INTERACTIVE PATHWAYS AS A NEW TREND IN URBAN DESIGN

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ABSTRACT

A moment of reflection and contemplation is really needed. On the one hand there have been radical changes in urban practices in Egypt, but on the other hand it has become common to observe the major shifts are occurring in the realm of urban in the world.Nowadays urban cities are facing many challenges like accelerating globalization, social and demographic changes and urban growth. From this point of view, the idea of interactive cities begins. Interactive Cities is a cutting-edge project aimed at exploring how digital, social media and other interactive ways can improve today's urban management. Interactive Cities will focus not only on the technological side but also on how this kind of innovation can be concretely useful for local authorities and urban residents, promoting better urban governance, citizen participation and economic growth. Pathways in our community is one of the most important issues affecting our urban life; the city image depends mainly on pathways as there is a direct relationship between it and the way of transportation whatever it is car, bus, bicycle, or even you are a pedestrian. Interactive pathways outline a new planning paradigm pertinent for urban development. This study attributes the rise of interactive pathways which appears in different forms (social media, virtual reality, materials technology, and also the local interaction). In Egypt, Pathways comfort, convenience and safety have been seriously ignored. Since the vehicle has been the dominant mode of transportation, planning was concerned with driving needs, building more roads and even more driving and so on, neglecting the open public spaces, Sidewalks, pedestrians needs and the street lifestyle. The study main vision is to occur an outstanding leap in urban pathways in Egypt, and the main objectives is to - Determine the design criteria which activate the idea of interaction in the design process of urban paths to reach the virtuous pathways, then the study focuses upon -The role of pathways in urban life. - Determine the pathways problems.-the ways of Interaction. - The role of user in the design process. - The time aspect in architecture and built environment. The objectives of this study will be achieved by applying these principles on one of the most effective pathways in Egypt.

Keywords: Urban Design - Pathways Design - Interactive Cities - Interactive Pathways - Identity - Virtual Architecture

1-INTRODUCTION

1-1-Lynch's five elements: Paths, Edges, Districts, Nodes and Landmarks. Lynch argues that people in urban situations orient themselves by means of mental maps.

A clear mental map of the urban environment is needed to counter the always-looming fear of disorientation. Lynch proposes that these mental maps consist of five elements:

Edges: May be barriers, more or less penetrable, which close one region off from another, or they may be seams, lines along which two regions are related and joined together.

Districts: Areas characterized by common characteristics, these are the medium to large areas, which observers mentally enter 'inside of and/or have some common identifying character. Distinctive physical characteristics might include 'thematic continuities, such as texture, space, form, detail, symbol and building.

Nodes: The strategic spots in a city into which an observer can enter, and which are the intensive foci and from which the person is travelling.

Landmarks: Landmark's key physical characteristics was singularity some aspect that is unique or memorable in the context. Some landmarks - towers, spires, and hills are distant and are typically seen from many angles and from distance, over the top of smaller elements. Other landmarks - sculptures, signs and trees are primarily local being visible only in restricted localities and from certain approaches.

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Paths: The Streets, sidewalks, trails, and other channels in which people travel. Lynch noted that paths were often the predominant elements in people's image with the other elements being arranged and related along paths [1].

- Pathway is the connector of the city and the interaction is the key which adds new dimensions on the elements of the city, converting the sense of the space from static to dynamic.

1-2- The concept of interactive cities:

The city is a large and diverse environment of people going about their business, interacting with one another in gatherings, events or simply passing each other on the street. Not one image, symbol or logo can truly represent such a diverse collection. The city is known by its name.

What can usefully be unified are certain types of information – to help people get about and find things, by pointing at things or letting people know how and when to use public transport, or by providing a consistent system of visitor information that is used by all. 'if it works for the first-time user – then it will work for everyone'.

What people come away with from a visit to a new location is an immediate sense or experience of the place. Experiences could be pleasant or confusing, stimulating or dull, welcoming or unfriendly. These memories create positive or negative views about a place, and determine whether we return or choose not to bother.

Making a city more understandable does not provide the prime reasons for people to frequent. Retail choices, tourist attractions, day or night life amenities are our destinations.

By concentrating on getting everyone in the city to coordinate a little bit and to focus on the experiences of people, then everyone in the long run benefits.

In our current cities the large mix of transport and information systems are run separately. Buses, trains, car parks, shops and destinations. To make a city interactive is not to run all these systems together, that would not be possible, but to provide a method of communication that allows them all to speak with a similar voice that is focused on making sense to the person on the street. People, places and movement require a degree of coordination. The feeling is that the city is 'Connected' its parts work together, for the benefit of everyone.

2-PATHWAYS

2-1-pathways as one of the urban elements:

"The street is not means of access, but also an arena for social expression. If a city's streets look interesting, the City looks interesting, if they look dull, the city looks dull [2]."

Paths were the predominant city elements, although their importance varied according to the degree of familiarity with the city. Subjects who knew the city better had usually mastered parts of the path structure; these people thought more in terms of specific paths and their interrelationships. A tendency also appeared for the people who knew the city best of all to rely more upon small landmarks and less upon either regions or paths. Characteristic spatial qualities were able to strengthen the image of particular paths in the simplest sense, streets that suggest extremes of either width or narrowness attracted attention. Where major paths lacked identity, or were easily confused one for the other, the entire city image was in difficulty, fig (1).

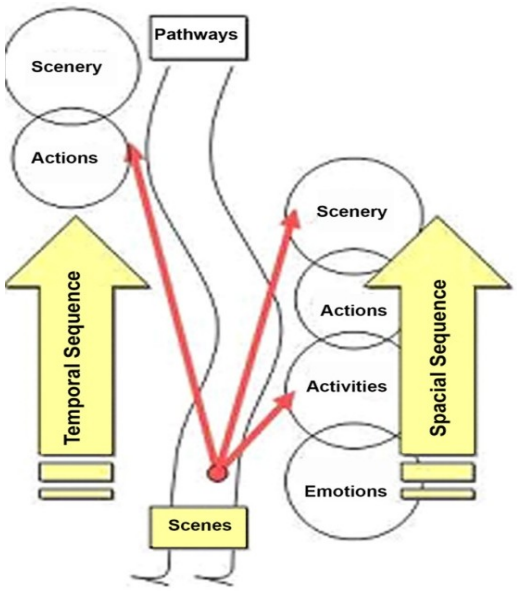

Fig.1- The Sequential Pathway Movement, Source: Dr. Ayman A.EL Hamied, The Time Dimension in Architecture and the Built Environment, Master

2-2-Types of pathways: There are two types of pathways: internal paths and external paths. The scope of our study is external paths which permeate the built up urban areas.

2-3-Pathways characteristics: Pathways characterization depends mainly on two types of elements: one special for the path-ways and the other for the users.

2-3-1 Special elements for pathways: Pathway degree even it is national, regional, ring, arterial, main, collector, loop, local or cul-de-sac. Pathway type relies on its function (residential, commercial, mixed residential commercial, service road, recreation and mixed use). Pathway shape: Straight - Curvy - Zigzag, Wide - Narrow, Long - Short.

2-3-2- Special elements for pathways users: The pathways network organize the users movement graduate from pedestrians movement to vehicles movement, so the pathways can classified into the

following:
* Pedestrian
* Vehicle road
* Mixed pedestrian and vehicle road

2-4-Pathways forming elements: Pathways elements are the elements which achieve identity and personality for the space which are flooring, walls, ceiling and complementary elements.

2-4-1 Flooring: Pathway flooring has an important role in the pathway visual character and the formation of its image. The main elements which affect the pathway flooring are the material, the pattern, the color and the texture.

The flooring most important functions:
- Achieve continuity along the path using the same pattern.
- Confirm the important spaces such as intersections or spaces distribution through breaking continuity using different color or material.
- Using the flooring texture to control the rate of movement for example using rough materials to reduce the users speed.

2-4-2- Walls: Pathway walls are the vertical planes which determine the pathway and the sense of its dimensions**,** walls may be built blocks, trees, fences.....etc .The proportion between the height of the pathway walls and the pathway width is an important point aesthetically, besides its ecological role in providing natural ventilation and lighting for the buildings and also it affects the users sense of time by moving through the pathway.

2-4-3- Ceiling: Pathway ceiling is often the sky and it extends to infinity, but sometimes it is covered to provide certain character or function**.**

2-4-4- Complementary elements: Street furniture products that fulfill function, are well maintained and reinforce the identity of a place can over time become a part of the place and eventually start to represent it in some way. The main complementary elements are lighting units, signs, seats, soft-scape and landmarks.

3- THE RELATION BETWEEN MAN AND PATHWAY

People tend to think of path destinations and origin points: they liked to know where paths come from and where they led. Paths with clear and well-known origins and destinations had stronger identities, helped tie the city together, and gave the observer a sense of his bearings whenever he crossed them. The user movement in the space represents the fourth dimension which is the time dimension. Time affects directly the perceptual relation between the user and the pathway. The perceptual relation elements are perception/perceptual process, mental impressions and visual sequence. Fig (2).

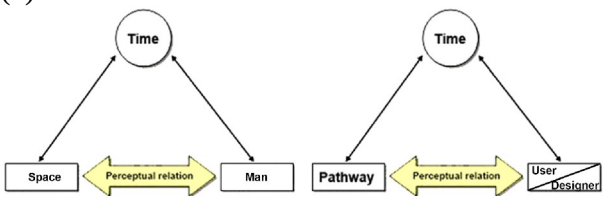

Fig.2- The Interactive Pathway Relation.
Source Dr. Ayman A. Hamid, 2010, ''Activating tools of time dimension in the design process '' Phd, Cairo university

3-1- Sequential movement: It is the journey that experienced by the user during his movement in the path in certain time, this journey succeeds as a result from the difference in scenes proportional to the taken time, so the user experience comes from the ability of the path to form a distinct visual experience.

3-2 Sequential Structure: Any temporal sequence consists of four essential levels as follows: Introduction, Development, Climax, Conclusion .Fig (3)

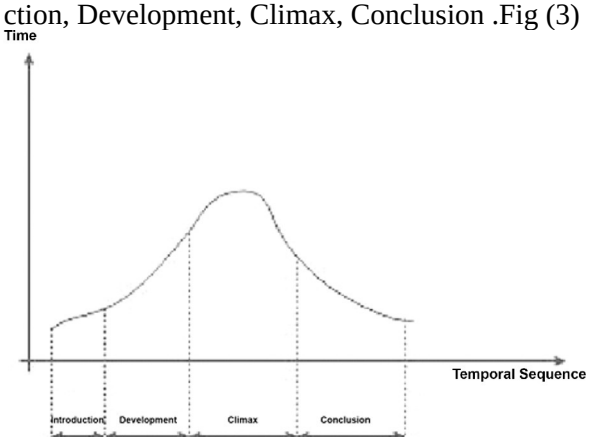

Fig.3 -The Visual Sequence Main Structure.
(Source Dr. Ayman A. Hamid, 2010, ''Activating tools of time dimension in the design process'' Phd, Cairo university)

3-3-Perception definition: Perception is a formation of a mental image for any element, so it is a process done by the translation of the physical elements to the mental elements.

3-4-Perception Levels:
A- Pragmatic level: It is a sensory level depends mainly on senses as sight or hearing or touch and this level address all users whatever they are.

B- **Existential level**: It is a level based on a mental process which identifies the nature of the perceived thing.

C- Conceptual:
- Level: This level is to try to decode the tag code which is the concept, which requires a high degree of learning.

D- Cognitive level: The perceptual process may be

stopped at the third level, but the sign sometimes has a deeper dimension needs to be interpreted; this level is the maximum level of perception.

Then signs are social systems for communication between the community members to organize different activities. So not only the architect who controls the design requirements but also the users play a main role to identify these requirements as the architect or the designer is the transmitter and the user is the receiver.

4- DESIGN CRITERIA FOR INTERACTIVE PATHWAYS CONSIDERING THE TIME ASPECT AND THE PERCEPTION LEVELS, FIG. (4):

Design Criteria with time dimension			The Objective
1	Growth (past-present-future)	Temporal oriented design	Reaching the most interactive pathway
2	Identify	Time as a fourth dimension	
	Accessibility		
	Appropriateness		
	Unity		
	Diverisity		
	Balance		
3	It's difficult to identify a design principle as it is differ from one another	Subjective time	

Fig.4- Pathway Design Criteria (Accumulative Time)

1-Evolution and growth: The design tools which activate the principle: growth is achieved by continuity and coordination between the past, the present and the future, Fig.5.

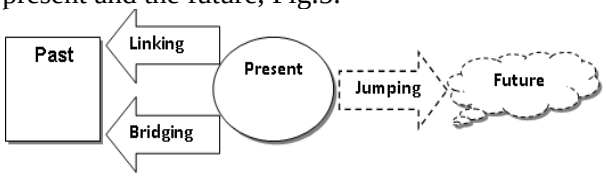

Fig.5-Communication between past, present and future.
(Source Dr.Ayman A. Hamid, 2010, '' Activating tools of time dimension in the design process '' Phd, Cairo university)

2-**Identity**: It means the existence of distinct features for the element identify it from other. The design tools which activate the principle: Singularity, Dominance, Simplicity, Similarity and Repetition, Fig. (6).

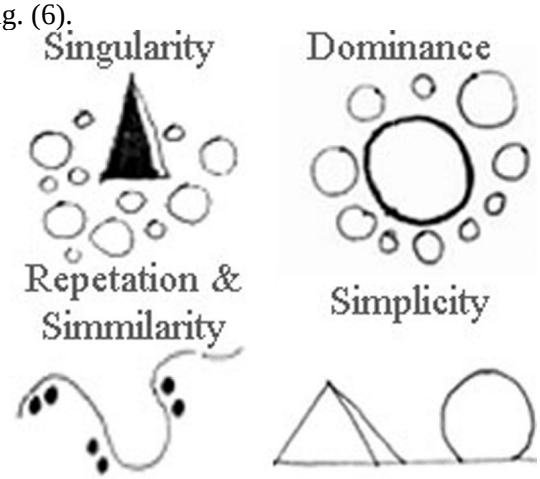

Fig.6- Characteristics strengthen the visual image.
(Source Dr.Sami Sabry,1996

3-Accessibility: The design tools which activate the principle: Hierarchy of pathways and Orientation , Fig.(7).

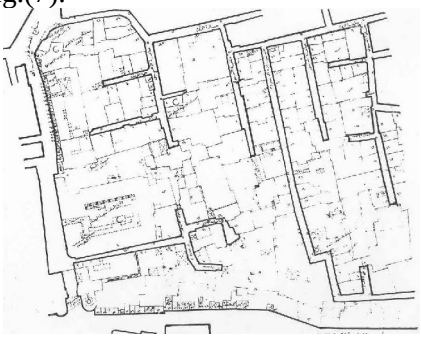

Fig.7- Hierarchy of pathways in the Islamic city
(Source Azza Yasin, 1984, ''Visual characteristics in the Islamic City''.Ways in the Islamic City)

4- Appropriateness: The design tools which activate te principle: Proportion and scale.

-Proportion is the relation between dimensions, heights, masses and spaces horizontally and vertically, Fig. (8).

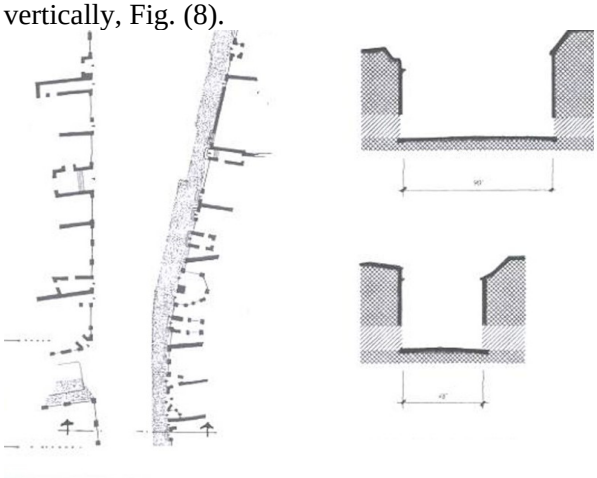

Fig.8- The effect of proportion on pathways
(source Allan B. Jacobs, 1993, ''Great Streets'')

-Scale is one of the main tools which represent the urban form features; the sense of scale plays an essential role in the design process. Types of scale are human scale, intimate scale and monumental scale.

5-Unity: The design tools which activate the principle: Continuity and Rhythm.

- Continuity achieved by the unity of rhythm or regular frequency or constancy in activity or movement which leads to link parts of the sequence and in the case of appearance of any change of the motion or pathway degree it is critical that this change be confirmed either by changing the buildings characteristics around the pathway or by changing the activity.

- The pathway sequence has to be characterized by rhythms which achieve the unity and cohesion of space, the rhythm can be either regular or irregular, fig. (9).

Fig. 9 - The Continuity of El-Tahrir Street (Source Resercher

6- Diversity: The design tools which activate the principle are Contrast and Transition of visual axis, Contrast is an essential tool for excitement, contrast achieved by achieving:

Contrast of space: Closed and opened active and quiet, color, material, texture and lightness.

Contrast of motion: up and down movements, straightness and rotation and speed and slow motion.

Contrast of views: appearance and disappearance of scenes, axial or panoramic scenes, remote scenes and suddenly appeared scenes.

- Transition of visual axis done as a result from the lake of straightness of pathways and this increase excitement in the scenes, Fig. (10).

7-Balance: Dynamic balance which means the balance on all the motion axis the design tools which activate the principle: this balance achieved by distribution of excitement and relaxation stations around the pathway.

As English architects say "Line is duty but curve is beauty"

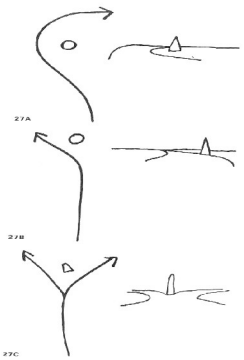

Fig.10- Transition of visual axis.
(source Lynch, k., 1960, ''The View fom the Road'')

5- RECOMMENDATIONS

- In case of designing pathways we should consider the relation between man (user and designer), pathway and time dimension. The designer have to use the reached design criteria, it is not obligatory to use all the tools to reach the design solution but the designer have to use the tools suitable for the pathway and the problems types.

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