Approaches to design of navigation systems in public institutions

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Abstract. The article considers specificities of design of navigation systems in public buildings and institutions, transformation of verbal information into a sign, symbol, pictogram, as well as simulation of versatile structures of navigation system carriers and their experimental application. Comparative analysis of principles of designing navigation systems in public buildings and institutions, intended to systematize a big volume of information transformed into a symbol, sign or pictogram, which favors for its quick perception, is carried out. The article considers the main principles of design of navigation systems. The research relevance is determined by the necessity to create versatile navigation systems for the improvement of communication in various public institutions.

1. Introduction
Paul Arthur in his book entitled “Wayfinding: People, Signs, and Architecture” writes that difficulties which people encounter when navigating in an urban space originated not now but in ancient time; since then, communication design has been intended to solve this problem [1].

Communication design is an important means of navigation; its purpose is to accompany people in an unfamiliar architectural environment. The need for the right navigation is typical for not only tourists but also for visitors of such institutions with an intricate layout as libraries, museums, medical institutions, airports and shopping spaces. Administrators of such institutions should direct the flow of people in the right direction. Communication design is intended to solve this problem. Having designed such a navigation system, a designer helps visitors to navigate in an unfamiliar environment by giving them a chance to choose the necessary vector of movement.

Logically targeted movement of human flows favors to creation of comfortable conditions for visitors as well as to a significant reduction of time spent in searching for the necessary locations; this also increases and optimizes the number of visitors to the corresponding services, reduces frequency of addressing the personnel, and solves the issues of balanced evacuation in case of emergencies [2].

Various navigation systems are necessary for people to navigate in a complex public space of various institutions. Efficiency of any graphic navigation system should not depend on the nationality of a user or his knowledge of a language of the country where he is at, which means it should be of international nature [1]. In other words, the purpose of navigation systems is to bring a visitor to a given space point with the use of graphic means (associative signs, symbols, pictograms). This problem is solved by a designer through the search and development of a plain language understandable for practically any language group. Using symbols, numbers and signs in the graphics
of a navigation system makes it understandable for any person who found oneself at an unfamiliar territory for the first time. Comprehension of pictures, as opposed to comprehension of written signs, is non-recurrent; time does not get spent for their interpretation. Symbols make the system of navigation to be simple, explicit and individual. Under conditions of a language barrier, they are symbols which help us communicating and are the necessary “decipher” of practically any graphic project of the environment [3].

This requires a designer to use identification, navigation and interpretation messages. Visual messages of a navigation system get provided by typical 2D or 3D words or images. Words can be taken from different languages and be presented in multiple printing types. Images can vary from detailed, for example, pictures or photos, to the simple ones, such as color indicators or symbols.

Esthetic goal is set as well when developing such systems and includes compliance with the general style of an institution or an entire settlement. Attractiveness of a navigation system is reflected in positive associations of users. Moreover, navigation system is an inextricable part of a company’s signature style. Rules and techniques of its placement on the carriers have an effect on the general spirit of a building and emphasize its uniqueness, no matter if it’s a library or a museum.

This means that the existing identity of an institution or territory should be taken into account, so the navigation system should be created based on its main provisions in order to fit into the common structure of its graphic decoration and a recognizable brand.

Therefore, navigation system is not just indicators and signs. This is a method of navigating in a complex space and an integration of all types of visual communications [4].

Let us note the main tendencies in navigation design:
- The use of natural plane fractures;
- Polygonal motifs;
- Placement of navigation elements on different planes of the room (columns, staircases; the use of floor and ceiling navigation; transition from one plane into another);
- The use of transportable navigation signs in the form of a folding stand or a tablet leaning against the wall;
- Navigation elements which work when looking at a certain angle from a certain point, which imposes some element of mystery and game to navigation (the Holbein’s effect);
- Cutouts (using cutouts of inscriptions or pictograms for imposing the effect of cutout to navigation);
- Placement of navigation systems on glass partitions;
- Light boxes as well as light effects and the use of reflections and shadows;
- Various prefabricated structures.

2. Designing the navigation system depends on its purpose of use

Depending on the purpose of a territory or an institution, as well as on those for whom the navigation system is being developed, it will feature a number of specificities. Let us consider the main specificities connected with development of the navigation system for museums, libraries and educational, medical and sport institutions based on the selected analogs. Each type of these public institutions is characterized by a certain complexity of its layout, which makes it more difficult for visitors to move around freely. Navigation system of medical institutions is characterized by special medical terminology (Figure 1); however, it should be understandable, readable and relevant, as well as to be placed in available places (Figure 2) [5-7].

The navigation in the museum should be designed concisely and reflect the essence of the activities of the museum complex. The different parts of visual system (navigation, poligraphy, point of sales materials and etc.) is the inalienable part of the museum complex. The navigation system should be created in collaboration with museum stuff and consider the concrete exposition. But the main principles of navigation are being established in the early stage of developing visual-graphic complex of the museum. Navigation system of museums should be ductile, easily changeable and...
replaceable; it should also consider the time lines of an exposition as well as various ways for access or restriction of visitors, correspondingly [8-9].

Figure 1. Navigation signs of the New Hospital (Tomatdesign) [6].

Figure 2. Dauro Oliveira Orthodontics Clinic (Greco Design [7].

In other words, there should be a possibility for navigation elements to move easily around the museum’s territory in case of any changes. The specificity of museums’ operation assumes visits by foreign citizens, which makes it necessary to design a system of navigation elements that make it easier for people of various language groups to navigate. Designing a system based on a pictogram makes it international. For example, the European biennial of contemporary art called Manifesta 10 (designed by A. Fedorov, A. Shelyutto, A. Vasilyev) or the Bristol Museum and Art Gallery (Cartlidge Levene) [10].

Sports facilities can be either a place for leisure activities (sports complex) or a place for holding competitions. Each variant requires different ways of solving the wayfinding problem. If a sports facility can be used as a place for holding competitions, its graphic navigation system requires being flexible and capable to transform; it may not necessarily strictly correspond with the existing identity of the institution. If a sports facility is a place for leisure activities, its navigation system should be static; therefore, it should strictly follow the existing identity of the institution and be friendly to its users. A common rule to use symbolic figures of men representing various sports has formed for sports facilities. Examples are the navigation system for Westerdals Health and Entertainment Center [10] or the London Aquatics Centre (Thesis at the british school of design) [11].

Navigation systems used in an educational institution, for example, in a university, is characterized by general integrity non-dependant on layout and number of buildings; the system should be explicit
and understandable right from the entrance and all along the way till the destination point; it should also be tamper resistant and noticeable. Westerda ls School can serve as an example (M. Holtmon, M. Landsem) [12, 13]. The graphics of visual communication parts and corporate identity should be laconic, well readable and clear for all users (Figure 2). It increase the recognition and attendance – the main objective of the museum. Sign and style of communicative elements of navigation system for educational institution should reflect the sense and visual part according to modern requirements [8].

Figure 2. London College of Communication (Pentagram) [13]

Navigation system for such public institution as a library needs using neat classification and clear directions to the necessary sections of library resources. Another factor to be taken into account when choosing places for putting the navigation tablets, based on the building’s layout and illumination, is the tablets’ visibility and their information value for a visitor. The best example is Vancouver Public Library (Central Library Branch) [14], and the West Newton Public Library (USA) [15].

Visual communication system should be developed along with its project, interior and functionality of the building. For point out the ways to move hanging and wall constructions are used. There should be placed main signs, floor signs, title of main departments. Graphics should contain only the pointer and short title. That signs are placed in the corridors, on stairs, at the elevators. For better navigation signs are duplicated where people flows intersects. To improve navigation it's taken to use wall or floor pointers, boards and stands. The boards and stands show the information about services on the floors with their names, office numbers and additional information. Navigation finishes with door or wall signs [16-19].

3. Conclusion

Right aesthetically decision, undoubtedly, will cause reputation improvement the reputation and competitiveness of the state body (museum, library, university or medical facility). Regardless of the purpose of the organization could be elicit these corporate identity constants: plastic solution features, brand colors, carrier design. The navigation system should be stylistically linked to the company's corporate identity. Navigation efficiency will be higher if the graphical language of the navigation system is international and clear clear to any person who is for the first time in the area [20].

This article allows obtaining some recommendations that in the future can help completing a design project of the navigation system that complies with formal requirements of communication design and takes into account the specificities of target audience and of a public institution. Considerable efforts are yet to be made in order to consider a number of stylistic, ergonomic and aesthetic requirements. Results of the carried our classification are planned to be used when designing a system of navigation for the Chelyabinsk Public Library.
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