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EVALUATION OF URBAN SPACES FROM THE PERSPECTIVE OF UNIVERSAL DESIGN PRINCIPLES

THE CASE OF KONYA/TURKEY

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ABSTRACT

During the process of accessing services provided within urban interior and outer spaces the elderly and disabled individuals encounter with a myriad of problems due to the limitations posed by structured environments. This limitation hinders elderly and disabled individuals from mobility without assistance, which in turn negatively affects their full participation to urban and social life. Rearrangement of urban spaces to meet the needs of elderly and disabled individuals would correspondingly bolster life quality of the entire range of users. Within the scope of present research, as mandated by universal design principles to stick to plans and designs approaches inclusive for all users, it is aimed to conduct evaluations on the use of urban outer spaces situated within Konya City Center. In the hypothetical and theoretical part of this paper, the perception of disability throughout historical process has been examined from a sociological perspective. In addition, concept of universal design, its principles and gravity have also been elaborated. In the part dealing with the case study, outer spaces within Konya City Center have been analyzed with respect to universal design principles and a range of suggestions have been developed.

KEYWORDS:
Universal design; accessibility; disabled people; urban spaces.

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摘要

由于结构性环境所造成的限制，老年人和残疾人在获取内外城市空间所供服务的过程中会遇到大量问题。这些限制会妨碍老年人和残疾人在无协助情况下自主行动，反过来会对他们全面参与城市和社会生活带来消极影响。重组城市空间以满足老年人和残疾人的需求，会相应地提升所有使用者的生活质量。通用设计原则要求遵守包纳所有使用者的规划和设计方法，因此本研究的目的即为对孔亚市中心的外部城市空间进行使用评估。本论文的假设和理论部分，将从社会学角度对整个历史进程中的残疾感知进行研究。此外，本文还将详细阐述通用设计的概念、原则及重要性。案例研究部分将从通用设计视角对孔亚的外部城空间进行分析，并提出一系列建议。

关键词：
城市及区域规划、通用设计、可用性、残疾

1 INTRODUCTION

The reports issued by the World Health Organization (WHO) demonstrated that circa 500 million people equating to 10% of global population are disabled. Turkish Statistical Institute reports manifested that approximately 12,29% of the entire population is disabled in Turkey. These data point that there are currently 8,5 millions of disabled people in Turkey (Turkish Statistical Institute, 2010). Aside from these data, there is an evident climb in the expected life span of human beings thanks to the recent advancements in medical practices. Aging brings with itself certain physical disabilities. Accordingly, in our country, it is one social responsibility to enable the access of elderly and disabled individuals to social and urban life. Irrespective of this responsibility however, it is a known fact that disabled and elderly individuals face a long list of challenges in the access to the services provided within urban interior and outer spaces due to the limitations posed by inadequate plan and architectural design. Such group of people is deprived of the basic rights to independently move and access the offered activities without any external assistance. Elderly and disabled individuals, due to the inadequate planning in cities, are marginalized from social life and imprisoned to their house in a sense; driven to forced-loneliness and their life quality is negatively affected. In that scenario a handicapped individual is thus transformed into a disabled one by the community.

Another point to accentuate hereby is that in the process of constructing disabled-friendly arrangements within urban spaces, it would be rather a discriminatory act to construct disabled-only designs. It would also be another discriminatory policy to establish the kind of institutions that were specifically catered to the use of disabled individuals alone. Disabled individuals themselves vehemently oppose such types of practices and demand to live under equal terms with the rest of citizens. In lieu of such approaches, it would be smarter to arrange the kind of settings and spaces in which all members of the community were comfortable to live collectively. The truth is that rearrangement of physical environment to suit to the easy-use of elderly and disabled individuals would translate to the structuring of physical spaces favorable for all users. In an attempt to generate solutions to the problems met in urban life by elderly and disabled individuals, it would be a reasonable practice to conduct all-inclusive arrangements to reunite urban spaces with the entire community rather than discriminate such individuals. Accordingly, during the stage of planning physical environment spaces, it is advocated to accentuate and employ universal design concept and principles recognized as an all-inclusive design approach integrating the entire community.

2 THEORITICAL BACKGROUND

2.1 THE SOCIOLOGY OF DISABILITY

Elderly and disabled people encounter many problems, these vary according to the types of disability they have, in urban spaces and their social surroundings. In almost every sector of society, people with disabilities, with their physical differences, are to be found. This generates different attitudes in people towards people with disabilities in society, and these diverse attitudes hamper people with disabilities from fulfilling their social needs. The primary reason for this negative situation can be traced through a historical perspective, from the past to the present; disability has been regarded as a disease and even as a disaster.

The focus of the medical model for disability is on the physical and biological condition of people with disabilities. In addition, the medical model regards disability as "reparable" and more importantly, as a condition that demands repair, the creation of a situation in which an individual can get back into circulation, or get as close to it as far as is possible is required. In other words, the medical model approaches a disabled person as if, for example, he/she has caught measles. So, the medical model asks the individual

with a disability or handicap to act as if she/he is sick. The assumption is that people with disabilities must act "the role of a patient". Acting like a patient leaves disabled individuals bereft of independence; in other words, deprives them of the ability of controlling their own lives, which is the basic feature of human personality. In brief, the problems which people with disabilities encounter are simply medical problems according to the medical perspective. As a matter of course, any person with any medical problems is treated by medical specialists. The medical model regards "knuckling down" to the treatment of specialists as a must, and any disabled person "patient" is regarded as an inactive person, scarcely able to present his/her own personality, and unable to take charge of his/her own life. Ultimately, the disability rights movement views the medical model as a form of torture. The disability rights movement believes that the main reason for the exclusion of people with disabilities from society stems from the problem that so-called "healthy" people regard themselves as rightfully superior (Winter, 2003).

The first presupposition of the social model is that disability is a social structure and a social construction (Oliver, 1990). Disability is created by the views of healthy people both individually and collectively. It is also shaped by hostile social attitudes towards the disabled and their stigmatization in the fundamental social relationships or during encounters in the society. In addition, disability is created by society in secondary relations which characterize that society, the state and its economy; this is the result of laws, policies and institutionalized habits which clearly constrain people with disabilities. In short, the first presupposition is that disability is not a direct result of any deficiency but rather a result of social constraints. These constraints generally become apparent due to the difficulties in building entrances (the absence of ramps or elevator for people with disabilities) for example, or in the misguided perception of disabled people's intelligence and social skills (the thought that people with disabilities are stupid and so unskilled that they are not self-sufficient), the fact that the general population is not able to use sign language, and in the absence of reading materials for visually handicapped people, or in the general public's hostile attitude towards people who have invisible disabilities (the mentally handicapped) (Oliver, 1990). In brief, "people with disabilities are disabled by a society which is customized to the needs of people who are intelligent and can walk, see, hear and clearly speak" (Brisenden, 1998). The second presupposition of the social model is disabled people's need for and ability to control their own lives as far as is possible. First and foremost, disabled people's independence should be respected and there should be no pressure brought about by pointless constraints. The disabled should make and realize their own decisions. This presupposition is enhanced by the view that the social model recognizes "a series of individualistic mental and physical skills" which any person with or without disability can have (Brisenden, 1998). The social model does not approve of eliminating the humanity and leaving the disabled person alone (Charlton, 1989). As Charlton says, 'people should not be given labels such as blind, deaf and handicapped; because, when people with disabilities are labeled this way, their personalities are identified solely with their conditions'. Contrary to this, the social model emphasizes the need to respect the independence of everyone, irrespective of the degree or type of their disability (Winter, 2003).

In this context, the descriptions which have risen according to diverse opinions should be discussed. The medical model explains that disability is dependent on biological structure. The assumption that all of the disabled are constricted forms the basis of this model. According to Article 1 of the Convention on the Rights of Persons with Disabilities, a disabled person is described as one who has 'long-term physical, mental, intellectual or sensory impairment which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others' (United Nations, 2006).

Functional deficiency is not simply an obstacle. Disability can be regarded as the limitedness of physical functions that hinders participation in social life (Ozarslan, 2010). According to Goldsmith (1976), the description of the disability in terms of architecture is the lack of opportunity to use buildings and their

surroundings which are only designed to meet the needs of individuals with no physical shortcomings. Kaplan (2007) describes disability as follows, obstacles encountered in the urban spaces are spatial factors which create difficulties for all individuals to overcome these obstacles at different degrees and especially prevent or restrict the disabled to use spaces and to take part in the social life in urban environment. Ideal spaces should be designed by taking the common denominator of the needs all individuals, disabled or not, into account, so that these spaces are designed architecturally to fulfill the general needs of all individuals.

2.2 UNIVERSAL DESIGN CONCEPT AND PRINCIPLES

"Universal Design involves designing products and spaces so that they can be used by the widest range of people possible. Universal Design evolved from Accessible Design, a design process that addresses the needs of people with disabilities. Universal Design goes further by recognizing that there is a wide spectrum of human abilities. Everyone, even the most able-bodied person, passes through childhood, periods of temporary illness, injury and old age. By designing for this human diversity, we can create things that will be easier for all people to use" (URL 1). The seven principles of Universal Design were developed by Center for Universal Design in the North Carolina State University (Figure 1 and Table 1).

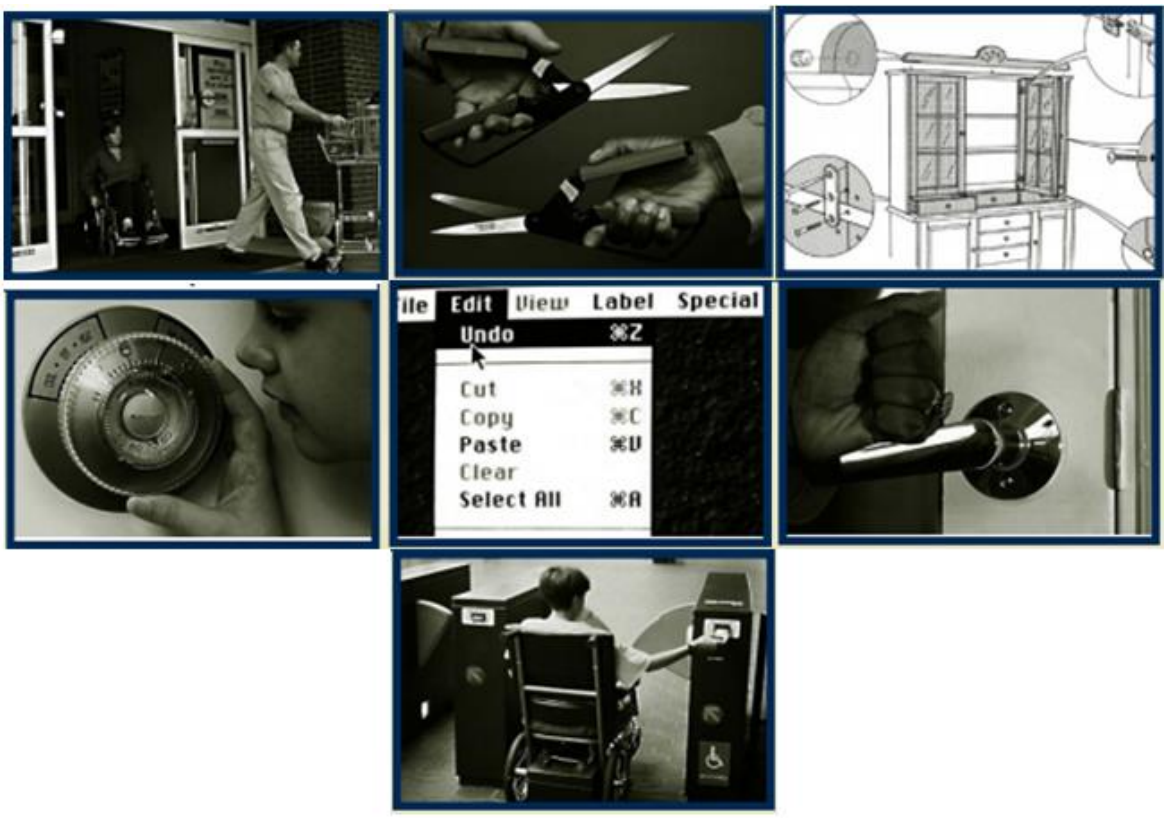

Fig.1 The images of universal design principles

The underlying belief in universal design is that from a generic perspective all individuals are potentially-disabled people due to the physiological losses introduced with aging. The advocates of this design approach treat the user dimension in designs from a wider perspective and attempt to generate applicable solutions to problems related to use by following an inclusive and integrative attitude (Dostoglu et al., 2009).

UNIVERSAL DESIGN PRINCIPLES	UNIVERSAL DESIGN GUIDILENESS
1. Equitable Use: The design is useful and marketable to people with diverse abilities.	**1a.** Provide the same means of use for all users: identical whenever possible; equivalent when not **1b.** Avoid segregating or stigmatizing any users **1c.** Make provisions for privacy, security, and safety equally available to all users **1d.** Make the design appealing to all users
2. Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.	**2a.** Provide choice in methods of use **2b.** Accommodate right-or left-handed access and use **2c.** Facilitate the user's accuracy and precision **2d.** Provide adaptability to the user's pace
3. Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.	**3a.** Eliminate unnecessary complexity **3b.** Be consistent with user expectations and intuition. **3c.** Accommodate a wide range of literacy and language skills **3d.** Arrange information consistent with its importance **3e.** Provide effective prompting and feedback during and after task completion
4. Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.	**4a.** Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information **4b.** Maximize "legibility" of essential information **4c.** Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions) **4d.** Provide compatibility with a variety of techniques or devices used by people with sensory limitations
5. Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.	**5a.** Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded. **5b.** Provide warnings of hazards and errors. **5c.** Provide fail safe features. **5d.** Discourage unconscious action in tasks that require vigilance
6. Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue.	**6a.** Allow user to maintain a neutral body position. **6b.** Use reasonable operating forces. **6c.** Minimize repetitive actions. **6d.** Minimize sustained physical effort
7. Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.	**7a.** Provide a clear line of sight to important elements for any seated or standing user. **7b.** Make reach to all components comfortable for any seated or standing user. **7c.** Accommodate variations in hand and grip size. **7d.** Provide adequate space for the use of assistive devices or personal assistance

Tab. 1 Universal design principles and guidelines (URL 2)

The preliminary objective of universal design is to conduct the kind of arrangements that aim not to adapt the individuals to the physical space but rather to adapt the space to the individuals. Accordingly the duty of designers is to build the kind of activity spaces that can meet the differing user needs in the best way possible. Accordingly, based on the objective of universal design as well, designers are required to reflect on the needs of different users and provide comfortable and safe spaces for the individuals. To achieve this objective in the implementation of universal design approach, certain data are transferred about the key criteria to harness within the scope of the accessibility to the design of interior spaces. Specifications to abide by in the design indicate the minimum technical specifications regarding the structured environment. During this process all designers are required to follow applicable standards (URL 3).

3 THE CASE STUDY: EVALUATION OF URBAN SPACES IN KONYA CITY CENTER IN TERMS OF UNIVERSAL DESIGN PRINCIPLES

Konya is one of the first inhabited cities in the history of mankind, and still contains traces of many ancient civilizations which give it the atmosphere of a museum city. Because of its locations in the middle of the barren Anatolian steppe, it used to be one of the most important trading centers on the Silk Road. The fertile land around the city means Konya is also the heart of Turkey's grain industry, with farming a major industry (URL, 4). Figure 2 illustrates the location of Konya in Turkey.

Fig. 2 The location of Konya in Turkey

Zafer Pedestrian Area, Alaeddin Hill and Mevlana Celaleddin Rumi Museum, Ince Minare Historic Mosque, Culture Park and Anıt Square are situated in Konya City Center. Culture Park is an attractive center for the inhabitants of Konya, hence it is easy to access via public transportation means viz. minibus, tramway or autobus. Culture Park project was implemented in 2009 by Konya Metropolitan Municipality in the ex-center of fairs and exhibitions. Nearby Culture Park the existing buildings are Konya Metropolitan Municipality, Hacıveyiszade Mosque, Alaeddin Hill, Zafer Square, residences and commercial. Figure 3 illustrates the area of case study.

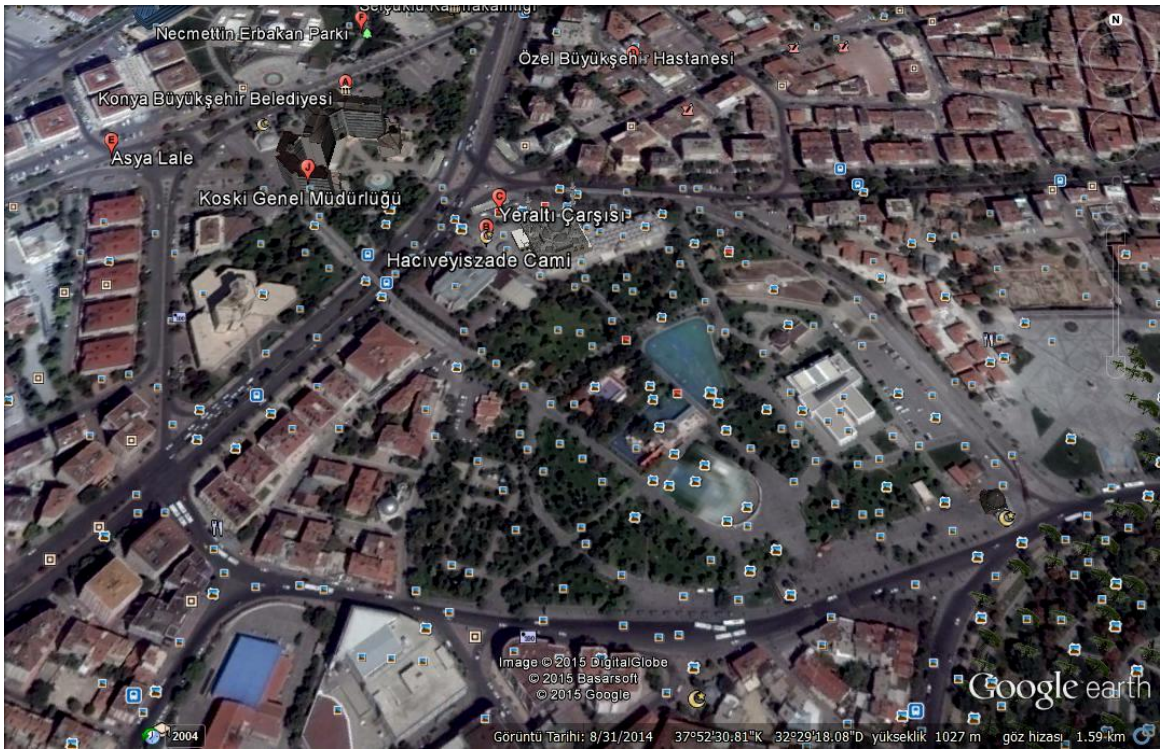

Fig. 3 Aerial photo of case study area

3.1 METHODOLOGY

Outer spaces selected within the case study site, Konya City Center, have been evaluated with respect to universal design approach and by analyzing in terms of individuals with restricted mobility as well as access and use status of all users, situational analysis of urban design components has been conducted. The suitability of public outer spaces to the access and use of individuals with restricted mobility would in effect enable comfortable and ergonomic use of all the other people. In this paper, the case study has been examined in line with globally approved design principles and standards. The case study research was conducted in April 2015. Current conditions, challenges and opportunities have been displayed via employing on-the-map marking, photographing and technical observation methods. In the process of data collection, evaluation and suggestions the assessment of urban design components in terms of universal design approach has been harnessed. Universal design principles and reflections on this paper have been examined with respect to three key headings:

1. Entrances and exits
2. Use of movement and circulation systems (main ways, pedestrian ways, stairs, ramps)
3. Common-use needs (outdoor-green spaces, urban substructure and urban furniture components)

3.2 FINDINGS AND DISCUSSION

3.2.1 ENTRANCES AND EXITS

From the pavement to building entrance, there are no guide track marks for the easy-guidance of visually-disabled individuals. Because there is level and surface failure in the building entrance, it is not feasible for the use of wheel-chaired disabled individuals; hence the entrances of such residences fail to comply with the principle of equitable use in universal design approach (Figure 4-a).

Fig. 4-a Building entrances in the survey area

At the entrance of Municipality Building, the coexistence of swing door and normal door, lack of threshold in entrance door and presence of a ramp are comforts for wheeled chair users. Nonetheless use of slippery material in building entrance is against the tolerance for error principle universal design approach. At the entrance of Finance Ministry building there exist stairs as well as a ramp. In the entrance of this building the unequal leveling, surface material and slope of the ramp are unfavorable for physically disabled individuals with a wheeled chair. The absence of any rails in the ramp is likely to trigger falling hazard which is a violation of tolerance for error principle. In addition this ramp is not applicable for wheeled chair users, thus it is against low physical effort principle of universal design approach. As seen at the building entrance of Chamber of Commerce the ramp and stairs coexist. The surface is made of slippery material which poses danger for the users and violates tolerance for error principle of universal design approach. Ramp slope is not fit for comfortable use and railing materials of slippery composite are nonresistant against heat and cold (Figure 4-b).

Fig. 4-b Building entrances in the survey area

At the entrance of KOSKİ Building absence of swing-door or a user-friendly ramp setting and ramp surface structure are some of the potential problems for wheeled chair using disabled individuals (Figure 4-c).

Fig. 4-c Building entrances in the survey area

At the entrance of library and exhibition halls, stairs-ramps coexist and as mandated by equitable use principle of universal design approach, surface flooring and ramp slope have been arranged (Figure 4-d).

Fig. 4-d Building entrances in the survey area

Entrances of bank buildings are not practical for wheeled chair users. There is only one single ramp for a range of banks ordered in line; hence this arrangement also violates low physical effort need principle of the universal design approach (Figure 4-e).

Fig. 4-e Building entrances in the survey area

In sum as surveyed at the entrances of the entire list of public spaces, it can be detected that the designs are not in full-compliance with the needs of visually and physically disabled individuals. Another detection is that the use of such urban spaces have failed to comply with equitable use principle mandated in universal design approach. Perceptible information criterion was also ignored and no warning systems were installed.

3.2.2 USE OF MOVEMENT AND CIRCULATION SYSTEMS (MAIN WAYS, PEDESTRIAN WAYS, STAIRS, RAMPS, FOOT BRIDGES)

At the entrance points of pedestrian foot bridges there is a stair-lift and lift module for the use of physically disabled individuals with wheeled chairs, for those with baby carriages and for elderly users. Slope of the ramp fails to comply with low physical effort need mandated by universal design principles. In the pedestrian foot bridges the height of the stairs is excessive and stair surface is of non- slippery solid surface (Figure 5-a).

At the entrance points of pedestrian undergrounds there are no ramps, stair-lifts or lift modules for the use of wheeled chairs for physically disabled individuals, for those with baby carriages or for elderly users. Surface flooring in the underground system is composed of slippery material which is another violation of equitable use and tolerance for error principles of universal design approach. The availability of secured non-slippery band at the foot of stairs provides ease of use for the walkers (Figure 5-b).

The frequent planting in the pavements and the excessive placement of decorative flowers restrict the mobility of visually disabled individuals. There are no perceptible surfaces for the easy use of visually-disabled individuals. Nearby the trees there exist no textures and levels uneven from ground surface. Pavement width is inadequate and ground floorings are not favorable for the comfortable use of visually-disabled individuals using assistance sticks (Figure 6-a).

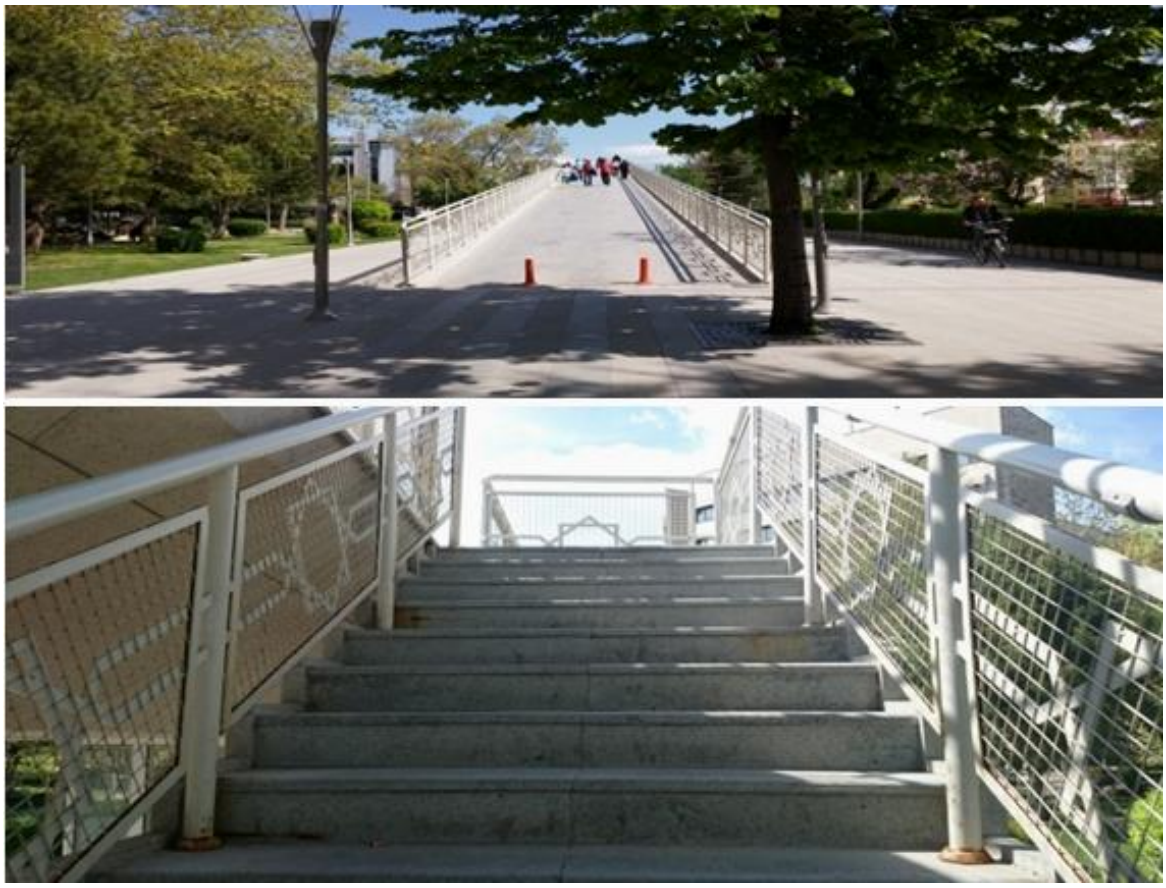

Fig. 5-a Pedestrian footbridges in the survey area

Fig. 5-b Pedestrian footbridges in the survey area

Fig. 6-a Pedestrian pavements in the survey area

Fig. 6-b Pedestrian pavements in the survey area

Fig. 7-a Ramps in the survey area

Pavements are discontinuous. There are no protective barriers in the border line to stop car parking; thus cars are parked on the pavement. Iron bars mounted to stop car passages on the pedestrian areas block the pedestrian traffic. There are no guide track colors and widths for the partially–blind or completely blind disabled people. In pedestrian footbridge there is a guide track for the visually disabled ones; however it is discontinuous (Figure 6-b).

As also seen in Figure 7-a, since uneven material was used in the surface texture of ramp it is against the low physical effort need principle of universal design approach and in this ramp there are no perceptible surfaces that can aid the visually disabled people to locate their direction.
Since there are no railings on the ramp borders in building entrances, it is challenging for wheeled chair users to move on the ramp which is against low physical effort principle of universal design approach. These ramps were not specifically catered for wheeled-chair users (Figure 7-b).

Fig. 7-b Ramps in the survey area

3.2.3 COMMON-USE NEEDS (OUTDOOR-GREEN SPACES, URBAN SUBSTRUCTURE AND URBAN FURNITURE COMPONENTS)

The failed structuring of the road and faulty location of substructure component render difficulty for all users to access the spaces. There are wide gaps in the grids used in pedestrian walkways and pavements are stationed perpendicular to the main traffic route which is a violation of equitable use principle and renders particular handicaps for the users of wheeled chairs, baby carriages, sticks or heeled-shoes wearing women. Likewise its design is incompatible with tolerance for error principle. Additionally, connection details of different materials are also unfit for the relevant principles of universal design approach and such incompatible components deviate the easy access and utility of the space. In this substructure application, absence of any perceptible surface is impairment for the comfortable and safe movement of visually disabled individuals. Technical substructure component installed on the pavement is a limitation for unassisted mobility of the users (Figure 7-c).
The installment of technical substructure component atop pavement impairs easy passage. This situation is a violation of tolerance for error and simple and intuitive use principles in design; thus based on the significance of the space it adversely affects the perceptibility of space (Figure 8).
The position of Automatic Teller Machines is not favorable for wheeled chair using disabled individuals. The height and location of telephone kiosks were not designed for the comfort of wheeled chair users. Since it was designed quite high, the model is not compatible with the size and space for approach and use principle of universal design approach. There is no Braille letter or digit telephone apparatus for visually disabled individuals or any frequency amplifier sound control tabs for the hearing disabled individuals (Figure 9-a).

Fig. 7-c Technical substructure in the survey area

Fig. 8 Urban infrastructure elements in the survey area

Fig. 9-a Urban furniture in the survey area

Fig. 9-b Street furniture in the survey area

The urban space catered for the easy passage of wheeled chair users is not wide enough. Absence of any warning signals for visually disabled individuals poses dangers for the users. In the pedestrian footbridges marked within the park area, there are no perceptible surfaces for the use of visually disabled individuals (Figure 9-b).

Another application that hinders pavement continuity and negates visual comfort is related to landscape design. As mandated to provide spaces and dimensions compatible with the universal approach and use principles of simple and intuitive use, tolerance for error in design, equitable use; it is equally vital to select appropriate trees in proper heights and sizes and locating suitably on the pavements (Figure 9-c).

Fig. 9-c Street furniture and recreation areas in the survey area

3.3 RECOMMENDATIONS: DESIGN FOR PEOPLE WITH DISABILITIES IN URBAN SPACES

The main pedestrian circulation, pedestrian walkways in open and green areas, should be arranged in order to ensure the accessibility for all users in accordance with universal and disabled-friendly design principles. These recommendations have been developed taking into account the 'Accessibility for the Disabled a Design Manual for a Barrier Free Environment' was prepared by United Nations (United Nations, 2004).

Entrance to Buildings

- At least one entrance in all buildings will be disabled-friendly. All accessible routes will be at minimum a 90 cm width. The ramp slopes will be not more than 8%. Signs will be placed on accessible routes with signboards for alternative entrances. There will be no lamps or pending signboards on entrances to be used especially by visually disabled or partially sighted people. Ramp width will be at least 90 cm.
- The access from the walkway to the main building entrance was preferred. All entrances were designed for easy access for the disabled.

Pedestrian Ways

- The width of pedestrian walkways/sidewalks were arranged to allow those using walkers or wheel chairs to pass easily.
- The width of the pedestrian pavement will be 200 cm, which is regarded as the ideal width. Pedestrian pavement curbstone levels will be maximum 15 cm higher than roadway coating. Non-slip material will be used for the coating of pedestrian pavement. Specific attention will be made to ensure that the pavement is steady and level. Also, there will be guiding tracks consisting of surfaces that can be perceived by visually impaired people using walking sticks. The guiding track with 60 cm width will be

placed parallel to the main pedestrian walkway and away from manholes and drainage channels. In addition, the color of the guiding tracks will be different from pedestrian pavement.

- Billboards, streetlights and trees, and other objects, in pedestrian walkways will be placed on a platform with 10 cm height to allow, especially visually impaired people, to recognize them.
- Instead of steps, platforms will be used for those using wheelchair to help negotiate the level differences.
- Texture changes will be made for visually impaired people on pavement landings.
- Texture changes will be made on slopes on sidewalk corners.
- In order to indicate pedestrian crossroads, returns, surface and usage changes, the tissue and coating material will be changed around these areas.
- The sidewalks and ramps will be built with an appropriate slope and with stable, uniform, non-slip, hard surface and matte material and color.
- Loose material such as sand, pebbles, stones etc. that may causes difficulty in moving and requires a lot more energy to navigate, will not be used. In surface coating, the ranges of junctures will be arranged in order to prevent obstacles for those using wheelchairs or walking sticks.
- The distances of vertical ranges for pedestrian walkways were formed so as to not make obstacles for visually impaired people.
- Parallels on drainage grills will be arranged to prevent obstacles for those using wheelchairs and walking sticks.
- Place identifiers, restrictive architecture and natural factors were taken into consideration for visually impaired people.

Street Furniture and Recreation Sites

- In order to ensure the easy use of all street furniture for everyone along pedestrian walkways, the necessary arrangements were made. The height of lamps will be minimum 220 cm. In order to ensure that people easily recognize street furniture, their colors will be different from the surrounding areas.
- Seats were placed along pedestrian walkways. Spaces were allocated around seats to let those using wheelchairs have proximity. Seat surroundings were planted. Recreation areas will be placed out of the main pedestrian walkway. Sitting benches will be placed with a 100 cm-200 cm range. A 120 cm area will be allocated around sitting benches for wheel chairs. Benches will be at 45 cm height and back recliner will be at 70 cm height.
- The height of tables in the recreation areas will be between 75 cm and 90 cm. The minimum depth below the tables will be 60 cm to allow wheel chair access in every direction.
- Project areas will be sufficiently illuminated to ensure access and personal safety. At this point, light levels should be increased in dangerous areas and matte material should be used to prevent flashing or reflection.
- To light the main pavement walkway, a lighting platform will be at minimum 150 cm width and 230 m height. Along the main walkway, a sitting bench will be placed every 100 m. The main pedestrian walkway and paths in green areas will be coated with non-slip material. For sidewalks within the park, light fixtures will be at minimum 90 cm width and 230 cm height. Ground types in open areas should be passed by wheel chairs easily and smoothly. Moreover, the ground should be used without any danger in all climate conditions. Surface coating will have a guiding function.
- Rubbish bins will be mounted at minimum 90 cm and maximum 120 cm height and at least 40 cm away from the curbstone on the edge of pedestrian walkways in order not to prevent pedestrian

circulation. Rubbish bins will be mounted in the opposite direction from lamps and pedestrian circulation so as not to cause any obstacle for pedestrians. Rubbish bins will also be painted with a different color than lamps to enable partially sighted people to recognize them.

- Traffic, information and guide signs should be basic and visible. Their height, position, color, size and graphical order are important. Signs should be illuminated, Braille should be used and they should be at suitable height to be touched easily. Signs should use international symbols.

Planting

- Thorny plants and trees, and plants that produce seeds and fruits that may cause slippery surfaces, were not used on pedestrian walkways since they are potentially dangerous.
- Branches extending over pedestrian walkways are dangerous obstacles, especially for visually impaired people. These branches should be prevented from extending over pedestrian walkways. Such trees will be planted away from pedestrian walkways so that they do not to prevent passage.
- Bushes, shrubs and flowers with different colors, forms and scents were used for planting.
- Trees, electricity, traffic signs, ornamental plants, flower beds and pots to be placed on the edge of roadways and walkways will be appropriately placed within a border with minimum 75 cm and maximum 120 cm width. Perceivable warning surface elements will be placed around trees, pavement stone bulges, shrubs etc.

4 CONCLUSION

Physical spaces used by the disabled and elderly individuals are the kind of areas that are comfortably used by healthy individuals as well. Therefore arrangements to conduct in urban interior and outer spaces must be performed to prioritize the needs of all society members. Applied plans and designs must be comprehensive, integrative and inclusive for all disability groups. However under no circumstances should it restrict the easy-use of others or create any discriminatory arrangement policies. Certain spaces should be arranged in cities to allow the independent and unaided movement of disabled individuals. In urban areas, right of way should be allocated to pedestrian-focused designs rather than vehicles. Instead of traffic-speeding foot bridges, lighted roads with uni-surface pedestrian ways should be opted for. In public transportation it is advised to implement integrative and all-inclusive arrangements rather than specific solutions catered for disabled and elderly individuals.

It is the main duty to achieve the participation of all mobility-restricted disadvantageous groups into social and urban life and to ensure that it is required that states, local administrations, relevant professional groups, nongovernmental organizations and university boards duly perform their respective duties. Other imperatives are forging social awareness and shifting the biased perspective towards disabled and elderly individuals. Rendering egalitarian rights and opportunities to disabled individuals is one rule for modern and social state approach. Local administrations, nongovernmental organizations and design-focusing departments of universities are advised to take action in coordination.

The arrangements to implement in Konya City Center on the basis of universal and accessible design principles would contribute to the strengthened life-bonds between elderly and disabled individuals and the city itself. Parallel to their risen participation to social and economic life they would attain a boosted level of productivity. In effect any disabled and elderly individual having managed to partake in urban and social life would sustain his/her life in a further productive and healthier manner.

REFERENCES

Brisenden, S. (1998). Independent living and the medical model of disability. In T. Shakespeare (Ed.), The disability reader: Social science perspectives (20-27). London and New York: Cassell.

Centre for Universal Design. (2011). The new principles of universal design. Centre for Universal Design, College of Design, North Carolina State University. Retrieved from http://www.ncsu.edu/project/design-projects/udi/center-for-universal-design/the-principles-of-universal-design/ (Accessed 11th July 2011).

Charlton, J.I. (1998). Nothing about us without us: Disability of oppressions and empowerment. Berkeley, Los Angeles/London: University of California Press.

Dostoglu, N., Sahin, E. & Taneli, Y. (2009). Inclusive approach to design: Design for all, universal design: definitions, objectives, principles (in Turkish: Tasarıma kapsayıcı yaklaşım: Herkes için tasarım, evrensel Tasarım: Tanımlar, hedefler, ilkeler). Mimarlık, 347.

Goldsmith, S. (1976). Designing for the disabled problems of conflicting criteria. MA (contab) Riba Publicotions Limited. London, 65–77.

Kaplan, H. (2007). As a component of urban design; barrier-free design for providing accessibility and legibility of the urban space. File 04, Chamber of Architects Ankara Branch, 51-62.

Oliver, M. (1990). The politics of disablement: A sociological approach. New York: St. Martin's Press.

Ozarslan, A. (2010). A study of the feasibility of barrier-free space design at a university campus (Master Thesis). Gazi University Institute of Science Technology, Ankara, Turkey.

Turkish Statistical Institute. (2010). Survey on problems and expectations of disabled people, Turkish Statistical Institute. Retrieved from http://www.Turkish Statistical Institute.gov.tr/ (Accessed 12th May 2015).

United Nations. (2004). Accessibility for the disabled a design manual for a barrier-free environment. Retrieved from http://www.un.org/esa/socdev/enable/designm/ (Accessed 06th Feb 2016).

United Nations. (2006). Convention on the rights of persons with disabilities and optional protocol. Retrieved from http://www .un.org/disabilities/documents/convention/convoptprot-e.pdf (Accessed 03th Apr 2016).

Winter, J.A. (2003). The development of the disability rights movement as a social problem solver. Disability Studies Quarterly, 23(1) 33-61.

URL 1: http://www.universaldesign.com/about-universal-design.html (Accessed 06th July 2015).

URL 2: http://www.ncsu.edu/ncsu/design/cud/pubs_p/docs/poster.pdf (Accessed 06th July 2015)

URL 3: http://www.ekoyapidergisi.org/212-erisilebilirlikte-evrensel-tasarim-ve-surdurulebilirlik.html (Accessed 11th July 2015).

URL 4: http://www.anadolukartali.tsk.tr/default.asp?loc=en&p=konumumuz (Accessed 3th May 2016).

IMAGE SOURCES

Paper Main Image: http://konya.com.tr/portfolio-item/alaeddin-tepesi/ (Accessed 17th May 2016).

Fig. 1: http://www.ncsu.edu/ncsu/design/cud/pubs_p/docs/poster.pdf (Accessed 06th Apr 2016).

Fig. 2: Google earth (Accessed 17th May 2016).

Fig. 3: Google earth (Accessed 30th Apr 2015).

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