

Urban quality and designing of spaces

Case study for Nasr City, Cairo

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The problem

It is widely believed that good urban design involves the design of spaces within the built environment. Consequently, urban designers are always interested in what should be considered for a good design. They are consciously thinking about space components and their mutual relationship. In general, there is a rich professional vocabulary for appropriateness of a space, or in other word the quality of space.

The criteria which define the quality of these spaces have been changed different times along last century. This could be easily figured through city urban structure and its space patterns. Meanwhile, problems for contemporary urban built environment could be seen through many aspects as following:

Loss of orientation: vast residential areas, which are created by massive transportation, make people feel irrelevant to their places. People therefore, have less sense of orientation.

Loss of public life: the public life in streets and squares has declined, leaving public life dependent on planned formal places, mostly in protected internal locations (shopping malls, bowling centers,...).

Poor living environment: While housing condition and interior quality have a great attention in terms of fundamentals as lights and air, spaces which surrounding homes are still fragmented, noisy and visually polluted.

The research objective

In attempting to achieve quality within these notions, urban designers have two main approaches. The first one deals with the design of space itself (improving facades, introducing benches,...). The supporters of the second approach argue that while all these are important in context as a local level of design, the key factor in understanding urban form and its use is how a space relates to other spaces in a system- as a global pattern. Due to the limitation of the research, three main approaches will be studied and investigated. The first concern with the imagability of the city- the visual intelligibility which is shared by all inhabitants through their mental perception. The second refers this quality to the urbanity of spaces, the unforced liveness that creates sense of safety and belonging. The third relates to the effect of the geometric characteristics of physical elements of the urban fabric building facades and street furniture(. Although the research is dealing with a universal phenomenon, referring to the Egyptian context will be indicated. Nasr City will be used as a tool to achieve this goal.

A. Imagability of the city and intellagable spaces

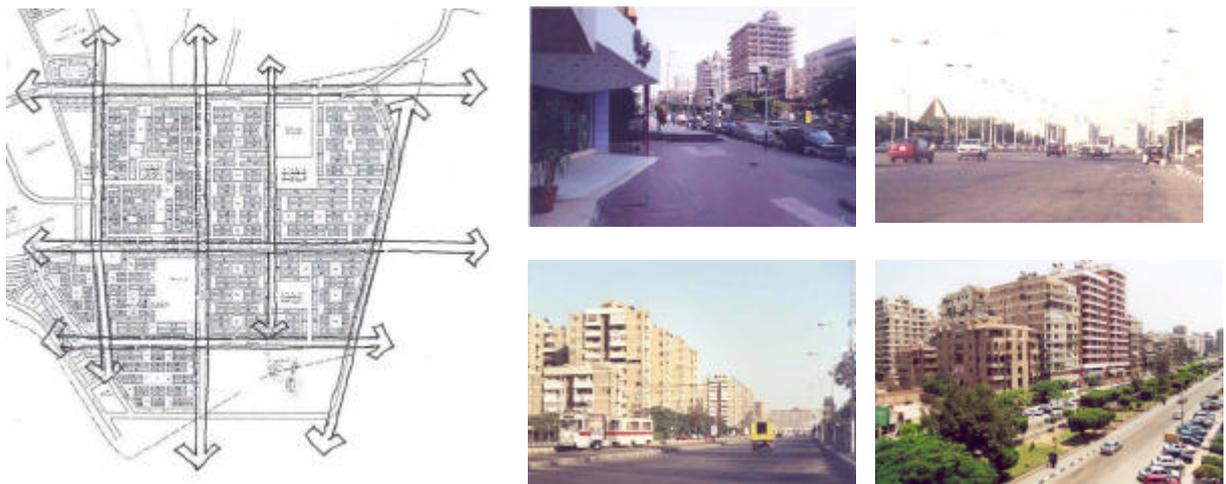
The question of how a citizen can successfully function within his own environment and also interact with other citizens is answered by Lynch, who believes in the necessity of a city's public image. This public image is an overlap of other separate images. In K.Lynch's⁽¹⁾ book "The image of the city", he defines a legible city as characterized by a visual quality of clear space, which allows its parts to be recognized and organized into coherence patterns, i.e. an overall pattern whose roads, landmarks and districts can be grouped and easily identified. To achieve an easy and quick movement for the individual inside the city, a clear image is a must. What we call environment mental image represents the strategic link, i.e. a general mental picture of the outside physical world conceived by the individual.

This image is formed through two factors: Immediate sensation and memory of previous experiences. Both enable a person to interpret information and also to guide action. The processor of a strong environment image enjoys a sense of emotional security enabling him to play a social role as well, and is reflected on a harmonious link between the individual and the world around him. He becomes free from the fear of disorientation leading to a strong sense of home that is not only familiar but also distinctive. Lynch classified the contents of the city images into five elements: Paths, edges, districts, modes and landmarks.⁽¹⁾

The elements mentioned above form the building blocks of the operation of differentiating structures on the urban level. This helps to provoke the imagability of this surrounding and to make its visual identification easier.

1. *Paths:* Paths are the channels along which the observer occasionally or potentially moves. They include roads, streets and walk ways which represent the main elements in the city visual components. People observe the city while moving through it, and along these paths the other environmental elements are arranged and related. The values of such different paths vary according to its degree of familiarity with the city. The observer form an image in his mind sometimes due to a certain activity concentrated on such street, this applies not only to activities but also to certain features and spatial quality. Streets that suggest extremes, either width or narrowness, could attract attention. The confusion of street identity reflects a difficulty of destination recognition, since people need to know where streets come from and lead to.

The road's net work in Nasr City consists of a group of main roads, stretching from North to South, and another group of roads perpendicular on the first group going from East to West. These main roads represent one of the important factors forming the mental image of the city, i.e. each road characterized by special feature. One road is characterized by its huge commercial activity, another includes a great memorial monuments such as the unknown soldier, while other street has a special public mean of transportation, i.e. the Metro. Generally, the visual characteristic has been strongly affected by the size of the road (width and length) and by the elements of landscape (Figures 1-5).



Figures (1-5) Various visual identity in the main streets.

On the other hand, the internal streets lack this distinguished visual characteristic, since it is an outcome of a grid pattern road network. This created a group of repeated and similar spaces, which had a negative impact on the clarity of the directing operation while the individual's moving inside that space (Figures 6-8). I agree with Hellier⁽²⁾ that traditional old towns which appeared to be lacking order and to be fairly random possessed subtle properties. These plans suggest an irregular continuity or deformed spatial grid. This contrast with a patterned regularity, which looks intelligible from above but may not be the case for the user from the ground level.



Figures (6-8) Visual similarity in the internal streets.

2. Nodes

Nodes can be defined as foci of strategic nature through which a person can penetrate. As a concept, it may look like rather small points in a city image, but in reality it could be large squares or somewhat extended linear shapes or even entire central districts when the city is being considered at a large enough level. Consequently, special attention should be given for squares as they formulate with paths the main components for any urban fabric. Rob Krier relates the beauty of our old town to the variation of geometric characteristic of the square shapes, and the mutual relationship with intersected streets. He defined, by sketches, these basic shapes (Figure 9) and claimed that planners and designers can learn from these examples and that they must incorporate spatial consideration more exactly into their overall view of architecture and town planning. He added that anyone engaged on the subject of "urban space" would soon find that an almost in-exhaustible range of possible forms exists, most in evidence in our historic towns.⁽³⁾

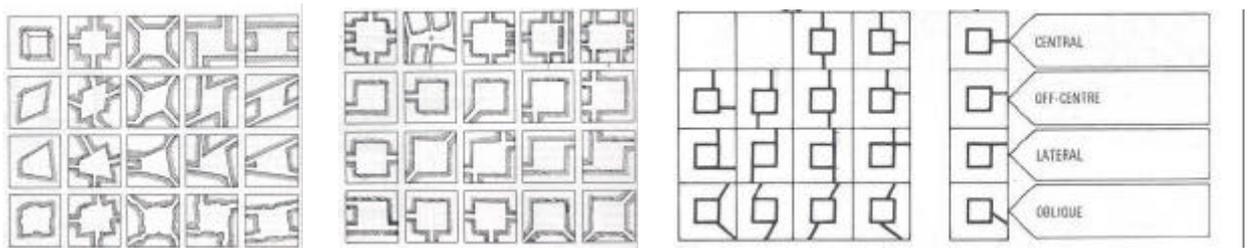


Figure (9) Different Types of square geometric variation and street intersection

Krier indicated that there is a common naive view among general public that this type of irregular or organic architecture is more beautiful than other buildings planned synchronically. He referred this to two main reasons. Firstly: any defective architectural detailing is not so obvious in case of organic form. In contrast, any architectural error is so clear to the extent that could damage the overall impression in case of clear geometric form. Secondly: beauty of squares is affected by fine architecture in surrounding blocks which no contemporary work could compete with.

Through the junctions of local roads in Nasr City, two types of nodes could be figured. Firstly, district gardens that are distinguished by their scale and activities. One can figure two parks that represent a recreational place for residents. Besides, they represent also by their scale, one of the remarkable landmarks in the city (Figure 10). On the other hand, different neighborhood gardens exist between the residential blocks. Unfortunately those gardens have two cases. Firstly, gardens which are left in bad physical condition without no means of regular maintenance. Secondly, gardens which are not used for social gatherings or human activities but are used only for aesthetic functions. In many of these gardens, the public are not allowed in as they are surrounded by fences, which have a negative impact on the unity between inhabitants and their surrounding urban environments (Figures 11,12).



Figure (10) District garden.



Figures (11,12) Neighborhood gardens

3. *Edges*: Edges are the linear elements not considered as paths: they are usually, but not quite always, the boundaries between two kinds of areas. They act as lateral references.

Nasr City lacks distinctive clear edges, since desert areas spread all over most of its eastern, western and southern areas. The western boundaries include a small mountain (the red mountain) which forms a clear border of the city on that side, while the northern borders are next to other residential areas.

4. *Districts*: Districts form the relatively large areas of the city; places of a common character inside which a person can go; enabling him to recognize it internally and refer to it externally, and finally its features can be imaged and identified in a unit, i.e. in a characteristic cluster.

The planning of Nasr City was based on the existence of a group of residential districts. These zones shared similar geographic characteristics and residential styles which have been controlled by building codes. The master plan of the city has allocated certain areas for different land use such as residential, governmental and industrial zones. Moreover, types of housing (public housing, private housing, villas...etc) were also determined (Figure 14).

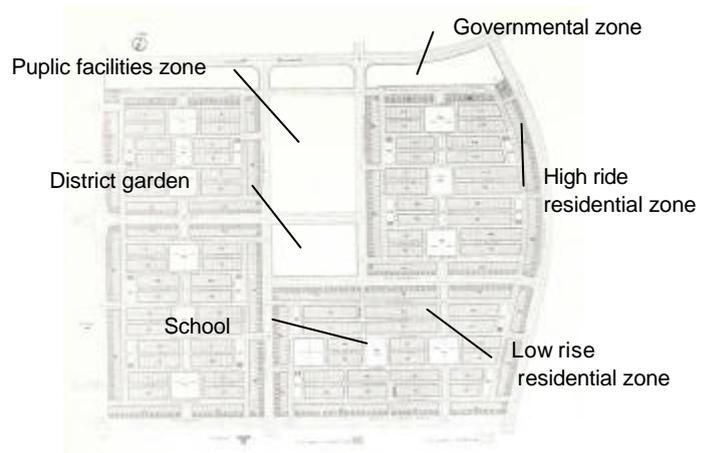


Figure)14(Clarity of landuse.

Consequently, each district was visually readable, which increased the intelligibility of the urban spaces of the city. Yet as a result of weakness of the authority of construction laws, the different types intermingled and formed an unclear visual image. The intelligibility has been lost and visual chaos became the main feature for the city visual identity

5. Landmarks

Landmarks, are simply external references to the individual. They are physical elements, which are different in scale. Most of the time when a person is not very familiar with a city, he depends on landmarks as a guide. This dependence on landmarks tend to single out an element from other possibilities i.e. a choice of a particular aspect which is memorable and unique. What makes a landmark memorable is its uniqueness, clarity, significance clarity, distinctive location and its contrast to the background.

Squares in Nasr City have not been used in a way which creates distinctive visual landmarks. Some of these landmarks were constructed by commercial companies for advertising purposes, but in the end it did serve neither an aesthetic nor a functional purpose. Such memorial works failed to consider the correct proportion of the construction size in comparison to the size of streets and the speed of traffic. In addition, these ordinary and cheap examples have led to poor architectural quality (Figure 14).

On the other hand, different buildings act as landmarks through the urban fabric of Nasr City: Mosques by their minarets and huge buildings as some office buildings and shopping malls. It should be indicated that unknown solidier represent one of the most remarkable landmarks in the city (Figures 15-17).



Fig. (14) Commercial landmark Figures (15-17)Landmarks with different functions and scales

B. Urbanity of space

What makes an urban design successful for many authors is not only its usage, but also the probability of encountering others. Street life begins and more people join in, when people are already on the streets as Gehl⁽⁴⁾ puts it “One plus one is more than two” one of the achievements of architecture’s donation to social well-being is making human contact easy through the organization of spatial structure. Street life can be improved by design intervention at a local level (the pedestrianisation of areas). The study of the impact of urban development and resulting human activities, deal with three levels:

- First Level: The planning dimension.
- Second level: Urban design dimension or site planning.
- Third level: Space physical elements and details level.

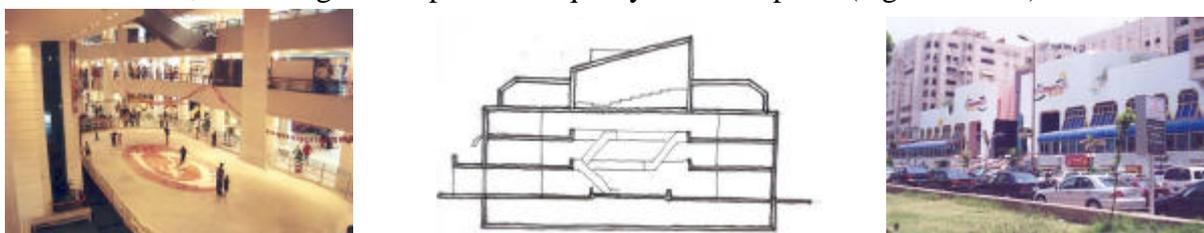
1- The planning dimension:

The practiced planning principal affects the size of activities in the space within urban areas. The planning principal is divided into two main lines i.e. single use and mixed use.

The weakness of the first principal is evident, through its negative impact on the urban development environment. It has also failed to meet the individual’s needs; which is observed easily in most of the European and American urban cities, where down-town and administration districts are characterized by the direct link between the activities and existing daily working hours and week ends. The spaces in such districts present an insecure place for those who wish to walk around by day or by night during the week ends. The second principal

“mixed use” based on the integration of its use in urban environment through residential, commercial and entertaining activities. This ensures street life all through the day and during week-ends. Street life provides the main source of security inside those areas, and subsequently increases the individual’s sense of each space. This principal was affected by the fast spread of what become to be known as “shopping malls” all over the world. These malls offer the individual all kinds of attractive facilities, which could satisfy his daily and weekly needs in addition to different sorts of entertainment (cinema, cafes, bowling, skating, fun fairs etc). The location of such malls, i.e. far from populated districts made their visitors use their cars to reach it and created the need for vast parking areas. The shopping malls established a group of urban islands separated from the urban fabric of the city in general.

The mix use approach is the main planning concept, which could be easily figured in Nasr City. Each district consists of residential zones with a group of gardens connected to schools or shopping centers. In recent years supermarkets were widely spread on the main roads. Shopping malls, as attractive centers, have become a source of traffic problems and over crowding, with a negative impact to the quality of urban spaces (Figures 18-20).



Figures (18-20) Shopping malls as commercial and recreational centers

.2- the urban design dimension or site planning :

Both, the order of the buildings’ distribution and the order of the traffic network have an impact on the performance of human activities through city urban spaces. It is intuitive that the opportunities of pedestrians practicing any activity decreases with longer distance between buildings while it increases with shorter distances between buildings. It is also intuitive that when we design residential districts under the condition of achieving certain population density, we realize that the use of high buildings increases the interval distances between them, while the use of low buildings decreases such distances and creates more interaction between spaces. Here we should point out three basic kinds of traffic patterns according to the following:

- (I) Full integration: Where traffic lines are close to houses, points of human activities and street life in general. This is the case of the low speed of both pedestrians and animals (compact order in old traditional cities).
- (II) Semi integration: Where traffic lines are away from houses and points of human activities as a result of trying to ensure safety and security for the individual from cars. Distances between buildings and traffic lines are determined with relation to the level of the allowed speed on those roads.
- (III) Full disintegration: where traffic is completely separated from the pedestrian movement as the city of Radburn. What should be mentioned here is this concept of traffic pattern has lost its validity due to failure of such experiment. It offered expensive and complicated solutions, which include both bridges and tunnels. Besides, it led to unsafe pedestrian spaces.

The question of either to segregate traffic from pedestrians or to integrate it has been a

debate for sometime, yet it has been accepted by many that the preference of integration of traffic with pedestrians resulted in more positive outcomes. Gehl ensures that meaning when he cited that, when traffic consists of pedestrians or of cars moving at slow speeds, the arguments for separation activity areas from the areas for traffic lose their validity. The fact that traffic to and from houses in nearly all instances is the most comprehensive of all outdoor activities in residential areas a good reason for seeking of integrate as many other activities as possible with the traffic. For those in transit, for children at play, and for those involved with activities around the houses, a policy of traffic integration will enable different activities to support and stimulate one another⁽⁴⁾.

Nasr City consists of a group of residential districts separated by main streets. It is noticed that the design concept of these districts is based on a full integration system. This network aims directly at serving all residential areas, where cars can reach the front door of each building. Besides, the master plan did not take into consideration the provision of any possibilities for partially separating the traffic from residential districts, which could ensure safer areas for pedestrians (Figures 21-23). Crowdedness became one of the main features in various areas in the city as a direct impact of both high residential density and high intensity of commercial activities.

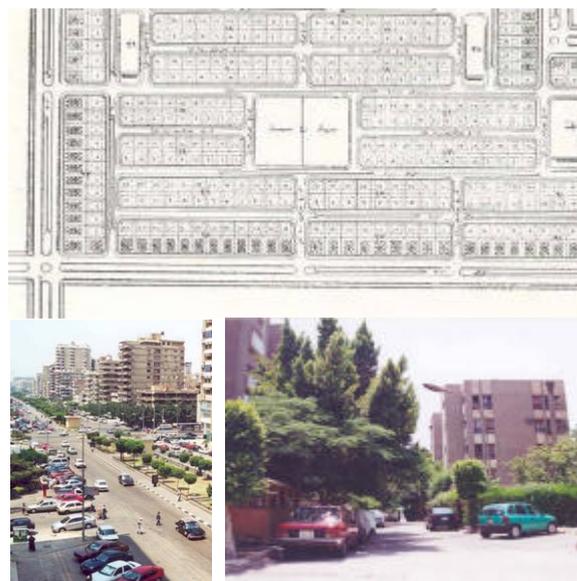


Figure (21-23) Road network with relation to building blocks

3. Space physical elements and details level

In designing outdoor spaces, it is necessary to work carefully with physical elements and details to support generating activities between buildings. According to Gehl : A number of quality demands on the outdoor environment in more detail has to be considered, some are general demands and other are more specific demands that concern simple, basic activities such as walking, standing and sitting as well as seeing, hearing and talking. These basic activities are used as a starting point because they are part of nearly all other activities. If spaces make it attractive to walk, stand, sit, see, hear and talk, this is in itself an important quality, but it also means that a board spectrum of other activities- play, sports, communities activities and so on- will have good basis for development. This is the case partly because many qualities are common to all activities and partly because larger, more complex community activities can develop naturally from many small daily activities. The big events evolve from the many small ones⁽⁴⁾.

In Nasr City, the low quality of physical out door elements could be easily figured, especially for what is related to the hard landscape components. This quality is not only discouraging pedestrians but also represents a direct obstacles for their human needs (walking, jogging, ..). This includes the basic requirements such as leveling of pavements or existence of seats on sidewalks.

C. Space Geometrical characteristics

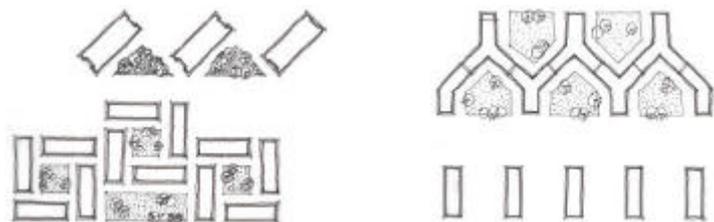
The quality of city urban fabrics is related to their space geometrical characteristics. Krier⁽³⁾, as one of the most important supporters of this approach, argues that we have lost sight of the traditional understanding of urban space. What has to be clearly defined is what should be understood by the term “urban space” and its meaning which is held within the urban structure. Space for Krier is geometrically bounded by a variety of elevations. It is only the clear legibility of its geometrical characteristics and aesthetics that allows us consciously to perceive external space as urban space. In his attempt to define space physical component, he stated that: “The street space can only function when it is part of a system in which pedestrians access lends of the street. This system can be unsettled by the following planning errors:

- I) If the aesthetic quality of adjacent houses is neglected, if the facing frontages are out of harmony, if different sections of the street are inadequately demarcated or if the scale is unbalanced.
- II) If no money can be invested in public open space on such items as avenues or trees, paving and other such street furniture, given that the first priority is the visual appeal of space”.

Based on the previous statement, special attention should be given for designing of buildings and elements of landscape as they represent the main component for urban spaces.

Firstly, the visual quality of building and their elevations is very important individually or within the wider urban content. So many architects assume the responsibility of providing society with new forms and environment experiences. Their justification is the psychological principal that the human mind needs surprise and variety in order to stay active.

The way in which buildings are arranged is an essential factor for urban quality. It could encourage or discourage creating distinctive visual perspectives through defined space enclosures, which are easily controlled, managed and landscaped by their residents (Figures 24-26).



Figures (24) Different alternatives for building arrangement

The sketches, produced by Krier, (Figure 25) can only give some idea of the various design possibilities. Each of these building types can be given a façade appropriate to its function. In addition, these structure influence urban space in different way.

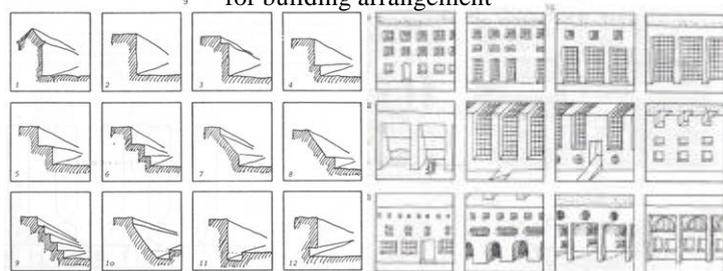
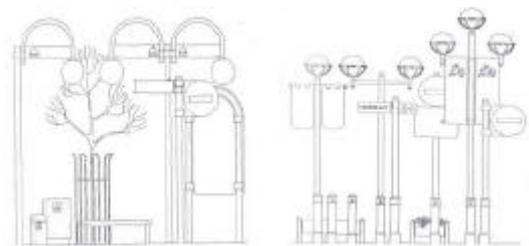


Figure 25) Different design elevation possibilities⁽³⁾.

The main question, which should be discussed, is what value must be observed? In very simple terms our main appreciation of these values is through seeing. These visual qualities must not only be shared by architects and few of their confidants, but also by everyone responding to his or her surroundings. Architects and designers also believe that it is their job to extend the aesthetic potential of the populace. In this respect they are like any other artist except that their art is unavoidable. It could be argued that the architect who follows fashion

without basic design principals would be in danger of serious error. It is a huge task to speak shortly about principals of visual quality of buildings and their elevations. Referring to K. W. Smithies⁽⁵⁾, three basic principles could be figured: (1) the visual composition, that is the syntactical relationship of part to part and each part to the whole in visual term; (2) the semantics, that is the effect of a design on the mind of the observer, or expressiveness; and (3) the wider relationship between design and setting in place and time, also its direct relationship to human size – magnitude. Each principle, alone, is reasonably simple to understand. The difficulty, for the architect, is that he must try to satisfy all objectives without diminution of any. Thus, no solution is perfect, compromise is inevitable and one of the architect’s most important tasks is to establish the right priorities at an early stage of the design process and be able to maintain them throughout the design process.

Secondly, a concept of landscape has different goals such as functional, symbolic and aesthetically ones. To enhance the quality of urban spaces, designers should orient their attention towards two main ways: Hard landscape elements which, should be chosen in harmony and congruence to each other; that what is figured as an integrated approach (Figure26).



(Figure26) An integrated approach⁽⁷⁾

On the other hand, great deal of planting could improve the visual quality very effectively. Designers can increase these benefits by achieving the perfect use for different functions in various places, i.e. to orient people moving, to define the space enclosure or to provide people with the environment suitable for human activities (behaviour setting).

The aesthetic standard of building facade in Nasr City is linked to the building code; this is recognized through two main phases:

First Phase (1960-1970): the building code limited all heights by 2 to 5 floors for the majority of residential areas, except for high rise apartment in main roads as well as governmental buildings,. The building code also limited the retreat areas and accordingly the building ratio for each piece of land. The result was visual unity in its simplest sense (Figures 27,28). Second phase: the application of the building code started to weaken with the increase of the population problem in Egypt.

This changed the shape of the sky line, which created ad hoc and disorganized horizons. The building ratio increased tremendously laying a huge load on the traffic network, especially in the intersection of the main roads and over crowedness of parked cars in the internal streets. Besides, different unrelated housing forms and styles were appeared as an expression of only economic factor. This dramatically lowered the aesthetic quality of city urban spaces (Figures29-33).



Figure)27,28) Visual unity in residential zones



Figures (29-33) Different building heights and shapes

Elements of unity (texture, colour, tone , direction, proportion, solid and void, form shape)

Aspects of unity (dominance, harmony, vitality, balance)

Expression (style and fashiobn,quality, view and sunlight0

Magnitude (scale, setting, time)

To discuss landscape elements in Nasr City, two main components, soft and hard landscape elements should be mentioned respectively. In the first phase of establishing the city, green spaces were spread within the buildings' retreat areas as an individual effort, while the main streets were the governmental responsibility (figures34,35). The second phase witnessed a decrease in retreated areas and accordingly in green areas. This left the responsibility of development and cultivation of green areas, relying completely on the governmental authority. The space quality has been negatively affected by limited financing budget, and the limited design capability of its employees. On the other hand, nothing to be mentioned relating to the hard landscape elements as they were totally neglected which include pavement and street furniture (Figures36-38).



Figures (34,35) Soft landscape elements within the retreated areas



Figures (36-38) Increasing of building bulk, and poor hard landscape elements

Conclusion

The research has led to a number of goals that are essential and represent the main core for good urban environment; way finding and image identity, community and public life and physical fabric and their details.

People should be able to understand their cities, their basic layouts, land uses and orientation. A city should represent itself as a readable story, in an engaging and without provocation style, i.e. people who are viewing the world in different point of views, they should read their environment, which encourages them to express themselves, and decide what they actually want, and take actions for achieving it. Different factors should be respected:

- Road hierarchy with special attention for internal streets to avoid similarity in visual perspectives
- Land use which is distributed in a clear pattern.
- Space hierarchy (private, semi public, public) which creates various space enclosures.
- Skyline which creates clear visual relationship between buildings and landmarks.

Within different views in the field of urban design, spaces are seen as a social context. Consequently, space quality is figured through achieving urbanity. Structure of the city should invite and welcome public life, not only through its institutions, but directly and symbolically through its public areas. The built environment should be for all members of the community; it is where people of different kinds meet. Urban spaces could enhance the social relations between residents when they are parts of peoples' daily routes. Different factors should be respected:

- The designer must produce a vital solution for the dilemma of the effect on traffic, noise and exhaust fumes on the pedestrians, without completely distancing one zone from the other. This means an overlapping of these functions, to be achieved with considerable investments in the technological sphere, a price that the motorized society must be prepared to pay.

- Residential densities should be carefully determined to have secure places in its minimum ratio, and not to have congestion or traffic problem in its highest ratio. Intensity of activities should be clearly considered by selecting the right location for activity centers especially shopping malls.
- Great attention should be directed towards creating public urban spaces which should not be excluded by the existing of shopping malls.
- Public open spaces could be successfully used for different functional activities as mosques, schools, nurseries and shops for daily needs .
- The building arrangement concept could help in creating semi private / public areas, which in turn helps in achieving cooperation and exchanging between individuals of the limited urban community.

The visual identity of urban fabric could be clearly figured when it reflects the components of the culture core of the society. The common values are clearly known to all the society without previous agreement. Meanwhile, in the developing countries, including Egypt, individual values are strongly affected by globalization. This explains variety and even disharmony in people building's designs. So it is necessary to control the architectural gemetric physical elements by building codes and regulations. For the success of such codes all designing elements of the building should be considered. Meanwhile it should not to prevent the creative architectural solutions. Three main factors should be determined:

- Building bulk which includes floor area ratio, building heights, etc.
- Building internal elements which formulate building horizontal plans.
- Building external elements which formulate building facades.

However, the validation of these regulations doesn't only depend on its items from the designing point of view, but should depend on other two main concepts. Firstly, the practicing, in which the phase of designing is monitored and supervised by executive authority. Secondly, the existence of the legal force which, protects the building executive procedures.

The low quality of landscape elements in urban spaces of the city, is mainly based on the fact that it is always done through governmental authorities which is missing for people with design capabilities, and for suitable budget as well. Various solutions for self-finance through cooperation with private sectors could lead to suitable landscape elements; an integrated approach is recommended. On the other hand, master plan and concepts of building arrangement should create territorial spaces to encourage people for landscaping these spaces individually.

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