

## The current topic of practice and research and its reflection in the pedagogical process

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**ABSTRACT:** Transformation of housing estates is a permanent process that involves theoretical research, verification of concepts and their implementation into land-use documents and strategies across Europe. The theme is current, particularly in connection with the functionalistic approaches in the framework of the so-called mass housing construction and its impact on the structure and functionality of towns. It includes creative, technical, social, economic and political dimensions. From this point of view, the type of task is suitable for application in the pedagogical process of study programmes in architecture and urbanism, which need these factors to reflect on. The topic fulfils the requirement of topicality and provides a bridge between the theoretical basis and practice. The interconnection of teaching and research through research by design is also an important aspect. In the Institute of Urban Design and Planning of the Faculty of Architecture at Slovak University of Technology in Bratislava, Slovakia, the authors of this article additionally applied the effect links to the research of the workplace and pedagogical process with the positive confrontation of the same procedure at the architecture schools abroad, specifically those with the Faculty of Architecture the CUT in Prague, the Czech Republic.

**Keywords:** Architectural research, education methodology, mass housing, urban design, international context

### INTRODUCTION

The theme is the transformation of housing estates in Slovakia and in other post-socialist countries, where about 40% of their population live in mass housing, while in western countries less than 10% do so [1].

In the larger cities and towns in Slovakia, the proportion is even significantly higher. Under the term *housing estate*, one understands the *functionally and territorially independent unit built at the same time, the most common in the open area on the edge of the inner city* [2]. Housing estates represent the realisations of 20th Century urban visions - the implementation of the ideas of the functionalist city all around the world. For this reason, they have many common characteristics, but also many differences.

Housing estates in Slovakia have had many problems, even at the time of their formation. One can characterise their defects as: the unification, the lack of diversity of dwelling houses, single functionality, and the absence of quality public spaces. These deficiencies persist up to the present time and, furthermore, add an additional problem: spontaneous intensification, overloading the urban fabric with static traffic, non-conceptual localisation of large scale shopping units, non-systemic thermal insulation and almost 100% private ownership of flats in prefabricated houses. In addition, housing estates are missing the strategies and the concepts concerned with their comprehensive humanisation and transformation.

Ideas about the construction and transformation of housing estates has changed in the course of the past decade, both abroad and in Slovakia. The development of concepts of the transformation of housing estates in the environment affected the change of the political system, the socio-economic situation, conversion of ownership, as well as the modification of planning system. The metamorphoses from the visions to realisations and their present transformations were presented by Kovač and Horák [3].

Research work, which aimed at the transformation of Slovak housing estates, was to explore the acceptable rate of their intensification. The researchers focused more on the construction of their cores and the contact locations, on the diversity of functions and spaces, on the overall humanisation and on the quality of public spaces [4]. The approaches of Bekeš and Görner are aimed at preserving their authenticity [5]. In this context, heightened attention is focused on the greening of mass housing estates as presented by Kristianova [6].

Pedagogical and research methods were verified within the frame of an urban design studio on the model of the Trnava-Hlboka housing estate. This complex has a wider significance for the Faculty of Architecture at Slovak University of Technology in Bratislava. The designers of the housing estate are former distinguished professors of the Faculty; namely, T. Alexy, J. Antal, J. Kavan and F. Trnkus [7]. In 1971, the professors won an urban-architectural competition concerning the *Trnava-Hlboka Residential District* and started preparing its final design. Students and teachers of the Faculty subsequently had the opportunity to investigate the area transformation after more than 40 years. The residential district has the obvious designer's concept, which was, however, under the influence of mass production technology and the weak economy implemented in a considerably modified form. Currently, it therefore has the same problems as most housing estates in Slovakia.

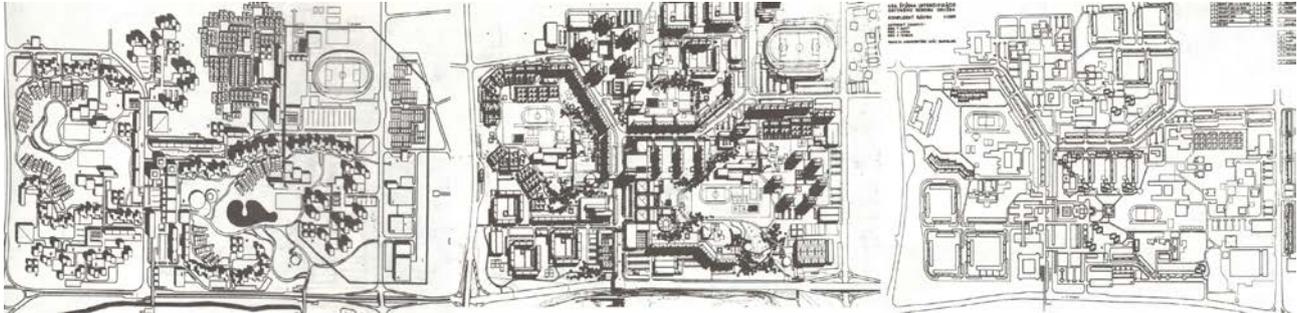


Figure 1: The development of the Trnava-Hlboka housing estate from the urban competition (1971), through the project (1973) to the present situation [7].

The urban fabric of the Trnava-Hlboká housing estate was built mostly of prefabricated residential buildings in three structural forms - line, tower and block. The residential structure is complemented by intensive family housing on some sites, and of public and sports facilities of local and city-wide importance. Neighbourhood spaces are structured into the characteristic skeleton - the system of central public spaces connected the housing estate with the city centre; on the set of inside blocks; the amount of indeterminate spaces between objects and two large green *craters* (residual after soil extraction from the former brick factory). The main problems of the neighbourhood are their overloading with static traffic, and the weak diversity of functions, buildings and spaces.

### THE LINK BETWEEN APPLIED RESEARCH, CREATIVITY AND PRACTICE IN THE PEDAGOGICAL PROCESS

The ambition of the Trnava-Hlboka transformation task in the frame of urban design studio was to reflect its original concept, to check the current trends of mass housing transformation and, in particular, to deal with its specific problems. The main objectives were to verify the possible scenarios of the future development of the housing estate, testing varying the intensity of new buildings and new activities, as well as operational modifications. Special attention was paid to the strategy of designing the public spaces and activated elements as generators of future positive changes in the way of sustainable development. In this process, the substantial roles were played by optimisation of urban fabric, public spaces and operation. Monitoring these aspects is critical from both the pedagogical and the research perspectives. The relationship of buildings, public spaces and operation affects the quality of the city and its parts. The different connections between these components are simulated and evaluated by urban design and research. The paramount goal in this process was to engage the students.

The semester task was divided into several phases:

1. Investigation of the site relationships (context of the housing district, its historical development, the analysis of the existing urban fabric, the analyses of expected social and economic development, the evaluation, and researching the principles of the housing estates transformation).
2. The proposal of the transformation strategy and the design concepts for the territory of the whole housing estate, the proposal of intervention that allows for improvement of the situation in the territory immediately and at a low cost.
3. The comprehensive design of the selected part of the housing estate, visualisations, model.
4. The evaluation of each project through diagrams and schemes.

Each of the phases has been completed with a presentation and critical debate involving teachers, representatives of municipalities, professional experts and students. The student projects were presented at exhibitions in the Faculty and in the City of Trnava. Currently, the results of this research and the pedagogical process are being prepared for a text book.

The task should be to ensure the further educational objectives:

1. In the process of urbanism education, the authors consider as essential the acquisition of design in the differentiated scales, from the scale of the region, city (M = 1: 25,000), over the scale of the district (M = 1: 5,000, 1: 2,000), for urban complex (M = 1: 1,000) until the architectural detail (M = 1: 500, 1: 100).
2. In the framework of urban creative work, it is important to demonstrate the ability to express ideas through models and sketches. Therefore, in this teaching, the teachers promote the principle of *the thinking hand*.
3. From the teaching methodological point of view, the students worked in teams of varying size depending on the stage of task processing. The basic group was a pair of students, however, and the analysis, common strategy and the concept of transformation of the whole housing estate were dealt with in a group of 8-10 students. The accompanying activities, presentations and reviews, ran through the framework of joint meetings - all teachers (5) all students (40) and other professionals.
4. The aim was to improve their presentation, argumentation and verbal skills. The students participating during the semester had to observe at least in the three control dates, and present their works publicly.
5. For the teaching method, *learning by doing* was particularly valuable, including cooperation with practice. Thanks to the real task being interconnected, the students obtained information and feedback from the professional staff council, the representatives of the leadership of the city (the mayor of the city, main city architect), as well as its inhabitants.

The research part of the semester task should aim to lead students through the basics of urban *research*, from analyses oriented to territory specifics, through the exploration of principles and trends of mass housing transformation, through the problems and potentials evaluation to the determination of development strategies.

The analysis carried out in-situ was focused on the standard assessment of character, and the function of the existing structure, as well as the free surfaces between buildings, the operation of the territory and the quality of the vegetation. The students implemented their own observations, which were focused on monitoring the behaviour of the population in the territory. They also conducted a public opinion poll among the inhabitants of the neighbourhood. On the basis of the available materials (master plans of the town, plan of economic and social development, relevant statistical data), the students analysed the socio-economic characteristics of the area and its expected development.

The research, which was focused on the comparison and evaluation of the proposals via the scheme of construction, operation and premises of the transformed Trnava-Hlboka housing estate, was innovative in the term of the first urban design studio teaching. All the students' proposals were evaluated in the monitored structure to each other and to the existing urban fabric. The aim of the studio conducted in this way was to create links between the design process, research and practice. It had to lead students to critical and creative thinking, to facilitate their work in a team, develop their ability to communicate, present and evaluate their designs.

#### A COMPARISON OF THE TEACHING AND RESEARCH METHODOLOGY AT THE FACULTY OF ARCHITECTURE IN BRATISLAVA AND AT THE FACULTY OF ARCHITECTURE IN PRAGUE

The contribution also focuses on a comparison of the urban design studio teaching at the Faculty of Architecture in Bratislava and at the Faculty of Architecture in Prague. The common theme was the transformation of mass housing. This topic was carried out by both Faculties accompanied and supported by research and educational grants (domestic and international), through cooperation with municipalities, related events (lectures by experts, conferences, exhibitions, workshops) and theses of PhD students.

The Faculties jointly arranged a workshop focused on the transformation of the largest Slovak housing estate in Bratislava-Petržalka. The fundamental basis for the comparison of teaching and research approaches were the mentioned schemes that focused on the buildings, space and the operation of the housing estates. These were assessed by the students based in Bratislava and Prague. The principles of the schemes created by colleagues from Prague are presented by Kohout et al [8]. They are graphically presented in Figures 2 and 3. The authors of this article have adapted them for a specific approach of the research and teaching methods.

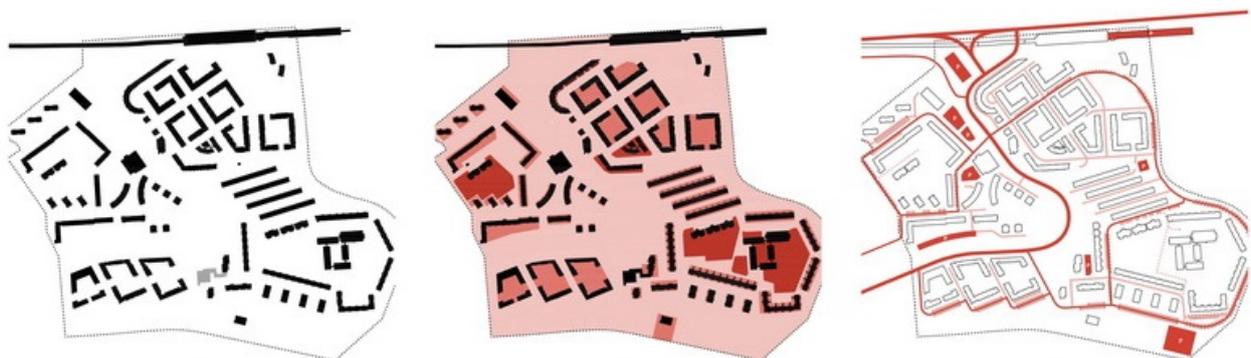


Figure 2: The pictures present analyses of the existing urban fabric, character of spaces and operation of the Prahá-Černý housing estate. Mostly based on the work of Prague students [8].

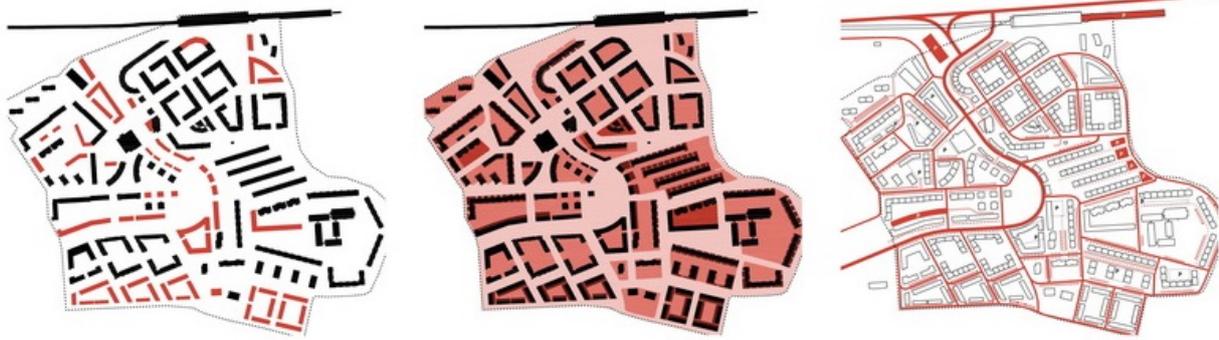


Figure 3: The pictures present the proposal and its assesment of urban fabric, character of spaces and operation of the housing estate Praha-Černý. Mostly based on the work of Prague studens [8].

From the schemes presented, it is clear that at the Faculty of Architecture in Prague the basic principle is that housing estates transformation is based on the application of a consistent division of available surface to the public, semi-public, semi-private and private space, through the regulation of new construction and operation. Mass housing, thus, represents a reserve for the future development on the principles of the typical compact urban fabric. This principle is also reflected in the methodology of teaching.

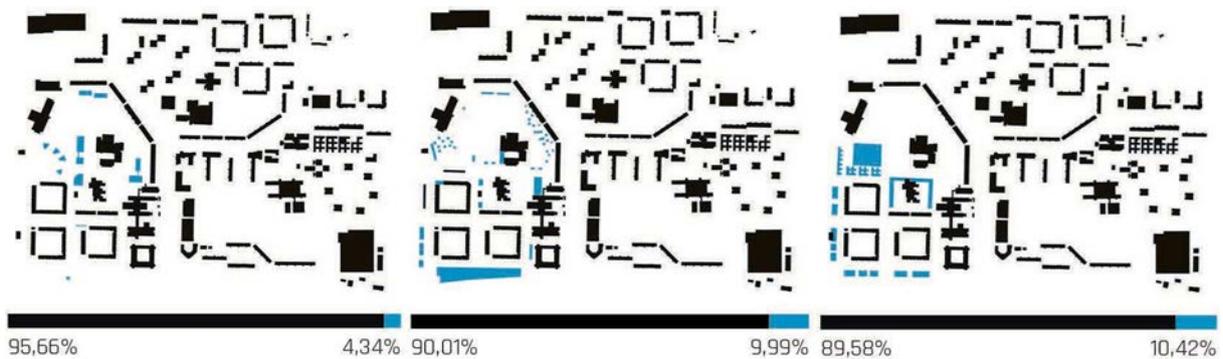


Figure 4: The schemes show the different forms and intensity of new buildings in the 1st part of Trnava-Hlboka.

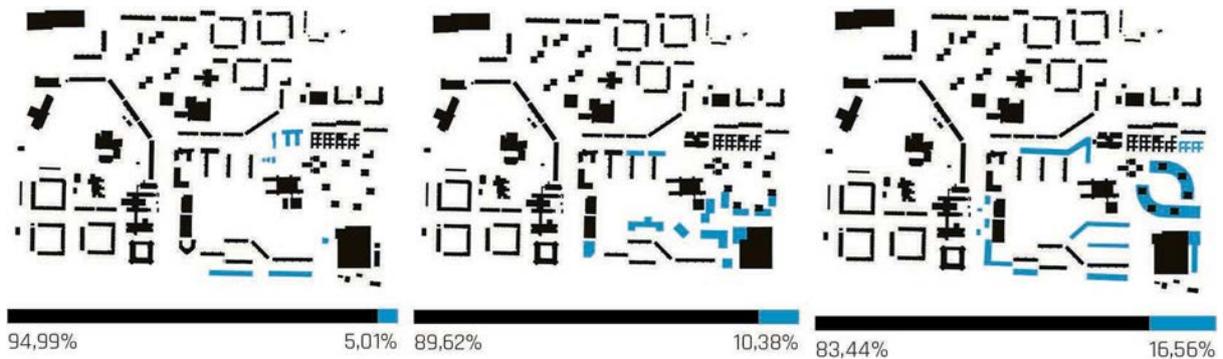


Figure 5: The schemes show the different forms and intensity of new buildings in the 2nd part of Trnava-Hlboka.

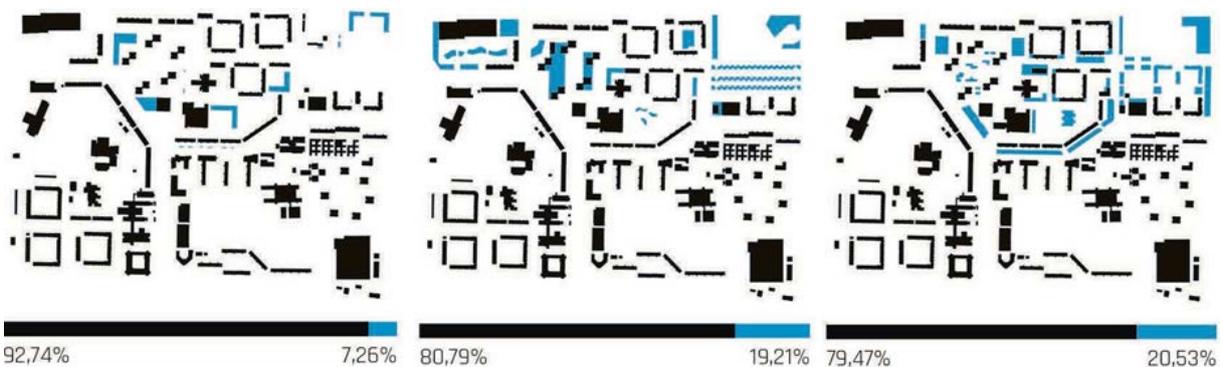


Figure 6: The schemes show the different forms and intensity of new buildings in the 3rd part of Trnava-Hlboka.

In the Faculty of Architecture in Bratislava, the authors have verified the differentiated approaches to the transformation of settlements. Like in Prague, the authors examined the opportunities for the maximal intensification of the housing estate through the building mass growth but, at the same time, they verified the improvement of the environment through

the *expansion* and the diversity of activities in the open spaces. Then, they actually moved between the poles of the minimum to the maximum intensification through the new development. Their approach was based on the current socio-economic potential and on its various future trends. The methodological approach is presented in Figures 4 to 7.

## CONCLUSIONS

The exact comparison of student work gives one the theoretical basis also for research into the options of transformation on other sites. The authors have elaborated on this method and intend to add new elements to the next pedagogical process. The aim of the studio was to link the design process, research and practice. The authors led students to critical and creative thinking, to working in teams, in order to improve their ability to communicate, present and evaluate their designs. The overarching goal is the constant improvement of the pedagogical process. On the one hand, the authors developed their longstanding tradition of urbanism teaching [9] and, on the other hand, they searched for innovative approaches, similar to those outlined by Smatanová [10]. As an extraordinary experience, the authors also consider international comparisons, especially in current topics, which are common to a certain region or if they even exceed them.

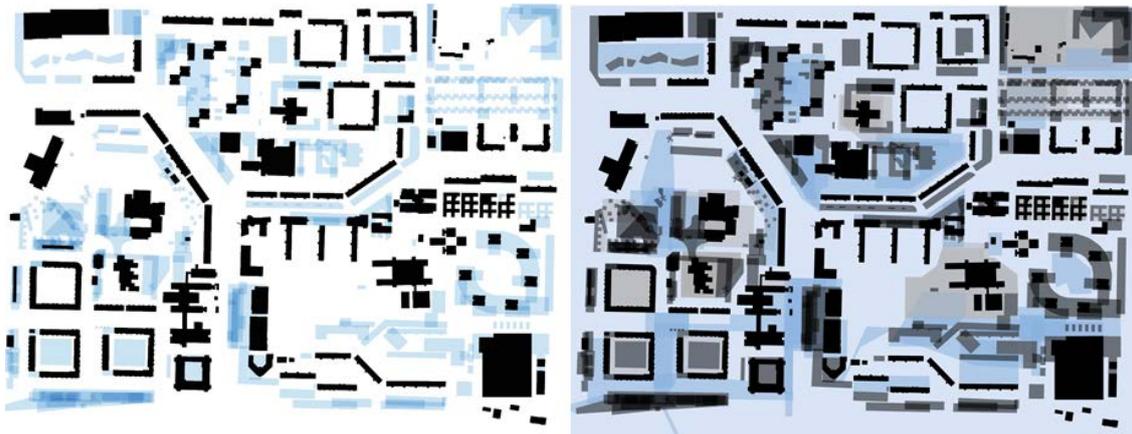


Figure 7: The schemes show the assessment of all students' project of the Trnava-Hlboka housing estate, which are focus to the new development of buildings and spaces.

## REFERENCES

1. Kempen, R., Dekker, K. and Hall, S., *Restructuring Large Housing Estates in Europe*. Bristol: the Policy Press, 1-17 (2005).
2. Moravčíková, H., Topolcanska, M., Szalay, P., Dulla, M., Ščepánová, S., Toscherová, S. and Haberlandová, K., *Bratislava Atlas Sídlisk*. Bratislava: Slovart, 24 (2011) (in Slovak).
3. Kovač, B. and Horák, P., From the iron curtain to the green border. History and visions of western development in Bratislava-Petrzalka. *Proc. SGEM*, Vienna, Austria, 287-294 (2016).
4. Vitková, L. and Görner, K., The strength and degradation of mass housing concepts in Slovakia, *Proc. SGEM*, Vienna, Austria, 797-804 (2016).
5. Bekeš, Š. and Görner, K., Reworking Detmerode. *ALFA*, 9, 2, 30-40 (2014).
6. Kristianova, K., Post-socialist transformations of green open spaces in large scale socialist housing estates in Slovakia. *Proc. WMCAUS*, Prague, Czech Republic, 1863-1867 (2016).
7. Kavan, J. and Trnkus, F., *Urbanistický Priestor*, Bratislava: Alfa/SNTL, 138 (1988).
8. Kohout, M., Tichý, D., Tittl, F., Kubánková, J. and Doležalová, Š., *Sídlište jak dál?*, Praha: České Vysoké Učení v Praze, 47-178 (2016) (in Czech).
9. Kováč, B. and Vitková, L., Urban design teaching in Slovakia. *World Trans. on Engng. and Technol. Educ.*, 13, 3, 217-224 (2015).
10. Smatanová, K. and Dubovcová, A., Workshop as a tool in architectural education. *World Trans. on Engng. and Technol. Educ.*, 14, 1, 123-128 (2016).

## BIOGRAPHIES



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