Methodology for the Evaluation of the Proposal for the Restoration of Small Architecture in Historical Public Spaces: on the Example of the Restoration of Koch's Garden (National Cultural Monument)

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http://doi.org/10.29227/IM-2024-02-71

Submission date: *07.08.2024.* | Review date: *21.08.2024*

Abstract

The paper addresses the development of a methodology for the restoration of small architecture in historical public spaces protected as monuments. The methodology is demonstrated using the example of an important historical garden, the National Cultural Monument (Koch's Garden). Koch's Garden, which this paper uses to showcase various restoration approaches for small architecture, was established in the 1930s as part of the sanatorium of MUDr. Karol Koch. The sanatorium and its accompanying garden were designed by architects Dušan Jurkovič, Jindřich Merganc, and Otmar Klimeš. The garden, situated on sloping terrain, features a system of terraces connected by walkways, exotic plantings, sculptures, and numerous small architectural elements. The primary goals of the garden's restoration design were to preserve and restore the original features while emphasizing the authenticity and unique character (genius loci) of the place. The small architecture includes a tourist information centre, a swimming pool, and sunbeds. The pool, integral to the garden's original architectural concept, is preserved as a significant central element. Given its status as a typical example of this type of garden, the focus of the contribution is on the pool. The methodology evaluates pool renovation solutions based on five key parameters: authenticity, function, attractiveness, investment, and operation. Using this methodology, five alternatives were identified: 1. an empty pool with a railing, 2. a pool with pool water, 3. a pool with lake water and aquatic flora, 4. a pool with a water film and a gallery below it, 5. a pool with a reflecting surface as part of an amphitheatre, with storage for garden tools. In addition to diagram-based evaluations, these alternatives were assessed by the general and expert public, incorporating a social parameter into the evaluation. The result is a comprehensive evaluation system that can be applied to other types of small architecture in historical public spaces.

Keywords: *Restoration, Public Spaces, Koch´s Garden, National Cultural Monument*

1. Introduction

The garden of the Koch sanatorium, along with its architectural solution, forms a highly valuable monument complex from the 1930s. It is the only comprehensively designed garden with such a feature in Slovakia. The methodology discussed in this paper was determined by the collective at the Department of Architecture as part of the architectural study. This methodology was necessitated by the insufficient number of renovations of National Cultural Monument (NKP) gardens in Slovakia. Most parks in our region are restored under the title of National Cultural Monument. The architectural study and all presented variants resulted from the detailed art-historical research of architectural elements conducted in 2007 [1] and updated architectural-historical research from 2023[2].

In 2023, the comprehensive restoration of Koch's Garden, a listed historical public space, began. The project was developed in cooperation with the Department of Architecture at the Faculty of Architecture of the Slovak University of Technology (STU) in Bratislava [3].

The grounds of Koch's Garden are located on the south side of Partizánska Street in Bratislava and form part of the MUDr. Karol Koch complex. The sanatorium building, constructed between 1929 and 1930 based on the designs of architects Dušan Jurkovič, Jindřich Merganc, and Otmar Klimeš, is situated in the northeastern part of the area. The garden is bounded by Partizánska Street to the northeast, Staroturský Path to the northwest, forming a stepped connection between Partizánska and Bartoňova Streets, Bartoňova Street to the southwest, and a neighbouring plot to the southeast. The sanatorium and garden are located among residential buildings constructed in this area during the First Republic as part of a housing concept [4]. The garden slopes upwards to the west and is compositionally divided into two parts: the entrance area around the sanatorium building and the main garden, which is separated from the immediate surroundings by a retaining wall behind the sanatorium. This garden environment, set in sloping terrain, is still characterised by a system of terraces connected by paths, exotic plantings, sculptures, and many small architectural elements.

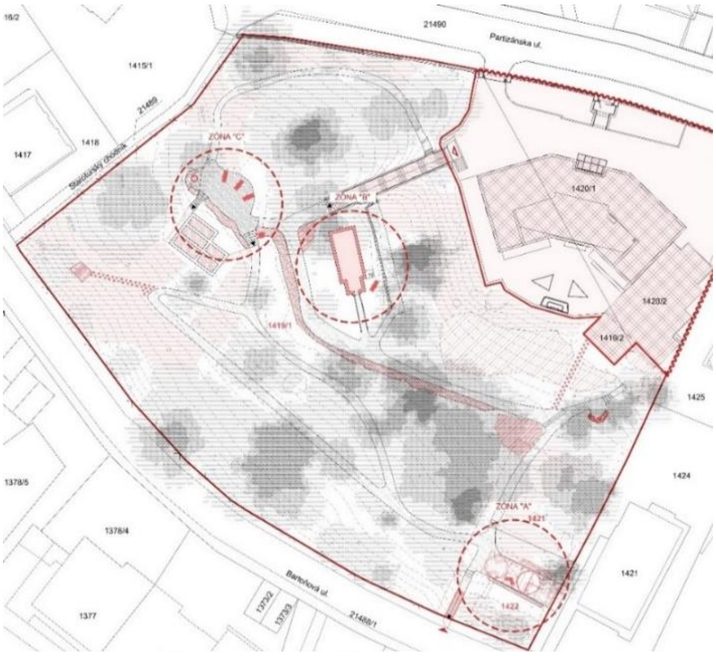

Fig. 1. Architectural situation with marking of the central areas of the garden [3]

The private garden was originally accessed from two locations. The main entrance, currently not open to the public, faces Partizánská Street to the right of the sanatorium building. This entrance has a separate gate and a stairway. The second entrance, which is currently used for public access, is from Bartoňová Street and features a single-arm staircase leading into the garden.

The garden is divided by footpaths with steps, rest areas, a swimming pool, and a herb garden. The primary network of pathways follows the contour lines and is separated from the garden areas by ceramic curbs embedded in the ground. A walkway from the main staircase leads to the pool. The rectangular, concrete pool is now non-functional, surrounded by ceramic tiles, and is the focus of this case study. In 2007, two concrete flower pots were placed near the pool, though they are no longer present. Additionally, a stone lavatory was positioned in a nearby retaining wall made of loose stone, with a concrete slab bench added later next to the wall.

On the east side, a path leads north to a small, architecturally designed rest area with two benches and a pedestal featuring a statue of Mother and Child. The central path continues to the northwest, leading to an irregularly shaped resting area paved with natural free-laid stone. A stone table once stood in the southwest corner of this area. In the northeastern part, there is a square brick plinth with a ceramic covering, holding a statue of the Lovers. Above this resting area is the herb garden, featuring rectangular beds bordered by square tiles made of washed concrete. At the entrance from Bartoňová Street, there is a paved area with a temporary tin shed for tools.

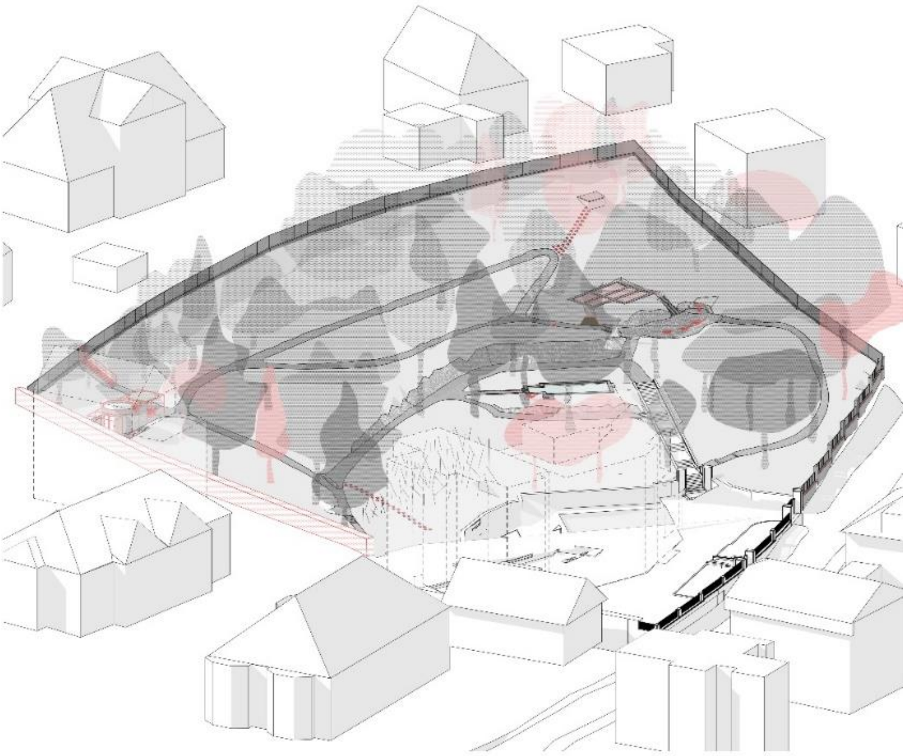

Fig. 2. Axonometric view of the garden area [3]

The basic ideas of the garden restoration proposal were the preservation and restoration of the original layer, as well as the emphasis on the authenticity and genius loci of the place. The small architecture consists of a tourist information center, a swimming pool and sunbeds. The pool, as part of the original architectural concept of the garden, is preserved as an important central element. Since he is a typical representative of this type of garden, the contribution will focus only on him.

Fig. 3. The pool in its original state [2]

The body of the pool is situated between the northernmost walkway, the sanatorium building and the main access staircase to the garden itself. The pool is rectangular, concrete, with a ceramic border. It will be preserved as part of the original architectural concept of the garden. However, its restoration and replacement of damaged parts is necessary. Today it is surrounded by mature trees, and its use as a swimming pool is not suitable due to the light conditions. The metal handrails and the entrance to the pool are in a state of disrepair. Originally, the vertical walls of the pool were lined with rectangular tiles, which we recommend replicating. The terrain around the pool is raised, its original level is under the ceramic tile. This terrain level can be read from period photographs. The height of the terrain should return to its original state around the pool. The pool is designed in four alternatives, which were created on the basis of proposals from several entities involved in the project.

2. Goals

The work had several sub-goals.

From an architectural perspective, the work focused on identifying and enhancing the monumental and architectural values of not only the swimming pool but also the entire area of Koch's Garden, in the context of understanding the restoration of historically important public spaces.

From an educational perspective, the aim was to engage both experts and the wider public in the approach to restoring historically important public spaces, highlighting the main factors that influence the final proposal and approach to restoration.

The main goal of the work was the development and verification of the methodology itself, which monitors five basic parameters (authenticity, function, attractiveness, investment, and operation) to evaluate alternatives for pool renovation solutions.

3. Methodology

The established methodology assumes the creation of a potential model for the assessment of small architecture in NKP gardens. It was applied to the case study of the renovation of the swimming pool, one of the main features in the garden of Koch's sanatorium. As part of the case study, five variants with different levels of intervention were proposed and assessed according to the chosen evaluation attributes. This methodology is based on the evaluation system established and verified by F. Bránický in his work. The evaluation methodology of vernacular principles established the following parameters as evaluation attributes: scale, volumetric composition, proportion, materiality, disposition, openings, and formative elements.

The presented methodology, applied in the restoration of the swimming pool in the study of the restoration and revitalisation of Koch's Garden, is based on five basic attributes. These attributes were chosen based on historical and architectural requirements, as well as the investor's requirements. The evaluation criteria chosen were: authenticity, function, attractiveness, investment, and operation [5].

Authenticity, as the primary indicator, is crucial for NKP gardens. For important objects and spaces defined as NKP, the degree of authenticity should be the decisive factor in choosing the final design. The main ideas of the garden restoration proposal were the preservation and restoration of the original layer, with an emphasis on the authenticity and genius loci of the place. For the swimming pool, function is a key factor in the evaluation framework. Given that the pool is now surrounded by overgrown greenery, which has altered its light conditions, and that the original character of the garden has changed, the original function of the pool is no longer ideal. The change in character and proportions necessitates finding a new substitute function with possible added value.

Considering a change in the primary function led us to choose another evaluation criterion: attractiveness. After the revitalisation, the garden will be opened to the public. In this case, attractiveness is significant for attracting visitors, especially as the garden is located outside the city centre. Investment is also crucial for the feasibility of the selected variant. The final parameter, operation, impacts the practicality and usability of the space.

The selected parameters are clearly arranged in a diagram. Each design variant includes this representation on the diagram, considering the assessment of all five attributes.

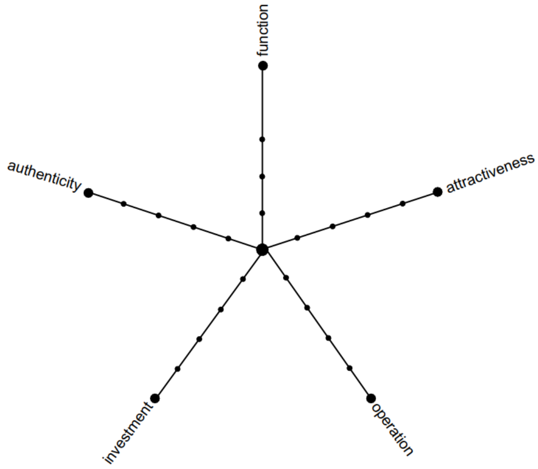

Fig. 4. Design a diagram considering design attributes [3]

4. Alternative Solutions of Possible Options

4.1 VARIANT 1 - Empty pool with railing

The first variant presents the alternative of renovating the pool to its original form, but without water, which negates its original purpose. The pool thus represents only a physical structure without added function or attractiveness. Although the mass and visuals of the pool are preserved according to the original historical model, a railing is added for safety reasons. The loss of authenticity is not only affected by the installation of a new type of railing, which is out of place in this space, but also by the absence of water in the pool area. On the other hand, investment and operating costs in this variant are significant factors, as they are the most financially acceptable of the mentioned variants.

Fig. 5. Empty pool with railing, 3D view and 3D section [3]

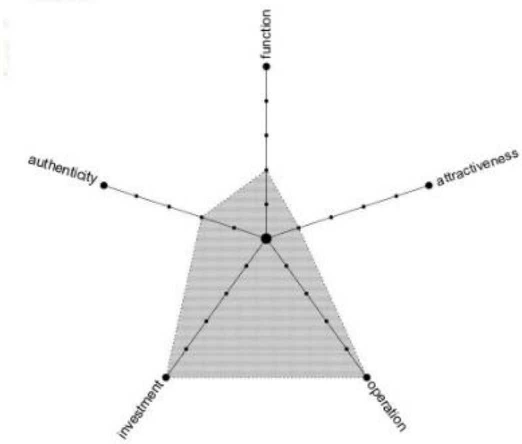

Fig. 6. Diagram for variant number 1. - Empty pool with railing [3]

4.2 VARIANT 2 - Swimming pool with pool water

The second variant is based on the concept of returning water to the pool, although without allowing for swimming. If the pool were to function as it did in the past, it would entail several challenging requirements and investments, such as building sanitary facilities for the public and lifeguard facilities. To prevent these issues, we propose a safety grate to prevent visitors and animals from falling into the pool. This variant stands out as the most advantageous in terms of authenticity, but its function and attractiveness are reduced. The biggest disadvantage of this solution is the high operating costs.

Fig. 7. Swimming pool with pool water, 3D view and 3D section [3]

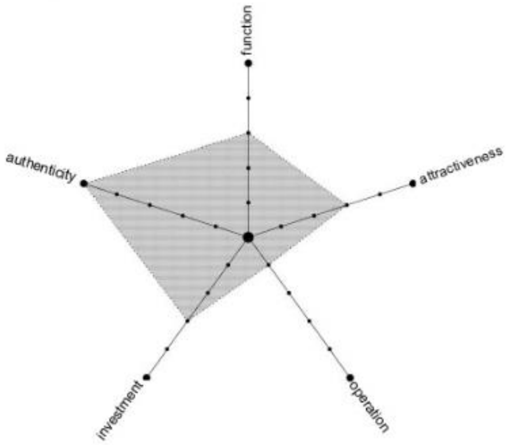

Fig. 8. Diagram for variant number 2. - Swimming pool with pool water [3]

4.3 VARIANT 3 - Pool with lake water and aquatic flora

The third variant is similar to the second variant, differing only in its function, which affects the degree of authenticity and attractiveness. In this case, the entire height of the pool is also filled with water and a safety grate is inserted, but the water used is lake water instead of pool water. Although the water element is restored, it is not in its original form as in the second variant; it does not appear deceptive and brings added value. It is evident that the pool's function has changed in this case, which affects its authenticity to some extent. Pots with aquatic plants are placed on the grate, enhancing the perception of a pond.

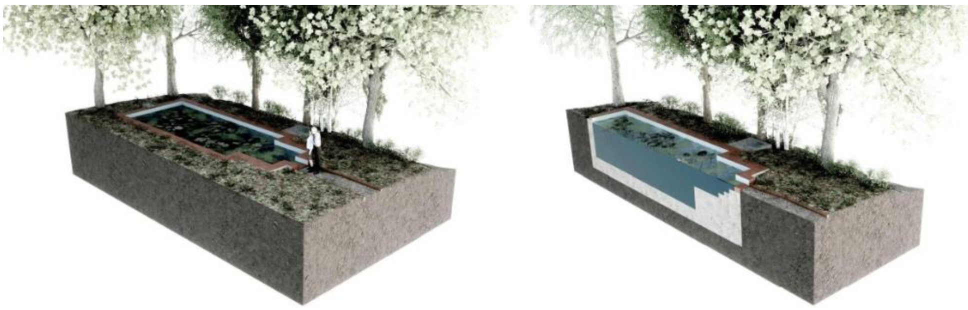

Fig. 9. Pool with lake water and aquatic flora, 3D view and 3D section [3]

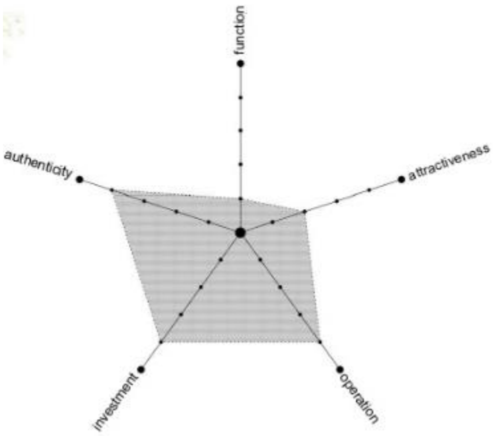

Fig. 10. Diagram for variant number 3. - Pool with lake water and aquatic flora [3]

4.4 VARIANT 4 - Swimming pool with a water film and a gallery below it

The fourth variant restores the water element in a subtle form. It is designed as a “water film” with a depth of 300 mm. The supporting structure consists of steel elements on which toughened safety glass is placed. The water surface corresponds to the original pool’s water level but also respects the change in function. This intervention is reversible and elevates the pool space to a representative function. In the gallery space beneath the pool, we are considering an exhibition dedicated to the history of Koch’s sanatorium and garden. In this variant, its function stands out as the most significant factor.

Fig. 11. Pool with water filter and gallery below, 3D view and 3D section [3]

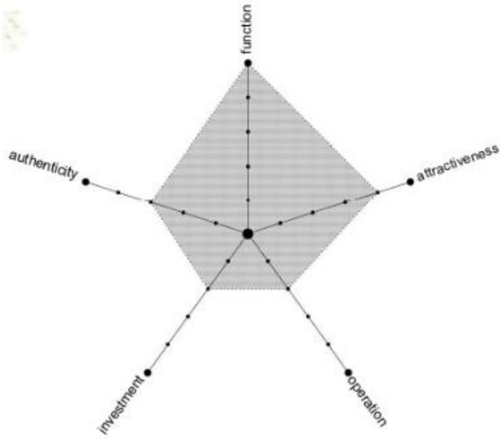

Fig. 12. Diagram for variant number 4. - Swimming pool with a water filter and a gallery below it [3]

4.5 VARIANT 5 - Swimming pool (with mirror surface) as part of the amphitheater with storage for garden tools

The fifth variant is the most controversial in its interpretation and approach. As in variant number four, we reintroduce the water element in a subtle manner. The water is suggested by a mirror surface, beneath which there is a space intended for storing tools. The original staircase is extended and serves as seating for the function of an amphitheatre. Among other options, a permanent loop presenting the history of Koch’s sanatorium and garden could run within these premises. This variant represents the highest degree of attractiveness, but at the cost of losing authenticity.

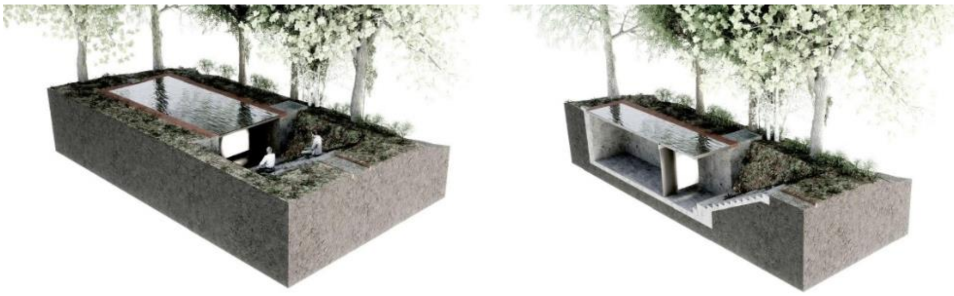

Fig. 13. Swimming pool (with mirror surface) as part of an amphitheater with storage for garden tools, 3D view and 3D section [3]

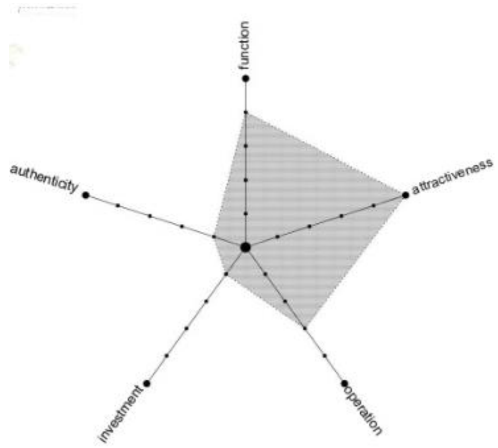

Fig. 14. Diagram for variant number 5. - Swimming pool (with mirror surface) as part of the amphitheater with storage for garden tools [3]

5. Public Survey

In addition to the analogical (diagram-based) evaluation, the alternatives were also evaluated by the general and expert public, allowing the social parameter to be included in the evaluation. This survey was based on a questionnaire answered by 73 respondents. At the beginning of the questionnaire, respondents indicated their highest level of education and classification. Of the respondents, 50.7% stated that their highest education was secondary school with a high school diploma, 20.5% had a higher education II degree, 19.2% had a first-level university education, and 9.6% had a third-level university degree. Respondents were classified into four groups. The largest group was students at 75%, followed by practitioners at 13.9%, the general public at 6.9%, and state sector experts at 4.2%.

The questionnaire was based on three questions related to five variants of the proposal and five evaluation criteria with which our methodology works.

1. Rank the following alternatives according to your preferences. Respondents had to rank the alternative proposals from the most attractive to the least attractive, based on their primary preferences without further specification.

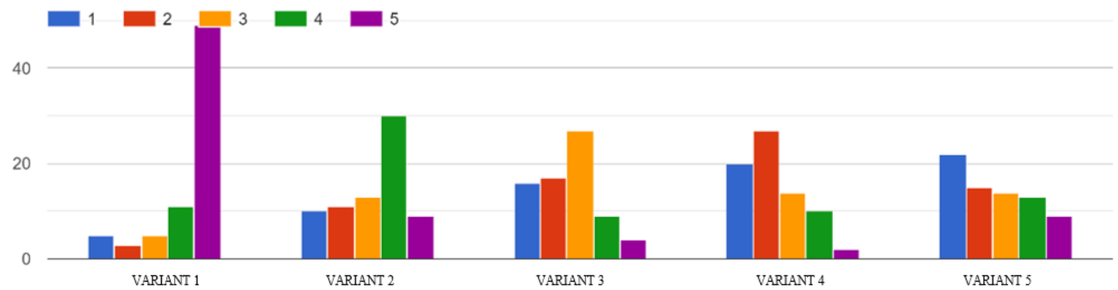

Fig. 15. Graph showing respondents' answers to question number 1: Rank the following alternatives according to your preferences (1 - most attractive, 5 - least attractive)

The table lists the selected variants sorted according to respondents' preference from the most attractive solution to the least attractive solution. It refers to question number 1, in which the respondents did not know the prevailing parameters of the given variants. The selection of respondents was therefore based on first planning and intuition.

Tab. 1. Table evaluating the results from question no. 1: Line up the following alternatives according to your preferences (1 - most attractive, 5 - least attractive)

VARIANTS	**PREVAILING PARAMETERS**	**ORDER BY RESPONDENTS**
VARIANT 5 - Swimming pool (with mirror surface) as part of the amphitheater with storage for garden tools	ATTRACTIVENESS	1
VARIANT 4 - Swimming pool with a water film and a gallery below it	FUNCTION	2
VARIANT 3 - Pool with lake water and aquatic flora	AUTHENTICITY INVESTMENT	3
VARIANT 2 - Swimming pool with pool water	AUTHENTICITY	4
VARIANT 1 - Empty pool with railing	INVESTMENT OPERATION	5

2. From your point of view, rank the following concepts according to the importance of taking parameters into account when restoring the public space of the NKP. In this case, the respondents had a choice of 5 concepts: function, attractiveness, operation,

investment and authenticity. According to their preferences, these concepts were to be ranked from the most important to the least important factor of influence with regard to the renewal of the public space of the NKP.

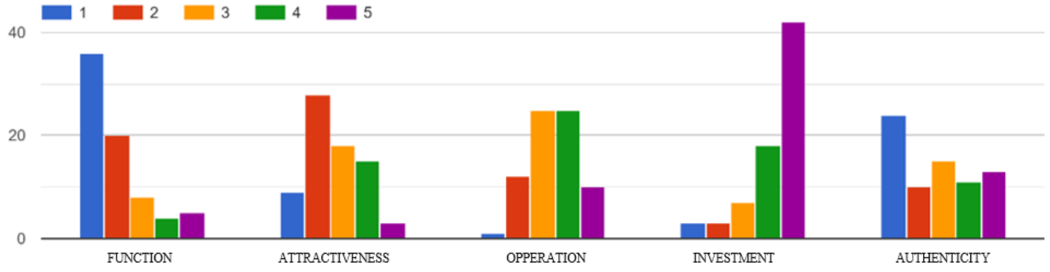

Fig. 16. Graph showing respondents' answers to question number 2: From your point of view, rank the following terms according to the importance of taking parameters into account when restoring the public space of the NKP (1 - most important, 5 - least important)

The table lists the parameters, sorted by importance and degree of influence, affecting the approach to selection in NKP renewals according to the respondents. It relates to question number 2.

Tab. 2. Table evaluating the results from question no. 2: From your point of view, rank the following concepts according to the importance of taking parameters into account when restoring the public space of the NKP (1 - most important, 5 - least important)

PARAMETERS	**ORDER BY RESPONDENTS**
FUNCTION	1
AUTHENTICITY	2
ATTRACTIVENESS	3
INVESTMENT	4
OPERATION	5

3. Rank the following alternatives according to your preferences after considering the given diagram. In the last question, the respondents re-ordered the variants from the most preferred to the least preferred, in this case a diagram was added to the variants, which indicated the degree of application of the factors that were presented above.

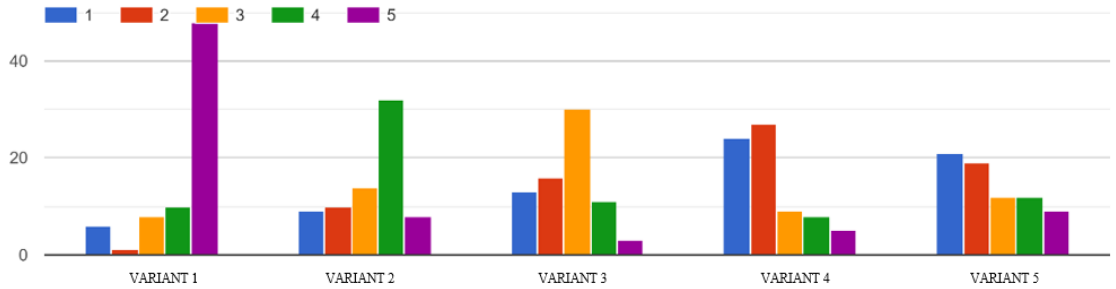

Fig. 17. Graph showing respondents' answers to question number 3: Rank the following alternatives according to your preferences after considering the given diagram (1 - most preferred, 5 - least preferred)

The table lists the selected variants sorted according to respondents' preference from the most attractive solution to the least attractive solution. It refers to question number 3. In this question, the respondents knew the prevailing parameters of the given variants. The choice of respondents was therefore influenced based on the parameters available to them and they themselves attributed the degree of influence to them in question 2.

Tab. 3. Table evaluating the results from question no. 3: Rank the following alternatives according to your preferences, taking into account the given diagram (1 - most preferred, 5 - least preferred)

VARIANTS	**PREVAILING PARAMETERS**	**ORDER BY RESPONDENTS**
VARIANT 4 - Swimming pool with a water film and a gallery below it	FUNCTION	1
VARIANT 5 - Swimming pool (with mirror surface) as part of the amphitheater with storage for garden tools	ATTRACTIVENESS	2
VARIANT 3 - Pool with lake water and aquatic flora	AUTHENTICITY INVESTMENT	3
VARIANT 2 - Swimming pool with pool water	AUTHENTICITY	4
VARIANT 1 - Empty pool with railing	INVESTMENT OPERATION	5

6. Conclusion

The questions in the questionnaire were designed to highlight how the selected attributes can influence respondents, emphasising that decision-making should not only be intuitive but should also consider other values and factors. Based on the evaluation of the questionnaire, the following results were obtained regarding the assessment of individual proposal variants, both from an initial perspective and after considering the attributes in our chosen methodology.

Variant 1 - an empty pool with a railing: The questionnaire results show this as the least attractive option, both in respondents' initial assessments and after considering all factors from our methodology.

Variant 2 - a swimming pool with pool water: This variant is the second least attractive, according to the questionnaire results, both initially and after considering all parameters.

Variant 3 - a pool with lake water and aquatic flora: The questionnaire indicates this variant as third in terms of initial assessment and after considering all factors from the methodology.

Variant 4 - a pool with a water film and a gallery below it: Initially, this variant was ranked second. However, after considering the input parameters of our methodology, it emerged as the most favourable solution according to respondents.

Variant 5 - a swimming pool (with a mirror surface) as part of an amphitheatre with storage for garden tools: This variant was the most favoured initially but ranked second after considering the parameters.

Based on preferences, the general public understood the chosen attributes as essential in the following order: function, authenticity, attractiveness, investment, and operation.

The main indicator is a comparison of the answers to question 1, where respondents evaluated the variants without knowledge of the parameters, and question 3, which was identical but included a diagram showing the influence of the selected parameters. The results show that the parameters only slightly influenced the final selection of respondents. In both cases, respondents marked Variant 1 - Empty pool with railings as the least preferred, followed by Variant 2 - Pool with pool water and Variant 3 - Pool with lake water and aquatic flora. The change was reflected in the top two choices. Without knowledge of the parameters, respondents chose Variant 5 - Swimming pool (with a mirror surface) as part of an amphitheatre with storage for garden tools as the winner. With the parameters, they chose Variant 4 - Pool with a water film and a gallery below it. This change was influenced by the authenticity indicator, which outweighed attractiveness. In both cases, the newly added function appeared as a favourable factor, repeated in both variants.

For more accurate results, it would be necessary to test the methodology on other types of small architecture within the NKP. To raise awareness of historical and architectural values and impact education, it would be necessary to expand the scope of respondents

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