

## **IMPROVING PERCEPTUAL PERFORMANCE OF URBAN SPACE: NEW CAIRO CITY CENTER AS AN EXEMPLAR**

By

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### **ABSTRACT**

*Designed to deepen the knowledge of perceptual performance of urban space and stimulate creative thinking for the city of the future, this article attempts to identify those intrinsic and inherent qualities of space that enliven the cityscape and contribute to its character and identity. A discussion pertaining to methods of improving perceptual performance of urban environments is followed by an in-depth investigation of the master planning of the city center of New Cairo (a new satellite town process), as implemented by the author. The article examines the sensual aspects of urban form and concludes with definite criteria for improving perceptual performance of Urban Centers while promoting explicit character.*

*Keywords: Perceptual Performance; Urban Spaces; City Center; Downtown; New Cairo.*

### **INTRODUCTION**

A person's strong emotional attachment to a particular location is ascribed to a positive satisfactory experience. Many people today find pleasure in ancient and traditional cities. By virtue of their evolution these cities offer urban spaces and streets of exquisite qualities, which rarely are present in many contemporary cities. This is particularly due to the grandeur scale of development in many modern cities, the absence of symbolic significance and historical association, the state of society and the gap between the users and the planners. All these ills and others have combined to negatively influence people's physical and psychological health. As a result large planned settlements of distinguished form are quite rare in contemporary cities.

It is for this reason that in the early 1960's urban advocates such as Lewis Mumford, Bernard Rudofsky, Jane Jacobs and William White began emphasizing the importance of creating Urban Centers as special places offering an appropriateness of sensual information and leading to a positive satisfactory experience.

This paper thus attempts to identify those physical qualities and characteristics that account for much of the richness in our relations with settings in Urban Centers.

### **CREATING URBAN CENTERS AS A SPECIAL PLACE: THE NEW CAIRO EXPERIENCE**

Urban Centers represent a unique opportunity for communicating meaning about societal and cultural values. They constitute the heart of a city through which surges the economic, cultural and social lifeblood of a city. In both a physical and cultural sense, Urban Centers promote a rich variety of character and flavors inviting us to discover the many special places and people found there. People from all walks of life feel equally at home in the Urban Center because there is something for everyone to see, learn and experience.

People are drawn to different parts of the Urban Center for different reasons. It is the center of employment, the home for many families, students, couples, singles and senior citizens. And for those seeking services, education or personal enrichment, Urban Centers offer an abundance of institutional, recreational, cultural and entertainment to sustain them. As such Urban Centers are places for people and places of opportunity that attract visitors from all walks of life. Experiencing Urban Centers thus provides an attractive opportunity for stimulation and for offering a wealth of sensual variation.

The New Cairo Experience constitutes a unique opportunity for learning and intellectual development. Through a four-year process of research, planning, and design a new approach to planning city centers in the Middle East was developed in which the pedestrian realm superceded that of the vehicular without sacrificing its functionality. Lessons learned from medieval cities of the past were implemented resulting in a network of articulated spaces linked to each other via pedestrian promenades affording ever-changing vistas. Landmarks, edges, districts, nodes, gateways and paths were well defined yet inter-connected to provide an urban fabric of unique characteristics. Size, building form, and architectural and urban character were all developed to provide for diversity within unity, and for an element of mystery and surprise.

The experience of New Cairo's City Center is distinguished by a sense of unity among districts of exceptional character. The urban landscape includes sidewalks, plazas and parks, changing building facades,

streets lined by exciting window displays, out-door cafes, clusters of activity nodes and a wide variety of people-pleasing activities and services that attract individuals from one end of the Center to the other.

The 12 km. long Center was developed as a continuum leading to climax at its center, yet was sub-divided into four districts with identifiable missions and flexible boundaries, each possessing a unique character and continuum of its own (Figs. 1, 2,3). Together, the districts' missions define the plan for the City Center. They include statements about design character as well as economic character. Organizing the City Center into four identifiable districts is a new concept yet, a profoundly simple idea which organizes a complex area.

The 2500 acre Center, originally a planning and design competition in which an inter-disciplinary team led by the author received 1<sup>st</sup> prize, was commissioned by the Ministry of Housing, Utilities & Urban Communities in 1997 and has, since its inception, been considered by many including the Ministry, as an advanced and novel concept in planning contemporary city centers of humane scale.

As such and as a case study, the New Cairo Experience has value. The City Center provides an educative environment contributing to the body of data that tests specific hypotheses concerning perceptual performance of urban space. It allows planners to make knowledge-based conclusions founded on feedback from users and stake-holders as well as the author – due to his continuing role as a member of the City's Urban Design Review Board and Design Advisory Panel. In so doing, it moves beyond what "planners and designers think" to address "how stake-holders and users react to urban space".

The current study builds upon this earlier experience, expanding the field of consideration to introduce other issues that may contribute to improving the perceptual performance of Urban Centers. Some of the issues identified herein need to be tested by assessing these characteristics in relation to behavior.

## **IMPROVING PERCEPTUAL PERFORMANCE OF URBAN SPACE**

### **Criteria for Improving Perceptual Performance:**

In its essence, Urban Design is the art of creating memorable relationships between people and their environment. Improving the perceptual performance of urban environments is thus preliminary to a positive satisfactory experience and entails satisfying the following criteria (Benerjee and Southworth, 1990):

- **Environmental Stress:** The physiological and perceptual stresses imposed by the physical environment are a common complaint of city life. Climate, noise, pollution and the level of visual input are the factors most often referred to. There is an acceptable range within which the environment is considered comfortable. The range however, is affected by what is culturally acceptable, by the temperament of the person and the activity he is engaged in. Places designed for human habitation should adapt to certain environmental factors affecting the comfort of their uses.
- **Behavioral Support:** Though it is obvious that places should support the actions and activities of users, this is usually not the case. Instead outdoor spaces are conceived of as a volume having a visual character rather than as a setting where activity takes place. However, if and when behavior is considered, it is usually of the formal and stereotyped kind such as: playing football, parking a car etc. Consequently, luggage must be carried up steep stairs, paths are slippery and do not lead to where people want to go, and park seating is either unavailable or located in an uncomfortable location. Such problems can be overcome by a behavioral program detailing the time as well as location of activities.
- **Identity:** "Identity is that unique quality of a place that gives its particular character" (Lynch, 1981). Spaces should have a clear perceptual identity: recognizable, memorable, vivid and differentiated from other locations. "The test of identity is not the novelty of its graphic presentation, but the degree to which it is vividly remembered" (Benerjee and Southworth, 1990). This means that one space should not feel like many others.
- **Diversity and Choice:** "A special spirit of a space exists in those settings that provide options about how they can be used or perceived. Having choice and variety in one's experiences serves a fundamental human need" (Steele, 1981). One of the commonly recognized delights of large cities is their diversity of people and places. Diversity is an obvious prerequisite for choice, and corresponds to a widely felt pleasure in variety and change. Sensuous diversity includes the choice between a calm and stimulating, lonely or crowded, natural or artificial. Perceived diversity is a function of actual variety and how accessible that variety is. Different people look for different kind of clues. Hence, to improve perceptual form, an urban pattern should be capable of being imaged in diverse ways, according to the desires or capabilities of the observer (a system of paths, a constellation of focal points, a network of open spaces, important natural or historical sites etc.)
- **Legibility:** Elements of the environment should be structured such that the observer can understand their pattern in time and space. The urban pattern has to be imageable and composed of differentiated elements legibly organized so that a normal person can relate them together and understand their pattern in space. Legible structure has an obvious value in facilitating way-finding and cognition. It also confers the aesthetic pleasure of perceiving the relatedness of a complex form. Urban Centers should be legible to the

tourist, knowledgeable inhabitant and the casual stroller. Temporal legibility is as important as spatial legibility

- **Meaning:** The environment is an enormous communication device, people read it constantly. The identity and legibility of places provide a common visible base to which all people can give their own interpretation. A cluster of skyscrapers may signify exhilarating power to one and cruel oppression to another. Spaces, "that contribute and contain many symbolic meanings which trigger off memories and fantasies are more likely to provide with experiences than those that have a few" (Steele, 1981).
- **Development:** The environment plays an important role in the intellectual and emotional and physical growth of the individual particularly during childhood. An educative environment would be full of available information visibly encouraging attention and exploration while alternating between moments of high stimulus and quiet privacy.
- **Perceptual Engagement:** Sensing the environment is a sheer delight. The play of light, the feel and smell of the wind, the sound of water, and the sight of people are all dynamic elements that never fail to catch attention. In addition, a space "whose special features are visible is more likely to stimulate use of those features than that whose features are hidden" (Steele, 1981).
- **Adaptability:** The physical environment should be adaptable to growth and change of physical features, activities and functions. The test would be to see if the perceptual image would absorb sudden shock, survive certain degree of functional disorganization and /or arbitrary changes, such as:
  - a dramatic increase in the current rate of change, or the reversal of its direction,
  - a radical transformation of the dominant mode of the circulation system,
  - a radical shift in the preferred life style or land use.
- **Congruence:** The physical environment should be congruent with the social and functional organizations.

Yet, to improve the perceptual performance of Urban Centers, planners and designers need to address and operate upon the decisive components and elements of urban form. The following elements are drawn from many previous suggestions by others, with a few speculative additions of my own, and are thought to constitute the crucial components of urban form of great consequence on the perceptual character of (Lynch, 1981):

- **Major Path System, Streets, Rail-lines, Waterways and Promenades:** These are the most crucial elements of form. Plans should specify the general sequence of paths (progressive, recurrent, climax, etc.), as well as the principal entry and climax points.
- **Major Centers, Focal Points or Nodes:** Plans should define their location; perceptual character; relation to each other, to the path system, to the natural features of the environment and to their surroundings. A policy should be set on such elements of visual character as lighting, mix of visible activities, spatial texture, landmarks, distant views, entrance points and micro-climate.
- **Special Districts:** These are areas of appropriate size associated with memorable activities, character, or associations such as universities, hospitals, ports, industrial areas, CBD, major open spaces, and special historical areas and sites. Plans should identify their location, accessibility and visibility from the path system, and their general visual character.

### **Elements of Perceptual Performance and Space Satisfaction:**

In view of the above and based on my personal experience as a planner and designer and the documented experience of others, I have formulated a brief list identifying those characteristic features of the physical environment that are thought to have a direct emotional impact and account for much of the richness in our relations with settings in Urban Centers. I consent however, that the following features may not in themselves be sufficient to create Urban Centers as special places, but see this list as issues that contribute to the knowledge base concerning perceptual performance and the design and planning of Urban Centers for more meaningful and livable cities.

However, the concern here is primarily with the psychological and sensual effects of urban form and not its functional and quantitative effects.

- **Orientation in Space and Time:** It is the sense of clear relation of the observer with the Urban Center and its parts. It also includes the deeper emotional sense of how the present moment is linked to the near or distant past and future (Benerjee and Southworth, 1990). Orientation may be achieved through the provision of:
  1. Strongly organized lines with a visible or sensed direction towards a major landmark.
  2. A sequence of experiences that builds upon one another.
  3. Landmarks of peculiar form and /or history associated with key locations, and to which observers can be oriented by sight. The power of landmarks is however, increased where the structures are expressive monumentally or functionally and can be seen from great distances.

- 4 Distinguished Spaces or Districts of key importance, significant form (spatial, topographic) or character.
5. A street pattern which provides compass directions, a basis for measure of distance and location by coordinates (e.g. grid pattern).
6. Directional differentiation - through the use of various effects (sun, natural or topographic feature etc.).
7. Maps and signs having clear, bold, simple and not conflicting symbols.

• **Warmth's and Attachment:** It is a positive response projected onto the physical surrounding. In part, it springs from familiarity and the sense of history but is reinforced by physical forms through:

1. Evidence of human care - lack of which may appear as careless use of land, neglect, decay and litter.
2. Symbolic association.
3. Human scale - in which the individual has some significance and mark on the environment. The minute size of human beings is further diminished by the sheer use of relatively grand scale (Steele, 1981).
4. Enclosure - giving a sense of warmth and protection through a quick transition.
5. Intricacy of detail.
6. Signs of life - via furnished windows, street furniture, interior glimpses and the sight of people and activity.

• **Stimulus and Relaxation:** It is the balance between the stimulus of activity and participation. One of the great delights of cities is the sight of activities; the range of personal friendships and contacts available; the variety of ways of life; services and goods offered; and the excitement of being in intense and powerful Urban Centers. On the other hand, small cities may not be able to build up a pleasurable level of stimulation and communication. Hence, spaces need to be designed proportionate to their use to insure appropriate levels of concentration. Over designed low-use areas are dead, and the opposite oppressive.

Nevertheless, continuous stimulus is maddening as is the case in down town Cairo. There is a need for times and areas of low pressure and low concentration. The optimum is thus the provision of both stimulus and freedom, implying a choice and variety of environment, and fluctuation of intensity.

• **Sensual Delight:** It is all the satisfactions of order, variety, rhythm and contrast through all the senses. Sensual delight could be attained through the following features:

1. Space: Quality space is determined by the shape, proportions and use. Yet, color, texture, floor, silhouette and other details can affect the shape of space. Spaces can be static or dynamic, have direction or unoriented to other elements of the Center. Spatial forms are only partially sensed from a viewpoint, and require movement and succession of views to be fully enjoyed. Thus a greater degree of irregularity and variety is tolerable and pleasant. Furthermore, transitions from one kind of space to another make strong impressions.

Form must also have general unity or clarity, a lack of unity can cause ambiguity and fatigue, or the space may not be sensed at all. As space is sensed by motion, so is the spatial pattern of the city as a whole, which should have some rhythmical quality geared to the speed of motion. Such a pattern may have to do with the city's character. Spaces are much more delightful if related to one another.

2. Floor: While moving through the city streets, the frequent posture is with eyes on the ground. And as the surface of physical contact, each change in texture or level of floor must be examined with care. Color and texture can give a great deal of pleasure. Texture can be used to give movement or give directions or to provide spatial unity with surroundings. Changes in level are greatly exaggerated in importance. Too strong a level change in a static space may be destructive, while slight changes can modify or enhance the sensation of a space.

3. Detail: Small expressive objects exemplified in doors, shop windows, signs, ornaments, etc. are close to eye level and get relatively more attention than grand effects higher up or at a distance. The high density of detail may however clutter the beauty of a street or space.

4. Texture and Silhouette: The observer is aware of the Urban Center as a series of planes. An occasional glance of the windows, shutters, mouldings, signs, etc. of upper storeys or the distant block ahead provides the observer with a general impression that characterizes the Center or one part. These textures can rhyme, be in contrast or delicate harmony. In this same view the skyline is usually the dominant edge, and can have dramatic impressions.

5. Smells and Odors: Odors seem to have the most direct emotional effect of all the sense perceptions, and are the most tied to memory. A passage along a street is punctuated by the smell of flower, smoke, car or fumes etc. Clearly massive offending odors may be eliminated and pleasant ones provided for.

6. Sound: Unlike sounds of painful levels of intensity; pitch; or monotonous repetition, natural sounds of sea waves, leaves in the wind are rhythmical and have pleasant connotations.

7. Natural Elements: Beyond their functional value of shade, ground cover, privacy, recreation and climate-control, water, plants, earth and rocks are important material in the esthetic design. Vegetation with its variety and intricacy of form and color, its seasonal growth and change is a necessary adjunct in low intensity areas. Water, has the connotations of coolness, refreshment and free motion, and can be enjoyed in an endless variety of delightful forms. In addition, and beyond the purely esthetic effects, these materials have emotional connotations of growth, life and connection to the world.

- **Interest:** Urban space should provide for the intellectual pleasures of curiosity, new experiences and new impressions. The use of detail and the concept of stimulus are very much tied to interest. It should be emphasized however that human activity is in itself, the fundamental source of interest.

- **Movement:** Accessibility is fundamental in Urban Centers and has immediate psychological effect both on the mover and the by-stander. The ease and naturalness of motion is important, as unnecessary blocks and jams are irritating. Experiencing the Center in motion through a sequence provides a vital impression and can be of great pleasure.

Observing motion is stimulating particularly if it is a mixed or varied form. Complete exclusion of traffic, long maintained, has isolating and deadening effects (Benerjee and Southworth, 1990). Nevertheless, the anxiety evoked by traffic can destroy urban delight and prevent other observations. Heavy cross-cutting traffic can shatter an otherwise pleasant space. Relatively thin lines of moving traffic however, passing at right angles to line of vision, and not too difficult to cross, seem to have little effect.

A rhythm of segregation and mixture, with partial pedestrian networks is one solution. Various devices of protection yet contact can be used such as: arcades, grade separation etc. There can be no question however of the delight of completely pedestrian streets: freedom, safety, a new level of noise, and the ability to pay attention to new things.

- **Shopping and Entertainment:** An Urban Center may be looked at as a great center of recreation, acquisition and consumption. Shopping is high on the hierarchical order and provides the live most broadly used foci. Window shopping and bright lights are two fundamental urban pleasures. Lack of range in these activities is the common complaints in towns and cities (Benerjee and Southworth, 1990).

Division and specialization of shopping areas is essential, both for the functional problem of traffic and for good orientation and character. The quality of shops is also a very sensitive index of the character of an Urban Center. Concentration on a relatively narrow corridor, with a mutual reinforcement of stimulus, is one of the most exciting methods. Storefronts should not be hidden or retired but bold and colorful, inviting and having interesting display windows.

- **Climate:** Micro-climate should be manipulated both by inviting weather and / or protecting from. The orientation, size and direction of spaces and structures, use of plants, levels, shelters, and street furniture can all help manipulate the micro-climate.

## CONCLUSION

There is more to improving the perceptual performance of Urban Centers than the above. However, it is my hope that if city centers were planned and designed with the above in mind, these characteristics will contribute to creating more meaningful and livable Urban Centers.

To conclude, it should be stated that creating Urban Centers as special places are not only urban idylls, but offer a wealth of sensual enrichment, while addressing practical needs. Urban Centers improve the quality of the physical environment and enhance the visual aspects of the overall city, attracting more people to participate in and observe activities, and thus strengthening community identity and reducing feelings of alienation. Moreover, the increased flow of pedestrians contributes to higher levels of opportunities for shopping and business, which in turn means more profit for the city and the people. It is thus hoped that studies such as this may arouse interest in others to undertake further research leading to the identification of specific criteria for the planning and design of Urban Centers.

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