

FORTIFICATIONS IN SLOVAKIA FROM ARCHITECTS' PERSPECTIVE

THE CURRENT STATE OF KNOWLEDGE OF FORTIFICATION SYSTEMS – RESULTS OF 20 YEARS OF RESEARCH CONDUCTED AT THE FA SUT

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City walls and castle fortifications in Slovakia constitute an important segment of the cultural heritage, national history and the history of architecture; therefore, it is very important to preserve, restore, transform and hand them over to future generations. Several experts have already studied the phenomenon of fortifications, both in Slovakia and abroad. However, they concentrated primarily on the research of the development and typology of fortifications and, later, also on the techniques used to restore parts that have been damaged. At first, the restoration of fortifications as urbanistic units was studied and implemented only in sections, without any defined methodology for restoring whole objects. There was not any so-called „standard restoration methodology“ which would, through a set of rules and regulations, pre-determine the methods to be applied to restore individual parts of the fortifications so that they would present a truthful picture of the distinct characteristics of the fortifications after the restoration has been completed. When fortifications became obsolete with respect to their original purpose, they underwent extensive re-building or were broken down.

A change in the approach occurred in 1990s, when the state of knowledge of several most valuable fortifications was such that it was possible to prepare the necessary restoration rules and regulations. The proposals covered both preserved sections and sections that have already disappeared, to

factor in the connections between individual parts or fragments also from the urbanistic perspective. It is no surprise that the Faculty of Architecture SUT Bratislava then started a research focused on the study of city walls. The research was conducted in the form of in-field surveys, workshops, solutions designed in designer studios, science research projects and later also in the form of assigned dissertation topics focused on the relevant issues. The research included the specification of the existing terminology, specific characteristics of types pursuant to the typology and factors determining the restoration with respect to architecture. Methodology guidelines were prepared for the mapping and technical inspection of the selected, already restored fortifications in Slovakia. Based on the collected information, it was possible to assess the development in the approach to the restoration of fortifications in Slovakia and compare it with restoration projects (conducted) abroad. The research also included projects for restoration of selected fortifications, in which the information from the research was utilized. This paper presents the results of the research conducted at the Faculty of Architecture SUT in 2000 - 2017.

THE IMPACT OF SIMULATION TOOLS ON PRODUCT DESIGN

PARTIAL RESULTS OF THE RESEARCH CARRIED OUT AT THE DESIGN INSTITUTE, FA SUT IN BRATISLAVA IN 2015-17

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The Design Institute, Faculty of Architecture, SUT, conducted a research financed from a grant under the Programme for Supporting Young Researches, the project name „The importance of

simulation in designing work“. The objective was to verify the hypothesis stipulated in the research part of the dissertation paper called „Laboratory of Ergonomics“, with the sub-title „Simulation as a means of improving the quality of the designing process“. The basic idea was to use a simulation tool in the designing process, which would facilitate better understanding of relevant issues and enable the observation of the impact on the quality of the final design. Simulations can re-create situations and run experiments using the visualization of the physical system and the link between reality and abstraction. This helps to create a dynamic and interactive educational environment for students, increases the knowledge potential of the designers and teaches them to think in a broader context, while it also encourages more active participation on the part of the students. As the number of people with some sort of health impairment has grown, it has also become increasingly more important that future designers account for several needs in all their products.

The research was conducted in the form of a workshop. The Design Institute students became familiar with two areas of health impairments: visual impairments – six types of eyesight degeneration and complete vision loss and a dyskinetic disorder – tremor. None of the participants had designed tools for people with specific health impairment before; however, they were interested in the topic of impairments. Age-related eyesight degenerations were simulated using simulation glasses, complete vision loss was simulated using black-out glasses and a white cane was used for orientation in space. The tremor was simulated using conductive

gloves with electrodes at the back of the hands that created the tremor via sent impulses. In cooperation with neurology experts, other disorders were further selected, with tremor as their characteristic symptom- namely Parkinson's disease and Essential tremor. The theoretical knowledge was further built-upon with the information collected using the simulation tools. After their experience, the participants were given the task to review their designs and suggest improvements or design a new product. With respect to the time constraints, the objective was to come up with designs and ideas, not fully functional solutions. The aim of the research was to compare the designs before and after the use of the simulation tools and determine the resulting impact on the designs.