

Concerns Coupled with Pedestrianization and Implementation Methods

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ABSTRACT: Walking has always been the most natural, the oldest, and the most essential form of transportation and is still major form of moving, hence, it plays a vital rule in urban transportation. In fact, walking is the most important tool for seeing, being seen, observing city wide daily and social activities, discovering the values and hidden attractions in urban environment, and therefore, feeling of liveliness and being needed amongst citizens. Throughout the last three decades, due to increasing urban problems such as; environmental pollution, traffic and transportation issues, lower pedestrians' safety against moving vehicles, jeopardizing the spiritual existence of valuable historical sites, lower visual quality of urban environments, and less social interactions. Which has created a worldwide momentum against the moving vehicles domination and diminishing of the pedestrianism. Consequently, pedestrianism and its necessities, which were ignored and forgotten urban issues, once again became one of the fundamental concerns in planning and development in urban design. This movement is called "Pedestrianism Movement".

In this research, after a discussion about the theory of pedestrianism and providing a literature review of the works done by the researchers, the acceptance criteria and characterizations of a walkable environment and the major contributing factors in strengthening or weakening of the pedestrian system will be discussed. Finally, results of several case studies in potential streets in Tehran are presented and recommendations will be provided to create a walkable environment and to accomplish the pedestrianism objectives.

Keywords: Urban Space, Pedestrian Movement, Pedestrianization, Pedestrianism Obstacles, Implementation Methods.

INTRODUCTION

Urban spaces are locations where belong to the general public and are not limited to the physical aspect but are defined by human presence and activities. Urban spaces are of significant value in the history of urbanism and over the time have appeared in different forms (Kashani Joo, 2010). In the past, cities had a great capacity in pedestrianism and walkway was the main form of commute due to public availability and low cost but after the industrial revolution and the vehicle dominance in cities, pedestrians were forgotten. Later on, air pollution forced people to think of reducing the use of cars and fossil fuels, which meant rebirth of the pedestrianism requirements (Moeini, 2006, 5). Over the past five decades, cities have been dealing with over consumption of energy, extra charges for infrastructure, lack of fertile agriculture lands, decline of the social values, and lower quality of urban spaces. Knowing that lowering the fossil fuel consumption and less air pollution are the main sustainability indices in the 21st century, pedestrianism improvement and design of walkable spaces seem to be essential.

Now, due to the importance of the research about the pedestrianism and its effects on sustainable urban design, first a literature review on urban design and the definition of

the pedestrianism and its types are presented, then a review of the prominent researchers' points of view on the subject is addressed. At the end, a discussion on the important factors on pedestrianism and study of a few successful and unsuccessful examples of pedestrianism are presented and the acceptance criteria for a good pedestrian design are discussed. It should be mentioned that the research methodology in this study is documentary-observatory and the main goal is to study the obstacles against pedestrianism and pedestrians commute in the urban spaces.

Description of Pedestrianism Theory

Walking is the main form of public transportation and about 50% of all public transportations in big cities and 72% in small cities in Iran are done by walking.

Studies have shown that people walk for different reasons; To get to a destination for work, shopping, or public activity. For enjoy the urban spaces.

Combination of both (Shahidi, 2002, 7).

In urban design, pedestrian is the most contributing factor in public transportation of a city. So, it is very important to improve pedestrianism as a significant form of public transportation. May be the simplest definition of pedestrianism is to reduce the car traffic as much as possible and giving more priority to walking. In fact the main goal in

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this theory is the cooperation between the pedestrians and the drivers, giving priority to pedestrians' safety against the moving vehicles. Hong Kong Department of Transportation defines pedestrianism as "limiting the vehicles access to a street or a neighborhood for exclusive use of pedestrians". Pedestrianism has many great consequences including reducing the environmental and noise pollution. Also, promoting the pedestrianism as a transportation method reduces the fossil fuel consumption and helps to achieve a sustainable development. Pedestrianism also leaves greater area for planting trees and flowers in public spaces and when combined with improved public interactions, social life, and security, will encourage people to show up in public places, which in turn will improve stores' sales and flourish economical conditions in cities.

History of Pedestrianism

Air pollution, car accidents, widespread health issues, obesity, and less social interactions are just a few side effects of vehicles' dominated environments. Since 1970 urban design theorists have continuously focused on the need to change the transportation methods and to consider pedestrianism as one of the main components in urban planning. In 1933 a movement called "New Pedestrianism" was founded by Michael E. Arth, the artist, writer, and urban designer that introduced numerous techniques to dominate pedestrianism in urban development. This movement was an effort to solve different types of social, health care, energy, economical, aesthetic, and environmental issues with a special emphasis on reducing automobile role in urban space.

Table below shows the main methods in dealing with the vehicle and urban spaces in different times.

MATERIALS AND METHODS

The possibility of seeing, hearing, and meeting other people can be considered as the main attractions in city centers and walkways. It has been proved that pedestrians spend the least amount of time in front of the banks, office buildings, and other boring locations and spend the most time in front of the shopping centers, interesting businesses, and 24 hours businesses. Security is a vital need in all spaces and without that people do not pay attention to other needs. According with the research done by Francis Tibbaldz, security is the prerequisite for using any space. People need several things in a space to make them feel safer; they need to have control over it, see inside it, be able to escape from it, and get help in emergency situations.

Based on Jan Gehl theory, outdoor activities that depend on quality of outdoor spaces and entertainment activities form a considerable amount of social activities. These interesting activities diminish when outdoor situations are weak and prosper when the outdoor conditions are improved. The importance of the improving the daily activities becomes more evident when we consider the walkways or areas with free transportation. In many circumstances, enhancing the physical conditions, have doubled the pedestrians, elongated the time spent outside, and consequently, greater range of activities were done (Gehl, 1987, 27).

Needs and characteristics of the pedestrians classified to two types; physical that deals with the body and quantitative aspects of the human, and psychological that focuses on the qualitative and conceptual aspects of the human. Kashani Joo has summarized the psychological needs of the pedestrians in five items groups as follow;

Continuity: Pedestrians are psychologically inclined towards the continuous networks that connect any two points without interruption.

Shortness: Pedestrians are more sensitive to distance compared to drivers and they generally pick the shortest route. Better routes that are longer are usually not used.

Beauty and Attractiveness: If the walkway is attractive, more people use it.

Security and Safety: Pedestrians feel completely vulnerable during quiet times and they need a secure route. They also need safe route to use.

Accessibility and Comfort: An accessible and comfortable route encourages walking.

Among different theories proposed by researchers and due to the objectives of this research, the table below shows the theoretical fundamentals.

Pedestrianism Obstacles and Weakening Factors

In general, authors' studies and observations show that the main obstacles against pedestrianism, in Tehran and many other cities can be classified into four groups that are discussed in the order of their significance. It should be mentioned that most of the pedestrians' issues are systematic issues that if removed or improved, pedestrianism can be significantly bloomed.

Indicators of an Acceptable Urban Walkway and Its Improving Factors

After researches done by the authors and their case studies, it was observed that in an acceptable urban walkway, the

Table 1: Methods in Dealing with Vehicle and Urban Spaces in Different Times (Source: kashani joo, 2010, 27)

Time Period	Method	Urban Spaces Conditions
1960-1980	Vehicular ization	Assigning special spaces to vehicles, urban patterns disconnect, no attention to pedestrians
1880-1960	Anticar	Eliminating vehicles from urban spaces, assigning separate spaces to pedestrians, expansion of walkways
1980-2000	Equilibriumization	Adjusting vehicle movements, compatibility of vehicles and pedestrians, balancing traffic
2000-2010	Active Calmness	Using vehicles in a controlled way, combining vehicles and pedestrians movements giving priority to pedestrians, completely connecting walkways' networks.

Table 2: Summary of Different Theories on Urban Spaces and Pedestrianism

Row	Researcher	Concepts and Theories
1	Kevin Lynch	Understanding city and the relationship between city and its residents. Attention to the presence of the citizens in the city and focus on the pedestrianism. Attention to different human psychological and mental images.
2	Rob Krier	Observation of the human aspects, focus on framework rather than functionality, attention to esthetics aspects of the city, compatibility of pedestrians and drivers on streets.
3	Camilo Sitte	Attention to the old fundamentals of the art, priority of visual rhythm and confinement, providing sense of security and calmness in walkways, defining the streets as the main component of the city, consideration of green spaces.
4	Lewis Mumford	Urban environment as a stage for social culture, providing leisure environment, walkways with different functionalities, observation of the human aspects in urban environments.
5	Jane Jacobs	Diversity and blend of functionalities focus on the social rule of walkways, providing safety in streets and walkways by continuous presence of the citizens.
6	Christopher Alexander	Small public plazas, creating positive spaces between buildings, attention to pedestrians, contribution of the citizens in the design of urban spaces.
7	Gordon Cullen	Presence of the people in cities as pedestrians, presence of the human aspects in cities, providing continuous sceneries to create visual memories for pedestrians, preparing the cities for pedestrians and giving priority to walkways, and providing their continuity.
8	Donald Appleyard	Streets as an obvious contradiction with accessibility and life of the residents and pedestrians, presence of people on streets, pausing in front of the stores, pausing in front of the homes, kids playing, people in public plazas as a way of understanding the street as a whole.
9	Francis Tibbalds	Providing compatibility and coexistence of the pedestrians and vehicles need for walkways in downtown areas, giving priority to the pedestrians.
10	Matthew Carmona	Streets as harmonic public spaces, relationship between pedestrians and their interactions.
11	Tony Garnier	Providing calmness and environmental protection of walkways, walkways through green spaces.
12	Eshprai Regen	Walking the best way to feel an urban space.
13	Lawrence Halprin	Priority of pedestrians in urban spaces, improving the quality of walkways.
14	Edmond Bacon	Transportation systems connecting the entire city, continuous commute to experience the environment.
15	Bill Hillier	The relationship between the commute (mostly walking) and the conditions of urban spaces.
16	Michael E. Arth	Focus on the reduction or elimination of the vehicles from urban spaces.
17	Ahmad Saeid Nia	Walking the most important way observing places and activities, feeling the liveliness and discovering the values and hidden attractions in the environment, walking plays a significant rule in understanding the environment and feeling belonged.
18	Jahanshah Pakzad	The rule of pedestrianism in creating vivid environment, walkway theoretical and practical solution to many serious urban problems, pedestrian the main component of the urban transportation systems.



Fig. 1: Discontinuity of the walkway
(Chizar, entrance of the Aliakbar shrine, spring 2011)



Fig. 2: A walkway with low level security
(Chizar, northern corner of Neda Square, spring 2011)

Table 3: Pedestrianism Obstacles and Weakening Factors

Row	Title	Description
1	Systematic Issues	Occupying walkways with urban equipments like poles, etc. Crossing the walkways with the arterial roads and natural obstacles. Uneven and non-standard pavements, abrupt changes in walkway elevations (Fig. 1).
2	Lack of Safety	Lack of safety in walkways and urban spaces due to mixing the pedestrians and vehicle path and their aggression toward each others' rights and limits.
3	Lack of Security	Insufficient lighting, poor design of the urban spaces and creating hidden corners, lack of visibility for the pedestrians and drivers (Fig. 2).
4	Cultural Issues	Presence of the hucksters on the walkways, people not walking on their right side, lack of attention to the people with special needs such as elderly, kids, ladies, handicapped (either motion or mental), and blind people.

Table 4: Indicators of an Acceptable Urban Walkway and Its Improving Factors

Elements	Indicators	Description
Organizing Elements (Fundamental)	Streets and City Blocks Patterns	The shorter the block length, the higher penetrability and more connections with other blocks
	Accessibility Sequence	Creating a legible and continuous network of arterial roads, public transportation routes, collector streets, and access streets.
	Open Spaces	Sceneries that join individual pieces to create a complete form.
	Functionality and Density	The connection between the developed surroundings and the access network can improve or weaken the urban structure.
	Space Characteristics	Buildings, with their continuity, can play a special rule in improving the organization and structure.
Identity Improving Elements	Historical Buildings	Human factor, high quality construction materials, and great architectural details of the historical buildings can create identity for the city that they are part of.
	Natural Bedding	Topography, sceneries, and other natural characteristics.
	Traffic Signs	These signs can help people find their destinations and make them feel comfortable in the city environment.
	Public Art	In addition to improving the city identity, it helps the human factor and attractiveness of the space, and gives meaning to the environment.
	Public Arena	Accessibility and visibility of urban spaces and downtown area can help their success more than anything else.
Persisting Elements	Architecture	Attention to the common and traditional trends in the area, especially in the ground floor which is the most memorable part for the pedestrians.
	Urban Landscape	Urban landscape can give identity to the walkways.
	Traffic Signs	Traffic signs can significantly affect the persistency.
	Motion Facilities	To encourage the pedestrians to use a space, one of the main tools is providing motion facilities such as signs, standard furniture, good pavement, etc.

organizing elements (fundamental), identity improving elements, and persisting elements have significant influence and they have been discussed in the table below. It should be mentioned that the most important rule of these factors in the urban spaces is to enhance the urban spaces for a better presence of the residents.

In accordance with the topics presented in the above table, the main and the most essential characteristics of the walkways, can be categorized into the following three types; Safety and security (Fig. 3)

Liveliness and dynamism (Fig. 4)

Flexibility and compatibility

RESULTS AND DISCUSSION

Proposed Practical Methods and Patterns for Design of Acceptable Walkways

Based on many case studies and observations done by the authors, in Tehran and their researches and according with the aforementioned obstacles against pedestrianism and vulnerability of pedestrians, and the important factors in acceptability of the walkways, here we present a few practical solutions for the design of standard walkways based on the local considerations.

Providing safety for pedestrians using standard pavement and considering bike lanes, blind pedestrians, and standard furniture.



Fig. 3: Safe and lively walkway with standard pavement, Keshavarz Blvd., Southern corner of the Laleh park, Winter 2011.



Fig. 4: Lively and dynamic, attractive, safe, and flexible walkway, Laleh Park, Winter 2011

Using combined functions for security and comfort of the pedestrians at all the times.

Attention to human factors and preventing separation, especially on the first floor.

Creating mixed attractive, live, and 24 hour activities such as shopping centers, theatres, restaurants, coffee shops, and outdoor furniture (Saeidi Rezvani, 2010) (Fig. 5).

Using speed humps and diverting the streets using plants to calm the traffic, and priority to pedestrians by widening the walkways.

Providing security and environmental protection for the pedestrians using tree shadows (Saeidi Rezvani, 2010) (Fig. 6).

Improving and renewing city's furniture and equipments with sharp edges and unsafe.

Increasing accessibility of the walkways by increasing access roads.

Using water and plants to create a lively and fresh feeling.

Restoration of the historical buildings to improve the cultural awareness and encourage people to walk.

Extra attention to the local culture and architecture.

Protecting the continuity of the walkways in arterial roads and bridges, and not crossing the walkways with any physical or natural barriers, to promote pedestrianism (Saeidi Rezvani,

2011) (Fig. 7). Providing public art exhibitions to create a live and fresh environment (Saeidi Rezvani, 2010) (Fig. 8 and 9).

CONCLUSION

To sum up, pedestrianism has drawn a lot of attention in the past few years in most of the cities in the world at the same as the increase traffic and environmental pollution. The interesting thing is that based on worldwide experiences, a comprehensive study of the pedestrianism is considered while in Iran, this issue has only been studied in a discrete and based on personal opinion and there is a great need for comprehensive plans. Of course, it should be mentioned that such plans should be based on the social, cultural, economical, environmental, and customs, and traditions of the area to create an acceptable walkway. In this research, first a literature review about the urban design definition of the pedestrianism and different types of that was discussed, next, a review of the state of the art theories from renowned researchers were listed, and after the important factors in improvement of the pedestrianism were discussed, and some successful examples were presented, a few practical methods in designing an acceptable walkway were introduced.



Fig. 5: Creating Liveliness using Outdoor Coffee Shops, Armenia, Yerevan,



Fig. 6: Direction Signs on Walkways, Potrajaya



Fig. 7: Skyway to Facilitate Walking for Pedestrians and Reducing Traffic, Bangkok.



Fig. 8: Creating Attraction in the Walkway Using Art works, Armenia, Yerevan.



Fig. 9: Creating a Fresh and Live Walkways using Art Street, Bangkok.

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