The most important point in spatial regularity of old zone is unity and continuity of all urban elements (Tavasoli, 1987)

3) Visual-artistic quality

Aesthetic and visual qualities can be seen in all old parts of the city. Rhythm, movement, unity and harmony are the special artistic points in old zone.

FEATURE OF YAZD

Features and signs are the first elements which affect the viewers' perception and have a strong visual effect.

Feature of old zone has some basic characteristics :

- Urban elements have relevance with their surrounded environment .
- Continuity can be seen every where.
- The feature is clear, alive and contiguous.
- There is a relation between memories, historical-cultural events and symbols.
- Some of the elements have special influence on viewer's mind.
- It creates sense of security.
- It is legible, simple, formic and meaningful (Hajforoosh, 2001).

It also consists of these components:

1. Ways: Main or secondary crossways , private or public alleys in old zone shape the fabric structure and in compare with the new ones they have the qualities such as: hierarchy, distinctive, create various light by making open and enclosed spaces, making contrast by changing the scale or kind of space, continuity, being surrounded according to climate, stability , dynamic and symmetry.
2. Edge: Yazd is situated in a flat field, so the natural edges can not be found there. Nevertheless, built borders are historical, integrative, connective and have desirable image.
3. Vertices: Mosques, squares, crossroads, place of various activities and either districts are the old urban vertices.
4. Signs: Signs are a symbolic factor in Yazd. Natural sign such as Shirkooh mountain or the artificial ones such as minarets of main mosque, Mirchakhmagh square or religious places like Tekiyeh, Hussainieh and shrines are some of the powerful signs in old zone. They make easier orientation, legible image, human's comfort and better movement in the city. Moreover they are spiritual signs that have religious and holy roots (Hajforoosh, 2001).
5. Districts: Yazd has 43 districts and each one has a center of district. Furthermore more urban legibility, spatial connection between districts or their centers are possible through a main crossways. Some of their principles are:
 - Identity and characteristic
 - Social, cultural, economical nexus together
 - Being a spatial relationship between elements of the district
 - Making spatial connection between elements of district, city center and center of districts via corridors
 - A qualified proportion between residential and urban spaces
6. Skyline and image of city: The image of traditional Iranian cities has been formed mainly along two factors, the cultural and climatic. The unique sky line of an old city expose its activity, power, decline and the other characteristics and it is the first image which establishes the identity of a city. Any visible element on the skyline of a Yazd city such as mosque and Hoseinieh (at the neighborhood level) and minaret of "Jameh" mosque, "Amirchaqmag" square or wind tower (at the urban

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level) were and still are the main basis for urban characteristics and orientation subjects for visitors and residents (Soltanzadeh,1986).



Figure 10 Skyline of Yazd (Zarabadi and Karimi,2008)

SUSTAINABLE URBAN PHYSICAL INDICATORS OF YAZD

The sustainable physical indicators in designing old zone of Yazd can be classified as follows:

- 1) The basic factors in feature of Yazd:
 - Urban fabric ,which is warm and attractive in old zone of Yazd.It has a direct relevance between the texture and its environment in Yazd.Straw,clay,wood and thatch are the natural source of urban texture in Yazd.
 - Color: Yazd is situated in a torrid zone of Iran with warm-dry climate,so according to its nature,the colour of the city is as same as the colour of the soil. The materials of building are light color with low thermal capacity
 - Proportion and scale:In old part of Yazd the principle of proportions(relevance of different dimensions of a space) are created due to climate,cultural condition and human's sense of peace and relaxation.The spaces have also human scale .
 - The architectural elements such as :Construction forms,technique of building,structure of buildings,materials,colour,architectural styles,scale,artistic critera,spatial density,geographical and natural factors.
 - Urban symbols as the most important cultural elements within the urban fabric
 - Using natural potentials such as wind, water, light and soil in urban structure
- 2) Surrounded spaces:
 - Surrounding the spaces with symmetrical high roofs,arches walls or porticos(Riwaq)
 - Simple form of urban spaces

- Building shelters with enclosed harmonized spaces and designing covered alleys, which provide shadow
 - Building shadowy domes in squares and crossingways against sunlight with regular and coherent rhythm.
 - Creating unity and continuity in enclosed spaces.
 - Creating human's conceptual unity regarding being in a monomorphic surrounded space.
 - Green spaces with full of shadow
- 3) Simplicity of urban design:
- Simple building design
 - Simple synthesis of spatial elements
 - Simple architectural materials
 - Simple design of signs ,symbols and their colour.
- 4) Dynamic and statics:
- Connective spaces such as main crossingways and extended spaces along squares are dynamic
 - Form of the squares and spaces around them are statics
- 5) Symmetry and synthesis:
- Symmetry in architectural spaces, open spaces and its components
 - Creating synthesis in spaces and their surrounded frame with the principle of unity
- 6) Distinctive spaces
- Heterogeneous spaces reduce monotony of connective spaces
 - Two main characteristics of such spaces are :to become wide or narrow, to be surrounded or opened according to ecological condition (like sabaat)
 - One of the famous sample of distinctive spaces is Masjed-e-Jameh mosque, includes: court of mosque, entrance spaces, Bazaar crossway, entrance of mini square (Meydancheh), main portal of mosque
 - Irregular design of alleys to prevent circulation of undesirable wind within the city
 - The scale of spaces and difference in method of surrounding spaces can create distinctive qualities between some spaces
 - Visual attraction
- 7) Spatial territory:
- Clear spatial territory and neighbourhood typology
 - Three type of spatial territory: 1) private spaces :such as yard in houses, 2) semi private-semi public spaces: such as a private blind alley, 3) public spaces: such as squares, crossways, Bazaars, mosques
 - The characteristics of semi private-semi public spaces are: giving sense of security and ownership to their citizens, permitting citizens to live in their private spaces , visit their neighbours and improve their social life
 - Belonging to several families and making an intimate place for more social relationship

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- Relation and balance between empty, half full and full space
 - Sequence of lost views and landscapes
- 8) Identity :
- Urban functional unity
 - Unity of urban form
 - Psychological urban unity
 - Creativity, freedom , awareness, human's need and individual or social belief are the reasons of existing identity and unity in Yazd.

CONCLUSION

Urban identity is not known only as a physical or natural element, but it is a mental and cultural element that its formation in people's mind has direct relevance with the interventions of history, religious and mythological beliefs, environment, traditions and etc. Consequently, urban identity is stage for the urban scenario. Since the historical fabrics of the city play an important role in this scenario and, as they generally form the first societies in the city, their role is highlighted in granting the urban identity. Urban identity is known as an image reflecting the human relationships with his environment from past up to the present time. It has a physical and mental nature. Therefore, identity has the content in addition to physical features. It is also a relative phenomenon depends on culture, history and human's popular images (Ghavampour, 2008).

A city with an urban identity is a city, where there is no time break in the links from its past to the present and future. So it has a legible scenario from different periods and different historical layers. Texture, relations, and strains along with this union make the urban incidents in the city comprehensible and may include full of activities, memories and tangible identity.

In many cases our judgment on urban identity is the result of the relationships between the visual signs. The architecture, buildings bodies, sizes, proportions, colors, shapes, surface decorations, continuity and rhythm, the variety of the materials along with other signs and symbols, make the visual contact of the city possible. The importance of the urban identity in urban sustainability is inevitable.

The mentionable point is the enriched situation of traditional cities, because of their identity , meaningful and functional structure. The presence of such sustainable qualitative dimensions of built environment has influential impact on the urban form, function and meaning which are the basic factors of urban design . This is evident in historical cities of Iran such as Yazd, which is one of the old Iranian cities and has undoubtedly a special identity in its physical structure. The technological and systematic function of the architectural buildings , along with social communication even in each small district, the dynamic economy pattern regarding the tourism attraction and economical focal points such as bazaar, utilization natural materials and resources as well as possible such as Qanaat or water storages, unity and integrity in urban form- feature and fabric , besides many other conceptual and meaningful components have been create a sustainable pattern , where can be a symbol of a sustainable historic city.

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