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Variating and developing architectural and urban concepts in the workshop process of education of architects

Wariantowanie i rozwijanie koncepcji architektoniczno-urbanistycznych w warsztatowym procesie kształcenia architektów

Abstract

This article discusses the process of architectural education in the form of an international student workshop aimed at developing variant urban and architectural concepts. The aim of this paper is to present the potential for the methodological development of the workshop as a form of university-level teaching creative architectural and urban design problem-solving with the use of the single-level activity cycle method. The analysis of the results obtained confirmed the effectiveness of the presented formula of design workshops.

Keywords: architectural education, alternative design solutions, international student workshop, activity cycle method

Streszczenie

W artykule omówiono proces edukacji architektonicznej w formie międzynarodowych warsztatów studenckich, ukierunkowanych na opracowanie różnych wariantów koncepcji urbanistycznych i architektonicznych. Celem tej pracy jest ukazanie możliwości metodologicznego rozwoju warsztatów jako formy nauczania twórczego rozwiązywania problemów architektoniczno-urbanistycznych w kształceniu na poziomie wyższym, z wykorzystaniem metody jednopozomowego cyklu aktywności. Analiza uzyskanych wyników potwierdziła skuteczność przedstawionej formuły warsztatów projektowych.

Słowa kluczowe: edukacja architektoniczna, alternatywne rozwiązania projektowe, międzynarodowe warsztaty studenckie, metoda cyklu aktywności

1. INTRODUCTION

Architectural and urban design is a complex process composed of multiple elements. In general, it is assumed that it can be divided into a number of stages, whose general sequence is typically the same, although they often differ in terms of their detailed record. After an analytical section featuring information gathering, there comes the conceptual phase. It is the first, key stage that forms the foundations for further work. It can be considered the most lively, dynamic and creative stage (Macmillan, et al., 2001), during which the 'soul' of a design can emerge (Pressman, 2001). It should be noted that during this stage, apart from creativity and imagination, one also requires knowledge and the ability to use it. This is not only about architectural knowledge, but also that of the general variety, including knowledge of society (Grzybczyk, 2017).

The matters of architecture and urban design are complex and multi-planar, and require a similar approach (Christopher, 2020). Therefore, the answer to the question about an optimal solution is never obvious and clear. It can even be stated that 'architectural design is a challenge because there is never just one answer. This is what makes it simultaneously thrilling and terrifying' (Pressman, 2012: 7). This is why when pursuing design solutions it is particularly important to develop various alternatives, if only to verify potential possibilities. To quote Pressman: 'Infatuation should not get in the way of larger goals, and openness to alternatives (...) is the mark of experience. Explore alternatives! Revise!' (2001: 261). He (2001: 513) also references Erickson: '...persistence is important, as is the habit of developing alternative ways of looking at a problem'.

Formulating alternative solutions provides an opportunity to verify possible scenarios and compare them, which leads to better design choices (Woodbury, Mohiuddin, 2017; Van den Ende, Frederiksen, Prencipe, 2015). Van Aken also phrases this very clearly: 'Professional designing is playing with alternatives' (2005: 381). The process of formulating conceptual design proposals is not only key to the further development of a design, but also demanding: 'Some designers, not to mention students, feel insecure during the creative process. This is natural; there is always the question of whether you'll come through with the brilliant final product as expected' (Pressman, 2001: 262). This is why it is important for the process of architectural education to sufficiently emphasise developing skills associated with this design stage.

In this context, student workshops can be a valuable tool in the education process. They enable the development of a wide array of skills, ranging from 'soft skills', such as creativity, dynamic action, time management, communication and the ability to cooperate, to 'hard skills', associated with gaining professional knowledge. The curriculum, designed as a whole, is intended to guide the student across each of its stages, so that they will develop knowledge necessary to pass onto the next stage. Due to the limited time for teaching in relation to term assignments, workshop projects concerning architectural and urban issues typically focus on delivering concepts and ideas. In this manner, workshops,

due to their different character in respect to the formula of term assignments, act as their supplementation (Szczerek, 2017).

Their formula, based on creative thinking, aids in formulating bold and original concepts. Thus, the workshop serves both as a kind of experimental field where various approaches can be tested and becomes a helpful tool in improving the skills of developing the design concept, which is an important initial stage of the design process. The aim of this paper is to present the potential for the methodological development of the workshop as a form of university-level teaching creative architectural and urban design problem-solving with the use of the single-level activity cycle method. Developing techniques that can aid in improving workshops in respects to creativity in formulating conceptual design proposals is an important research problem.

One form of improving workshops is 'brainstorming'. In this approach, the more proposals a group generates, the better, and the more valuable ideas can be selected and used as a basis for further work (Cempel, 2013). This method, similarly to 'thinking out of the box' and 'lateral thinking' (De Bono, 2008), supports the abstract thinking, going beyond borders and breaking established thought patterns, rejecting unnecessary constraints. This is critical to the creative process and takes on a particular significance in the context of architecture and urban design. It is worth mentioning that historically, freedom of thought has always been a condition for cultural and civilizational progress (Cempel, 2013). Thus, in terms of engineering education creativity plays a significant role (Pusca, Northwood, 2019).

The workshop is a form that is to aid in such efforts, particularly when it is based on group work. The significance of cooperation in architectural design is highlighted increasingly often (Emam, Taha, ElSayad, 2019; Nerona, 2017). Pressman is explicit about this: 'Replace the myth of the lone creative genius with the reality of the enthusiastic interdisciplinary collaborator' (2012: 21). One positive aspect of cooperation is synergy, as well as different modes of thinking and looking at the world coming into contact with each other. Greater creativity and innovation can also be facilitated by multi-cultural groups, whose members can adopt different approaches (Cempel, 2013; Gassmann, 2001). International workshops are of particular value in this regard. Persons from different cultural environments can look at a given place differently. They can identify different values, different characteristic features, other dependencies, linkages, etc. (Szczerek, 2017).

2. SUBJECT OF THE WORKSHOP

The subject of this discussion concerning developing methods of enhancing the effectiveness of stimulating creativity in architectural and urban design is an international student workshop, presented in this paper as a case study. The workshop was organised by the Cracow University of Technology CUT Faculty of Architecture between the 23rd and 29th of September 2019. The participants included six academic teachers and twenty-two

architecture students from four universities: the CUT Faculty of Architecture (Poland), HAWK University (Germany), the University of Mons (Belgium) and the Podhale State College of Applied Sciences in Nowy Targ (Poland). The workshop was the result of many years of inter-university and international cooperation and was a part of a cycle of workshops that has been organised since 2009. The subject of the workshop, which was organised under the motto 'New public spaces for Nowa Huta', were the public spaces of Nowa Huta's oldest section. The workshop participants were tasked with formulating design proposals of reinvigorating them and giving them a new quality of their own.

Nowa Huta was initially built as a separate city, located several kilometres to the east of Krakow. Its construction started in 1949 and took several years to complete. It was intended to serve as a housing base for the metallurgy plant that was being built nearby. Its urban concept was based on Perry's neighbourhood unit and on a composition in which multiple axes converged at a single site, which gave it a monumental expression. As a result, a legible urban layout with large amount of greenery was formed with clearly defined urban blocks and public spaces, primarily in the form of boulevards that converged at Central Square, wherein Rose Avenue plays the role of the main axis (fig. 1).



1. Central Square & Rose Avenue
2. Nowa Huta Meadows
3. Administrative buildings of the metallurgy plant

Fig. 1. Illustration presenting the urban layout of Nowa Huta – present state. Drawing by author

Since 2004, the urban layout of Nowa Huta has remained under heritage conservation. It was placed on the heritage sites list as a cultural treasure and a representative example of socialist realist urban planning in Poland. The area also has a land development plan in place, which – while accounting for the precepts of preserving cultural values – is intended to enable the development of this part of the city as an urban centre (MPZP, 2013). The layout of Nowa Huta is compositionally linked with the area of the former metallurgy plant, which is located at the opposite end of one of the district's axes, as well as extensive green areas, the so-called Nowa Huta Meadows, which are legally protected under the Nature Protection Act and as a Natura 2000 Site. The Meadows have been an integral element of the entire urban layout from the start.

At present, this linkage with the Nowa Huta Meadows is more strongly perceived on the plan than in reality. The character of the square itself contributes to this, as despite being the focal point of the entire layout, it functions as an empty space that primarily acts as a circulation node, surrounded on all sides by streets and tram rails. It also lacks direct interaction with services on the ground floors of the buildings that form its frontages. This situation illustrates one of the primary problems faced by this part of the city, which is the low standard and degradation of public spaces. This is accompanied by poor commercial, service, tourist, cultural and sports infrastructure. As a result, the depopulation of this part of the city and the visible aging of the local community is observed. Moreover, Nowa Huta still remains a dangerous and polluted area in the public conscious (MPRK, 2021).

3. METHODOLOGY

To increase the effectiveness of stimulating creativity in architectural and urban design performed as a workshop, a method aligned with the concept of the single-level activity cycle method – called the *Simplex* method (Manktelow, 2003) – was used. The analysis of the literature did not detect any examples of its use in reference to architectural and urban design subject matter. The literature in this field includes the use of a different, mathematical method of the same name – a *Simplex* optimisation algorithm, used on economic aspects (Van Loon, 2002). The single-level activity cycle method – *Simplex* is based on the repetitiveness of successive stages of action (fig. 2). The first three steps are primarily focused on information analysis, formulating a diagnosis, defining problems and asking questions, followed by stages dedicated to idea finding, selecting, planning and selling an idea and carrying on to another action. This approach helps in guiding the creative process in a structured manner.

The rotational character of this method, which assumes the possibility of going through the full cycle again, enhances the creative character of solving problems by formulating alternative solutions and enhancing previous ones at a higher level of creativity (Manktelow, 2003). It also demonstrates that the design process is not linear. The following quote also supports this: 'It seems that creative design is not a matter of first fixing the problem and then searching for a satisfactory solution concept. Creative design seems more to be a matter of developing and refining together both the formulation of a problem and ideas for a solution, with constant iteration of analysis, synthesis and evaluation processes between the two notional design 'spaces' – problem space and solution space' (Dorst, Cross, 2001: 434).

The starting point for design work as a part of the workshop in question, by analogy to the method presented, was an introduction to the subject and familiarising participants with the history and problems of Nowa Huta, presented during an introductory lecture. Another essential element was familiarisation with the site, which had a dual character as it was

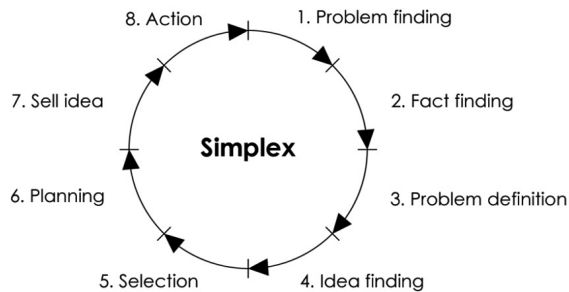


Fig. 2. Illustration of the single-level activity cycle featured in the *Simplex* method (Manktelow, 2003)

performed on foot and by bus. The second allowed for a more comprehensive perception of the scale of the entire complex. One important element that was, as it later turned out, quite inspiring, was a visit to the Nowa Huta museum, enhanced by a presentation and a visit to an underground shelter. Furthermore, in order to familiarise participants with the reality of the times when Nowa Huta was being built and the key events of this area's history, a screening of the cult film 'Man of Marble' was organised. This was the stage of information gathering, observation and experiencing the space that was the essence of the design task at hand. It also featured a discussion during which the problems and issues to be addressed were defined.

On the *Simplex* scale, these stages can be compared to the first three steps. During this stage, the students were divided into five groups composed of between four and five persons. The groups were organised so that each of them included at least one person from every participating country and university. This was to enhance the creative process, during which different perspectives and points of view arising from different teaching profiles of each university and different cultural conditions had a chance to come into contact with each other. After passing to the next stage of idea finding, which is the most intense and creative stage, a review was organised, based on initial presentations of conceptual proposals, which is featured in the *Simplex* method as the fifth step. The step that followed was based on developing and detailing student conceptual proposals, their analysis and presentation.

4. RESULTS

The measures adopted during the workshop as per the presented methodological scheme resulted in the development of different, characterized by high originality concepts that each presented different design solutions and approaches. Below is an outline of the main concepts of each group, as well as their graphic illustrations.

'Rose' – This concept directly references the fields of roses that used to intensively decorate the public spaces of this part of the city. The main emphasis was placed on reinforcing

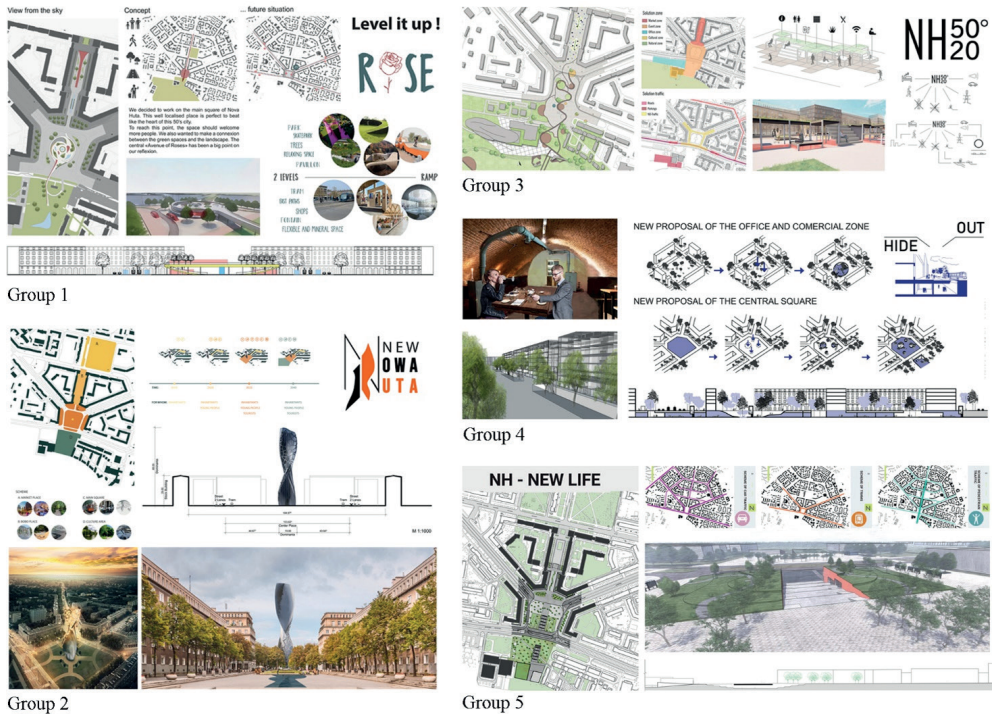


Fig. 3. Various architectural and urban concepts developed during the international student workshops (project by: Group 1: A. Krawczyk, Ch. Mulkers, M. Panning, M. Polak, M. Rackwitz; Group 2: C. Liebner, L. Ihadadene, A. Marusarz, J. Zimna; Group 3: A. Gade, L. Frabel, G. Kulig, W. Przybyła; Group 4: K. Schuhmacher, Ch. Donati, D. Poluk, D. Polak; Group 5: K. Cichy, K. Czesnowska, K. Stańczyk, J. Rochez, L. Schönamsgruber; tutors: CUT Cracow: K. Racoń-Leja, E. Szczerek; HAWK Hildesheim: M. Reichelt, T. Kauertz; FA + U Mons: P. Simoens, M.A. Gallas; Collaboration: PPWSZ Nowy Targ: K. Bieda, A. Bentkowska)

the link between public spaces – from the main axis itself that is currently formed by Rose Avenue, Central Square and the Nowa Huta Meadows. Central Square became the site of intensified intervention and a pavilion inspired by the form and colour of roses was proposed as the composition's lynchpin and spatio-functional accent, integrated with greenery. This would make the currently empty square a space that would teem with life and combine the function of a public transport node with a commercial, cultural and recreational function. Its other distinct features are ramps and a roof designed as an observation and recreation deck, from which one would be able to reach the green areas of the Nowa Huta Meadows via a green footbridge. Furthermore, the area around Central Square would be converted into a restricted traffic zone (fig. 3 – Group 1).

'New Nowa Huta' – The leitmotif of this conceptual proposal is to introduce a new sign into the space that would be based on Nowa Huta's strong identity while also symbolising

a step towards the future. The students proposed an observation tower with a height of 65 m, made of steel and glass. The steel references the metallurgy plant while glass is transparency and the future. The tower can be identified with the metallurgy plant's smokestacks, but this time in a new, contemporary version fit for the twenty-first century. The tower was placed at Central Square, which highlights its compositional and symbolic character. The significance of the main axis of Rose Avenue was also highlighted, suggesting the crystallisation of public spaces associated with commercial, cultural and recreational spaces along its individual sequences, including the most formal – the main square with the tower. This underscored the necessity of reinforcing the linkages between a part of Nowa Huta with the Meadows (fig. 3 – Group 2).

'50 20 NH' – This conceptual proposal, whose name is a reference to the geographic coordinates of this location, emphasises a strong and decisive integration of Central Square with the green areas of the Nowa Huta Meadows via introducing a new pedestrian zone arrangement, eliminating vehicular traffic at a key site and bringing it below grade to level –1, in addition to reorganising tram traffic. Organic forms inspired by the natural curvature of greenery crawl into the central part of the square and give a pretext for its spatio-functional arrangement. They then transform into orthogonal forms and, in a modular manner, as urban furniture, arrange the space between buildings. Furthermore, on a broader scale, the conceptual proposal assumes the development of market, event, office, cultural and natural zones (fig. 3 – Group 3).

'Hide Out' – This concept brings to light the existence of underground shelters in Nowa Huta in order to use them to build a new spatio-cultural narrative. It should be mentioned that over 250 shelters were built in Nowa Huta during the socialist period. They were placed underneath buildings, primarily residential ones. This idea approaches to building public spaces in a non-standard manner, proposing a new quality of public spaces via utilising and expanding upon the existing system of below-grade shelters, integrating it with the ground level. This would also be associated with introducing new functions, with the Office Park providing new employment opportunities and attracting active persons to live in this part of the city, being a key element (fig. 3 – Group 4).

'New Life' – This proposal stresses the linking of green areas with Central Square and the more distant compositional spine in the form of Rose Avenue. This time, the linkage is to be based on a panoramic crossing to the level below grade, as well as the introduction of new functions in tectonically elaborate structures, particularly one structure with a cultural function. This is also a reference to the concept of a community centre designed in this area that was first drafted in the 1950s and which was never realised. These efforts are to aid in reinvigorating this part of the city and making it available to a wider community in accordance with the adopted assumption of 'past – workers; now – old people; future – everyone / all generations' (fig. 3 – Group 5).

5. ANALYSIS OF THE RESULTS

The alternatives proposed by students show a spectrum of possibilities for a given place, often departing from the usual mode of thinking about the area. The preparing of alternative solutions first took place during work within each group and then once again during comparing the effects of the work of all groups. Creating these conceptual proposals passed through most stages distinct of the *Simplex* method cycle: from problem finding and definition, through idea finding, selection and planning to the preparatory stages for action – the sell idea stage, which confronted the effects of the work of all groups. The assessment of the presented projects in terms of diversity and quality was performed using the following criteria:

- References to Nowa Huta's identity in the context of designing public spaces and creating a new vision for this part of the city.
- Introducing new spatial structures.
- Forming proper linkages in the context of creating and reinforcing public space continuity.

It can be assessed that various attempts at engaging into dialogue with the extant context and referencing its identity were made. One group decided to introduce a clear and strong accent referring to the industrial past and new future, proposing a tower at the central point – a symbolic landmark. The group of students that presented a concept of utilising existing underground shelters, approached the space and identity of Nowa Huta in a completely different manner, exposing and unearthing something that is unique due to its scale and is distinct for this part of the city. This value is also far from obvious and can even be considered controversial. The design that referenced the motif of the rose is more conservative and calm in this context, something that is also presented by another, more neutral approach to engaging in dialogue with the site. Yet another solution was proposed by the group which referenced the community centre that had never been built at the site where it had been proposed.

Varied approaches can also be observed in the matter of integrating public spaces. The proposed design solutions differ particularly in respect to crossing busy streets – the urban barriers that separate Central Square and the green area of the Nowa Huta Meadows. One solution was a concept based on the complete elimination of vehicular traffic in this area by redirecting it underground, which reinforced this linkage the most. Another proposal included the introduction of a speed limit or an observation deck and footbridge at level +1. There were also proposals of alternative linkages below grade.

The results presented herein demonstrate a similarity in understanding the main problems and in indicating areas where intervention is required on the one hand, while on the other – we can identify distinguishing features that indicate a wealth of differences and diversity in the concepts themselves. All projects reinforced the continuity of public space, particularly along the main axis of Rose Avenue – Central Square – Nowa Huta Meadows, yet they did

so using different means. Controversial projects were made, while others presented more conservative solutions. This proves that, from a methodological standpoint, structuring creative activity that takes on the form of the workshop under discussion provides an opportunity for the formulation of combinations of many varied alternative solutions, which, when assembled together, are complementary and jointly frame the main site of the intervention.

6. CONCLUSIONS

The conceptual designs that have been presented herein, despite being shown in a very brief manner, can become a starting point for a discussion on increasing the effectiveness of obtaining the best possible creative group work effects through the workshop formula. The exemplification presented above, in reference to student designs of alternative proposals of design solutions, can reinvigorate the urban space of Nowa Huta and demonstrates the justification of adapting methodological tools that have proven effective in other fields of creative work to the sphere of architecture and urban design. The presented approach, which is aligned with the systemic approach of the *Simplex* method, when explored in the context of workshops in the sphere of architecture and urban design and its complexity and diversity, indicates a particular usefulness. It allows one to obtain the effect of synergy via preparing alternative solutions or further enhancing conceptual proposals over successive cycles of a team's creative work.

Under the conditions of an international workshop, the effect of synergy is further enhanced thanks to multi-cultural diversity. The workshop became an opportunity to stimulate the imagination of students and fulfilled their educational goal, while also becoming an occasion to extend the discussion concerning these spaces by presenting new possibilities for the development of this place. In summary, based on the criteria applied, it can be stated that the results confirmed the effectiveness of the presented formula of design workshops. The rotational character of the proposed novel approach is conducive to teaching creative, systemic problem-solving in the field of urban design and architecture via making modifications or preparing alternative stage-based solutions on the context of the final outcome.

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