ORIGINAL RESEARCH PAPER

Investigation of Urban Open Spaces Organization Effects in Urban Management

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ABSTRACT: Open space as a supplementary for green space results in reduction of human and constructional density. These places offer opportunities for creative growth, social interaction and conflict; applications such as establishing communication, relaxation and recreation are very efficient in cutting down pollution and improving the surroundings. Open spaces between residential buildings are placed in daily life where residents have relations with nature and spend their leisure time. In the past times, the courtyard was the beginning and the most accessible space to experience a tight relationship with nature and open place.

In current conditions, the houses built in urban cores such as Tehran are not capable to supply most of the Iranian life needs. residential open spaces have various features and dimensions, and their principles and their planning criteria can be applied to achieve an appropriate residential environment. Some of these dimensions which their related criteria were noted in reviewing the principal disciplines and will be likewise utilized to analyze. On analysis stage, first, classifying documentary, statistical and spatial data with regard to the research objectives was done on the subject and field form, interviewing, photographing, using documents and available maps and also reference information and finding are classified. Analytic hierarchy process (AHP) was used for qualitative assessment.

Keywords: Open space, residential buildings, environment, AHP, Tehran

INTRODUCTION

Introduction

Open space as a supplementary for green space results in reduction of human and constructional density. These places offer opportunities for creative growth, social interaction and conflict; applications such as establishing communication, relaxation and recreation are very efficient in cutting down pollution and improving the surroundings. Residential open spaces are somehow crystallization of collective life, nature" (Nozari, 2004). "These spaces provide an opportunity for meeting and social interactions" (Waxman, 2004). Jacobs (2006) as a forerunner has noted the importance of public space in creating successful residential neighborhoods, and public and private life. Public space that Jacobs states is a place to visit, but a particular call which is not sincere and not anonymous. He opposed particular type of call named "togetherness". He thinks that if people find something in common, they should obtain many more affairs in common (Mirgholami, 2006). According to Jacobs (2006), if

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a public space creates only a heartfelt or anonymous relationship, it will be unable to create an informal and an impersonal relationship motivating collective life. Subsequently, many planners used the Jacobs's ideas with the slogan "If you create a space, people will arrive"; yet, they were unaware that collective life affects space formation. Open spaces between residential buildings are placed in daily life where residents have relations with nature and spend their leisure time. In the past times, the courtyard was the beginning and the most accessible space to experience a tight relationship with nature and open place. In current conditions, the houses built in urban cores such as Tehran are not capable to supply most of the Iranian life needs.

The purpose of open places

In expanding residential complex scale and their open spaces, residential open space scale goes beyond the household; it found a scale such as local and urban open space. In most instances, some divisions of open spaces are publicly accessible for other occupants of the city; therefore, studying its specifications needs to examine the clear place in local and urban scale.

The urban center is like a parasite composed of numerous full and empties and changes their shapes based on the situations and are factors to draw masses. The metropolis is a topographic point for meeting and social interaction, and urban spaces as Social life scenes are areas for meeting people, despite all their disputes. The concept of urban place is set in relation to the concept of social membership; it intends that the city should provide an opportunity for its users to assemble and select with its spaces. Public space is a joint area that people do functional activities and perform festivals which connect community members to each other, either routine activities or cyclical festivals, a scene in which the collective life is shown, space in which individuals are share with strangers, people who are not their relatives, friends or colleagues, a space for religion, trade, and sport and also a space for peaceful coexistence and impersonal meetings that express collective life, urban culture and everyday issues and also it affects them (Madani Pour, 1996). Open space makes the foundation and the structure of space with establishing relations between various activities. According to

Halprin, quoted by Pakzad (2007), open spaces are elements that give exceptional quality and personality to the metropolis. He split up these spaces into two categories: Public open space and private living place. He saw the open space as factors that include historical and urban forms; He also looked at them "Arteries of the Community Body," that pump health for the city and its citizenry.

As a consequence, a strong notion such as defensible space, Newman (1996), which was prompted by the Observer eyes on the street of Jacobs, makes a place for repelling than a place for communication. Public space of William White has apparently drawn from a middle-class male and specific position. A relationship which represents the best marriages and all real friendships. A relationship in which people sing about the ultimate significance of their lives (Mirgholami, 2006). According to Jay Bowen (2010), gardens have concrete effects, on social relationships in urban centers.

In the script entitled "Public Space", Carr and Francis (1992) considered the following three characteristics as essential ones for any successful public open space: "accountability", "public-oriented" and "meaningfulness". Responsive spaces are spaces designed and constructed to fit the users' needs. Basic needs which people are asking for open space are comfort and quiet. Open spaces are places for mental and physical body processes such as working, gardening and a blank space for meeting other people and nature. In public places, people experience an ownership sense and there is no boundary for the presence and use of space for them.

Meaningful locations allow people to create a nexus between the location and themselves, and are in intercourse to their societal and physical placement. Gell (2010) considers the quality demands of public spaces in protecting (against traffic, accidents, crime, violence and bad weather conditions), comfort (some facilities for walking, sticking out, sitting, seeing, talking and listening, playing games and doing bodily functions) and pleasure (scale, some facilities for enjoying of appropriate climatic conditions, quality of aesthetics and experience of a positive sense).

The tradition of meeting together in urban open spaces is main character of each ritual ceremony; therefore, the temples can be reckoned the first ur-

ban public places. These spaces are evident in the ancient cultures such as India, Egypt, Iran, Greece, and South America. Building public spaces near churches and squares connected to mosques in Islamic countries in the Middle Ages is followed by this procedure. Designing open spaces was applied by constructional bodies to construct urban units during centuries, and old textures of Islamic and European urban centers were made by this method

Residential open spaces

The presence of the courtyard as a residential open space is changed as residential units are changed in modern architecture. Receiving a specific courtyard is not possible for many households and its dignity has changed to public open space in the region. The way of forming a residential texture in current cities is in such a way that all spaces are private or publicly organized, and intermediate space has gone.

The structure of the courtyard in Iranian house can be studied from two directions/aspects. In terms of functionality, the courtyard is a blank space for getting close to the nature, for furnishing light and comfort of interior space as well as a topographic point to establish social activities. In terms of natural philosophy, the courtyard is located in the center of introverted houses, and the house structure is determined based on courtyard location. It offers the possibility of incorporating the interior spaces and courtyard, expanding the functions of the house and spaces in certain places. Two functional and physical attacks are identified as follows:

A: Functional structure:

B: Physical structure

- Appraisal of residential open space

To distinguish the residential open space, it is first necessary to possess a comprehensive definition for it. In this study, residential open space of each residential area which is not built is defined in boundary or a round of a residential complex that taking advantage of social and economic benefits are directly or indirectly available to users. Residential or boundary buildings or wall of the complex surrounds the physical structure of this quad. Clear space is defined by buildings, but it does not admit it.

Open space includes concrete and abstract sections. Routes, communicative public spaces, pavements, gardens and green spaces in neighborhood, bridges, and constructions that surround the body of open space are concrete and structural image that the addressees have relatively the same ability to understand them and they are also perceived using five senses. Some other significant factor in open spaces is human and his presence in space that creates a major function in space quality (Pakzad, 2007). Therefore, Schultz (1966) believes that form and content of structure of architecture should be simultaneously considered for its comprehensive analysis. Although, designing relates to functional and spatial aspects of the environment, it is not separable from its usage. Derived from separation of city planners, its constituent parts can be the following factors: activity, phase and space".). On the other hand, the semiprivate-semipublic nature of residential open space and its continuing relationship with individuals' lives confirms the importance of its upkeep and management. Hence, the functional, spatial and managerial features of open spaces are continually effective at assessment of open space. In the rest of this clause, the evaluating factors for each indicator will be separately named.

A – Functional Features

In all the presented definitions, natural action is conceived an integral portion of the open space structure; in this study, furthermore, it will be considered the main basis for understanding the structure of residential open space. Action is the cardinal aspect of each natural and man-made location. Although it is difficult to predict how to use the space, a lot of studies have been conducted on how to use the neighborhood home. Hester (1984) divides the route of using neighborhood space into two parts based on activity: 1. Activities depended on interior space 2. Activities depended on recreational services. Behaviors depended on house form a large part of the behavioral patterns.

Gell (1987) divides activities that take place in residential open spaces into three groups:

B- Spatial features

Physical environment should be explored from different people's perspective. Human, according to his nature, pays more attention to the visual and spatial qualities of the surrounding environment

(Kaplan, 1989). When residents talk about their physical environment, they pay more attention to features of landscape design than house style or appearance, height, color and building facades. A good landscape, wide vision, proper maintenance is closely associated with the good visual view. Thus, a good landscape can lead to establishing a confident relationship with the residential environment (Marcus, Sarkissian, 1986). Structural attractiveness of the surrounding environment can be an important factor in residence selection. In late years, environmental, psychological researchers in the area of visual perception area have focus. Ed on the balance environmental, psychological discipline / cohesion and diversity / complexity (Kweon, 2010). Kaplan and Stephathe relationshipered consistency, complexity, legibility and secretly as the main criteria to assess the landscape.

Methodology

Given the presented principles, residential open spaces have various features and dimensions, and their principles and their planning criteria can be applied to achieve an appropriate residential environment. Some of these dimensions which their related criteria were noted in reviewing the principal disciplines and will be likewise utilized to analyze a case sample are as follows:

Transportation and access system including relative position to access passages hierarchy and city communicative network, the effectiveness way of traffic load and access to public transportation system in the city.

Structural dimensions, including density, unit height, arrangement way of blocks and residential houses, the level and character of residential open space

Dimensions related to urban appearance include spatial unity and coordination with adjacent urban context, supplying the view and the absence of secrecy

Dimensions including level and quality of green space maintenance, level of pollution and noise pollution.

Accessing to services, facilities and importance, urban applications including appropriate access to services and urban equipment in several functional levels, compatibility of residential complex with adjacent applications

Social and cultural dimensions, including safety and protection, neighborhood relations and resident participation

Although real dimensions of these residential complexes in the strain of urban contexts and also residential neighborhood include many events such as economic dimensions, some measures can be employed to examine the issue in case sample more accurately counting the research limitations and also concentrate on assessment of residential open spaces; the following table presents the primary criteria (table 1).

Main Factors of quality assessment in residential open spaces				
Security and Privacy	Harmony	Nature Oriented	Legibility	Acessibility

Table 1: quality criteria of residential open spaces

In general, accessibility can be considered an important factor in determining the quality of urban transportation system, the position of access passage in local or urban scales and also available communicative network; on the other hand, solidarity has a mutual relation with accessibility; in general, it can be said that appropriate and inappropriate status of accessibility in a context or residential complex can have a direct effect on solidarity of that context or complex in such a way that it includes the structural dimensions in this discipline as well as spatial quality of blocks, arrangement of space and density. These qualities and their balance plus type of view, spatial unity and also adoption to urban context present legibility.

Nature-oriented criterion is somehow considered the representative of the environmental dimension in studying the residential open spaces that evaluate the green spaces as well as the way of dealing with different types of environmental pollution. Nevertheless, the primary goal of mentioning this criterion is the quality of understanding the landscape and environment that

Lastly, one of the other main used criteria is safety and privacy available in the setting that includes personal and private events as well as societal and

ethnic dimensions. Descriptive and evaluative research methods are applied in the present analytical research. Moreover, the quantitative analysis is done through scoring the residents' responses after evaluating the extracted criteria.

On analysis stage, first, classifying documentary, statistical and spatial data with regard to the research objectives was done on the subject and field form, interviewing, photographing, using documents and available maps and also reference information and finding are classified. Analytic hierarchy process (AHP) was used for qualitative assessment.

Recognition limits

Regarding the discussed concepts in subject, and main factors, Zargandeh district which is located in area district 3 of Tehran city, beside having no-

table city texture has beautiful natural landscapes. Considering the importance of vision in this study, investigation of such samples can be effective in reaching the general subject (picture 4).

This district has pieces of 50 to 60 square meters and width of the passages is in the small texture and their connection in most of the places is possible through stairs. Residential buildings are mostly of 2 to 3 floors. The past of this district which was among the villages of Shemiran has been preserved organically and with those potentials and capabilities (Pic 4). Generally, the main problem in doing the general texture is accessibility and decrease of belonging sense and place for people. So considering this beautiful tourist attractive and organic way we can represent some strategies for vision assessment.
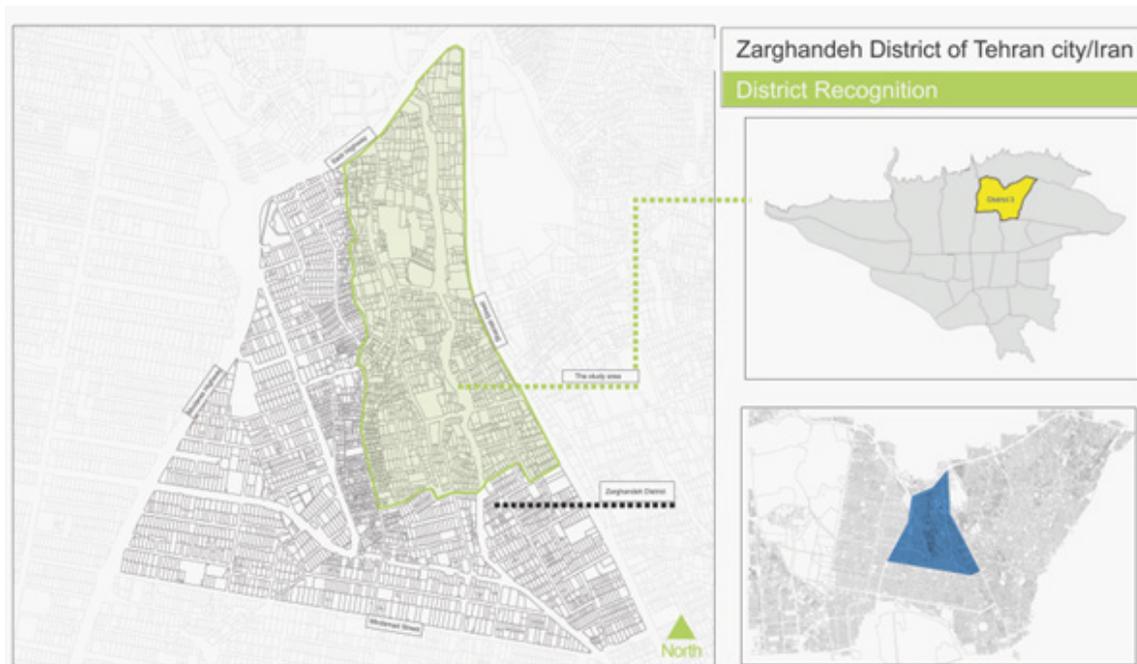

Fig. 1: Geographical position of the limits relative to adjacent contexts in District

In universal, the individuality of the traditional town of Tehran has a spatial unitary because the constructional materials have remained the same in city level. Although each space is complete in itself, it generally, in a larger scale, depends on the surrounding space that various dimensions can be taken in this event.

However, after changing urban textures, particularly the entrance of modernized elements, especially

in urbanism and architectural, this unity has broken and result in the creation of a un proportioned solidarity of two types of texture next to each other. Features of old texture caused by climatic conditions, cultural and social traditions and environmental factors that are rarely observed in new texture. Therefore, the texture of desired limits has been changed. (Table 2) also we can find an arrangement of open space typology in texture.

Past	Present	Results
* The narrow width of Rodaki street and Flood among * Maintaining the Shariati Street	*Increasing the width * Maintaining the Shariati Street	* Changing the street map * Unified texture break Possibility of historical identity pay back to ways

Table 2: an example of dimensional changes in the desired texture and its consequences

To examine the texture of the limits and to assess the desired measures, the bounds can be separated into four fine-textured according to total features. This class is performed based on newly-made and old type and density, and relying on classifying houses and religions of residents' living in the region.: In general, we can test these measures and value in the grain.

In general, criteria extracted from theoretical basis can be dissected and appraised as follows:

Accessibility: In general, one of the most important measures of residential textures is their proper and appropriate approach which are moved by their position in the urban center and access to important traffic arteries and lymph glands. On the other hand, different designs of residential building have a significant effect on communicative networks because of population and building density, ratio of built level, level of land separation, designing and its placement. Carrying capacity of surrounding passages, the outcome of these residential complexes in misaligning of communicative hierarchy in all three primary types of grade 1, major and minor collectors, the number of trips, traffic effects and evacuation issues in rush-hours and access way in emergency and critical events are significant.

A map of access hierarchy shows, the said texture in term of access to communications lines is not in a safe position. Although, it is near to three main first class, there is an inappropriate relation in hierarchical divisions in such a manner that this admission is non-continuous in smaller scales with regards to discontinuity and deterioration. The mentioned routes have positive potential; they also create suitable conditions for adjacent texture, but this traffic comes up some problems in facing passages standards. Linking to the central square as traffic proxy in urban adjacent textures as well as having main passages are main advantages of this grain.

Access issues in the said texture were asked residents through various questions, including inhabitants' satisfaction level from accessing to main streets and communicative lines, the simplicity level of accessing and the point of using the public conveyance system. Its rating is expressed in the variety of scoring results from the study.

Legibility: Based on variation in scale, shape and structural properties, local landmarks, index points, height and proportions, residential textures have various effects on the environment in terms of visual and urban landscape which make the generality of urban legibility. The more important examples of these effects can be analyzed in terms of vision obstruction, landscape supply, the absence of unity, harmony with background, facade effects and buildings decoration. By this criterion, two major components of spatial unity, and urban appropriate view and harmony are studied in the said texture. In general, the view of texture depends on having buildings with various heights and forms; considering the worsening of this texture, the survey is not appropriate. The absence of proper coordination and height on the unitary hand, and the absence of spatial constancy on the other hand has that urban open spaces in this texture don't have an appropriate quality in terms of perspective. Nevertheless, the existence of signs and significant indicators in the texture somewhat strengthened this legality and in several areas could improve a generality of the discipline. Sky line which is another ingredient in shaping the position shows a relative undesirability in structural integrity to accomplish the desired legibility

The residents' response of the mentioned texture about the doubts linked to view the quality of the texture of living place shows the absence of satisfaction that some signs of desirability can be simply observed in some cases of indicator buildings and as well in green space dominated in residential open spaces of the grain

Nature-oriented: Factors include various factors in quality of nature-oriented of the said texture; they have a subject connection with environmental quality that includes plant density, arrangement way of open green spaces, a vast extension of water supply, the way of excreting sewage, excreting garbage, wind, dispersion, audio pollution , Given the environmental situation in texture, the dispersion of green spaces in centralized and distributed form has a better situation than urban surrounding texture in such a way that plant density was higher in the eastern part, which is probably related to the culture and religion of the inhabitants in terms of social and cultural dimensions.

These open green spaces in residential fine-textured prevent noise resulted from traffic in major or minor courses in such a way that the comportment of these natural organic buffers are clearly apparent in fine texture near main streets (Fig.3).

Fig. 3: a sample of open green space in texture

Solidarity: urban textures with regard to the existence of various urban spaces usually have special order and solidarity that It could be generally shown in the form of traditional and local urbanism; however, because of the occurrence of general changes, this criterion is changed by the structural-spatial challenges, walls, building density, generality of shaping space and mass, functions, the relationship between body and meaning, housing patterns. The said texture has some positive and minus points in building layout, spatial practices, resulted surround, offering open space and also creating aesthetic combinations; in general, some of them can be observed:

Walls available in texture show a beneficial quality in terms of harmony, rhythm, contrast and identity in some regions; however, these elements work against each other and provide a kind of lawlessness in some countries where the texture deal with two types of old and young ones.

In conditions of urban edges importance played by these walls in texture, they maintain their initial state which is deduced from local architecture and Urbanism or change to other types of qualities due to newer construction (Fig.4).

Fig. 4: samples of texture walls (edge) (in different arenas)

In some other manner, this solidarity resulted from main ingredients can be effective in social dimensions related to texture physics; generally, the sense of belonging to space or in other words sense of distance and belonging can be the best means to judge the character of this criteria. In a general review, it can be said that with the presence of different religions and ethnicity among residents of the mentioned texture, formation, and relationship of culture and ideological issues, residents deal with this case differently in such a way that it can be mentioned that in places where Muslims live, the density of new buildings is more and belonging to space is not exclusive to a specific places, and in place where different family live, the historical buildings is more and attachments to religious buildings results in survival of eastern side, and ultimately imagrative people has a significant role that these parts stay ruined because of the absence of attachments.

Safety and privacy: they are two main sub-criteria of social standards, proper maintenance and safety of residential environments, suitable neighbor relationship, and residents' participation of neighborhood in management of different proportions. Regarding the presence of tradition and social status,

which is relatively native in the said texture, it can be said that in addition to structural and spatial effects on safety, quality, the residents make a kind of safety by themselves and with regard to their acknowledgement of their living situation and diverse people. The variety and quality of neighborhood relationship as good as public participation can have a substantial effect on resolving or reducing the societal and cultural problems.

In universal, given the appropriate sidewalks in the texture and also the presence of social safety in these paths, we can speak about the sound quality of this touchstone. If two terms of refuge and security are defied in psychological and structural aspects, the said texture has a honest tone in terms of safety and security from the north and center sides where end two main passages; all the same, on that point are some safety and security problems with fine textures especially in its small cores with respect to remaining organic of the spatial arrangement type and number of passing. This absence of safety and security is more obvious in neighborhood remained ruined and also don't have specific ledges for spatial definition; these places also don't have suitable lightness, appropriate functions and unity in social organization.

AHP was applied to calculate total scores resulted from the study

To use scores obtained by a study which were satisfied out by residents about studying criteria and to work out the total score in order to the texture quality

The beginning step in hierarchical process is making hierarchical structure for analyzing the issue; in this subject area, objectives, measures and sub-measures are individually made for each ace. Moved over the questions asked from some of the inhabitants dwelling in the texture, a hierarchical structure is made. (Diagram)
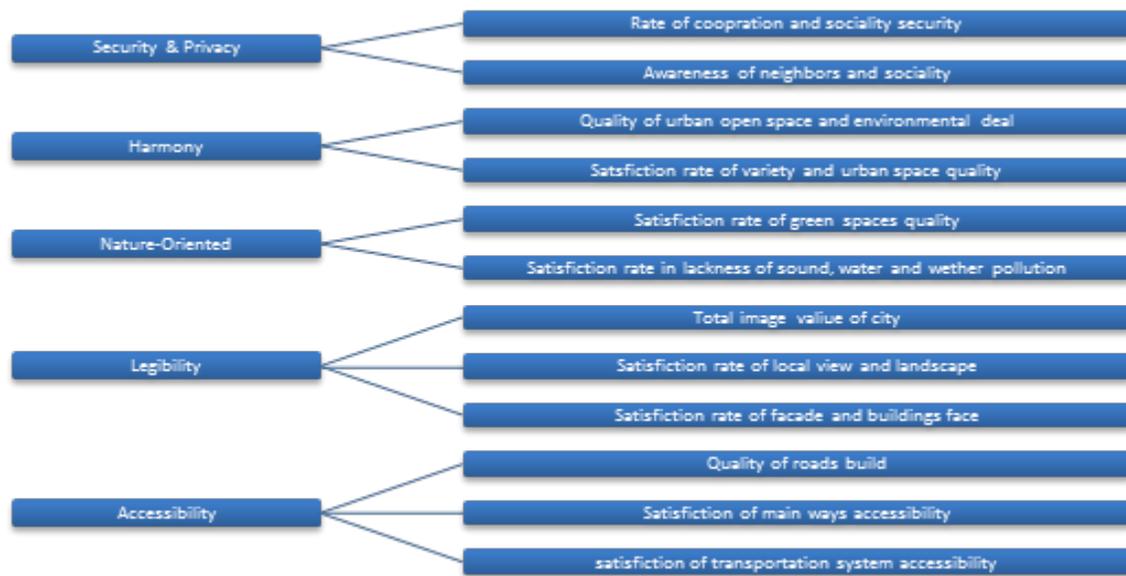

Fig. 2: Diagram of hierarchical structure

After matrix formation, the coefficient of criteria importance is calculated using Time Method. In this way, the geometric mean is first calculated. And so they are normalized. Side by side, the logical compatibility of judgments is studied (Zabardast, 2005) Counting on the coefficients of the sub-criteria using an hourly matrix (forming matrix separately to compare sub-standards and criteria) or geometric mean method is the succeeding footfall.

After estimating the coefficients of sub-criteria importance, the following formula is applied to calculate the score in 5 main criteria:

Score A =∑wi x qi   ,   i=1,2,3,…
Where:
(A, is a criterion whose score is calculated; WI, is sub-criterion weight; I, is the criterion obtained through AHP method; Qi, is the score obtained from a survey about the related sub-criterion; I, is the number of sub-criteria related to each main cri-

teria)
To estimate the overall grade of the studied sample, the scores related to five criteria are separately multiplied by the coefficient of criteria importance and are added together at the terminal. The results of the calculations are summarized in the table.

Criteria	Criteria IF	Sub-Criteria	Criteria IF	Score of Poll
Accessibility	0.323	Suitable accessibility to main ways	0.112	2.5
		Suitable accessibility to public transportation system	0.115	2.9
		Quality and Standards of ways	0.051	1.8
Total Score of Samples in Accessibility criteria				2.4 * 0.323
Harmony	0.154	Quality of Blocks spatiality	0.154	3.2
Total Score of Samples in Harmony criteria				3.2 * 0.154
Legibility	0.124	Suitable view and landscape	0.083	1.9
		Suitable form and face	0.041	1.6
Total Score of Samples in Legibility criteria				1.75 * 0.124
Nature-Oriented	0.224	Suitable green spaces	0.115	2.7
		Suitable wind and water flow	0.073	2.1
		Lack of sound pollution	0.036	1.4
Total Score of Samples in Nature-Oriented criteria				2.06 * 0.224
Security and Privacy	0.175	Suitable social cooperation	0.079	2.2
		Neighborhood recognitions	0.096	2.3
Total Score of Samples in Security and Privacy criteria				2.25 * 0.175
Total				2.338

Table 3: Estimating the Coefficints of Subcriteriaes and Value of Importance

Conclusion

Lack of preparation and design criteria of physical – spatial matter, in the construction of new urban regions can be significant problems in housing and environment roles to be pursued. Granting to the hypotheses, specifically the urban fabric in the historic dominance implies, suggests that, as a consequence of alterations due to advances in the skill of modern Urbanism and architecture. Our ancient tissues that rely on knowledge and models during the life of its original native inhabitants have been able to strike a favorable environment, all confused in the body and its environment due to misconceptions are the challenges and changes Based on research findings

that might be seen in the table can be slightly more accurate results in this case. Therefore it is possible to offer quality of urban space leveles up to belows:
1.Spatioal unification: Reaching to one unice wholeness with composition of urban space elements up tu conseptual architectur.
2.Exterior urban edges in continuty: Joint and continuty of edges to defin and recognition space limits by estimating inclusure principle up to the urban codes
3. Compatibility of architrcturr stylrs includes material, colour and texture up to formation of skyline: Creating meaning relationships in to the urban edges to leading visual values to making a regular

skyline and compatibility for audiance persiption .

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