ON ORIENTATION OF VISUALLY IMPAIRED PEOPLE IN PUBLIC SPACE

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Abstract
The topic of this paper focuses on orientation of visually impaired people in public space. The purpose of the paper is to show the ways visually impaired people move and therefore, to show the barriers which hinder them to get someplace. An important element is to increase social awareness of the quality of public spaces so that they could be adapted to every user. The paper was written on the basis of literature analyses and the author’s own observation.

Keywords: Blind and visually impaired people; Orientation in public space.

1. INTRODUCTION

“I am afraid of going out”
“I cannot see the bus numbers but I am ashamed to ask strangers”
“I fell down the stairs because I did not see the first step”
“I cut my head because I did not notice a glass wall”
“I have trouble crossing the street”
“I get lost in hypermarkets, offices, at the bus/train stations”

These authentic statements begin the publication of Polish Association of the Blind which deals with planning public spaces for the benefit of visually impaired people [1].

80% of sensation which reaches us is detected by means of the sense of sight. Sight can be regarded as the most important of human senses, thanks to which we can orient in space, perform everyday activities, meet other people, work, live. What happens, however, when this sense is lost? The chairman of the Chance for the Blind Foundation, Marek Kalbarczyk, who lost his sight as a teenager, writes in his book entitled: Attain a goal. Can a blind person become the president? [2], that at the beginning he lacked his sight mostly when falling asleep, because still as a sighted person he had not been able to fall asleep in complete darkness. In spite of strenuous effort, a healthy person can hardly imagine the existence without the sense of sight. That is why it is so difficult to understand the world of the blind and to design for them. Fortunately, more and more projects, publications and social initiatives appear aimed at introducing this issue. An example of that kind of undertakings is for instance, Invisible Exhibition, which can be visited in Warszawa. …“The intention of Invisible Exhibition is to bring closer the experience perspective of one world, of the sighted people and the one of the blind. Assigned to the care of blind Guides you can visit specially equipped and entirely darkened rooms. You can experience how to move in the hustle and bustle of the city life, how to pay for coffee in a bar, how to move around in a flat in complete darkness and not only”… [3]

The purpose of this paper is to introduce issues concerning orientation of visually impaired people in public space and designing in favour of its improvement. The paper was written on the basis of literature analyses and the author’s own observation.
2. MOBILITY IN SPACE OF VISUALLY IMPAIRED PEOPLE

In the urban space the visually impaired people can move in the following way:

- with a qualified guide,
- with a trained guide dog (adults);
- with a white cane,
- with a locator (technology is under development)

A white cane is the most helpful element for a visually impaired person, and the most characteristic one, thanks to which we can recognise a blind person.

James Biggs, a photographer from London, is regarded as an inventor of a white cane. In 1921 as the first one he started using a cane in a natural wooden colour and when it caused him more trouble than help he started using a cane painted white because of poor visibility of the first one in the city crowd. However, a white cane came into widespread use after 10 years, when in February 1931 the idea was popularised by an aristocrat Guilly d’Herbemont, who initiated a national programme of a white cane movement for the blind people in France. Moreover, as a result of action taken by BBC and Royal National Institute of Blind People all blind persons in Britain have been provided with a white stick for free since 1932. In Poland white canes can be purchased partially funded by the National Health Fund [4].

Numerous studies carried out in the United States showed that long non-folding canes are the best to learn spatial orientation and move independently because they better convey information from the ground.

We can distinguish the following techniques of walking with a white stick:

- **Touch technique**
  touch technique constitutes about 80–90% of the time of walking with a cane; in this technique it is essential to touch two points on the ground with the cane tip while moving the stick from the one side of body to the other side.

- **Constant-contact technique**
  the stick is moved on the surface without taking it away from the ground, from the right side of the body and vice versa.

- **Diagonal technique**
  it consists in statically keeping a cane in front of oneself; a stem of the cane is placed diagonally and the tip is 2–3 cm above the ground; such handling of a walking cane acts as a bumper when in contact with an obstacle [5].

A visually impaired person must do a lot of exercises in order to achieve perfection in walking with a cane and to have no fear of going out into public space. Such a person will move in space on the basis of memorising its characteristic elements and remembering the time he/she needed to cover consecutive stretches of road. In line with technological development white sticks are equipped with devices which assist in orientation. In Poland pursuant to Highway Code: Art. 42, *When moving about the city a blind person is obliged to carry a white walking cane in a manner visible to others* [6].

3. OBSTACLES IN PUBLIC SPACE

In this context it is very important to remove any obstacles from the public space. It is not only connected with typically natural obstacles, although the removal of which should be given priority considering the improvement of conditions for all users, but, for example, dismantling of advertisements standing on pavements, which can simply be not noticed by a visually impaired person. It is necessary to remove from public space all such elements which can endanger safety of users.

![Figure 1. Blind woman using her white walking stick. Source: good-
luz/shutterstock.com](image1)

![Figure 2. Advertisements in urban space. Source: Wyborcza.pl](image2)
The author has worked out a special method – within a Urban Audit – of studies on structural and non-structural barriers in the space of a housing development, which can be useful in other urban areas as well. Within the framework of this method places which can potentially constitute barriers are evaluated based on criteria proposed by the author. Then suitable recommendations on modernization are assigned to them [7, 8].

Apart from problematic places mentioned in the method some others can also be indicated – the milder – obstacles in public space. The following examples can be numbered among them:

- **Change of the pavement level or other surface** – the most problematic is a small, unexpected change of the level, e.g. by one step, which can be dangerous for a healthy person and a visually impaired one, as well;

- **If in public space there are** (for example: a shopping centre, train station, office block) **large doormats at the entrance** – which, can expose users to the danger of stumbling when they are not properly recessed;

- **Interruption of a guiding line for blind people at the entrance to public utility buildings** – such a phenomenon can cause a blind person to lose the sense of direction and evoke a feeling of being lost,

- **Insufficiently profiled stairs** – stairs should be so profiled as to prevent from getting caught with the back of a shoe when going downstairs and stumbling when going upstairs [9],

- **Application of very shiny surfaces** [9] – which can dazzle a visually impaired person,

- **Lack of colour contrast inside public utility buildings** [9] – which make it difficult to distinguish between a wall, floor and ceiling.

Such types of doormats are normally used seasonally, therefore they are an element which is laid in the entrance areas only during the autumn and winter season. But on the basis of the presented examples it is possible to propose the application of recessed (deep)
doormats in the inner entrance areas. Then they should be designed comprehensively together with a building or the building ought to be so modernised as to apply a safe doormat. In such a case it is necessary to provide proper uninterrupted guiding lines.

The railway station in Gliwice was put into operation after thorough modernisation in December 2016. It seems, however, that actions taken in favour of visually impaired people should have been better thought over.

4. SOLUTIONS WHICH SUPPORT THE ORIENTATION OF VISUALLY IMPAIRED PEOPLE IN PUBLIC SPACE

When introducing various types of elements into public space, the purpose of which is to facilitate the orientation of visually impaired people, first of all you need to think about the way such improvement can serve such a person and how such a person can familiarize with it. A blind person, devoid of the sense of sight, can use the sense of hearing and touch. Therefore, we can support the orientation of such a person by means of verbal and haptic means.

**Verbal means** include, for example, application of sound in correlation with light signals on pedestrian crossings, or information spoken in lifts. Application of verbal information in the hubbub of the street, where many sound sources overlap or if there are many crossroads in the vicinity, is very difficult and requires specialist knowledge. First of all, recommendations of the Polish Association of the Blind can be helpful here [1]. Thus, these types of actions are supported or substituted by **haptic information**, which include:

- tactile surfaces on pedestrian crossings,
- tactile strips on railway platforms and bus stops supported with additional contrasting colour (yellow or orange, where yellow is the last colour seen by a human eye which loses sight),
- guide paths and tactile paving surfaces,
- typographic maps situated most of all at the entrances to public utility buildings, which inform about the layout of particular storeys of a building (maps should be used on each floor of a building),
- Braille signs on handrails and doors (such signs need to be used in the same place, just above a door handle on the door or on the wall)
- scale models,
- and
- application of high colour contrast for visual information.

Solutions in typographies, that is printing technology, which enable to produce a convex graphic form become more and more popular in new or modernised public utility buildings. Social awareness concerning this issue grows as well.
Here it is also worthwhile to give an example of application of typographic solutions to introduce art to blind people. Such types of conveniences were introduced by the Silesian Museum in Katowice, which offers visually impaired people an educational path in the Gallery of Polish Painting equipped with reliefs that copy the selected pictures as well as guides prepared in Braille alphabet. So far, this path has been the only solution of this type in Poland.

The other type of solutions are urban development or architectural **scale models**, which can be found mainly in historic cities or at historic buildings. The scale models are also provided with descriptions in Braille alphabet. When preparing a scale model, it is necessary most of all to design it in such a way that a blind person will have easy access to it and that the presented model will really convey proportions, style and layout of the building it represents. A big mistake is to place a model on convex elements, deform it, because it disturbs the perception of the message.

Preparing a scale model, it needs to be remembered what Agnieszka Kłopotowska said in her paper [10], that the sense of touch is a successive sense which relies on discovering separate layers of the studied object: its three-dimensional geometry, overall dimensions and particular elements of the composition, spatial interrelations and certain surface properties. Therefore, for completeness of the message, it is worthwhile to prepare a multistage model, that is a set of models of a building corresponding to various scales of accuracy – from the most schematic one illustrating the main formal guideline (proportions of parts and directions of composition), through the general view on the shape of the building to the architectural detail.

**5. CONCLUSION**

The examples of solutions for visually impaired people, which were presented in the paper, do not exhaust the topic. They show, however, the need for taking such actions in public space. In order to avoid design errors, it is necessary to propose closer interdisciplinary cooperation of designers with blind people, who can define their needs in the best way.

**REFERENCES**


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