

A Tale of a Sidewalk; the Conflict of Its Presence and Usage in the Streets of Cairo

By Dalia Abdel Moneim Osman¹

Abstract

People walk along the streets every day, in densely urban and built environment, streets are the most obvious public space that serve not only as links for movement but also as public places. Sidewalk is the people's place in the street's space; the road bed is used only for vehicles, but people walk and socialize on the sidewalks. Recently it has become an important issue to diverse planning concerns towards sidewalks, it is an important element in the street's components, encourages walking, consequently improves public health, environment, stimulates economic development and recreation. The research focuses upon the significance of the presence of sidewalks and their design in order to function and to facilitate usage. It addresses the conflict of sidewalks in the city of Cairo, the problem of their absence and the difficulty of walking along them if existed, assuring the importance of the sidewalk as a main issue in planning by reviewing the case of Heliopolis neighborhood in Cairo. Finally, the research illustrates the challenges that face planning and design of a sidewalk, as a link and as a space, and recommends keys for the space usage as a solution for its related problems.

Keywords: Sidewalk, street, pedestrians, Mobility

1. Introduction

The increased number of vehicles and the dominance of motorized movement in the streets; results in a demand that a separation should take place between vehicles and pedestrians to provide safety. Sidewalks represent the line between the street space for motorized movement and the building line of different land uses. Few studies explain the ways that people use sidewalks in cities and the role that sidewalks play in people's daily life (Jacobs, 1961). They have an important role in the street space; they should provide a comfortable space for pedestrians in the street space, providing access to any destination along the street length in addition to representing the connections between other transport modes in the street space such as vehicles or bicycles. They are a clear solution for transportation related issues, environment and public health, and for economic development as well that occur where people can sell goods, find work and meet others. However, most people in the streets of Cairo do not use sidewalks for walking, this due to the inadequacy of existing sidewalks for walking or their absence in many streets. The research main objective is to reach a solution to build quality and adaptable sidewalks throughout the city streets of Cairo through studying the sidewalk's space. Based on a hypothesis that better streets for more people can be created by considering two facts when planning sidewalks; the first is sidewalk as a transport link for pedestrians and the second is sidewalk as a space for people's daily life and activities.

¹ Assistant Professor of Architecture and Urban Design, Department of Architecture, Faculty of Fine Arts, Helwan University, Cairo, Egypt

2. Significance of sidewalks

Sidewalks are distinct public spaces, the most important issue concerning the presence of sidewalk is its function to separate pedestrian movement from motorized movement which provides safety for people and decreases the risk of accidents. Hence, they are considered transportation facilities that support movement. In addition they create public space for people in the street space, providing place for them to interact and socialize. Therefore, as spaces of access, sidewalks enable people to move from one place to another, thereby facilitating access along buildings, pedestrians walk along sidewalks as well from point of origin to destination or from car to building (Loukaitou, 2009). In addition they allow people to come into contact with others_ thereby facilitating access to people (Ehrenfeucht & Loukaitou, 2010).

3. Promoting walking

The presence of sidewalks encourages people to walk instead of using other transport modes; this in turn decreases pollution, and improves physical conditions and health. Consequently, miscellaneous activities are created and the social relationships are improved due to the presence of people in a suitable space down the street. Other Stationary activities are created as well. Although, in practice, activities may conflict when they overlap and users' priorities vary. The sidewalk has an important role also in the recognition of different values in the city streets. Encouraging walking in a suitable space down any street encourage culture identification, historical and custom values in the city to be recognized by people (Movahed et al, 2012). In addition to the optical perception achievement which would take place through the improvement of optical perspective of the city streets.

4. Sidewalks related problems and Safety procedures

There are a number of problems concerning planning and designs of sidewalks in streets, the important ones are those affecting safety of pedestrians since this is the main aim of the sidewalk. For the street space, if the street is wide, this encourages motor vehicles for high speeds which have direct connection with accidents and pedestrians' injuries. The street with lots of divergences has also an impact on pedestrian safety and make crossing of street is difficult. Some streets lack the presence of a suitable space for sidewalks, which is not enough to accommodate the pedestrians flow. Others do not have sidewalks at all. Also, the sidewalk may present but it is actually occupied with other uses which block and hinder pedestrians. These reasons definitely lead to the rise of the percentage of accidents occurrence in the street space due to the interference between the pedestrian movement and the vehicles one. Another problem affecting the people's safety is insufficient illumination, because of vision limitation at night, various dangers threatened users. When low illumination is existed, the possibility of occurrence of accidents is high. Studies showed that well lighted sidewalks helped to decrease accidents, relaxation of pedestrians occurred, increase of shops, encouragement of walking and increase the ability to see objects, lighting, details of buildings and size of

objects (Movahed et al, 2012). There are a number of major procedures that help to decrease accidents for pedestrians and guarantee their safety; for example, the sidewalks should exist as middle islands in addition to the two sided ones in wide streets, middle islands for crossing pedestrians make the street crossing occur in two phases (Zegir et al, 2006). Ramps should be existed and located between the sidewalk space and the street space for vehicles; they provide better conditions for pedestrians having physical disabilities, elderly ones and those with wheelchairs. Also, the sidewalk should be free of obstacles that may cause people to hit or fell down; in addition it is important to avoid the interference between bicycle and pedestrians on the same space especially in sidewalks of short width. Well illuminated sidewalks as well increase the safety issues for pedestrians.

5. Planning for people

Sidewalks are the space designed for the presence of pedestrian in the street space. This public space is considered a city's social realm, where people engage with strangers those they do not know personally (Ehrenfeucht & Loukaitou, 2010). A study has observed that people like to be around other people (Whyte, 1988). In public spaces, people also meet others like or different than themselves and find privacy away from family and community. People have fun in public and engage in playful behavior (Stevens, 2007). Good design can stimulate optional rather than only mandatory uses and activities (Gehl, 1987), and among other qualities can include permeability, legibility, visual interest and richness (Bentley et al, 1985). In general, planning for sidewalks is difficult than for planning for public space, since planning should take place effectively in order to both facilitate travel and enhance livability. Consequently, there are two main challenges; the first challenge is how to ensure travel without hindering access to people. The second challenge is how to create spaces that allow various activities to take place.

6. Sidewalk planning

It is essential that sidewalk functions as a transportation element in the street space for pedestrians, in addition to the accommodation of the daily activities for people. It should be available as a more incidental space available for street vending and other sidewalk activities, destinations should be reachable and open to all potential users. According to these challenges, planners should facilitate movement for pedestrians in the street space and create desirable spaces that can function well for everyone, fulfilling both travel and social properties in planning.

6.1 Transport link

The main function of the sidewalk is to fulfill the ease of path through for pedestrians, and to assure safety from motorized movement by vehicles down the street driveway space. Also the effective use of design elements can better articulate the way the surrounding buildings relate to sidewalk and the relationship between sidewalks and adjoining spaces in order to integrate incidental spaces into the larger urban structure (Loukaaitou, 1996). There is an effect of the sidewalk pavement width on pedestrian

levels of comfort (Kim et al, 2011). Basic priorities might include fixing sidewalk cracks; installing kerb cuts to allow all people comfortable access, planting and maintaining street trees, providing bus shelters and benches.

6.2 Daily activities

The sidewalk as a space for pedestrians in the street should accommodate a number of daily life activities of people, these activities take place during the presence of people in the place, and they make the sidewalk's space interesting and spaces to stay and use. In some areas of the city, sidewalks are inherent parts of destination districts that are designed to attract people for example shopping, people watching and entertainment. Planners in some cities have used ordinances and design interventions to attract restaurants, cafes, boutiques, book stores and art galleries. They have installed public art on the sidewalks; street furniture and decorative lighting, building facades were improved (Banerjee, 1996).

7. Design Principles

In order to avoid common problems related to sidewalks and to achieve safety procedures, establishing a design to sidewalk should take place with a number of characteristics. In addition, this will assure fulfilling of the link and the place characteristics of the sidewalk. There are five major features are identified through various literature reviews and studies (Kang et al, 2012) (Yang, 1981), these are mobility, place, safety, sociability and amenity. Each design principle has a number of indicators that were derived from the main design term in order to be more appropriate.

7.1 Mobility

This term means the ability for pedestrians to move from one place to another. The specific term indicators include continuity, functionality, efficiency, accessibility, affordability, consistency and connectivity. The continuity is for the pedestrian activities, the functionality according to the density of pedestrians in the street space, the efficiency of pedestrian facilities in terms of the efficient use of urban space in the restoration of the unique features of pedestrian facilities maintenance or preservation. Accessibility should occur to reach a particular place or facility with easily accessible properties. The sidewalk space should afford well formed walking environment, pleasant area with the activation of the surrounding activities. The consistency enables pedestrians to read the direction of the destination, consistency in space through composition, color, light, smell, and the slope of the ground, textures features also naturally perceived characteristics. In addition to connectivity, where pedestrians can move to any destination interconnected by walking, public transport, car and bicycle parking and any building that can be connected efficiently.

7.2 Place

This helps pedestrian to recognize and remember features that distinguishes a particular space and other space properties. It could be achieved through a number of indicators such as symbolism, diversity, identity, unity, tradition, spirit of the time and

elements of art. For example, Landmarks have symbolic significance as an important recognition of the destination. Through diversity pedestrians can enjoy a variety of experience and of the space through physical and non-physical environmental factors. Identity is achieved through unchanging of the components that have unique characteristics in the pedestrian space. Unity is clear when pedestrian street space full of various components is identified as one, multiple elements properly integrated into one organic system to accommodate the diversity. The tradition is handed down from the past and the spirit of the times characterizes the space by the configuration of culture of a definite era. Finally elements of art make up the pedestrian space as an artistic activity, acts of culture and art exhibitions, concerts, festival take place and culture of the city reflected in the space characteristics.

7.3 Safety

Safety refers to all the ways and elements needed to minimize the possibility of occurrence of the risk arising from the existence of a traffic accident or a society crime while walking. The indicators include buffer and crime prevention plans. Buffer exists to avoid a direct conflict between transportation and pedestrian space. Physical separation takes place between the street space for vehicles and the sidewalk. Facilities and plans installed to prevent crimes.

7.4 Sociability

The term sociability means that people would meet each other to share the areas of social interaction and to create a sense of community interaction. The term indicators include the presence of play, relax, share and equity. The sidewalk space can be a space to relax through benches, resting in the shade of trees and meeting up. Also, it can be an area to play if width permits. Sharing external space takes place and equity as well through providing the chance for all types of people to use the path; children, elderly, people with disabilities.

7.5 Amenity

Amenity brings comfort and provides convenience to pedestrians; people will feel refreshing during walking by a good composition of the surrounded environment of the sidewalk space. The indicators include landscape, aesthetic elements, natural elements, convenience and sense of openness. Landscape elements can be introduced to the sidewalk space that helps to provide amenity to the space. Aesthetic elements include colors, studied street furniture units and signage design help together with other natural elements in strengthening the design element. It is important to provide convenience through the presence of various facilities required to encourage the flow of pedestrian and ease walking without discomfort. The sense of openness depends on the parallel frontage to the sidewalks, the visual corridor of the building setback and the horizontal configuration of the pattern share in achieving this sense.

8. Introducing the City of Sun

One of the distinctive neighborhoods in Cairo, is Heliopolis district, means the City of the Sun. This was the new name for a neighborhood in contemporary Cairo created to the northern east of the site of the old city. It is much more than a neighborhood sometimes referred to as a suburb. It was reborn in the year 1908 by the Belgium industrialist "Baron Empain" when he decided to build a new city in the desert. First he constructed the Heliopolis Oasis Company which was officially established in the year 1906 (American University Press, 2006), see fig. 1.

There were variety of buildings, it attracted all classes. Luxury buildings were constructed yet a special area of the new city was designated to house service workers and servants. Their houses were economical but designed to allow them to live in good conditions. The first building to be constructed was the company headquarters, located on the newly laid out 'Boulevard Abbas' of 30 meters wide (French Culture Bureau), known now by 'Ibrahim Al Laqqani' street in 'Kurba'. Much has changed in Heliopolis since the Company has established, yet its headquarters still occupy the same building on 'Boulevard Abbas'. Many of the first constructed buildings are still exist, and most of them are located in 'Kurba' district in Heliopolis. The same with the urban form, buildings have been built around courtyards, opened onto a common space planted with greenery. This was a creative adaptation of concepts that had been present in European urban planning before, in such developments as the "Place des Vosges" or "Place Dauphine" in Paris, and in British housing around common greenery squares (Ilbert, 1981). Residential buildings created first containing only luxury apartments, they were arranged around huge common courtyards, and were entered from small pedestrian streets running between gardens, therefore offering greenery and privacy even through the houses were located on a main street. This was a kind of urban design that was discussed in the progressive European architectural journals of the day.

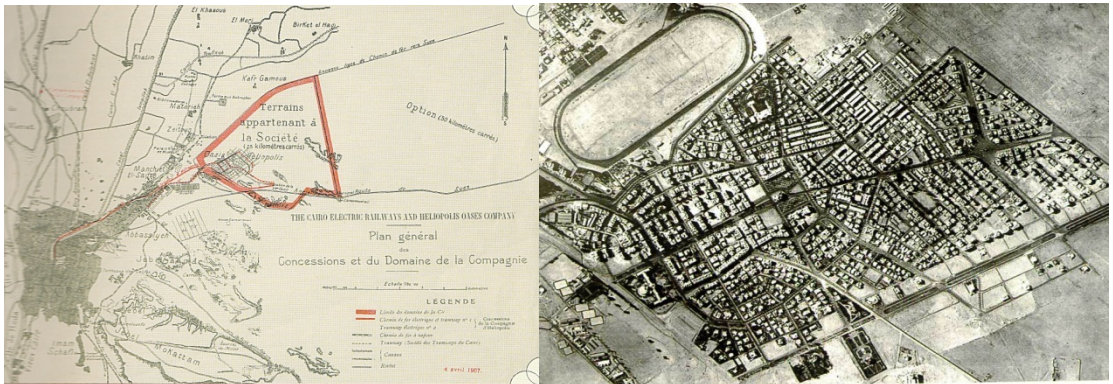


Fig. 1 left, Plan of the land purchased by the company 1907. Right, Mass plan of Heliopolis 1930.

8.1 Case Study Justification

Heliopolis district is chosen as a case study because it is representing a successful example of planning the travel patterns when first constructed and planned. Although it had been constructed since more than one hundred years ago, but it is still preserving unique urban and architectural characteristics up till now. Mainly its planning is based upon the movement pattern; it had been planned first by the streets patterns and grids and by the metro line that connect it at that time with the city of Cairo. Therefore, the movement study was the most important issue in the street planning and design of this new city at that time, the motorized movement and the pedestrians' one. This is clear in the accompanied pedestrians' pathways, sidewalks and the metro line. In addition, the sidewalks are clear and present in the streets spaces from the start of the planning of the new city's streets. They were existed and were being used effectively. However the problem is now represented in the current situation of the sidewalk, the people do not use sidewalk. Is this because of its design, or there are obstacles that prohibit walking, or that it is no longer existing, or may be due to negative changes that took place on the sidewalk and the surrounding street space as a whole which led to the loss of its function. In another words, there were good planned sidewalks so why they are not used despite their presence till present.

8.2 Streets and Sidewalks in Heliopolis

Heliopolis has two main diagonal streets that join in a 'Y' shape at the main square, the "Avenue of the pyramids" _has known as "Pyramids Street"_ and the perpendicular street that leads to the Baron's palace, these form Heliopolis's simple, a symmetrical framework. They were enclosed on three sides by circular boulevards with smaller streets and alleys filled the space in between. The streets still keep their form and patterns; Heliopolis has a number of landmarks such as the 'Basilica', the Heliopolis Palace Hotel, the Baron's Palace, the main mosque and other monumental buildings. They are all considered focal points connected by wide streets and avenues to create grand vistas, see fig. 2. To pedestrians on sidewalks, this represents a major guide to their destinations. The streets represent 35% of the built environment; they are classified into three main types, main streets (50-60m), secondary streets (28-50m) and local streets (12-28m) (Masr Al Gadidah Company, 1965). They are characterized by the clear presence of sidewalks, despite the fact that there was not that much motorized movement as it is nowadays; the percentage of vehicles was not high besides the presence of the horse carriages, but the sidewalk was a major element in the street planning and design. The sidewalks were having an appropriate width in accordance to the street width, there was not crossing points since the motorized movement was not considered a problem for the pedestrians at that time. There was a space for greenery on them, where trees and plant boxes are located along the path of the sidewalk between the path for pedestrians and the driveway for vehicles. Furniture elements existed along the path space; these elements are not interfering with pedestrians' movement, such as lighting columns and shaded benches.

The most distinctive sidewalks in the planning of the neighborhood are those in 'Kurba' area, the front facades of all buildings on the main streets are shaded and arched with columns, these columns were structural, not just for decorative. This offers shaded paths to people along the sidewalk. In addition to the existence of shops and cafes along their paths, that represents attractive points to most pedestrians, see fig. 3.



Fig. 2 Above, The 'Basilica' created a focal point.
Fig. 3 Left, Colonnaded arcade on 'Ibrahim al-Laqqani' street in Kurba.



8.3 The Changes in travel pattern

Streets suffer from the same problems as other streets in the city of Cairo; some gardens in major squares such as the Basilica's square had been destroyed. The space became vast and empty, grass is not enough to protect from summer days weather. The streets were first designed to have gardens for this reason, to provide shade and protection for pedestrians, whether people were walking along sidewalks in major streets or minor ones, see fig. 4



Fig. 4 left, The Avenue of the Pyramids looking towards the 'Basilica', in 1930s and in 2006. Some of the architecture survives but of the greenery, little remains.

Another problem is the occupation of cafes chairs and tables to the space of walking along the sidewalks that represents obstacles to pedestrians. Interference between pedestrians and vehicles takes place while crossing the street due to the existence of dense traffic along the streets with the lack of crossing points. The changed new location of greenery impedes people's movement along the path. The increased number of vehicles' ownerships had led to a problem, since there are not enough parking areas, in many streets; people are parking their cars on the sidewalk itself, see fig. 5. The trees and plant boxes location on the sidewalk had been changed in some and removed from others. Not all the streets gain the same maintenance; some streets are lacking sufficient lighting. In addition, there is insufficient maintenance that results in deteriorated parts of the pavement of the sidewalk.



Fig. 5 left, 'Boulevard Ismail', now 'Baghdad Street'. Right, 'Roxy' Square. The arcades still host some of Heliopolis's most elegant shops. However, there exist traffic movement problems due to the interference with pedestrians and lack of parking areas.

Also the problem of the difficulty of using sidewalks especially for elderly, people's with disabilities and with children strollers is obvious; this is due to the new unstudied height of the curb line. The old curb line was removed and a new unsuitable one was installed. The area in front of many shops is occupied by their goods. This had resulted in the occurrence of obstacles to pedestrians on the sidewalks. Many of the obstacles that exist on sidewalks are belonging to governmental authorities. For example, the electricity kiosks, telephone boxes, gas suppliers, lighting columns, the locations of these elements are not planned where there is no space left for pedestrians.

9. Conclusions

It is concluded that the major problem in streets which is the interference between pedestrians and vehicles in the street space is because of the absence of sidewalks or because of the unsuitability of them to use for walking along. The sidewalks are major component in the street space, it is the people space used for walking, so they need more consideration to design and planning. Sidewalks should be treated as a space

for pedestrians in the street and a place for them to accommodate other related activities; they can accommodate more than just walking. Although sidewalks _if exists_ in the city of Cairo suffers from deterioration and unsuitability to perform their major function, there is a chance to provide the streets with well planned and designed issues.

One of the reasons for the successful sidewalks in Heliopolis district is planning the travel network of the new neighborhood from the beginning with taking into consideration the presence and usage of sidewalks in its streets. There were clear plans for the trees placement, the number and location of benches, the relationship between the façade and the sidewalk, the building and the ground floor uses and the width of the driveways in the street space.

10. Recommendation

To assure the success of design and planning for sidewalks, they should provide access for people of all ages and physical abilities; its space should comprise walking space with comfortable barriers between pedestrians and vehicles, and should accommodate people's related activities.

It is recommended that design and planning for any sidewalk should take place with the consideration of its major functions, a link and a place for pedestrians. The design principals assure the fulfilling of these characteristics, however, the space of the sidewalk should be classified and divided to hold the movement and the daily activities of people. It can be divided into four main spaces, the pedestrian space for walking, the furnishing space, the building frontage space and the curb space. The width of these spaces varies according to the use of the street; for example a street in residential neighborhood requires sidewalks with dimensions different from that one in commercial areas, however there should be a definite space for each of the previous issues. First, the pedestrian space is the space of the sidewalk that is dedicated to walking, it is located between the furniture space and the frontage space, and should be free of any obstructions. The width of the pedestrian path should provide adequate space for at least two people to pass by comfortably or to walk side by side. Pavement materials used should be slip-resistant. Second, the furnishing space is that section of the sidewalk which is located between the curb line and the pedestrian space. This space is including all related streetscape elements such as trees, signs, bins, bus stops, utility boxes, benches and any other street furniture. Resting areas with benches and space for wheel chairs should be provided in high volume pedestrian districts to provide a space for elders, handicapped and others who need a rest during their walking. Trees make sidewalks comfortable and neighborhoods desirable as well as offer environmental benefits such as cooling and carbon absorption. Third, the frontage space is that part of the sidewalk that is located adjacent to buildings; it contains a space for building-related features such as entrances, landscape elements, fences, benches, signs, stairs and ramps. In some streets the frontage space comprises the seats of outdoor cafés. Fourth, the curb space separates the pedestrian space from the street car space; it prevents cars from getting to sidewalk. Its design should assist people especially elderly and handicapped ones to get easily on the sidewalk from the street. Proper ramps for curb lines of the sidewalk should be used with a suitable design for people with wheelchairs, to help for easily transition between

the street and the sidewalk. Also Fences or green buffers can be used to separate sidewalks from cars.

It is recommended also that one authority only should take decisions on sidewalk planning; different decisions from various sectors interfere in street and sidewalk planning such as the finishing of the ground, the street trees, furniture and all other installations. These are made by more than one authority, with no consideration of the sidewalk as an urban space. As a result, for example the street furniture may prevent passage for pedestrians.

References

- Banerjee, T., Giuliano, G., Hise, G. & Sloane, D. (1996). Invented and re-invented streets: Designing the new shopping experience. *Lusk Review*, 2(1), pp. 18-30.
- Bentley, I., McGlynn, S. & Smith, G. (1985). *Responsive Environments: A manual for Designers*. Oxford: Butterworth Architecture.
- Ehrenfeucht, R. & Loukaitou, A. (2010). Planning urban sidewalks: Infrastructure, Daily life and Destinations. *Journal of Urban Design*, vol. 15, No. 4, pp. 459-471.
- Gehl, J. (1987). *Life between buildings: using Public space*. New York: Van Nostran.
- Ilbert, R. (1981). *Heliopolis: Colonial Enterprise and town planning success*. Centre regional de publications de Marseille.
- Jacobs, J. (1961). *The Death and Life of the Great American Cities*. New York: Random House.
- Kang, J., Seo, H., Kim, H. & Kim, S. (2012). A study on the design elements of sidewalk in urban commercial district. *World Academy of Science, Engineering and Technology*.
- Kim, S., Choi, J. & Kim, Y. (2011). Determining the sidewalk pavement width by using pedestrian discomfort levels and movement characteristics. *KSCE Journal of Civil Engineering*. 15(5), pp. 883-889.
- Lofland, L. (1998). *The public realm: exploring the city's Quintessential social Territo de Gruyter*.
- Loukaitou, A. (2009). *Sidewalks: Conflict and Negotiation over Public space*. MIT Press.
- Loukaaitou, S. (1996). Cracks in the city: addressing the constrains and potentials of urban design. *Journal of Urban Design*, 1(1), pp. 101-114.
- Masr Al Gadidah Company. (1965). *Heliopolise suburb, Past and Future*.
- Movahed, S. , Azad, S. & Zakeri H. (2012). A Safe pedestrian walkway; creation a safe Public Space based on Pedestrian Safety. *Procedia, Journal of Social and Behavioral Sciences*. No. 35, pp. 572-585.
- Stevens, Q. (2007). *The Ludic City: Exploring the potential of Public spaces*. London: Routledge.
- The American University in Cairo. (2006). *Heliopolis; Rebirth of the city of the Sun*. The American University in Cairo Press. New York.
- The French Culture Bureau in Cairo. *Memoires Heliopolitaines*. Al Ahram establishment.
- Whyte, W. (1988). *City: Rediscovering the center*. New York: Double day.
- Yang, H. (1981). *Research on pedestrian space in the city*. Seoul National University, Graduate School of Environmental Studies.
- Zegir, V., Charles, Sandt, Laura, Scully, Margret (2006). *How to develop a pedestrian safety Action Plan*.

