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THE COURSE OF THE HISTORY OF ARCHITECTURE AT THE FACULTY OF ARCHITECTURE AND DESIGN CREATIVITY BASED ON THE TRANSFORMATION OF FORMS AND WAYS OF THINKING

Education in the history of architecture and history of urban planning at the Faculty of Architecture at the Poznan University of Technology is not only a source of historical information, but also consists of conveying ways of thinking and design decisions that arose in given socio-spatial and cultural situations. Classes in the history of architecture are indirectly a science of design and creativity based on existing models, which, however, can be implemented or transformed to meet contemporary needs. The author decided to investigate whether this subject is sufficiently valued by students, how it is perceived by them and to what extent the knowledge gained in the classes is used in design and therefore conducted a survey among architecture students. The study also attempts to show examples of the transformation of thinking taken from previous centuries to contemporary design.

Keywords: history of architecture, education, implementation, design, mindset

1. THE COURSE OF HISTORY OF ARCHITECTURE AT THE FACULTY OF ARCHITECTURE – TASKS, PURPOSE AND USE OF KNOWLEDGE

1.1. The course History of architecture at the Faculty of Architecture - as more than just historical information

The desire to learn about architecture and art and their history has inspired much travel for centuries. Tourism for the purpose of learning about architectural history particularly increased with the idea of the grand tour popular among the

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European upper classes. In the second half of the 18th century, a cultural pattern was established whereby works of art and architecture had to be experienced first-hand. Familiarising oneself with art and historical objects was supposed to ensure the correct formation of artistic taste and the development of a sensitivity to beauty. Therefore, representatives of the aristocracy, mainly British, and the wealthiest Americans travelled to various cities in Europe in order to learn about the history of architecture and art through direct contact with historical objects [Kaczmarek 2013: 9-10]. Knowledge of the history of architecture, buildings and their construction is particularly important in the education of architecture students. This knowledge is not only important in terms of the field of study, but it increases artistic sensitivity and builds a proper attitude towards the historical and cultural heritage. Thanks to this knowledge, the student begins to understand and associate combinations of ideological, formal and structural solutions appearing over the centuries [Barełkowska 2014: 24].

Teaching the history of architecture at the faculty of architecture is not only a source of historical information and knowledge about how construction was built in different centuries, but it is based on the transmission of ways of thinking and design decisions arising in given socio-spatial and cultural situations. It can therefore be concluded that classes in the history of architecture are something more than a story of how they were built in various geo-climatic, historical-cultural, and socio-economic contexts, and they can be a study of design and creativity based on existing patterns that can be transform to contemporary needs.

Education in the history of architecture at architecture faculties begins at the beginning of the first year and precedes design classes. By learning the principles of composition of architectural elements and the principles of shaping, organising space, students should acquire the ability to understand and analyse historical objects [Barełkowska 2014: 24]. Understanding and associating the principles of composition, functional and structural solutions of historical objects students should use and implement in the future, in their own design activities.

1.2. The subject History of architecture at the Faculty of Architecture – aim of the course and expected learning outcomes

The education of the subject History of Architecture at the Faculty of Architecture of the Poznan University of Technology carries much more complex objectives than just historical information.

During the first three semesters, as part of the History of architecture course, students will not only get to know the most important works of architecture and their creators over individual historical periods, from antiquity to the 18th century, but also learn about the continuity of architecture development in terms of utility and technical related to meeting human needs. Students learn the laws of creative think-

ing, ways of solving the arising spatial, technical and functional problems in order to satisfy human needs related to the shaping of their immediate environment. The subject introduces the specificity of local architecture of the same historical period in different countries and regions, paying attention to different local and social conditions. Students learn to recognise and distinguish between human and monumental scales, as well as perfecting drawing skills and ways of graphically representing objects and elements of architecture and urbanism. In the fourth semester, on the other hand, the subject History of Architecture makes students aware of the links between the technical possibilities created since the beginning of the Industrial Revolution and the new architectural trends of the 19th century and the first half of the 20th century.

The expected learning outcomes include: knowledge of the history of architecture and urban planning; knowledge of architectural and urban planning solutions, useful for formulating simple solutions in architectural and urban planning design; the ability to formulate opinions on the achievements of architecture and urban planning in different historical periods; the ability to integrate knowledge from different areas of science, e.g. history, history of architecture, history of art and protection of cultural assets in the process of architectural and urban planning design; the ability to make reliable self-assessments and formulate constructive criticism concerning architectural and urban planning activities [Source: SUBJECT DESCRIPTION SHEETS – SYLLABUS, subject HISTORY OF ARCHITECTURE 1,2 – study: prof. dr hab inż. arch. Piotr Marciniak, subject HISTORY OF ARCHITECTURE 3 – study: dr hab inż. arch. Grazyna Kodym-Kozaczko, subject HISTORY OF ARCHITECTURE 4 – study: dr hab. Hanna Grzeszczuk-Brendel].

According to the author, the primary goal of education in the History of Architecture course at the Faculty of Architecture should be the ability to integrate knowledge of the history of architecture, urban planning, technical-structural, utilitarian and functional solutions, and the ability to apply it in architectural and urban planning design. The question that arises here is to what extent students consciously study the issues in this subject in order to achieve the expected educational outcomes expected above and whether they actually use them in architectural design and at what stage of education this occurs. The author of this article decided to investigate students' attitudes towards the knowledge taught in the History of Architecture course and to attempt to determine to what extent students consciously adopt, transform and use this knowledge in architectural or urban design.

1.3. Study of the perception of the subject History of architecture by students and the use of acquired knowledge. Study method, results

The research was conducted in the following years 2021, 2022, among second-year students of the Faculty of Architecture at Poznan University of Technology, at the end of the fourth semester, during the History of Architecture 4 course. 50 re-

spondents were after four semesters of the History of architecture course. The author conducted a survey to show how the students perceived the knowledge acquired in the course. Questions were asked whether the acquired knowledge in the subject history of architecture brings them benefits in the design process, whether they used this knowledge in their architectural studies, whether they used it in their design practice, whether they transferred ready-made solutions to their design tasks, whether they were only inspired by historical solutions, whether they used ways of thinking and solving problems, or whether they regarded this knowledge only as material to be mastered in order to pass an exam. The question was also asked whether attitudes to this subject change over time, with successive semesters of study. How do students treat the knowledge of this subject in successive, consecutive semesters.

Table. 1. The results of the study of the perception, treatment of the subject History of Architecture by students of the Faculty of Architecture and the way it is used in design (author)

| | perception, treatment of the subject History of Architecture by students of the Faculty of Architecture and the way it is used in design | yes |
|---|---|-------|
| 1 | as knowledge used in the architectural design process directly through the application of ready-made patterns, elements and compositions | 3/50 |
| 2 | as knowledge used in the architectural design process indirectly through the use of similar solutions or ways of thinking, as inspiration | 7/50 |
| 3 | as knowledge used in urban design in a directly through the use of ready-made designs, elements and compositions | 1/50 |
| 4 | as knowledge used in urban design indirectly through the use of similar solutions or ways of thinking, as inspiration | 3/50 |
| 5 | as knowledge to be mastered in order to pass the examination | 50/50 |

The results of the research showed that during their studies, students treat the subject History of Architecture mainly as material to be mastered, and that they are not yet able to transform the acquired knowledge into design tasks or do so unconsciously. The research shows that they see the subject only as a source of historical knowledge and knowledge of how things were built in individual centuries. Particularly in the first year, when students do not yet have sufficient technical knowledge of design, they do not yet associate, compare or analyse what they learn, they simply take it in. In the following years of education, design subjects are added, on which students focus all their attention and interest, which is probably why the history of architecture still remains only knowledge to be mastered. As the range of knowledge presented is extensive, students focus on memorising this information rather than associating it and the possibilities of its transformation. According to the author, the extensive knowledge of the history of architecture acquired by the students needs time to establish itself and find its place in their minds so that they can freely use it in many ways.

2. POSSIBILITIES AND EXAMPLES OF IMPLEMENTATION AND TRANSFORMATION OF KNOWLEDGE FROM THE HISTORY OF ARCHITECTURE IN DESIGN

2.1. The use of knowledge and thinking patterns taken from the history of architecture in architectural design

Elements of historic buildings and their compositions and specific solutions to space problems or situations can be used and implemented in contemporary architectural and urban design.

The cornices, pilasters and window frames popular in Renaissance and Baroque façades can today provide inspiration for elements, forms and proportions that, as ready-made patterns or in a simplified version, can be applied to the flat façades of contemporary buildings designed in the vicinity of historic buildings.

In space solutions applied centuries ago, it is possible to see how to make a detail out of an element that is essential to a building, i.e. how to turn something necessary, for example of structural importance, into an asset or decoration. In general, structural elements that ensure the stability of a building, or installations that ensure the comfort of a building, do not have an aesthetic purpose. In earlier centuries, however, architectural design was characterised by great attention to form and detail, which gave buildings the features of a given style.

Many examples of design elements that had both structural functions and decorative functions and had significant style features can be found in the Gothic style. For example, the weighting of the tower of forces outside the body of the gothic church were small, characteristic, decorative turrets, which were filled with heavy sculpture or were openwork, depending on the needs of the amount of vertical force. Inside gothic churches, constructionally necessary elements – vault ribs were made one of the most important details of this style. Structural load-bearing elements in the form of ribs forming various structural grids, such as starry, crystal, palm vaults, etc., became the decoration of the building.

In contemporary construction, especially single-family houses, structural elements can be found as decoration, for example exposed wooden ceiling beams visible in rooms. It is sometimes the case that in some contemporary buildings, in order to achieve the height required by the standards, or deliberately in order to maintain a specific interior design, no false ceiling is used and then elements of the ventilation, air-conditioning or electrical installation are visible, forming a detail of the interior, a decoration. Perhaps such solutions are a conscious or subconscious transfer of an idea or way of thinking from the aforementioned earlier epochs. A necessary element on the ceiling has been turned into a decorative element: in the Gothic, the ribs of the vault became such a decoration, and in the modern building, the ventilation and electrical installation elements. There are no historical connections here, but one can see a similar way of thinking and solving the problem.

Historical buildings



Contemporary buildings



Fig. 1. Possibilities and examples of using elements, forms, compositions and patterns of thinking taken from historical buildings in contemporary buildings [photo: author]



Fig. 2. Structural elements of the vault ribs as a detail in Gothic churches (A, B) [photo: author]; elements of the installation of the building as a detail in a contemporary building (C, D) [photo: A. Leśniak]

2.2. The use of knowledge and thinking patterns taken from the history of architecture in urban design

The course History of architecture 4 in the fourth semester deals with issues related to spatial changes related to the development of industry and a new division or development of society, especially the working class. Attempts at solving housing problems related to overpopulation in cities by designing architecture and greenery provide an excellent example of thinking that may still be relevant today. For what is architecture and urban design? Design is a response to current, existing human needs; it is problem-solving and decision-making. It has been unchanged from the earliest times.

In the 19th century, due to overcrowding, housing conditions in cities were very difficult, especially through the housing situation of the poor part of society, where social and health pathologies developed [Grzeszczuk-Brendel 2012: 67]. Initiatives to improve urban housing conditions were a response to these problems. One initiative was to provide the working class with low-cost housing and thus improve living conditions and develop health care. Settlements for workers, which were located close to factories, became very popular at the time. These housing estates consisted of single-family or terraced houses for the workers, which were complemented by greenery areas.

Over time, typical patronage worker settlements were transformed into more socially diverse complexes created in line with the idea of the garden city. The idea of the garden city was to prevent urban sprawl into large metropolises, hence the concept of satellite cities, whose growth and size and spatial and social structure could be more easily controlled [Grzeszczuk-Brendel 2012: 71-94]. Spatial structures such as a suburb with greenery space or a garden estate were created based on this idea. In the design of workers' settlements, social integration was an important issue, but also the peripheral location of the settlement isolating this social stratum somewhat from the richer stratum of society.

One of the most famous examples of a garden city/suburb is the 1906 Hellerau estate, which had a variety of buildings in the form of small apartment houses, semi-detached and terraced houses and more imposing detached villas. The smallest houses of 52-55m² had a living room and kitchen on the ground floor and two bedrooms on the ground floor. Larger dwellings had three to five rooms. On the other hand, the smallest flats had one room and a kitchen and their surface area was 31 m² [Grzeszczuk-Brendel 2012: 97-98]. Over time, thanks to its aesthetic values, the Hellerau estate developed from a factory estate into a model estate for the wider social classes.

Undoubtedly, the great value of the Hellerau estate, determining its survival and development, was the diversification of the size of the apartments, which satisfied the different needs of the residents. In fact, it is a timeless asset. The spatial diversity of the flats will always optimally meet the diverse needs of people in a certain family situation (number of family members) and material situation. This project and thinking patterns are still relevant today. The idea of the city / suburbs / housing estate – garden can serve as a model, an inspiration for current housing developments. Due to the shortage of available land in the cities and the high price of real estate in the cities, new housing estates are usually designed on the outskirts of cities or as satellites of cities.

Like the 19th-century housing estates discussed above, the newly built estates have a variety of housing: semi-detached, terraced, and multi-family houses, with different sized flats: one-room flats with kitchen and bathroom, and larger two- and three-room flats for families with children. Diversification of the size of flats and their location (terraced houses or multi-family buildings) satisfy a wide range of needs of families with different financial capabilities [Sobczyńska 2021]. It often

happens that a family initially occupying a small one- or two-room apartment, with the growth of family members and material goods, moves to a larger apartment, within the same housing estate, without the need to change its location. This is a very comfortable situation for the residents, who have become accustomed to the location, the local shops, who have established friendships and social ties, as well as for children who have made friends with their peers and do not have to change schools.

3. CONCLUSIONS

According to the author, the primary effect of education within the subject History of architecture should be the integration of knowledge of the history of architecture, urban planning, technical and structural solutions, utility and functionality, and the ability to implement it in architectural and urban planning design. However, research has shown that the vast majority of students do not sufficiently appreciate this subject during their studies, and treat the knowledge they acquire in classes as a batch of material to be mastered and passed in examinations. Therefore, in the author's opinion, in order to achieve these elements of education, it is important for the instructors of the subject to show the students, through design examples, the way to use the knowledge from this subject today, in design practice. In this way, the subject History of architecture will become more valuable to students and will not be perceived by them only as material to be mastered in order to pass an exam.

The author, as a lecturer and practising architect, concludes from her own experience that knowledge from the subject History of architecture is very useful and can be implemented directly and indirectly in design. Perhaps a survey of those who have completed their studies and are working professionally would show that the knowledge gained from the History of architecture subject, however, has many positive effects in design practice.

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PRZEDMIOT HISTORIA ARCHITEKTURY NA WYDZIALE ARCHITEKTURY A KREATYWNOŚĆ PROJEKTOWA OPARTA NA TRANSFORMACJI FORM I SPOSOBÓW MYŚLENIA

Streszczenie

Edukacja historii architektury i urbanistyki na Wydziale Architektury Politechniki Poznańskiej nie jest wyłącznie źródłem informacji historycznych, lecz polega na przekazywaniu sposobów myślenia oraz decyzji projektowych powstałych w danych sytuacjach społeczno-przestrzennych i kulturowych. Zajęcia z historii architektury są pośrednio nauką projektowania i kreatywności opartą na istniejących wzorach, które można implementować czy transformować do współczesnych potrzeb. Autorka postanowiła zbadać, czy przedmiot ten jest wystarczająco doceniany przez studentów, jak jest przez nich postrzegany. Autorka artykułu próbowała dociec, w jakim stopniu zdobyta w ramach zajęć wiedza jest wykorzystywana w projektowaniu. W opracowaniu podjęto próbę pokazania przykładów transformacji sposobu myślenia zaczerpniętego z poprzednich wieków do współczesnego projektowania.

Słowa kluczowe: historia architektury, edukacja, implementacja, projektowanie, sposób myślenia