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Revitalization of Historic Buildings as an Approach to Preserve Cultural and Historical Heritage

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Abstract

The need to preserve architectural heritage of historical and cultural value is getting more and more significant. At the same time it is very important to develop environment dynamically to sustain life activities in general. The article deals with the revitalization method with the purpose to preserve and restore historical landmarks, which assign a new function – to expand areas and adjust historical buildings to modern requirements. The projects of historical buildings in the cities Nis (Serbia) and Saint-Petersburg (Russia) were considered as examples herein. Revitalization was presented as a method of how to convert life-sustaining environment in the context of preservation and promotion concerning cultural value of historical buildings.

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1. Introduction

Various needs of contemporary society and growing consciousness of great value of architectural heritage emphasize the importance of revitalization as a means of preservation, but at the same time its activation in the

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context of sustainable development. New, innovative techniques of active preservation and protection of architectural heritage are developed. As there is no universal formula for objective consideration and evaluation of always disputed connection and integration of “old” and “new”, the need for that universal cognition is basis and motivation for further research in this area. The aim of research in methods and final visual products of revitalization is that “visual objectification should be the final result. Evaluation of visual significance of ambient is a result of interweaving of objective criteria, functional organization and creativity in design.

2. Villa Zivkovic in Niška Banja

Villa Zivkovic in Niška Banja which is an important example of the development of early modern architecture in Nis, is located near the center of this small but attractive tourist place. Little is known about this building but its timeless impressiveness and monumental spirit confirm that this is a facility that is worth preserving as one of the most successful aesthetic ventures of the Niš Modern. For these reasons, Villa Zivkovic has set a great challenge to the authors of the design as a building that can be considered as self-sufficient in the aesthetic sense, and any intervention on it must be thought out and nonintrusive.

The subject of this paper is a case study of revitalization of Villa Zivkovic, as an innovative method of revitalization of the building that has cultural and historical significance. The method applied in this design is based on emphasizing the original aesthetic value of the existing building, and therefore the cultural importance that building carries as one of the representative examples of the development of early Modern in Nis and the surrounding area [1-11].

In twenty years period, from 1920 to 1941, Niska Banja, as the existing thermal spa, as well as the settlement which is just being formed, experienced a sudden building expansion. Niš, as industrial and administrative center of the Moravian Banovina already formed a civil elite that built family villas, larger buildings with rooms for rent, and hotels in Spa, as neighboring resort. [1] During this period between the two world wars, the Modern architecture records its fastest growth in Nis and Niska Banja. In the literature Niska Banja is mentioned as a phenomenon with very large number of buildings of architectural value built in the style of early modernism. Villa Zivkovic is located at Ivan Goran Kovacic Street in Niska Banja, in the centre of this small tourist resort. Little is known of this building. It was built at the end of IV decade of the twentieth century, and a designer is unknown. The most expressive and beautiful example with all the characteristics of pure Modern architecture in solving function and formation of masses, is the house of brothers Zivkovic, traders from Nis, probably built in 1938 or 1939th. [2] Functionally and in its form, Villa Zivkovic is the classic example of Modern architecture between two World Wars. (Figure 1) Dynamic treatment of two volumes that are intertwined, at the same time emphasizes the verticality and horizontality. Strong white volume of the first floor, which is semi-circular in its basis, comes from the more massive and heavier corps which is in the background, and rests on a circular pillars and creates a partially illusion of "levitation" above the entrance to the ground floor. (Figure 2)



Fig. 1. Villa Živković, Niška Banja – current state

Like many buildings from this period Vila Zivkovic is in poor condition. The facade became dilapidated as well as windows on the facade. The reason for that probably lies in the fact that buildings from the modern period have not yet been recognized by the wider public as a treasure that should be preserved to represent the time that marked the architecture. (Figure2)

3. Basic principles and revitalization proposal

In the theoretical considerations of interpolation, the question of methods, respectively principles of intervention, refers to determining ways to approach to problem solving, so they ultimately can be classified by increasing radicalism of the procedure: the principle of "facsimile" (repetition), the principle of adaptation, the principle of emphasizing, the principle of contrast, the principle of combining two or more principles.

In addition to the general division by level of radicalism of the procedure, method of intervention can be typologically classified into several categories: the construction of the new facility as an annex to the existing old building or complex of monuments of architectural heritage, where direct physical contact between the "old" and "new" is made, the construction of the new building in the immediate surroundings of monuments of architectural heritage, intervention on the internal parts of the monuments of the architectural heritage, combining two or more categories. [5] In this case the construction of a new part of the building as an annex and principles of adaptation and contrast are adopted as basic principles, where the adaptation of the new facility to the existing environment and ambience is a priority, but with clear contrast and separation of the new from the old part of the building, through the form and materialization. The conceptual design of revitalization of Villa Zivkovic is based on the conversion of facility into a hotel, according to the needs of Niska Banja and its tourist character. The new purpose of the building requires introduction of additional content, and therefore its expansion. Extension of facility would be formed on the south and west sides, only through a single, ground floor, so that it wouldn't compete with the volume of the existing building in its size. Admission area with the main entrance to the hotel and reception would be placed in the building annex, and thus the existing entrance to the building would gain a more private character. In the reception lobby the cafe club that has a public character is foreseen, in order to take advantage of the good view to existing part of the villa and greenery enabled by glass walls and ceilings. In existing building the accommodation units are formed on the ground floor and first floor, and second floor is designed as hotel restaurant with a terrace. The accompanying technical premises of the hotel would be located in the basement that includes main kitchen of the restaurant, which would have economic connection to the restaurant on the second floor via elevator. Also, the extension of the building where swimming pool for hotel guests would be located was designed. All areas are designed in accordance with current legislation. The revitalization of monuments and architectural entities by finding new ways of usage is legitimate and recommended if these ways of usage, whether external or internal, do not lead to disorder in the structure or character of the whole entity. [3] The design includes annex on the southern part of the plot, designed as a glass cube partially "pulled" into itself in the plan, so as not to disturb the existing building and follow its geometry, and in some parts not to interfere with the growth of the existing pine trees on the plot. Pine trees that were found in plot were retained, and circular atriums that allow them to grow were formed around them. This is in accordance with the principle of discrete intervention which prioritizes the respect for the existing building and state on the location and visually subordinates the upgraded part to it. Thereby the annex was fully glazed so that the effect of transparency contributed to the impression of dematerialization of the annex, emphasizing Villa Zivkovic in the authentic condition. (Figures 2, 3) This is supported by the fact that the annex was elevated above the ground, which results in an illusion of it "floating" in space, and thus metaphorically and perceptively giving the impression of impermanence and instability. By such discrete visual treatment annex is completely merged into existing environment and does not disturb it.

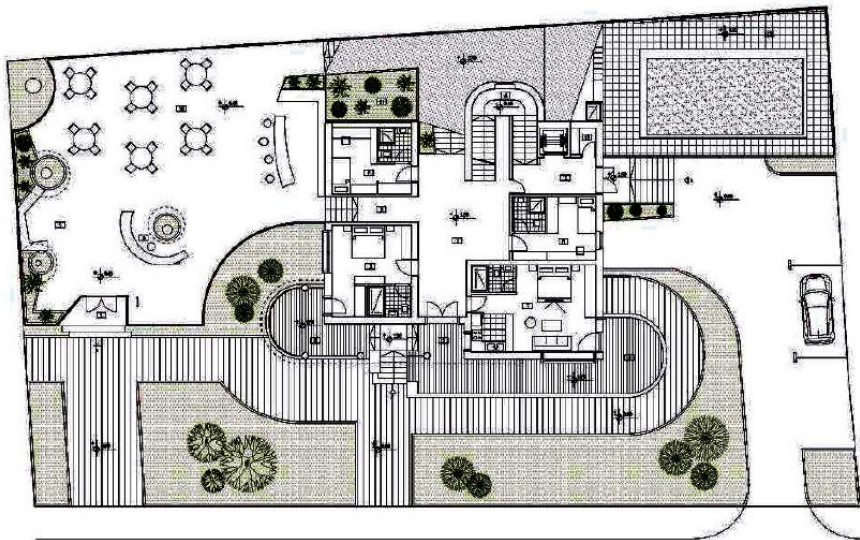


Fig. 2. Villa Živković, new design proposal- ground floor plan.

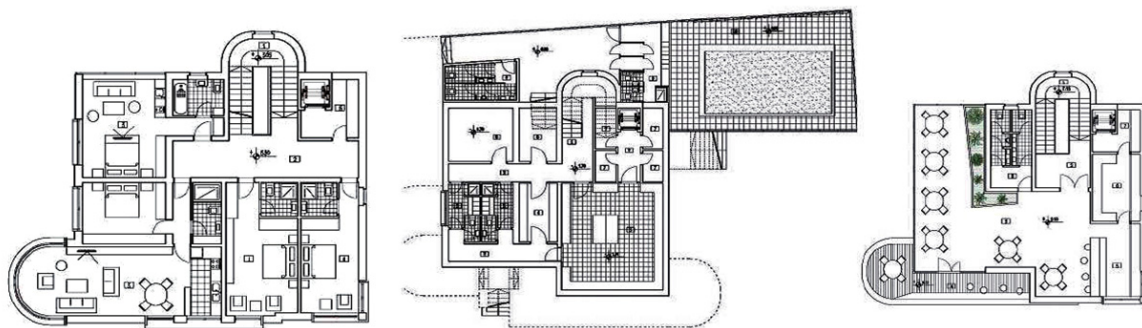


Fig. 3. Villa Živković, new design proposal – first floor plan, basement) and attic.



Fig. 4. Villa Živković, new design proposal- emphasized main facade of the existing building



Fig. 5. Villa Živković, new design proposal- circular atrium that allows undisturbed growth of pine trees



Fig. 6. Villa Živković, new design proposal-view from the inside area of the annex to the existing villa

The use of glass as a material primarily serves to emphasize the absence of classical walls and constructions, and therefore the absence of the building in the classical sense, as we recognize it. On the other hand, the transparency initiates a strong connection of the interior space to the outside, so that the visitor located in the glazed hotel lobby has a complete visual communication with the outside environment dominated by the existing building of Villa Živković. That is another form of glorification of the building in its original state. By retaining existing vegetation which is partly integrated or is perceived from the interior space, a pleasant and comfortable environment is formed, that is a priority because of the function the building, but also because of the characteristics of a place like Niska Banja. It can be said that the main principles of the revitalization of this building were the attempts to emphasize and refresh existing beauty of the building, but also to enrich the primal natural effect in terms of greenery and reflection of sunlight in glass.

An analogous project of the historical and cultural heritage-listed building has been performed in Saint-Petersburg.

Reconstruction and restoration activities for historical buildings are executed in accordance with the existing standards for conservation of historical and cultural monuments. Constraints for any changes in certain building exteriors are stated in the Law of Saint-Petersburg «On the boundaries of protection areas of objects of cultural heritage and on the conditions of using the land in the above boundaries and on the introduction of changes into the law of Saint-Petersburg “On the master plan of Saint-Petersburg and on the boundaries of the protection areas of

cultural heritage in the region of Saint-Petersburg».

4. The mansion of the Nobel family (historical monument) in Saint-Petersburg

The mansion of the Nobel family in Saint-Petersburg has a unique historical and architectural value. It is situated at the address: 19, Pirogovskaya nab., and consists of 4 buildings.

Four generations of the Nobel family lived and worked in this mansion. Final decisions on establishment of the prominent International Nobel Prizes and Nobel Fund under the Alfred Nobel's will have been taken here. The following architectures worked on the mansion buildings of the Nobel Family: Swedish architecture K. K. Anderson and R. F. Meltser and I. Shrerter.

There were living and ceremonial rooms of the Nobel family, plant office of the "Mechanical plant "Ludvig Nobel" (1862 – 1918), management office "Nobel Brothers Partnership of Oil Production" (1879 - 1910 г.). Certain groups of ceremonial rooms implemented in a complex art and architecture style mainly under the projects of K.K.Anderson and R.F.Meltser are still remained. After the year of 1918 the Nobel mansion belonged to the plant 'Russian Diesel'. The buildings were damaged by bombs and missiles during the Great Patriotic War.

After the war and up to the year of 1997 the building belonged to the Mechanical plant office. Since 1997 and up to now the building has been in disrepair and requires immediate restoration and reconstruction. Figure 7, 8, 9.



Fig. 7. Ludwig Nobels Mechanical Workshop in Petersburg.

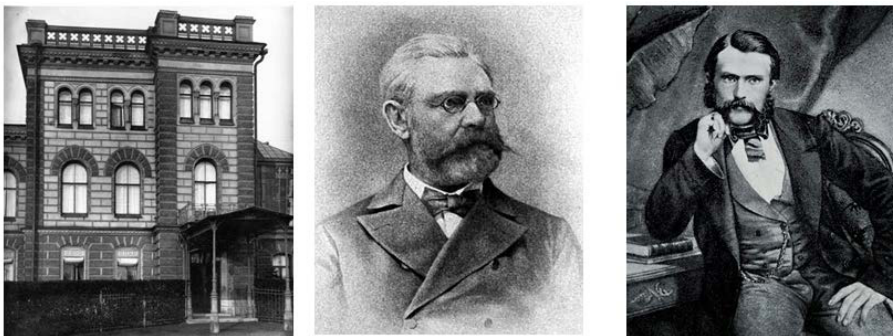


Fig. 8. The mansion of the Nobel family in Saint-Petersburg; Ludvig and Robert Nobel.



Fig. 9. The mansion of the Nobel family in Saint-Petersburg: modern look.

The front facades can be reconstructed without any changes in accordance with the Law on protection of cultural monuments. The yard space was agreed to be overlapped with glass coverage in order to expand the working area of the building during the warm season of the year.

Solar power supply was assumed to be used in a set of energy-efficient measures. The structure option chosen for glass covering ensures energy supply for significant unshaded surface area southward. An initial project solution assumed photovoltaic panels placed on the southward roof of the greenhouse building. (Figure 10) However, this solution was cancelled by the authorities since the roofs can be clearly viewed from the side of the front facade. Placement of engineering equipment on the front facades is forbidden. For this reason photovoltaic panels were approved to be placed on the southward slope of the yard glass coverage. (Figure 11)



Fig. 10. The initial project solution assumed photovoltaic panels placed on the southward roof of the greenhouse building



Fig. 11. Model of the inner yard made of the glass. Photovoltaic panels to be placed on the southward slope of the yard glass coverage.

5. Conclusions

Revitalization of buildings of cultural and historical importance has always presented a challenge at all levels of architectural design. With the intensive development of modern techniques in architecture, how to preserve a building that represents cultural heritage in an authentic state and inspire it with a life of modern building adapted to a new purpose is becoming an increasing problem.

The proposed approach to revitalization, applied in the presented concept, complies with contemporary and proven principles of active protection, respecting architectural heritage by giving it spatial primacy. The most important principles applied in this design are: principle of discreet intervention, principle of evaluation and preservation of existing ambient and context and principle of clear differentiation between old and new as a means of avoiding historical forgery. Introducing innovative materials and inventive techniques, this approach to revitalization is the proposal of contemporary method of preservation of architectural heritage, but it is also recognized and perceived as the most direct and the sincerest act of glorification of important cultural heritage building.

References

- [1] Keković, A., Čemerikić, Z. Moderna u Niškoj Banji- vile i hoteli (2001) Arhitektura i urbanizam, Vol. 8, pp. 1-61
- [2] Keković, A., Čemerikić, Z. Moderna Niša 1920- 1941, (2006) Društvo arhitekata Niša, pp. 1-37
- [3] Milojković, A. Lectures-Revitalization of Architectural Heritage (2013) Graduate academic studies, Faculty of Civil Engineering and Architecture in Niš. pp. 1-127
- [4] Keller, G. Osvrt na skriptu Meštrovića M. "Osnovi metodologije industrijskog dizajna" (1976) Vjesnik, Zagreb, pp. 1-326
- [5] Petrović, M., Keković, A. Savremeni principi intervencija na spoljašnjim i unutrašnjim delovima spomenika graditeljskog nasleđa (2010) Zbornik radova Građevinsko-arhitektonskog fakulteta, Vol. 25, pp. 119-125
- [6] <http://lenarudenko.livejournal.com/220931.html>
- [7] Dragul'skiy S.A. Rozhdeniye nef'tyanoy otrasli v Rosi [The birth of the oil industry in Russia] (2010) Publisher: Mir izmereniy, Vol. 11. pp. 50-59.
- [8] Shishkin V.Ya., Pogorelov A.Ye., Makeyev V.A. Rekonstruktsiya zdaniy istoricheskoy zastroyki na primere vspomogatelnogo zdaniya moskovskoy konservatorii [Reconstruction of buildings of historic buildings on the example of an auxiliary building of the Moscow Conservatory] (2011) Publisher: Zhilishchnoye stroitel'stvo, Vol 9. pp. 16-23.
- [9] Žegarac Leskovar, V., Premrov, M., Vidović, K. Architectural geometry of timber-glass buildings and its impact on energy flows through building skin (2013) COST Action TU0905 Mid-Term Conference on Structural Glass - Proceedings of COST Action TU0905 Mid-Term Conference on Structural Glass, pp. 133-139.
- [10] Leskovar, V.Ž., Premrov, M. An approach in architectural design of energy-efficient timber buildings with a focus on the optimal glazing size in the south-oriented façade (2011) Energy and Buildings, 43 (12), pp. 3410-3418.
- [11] Yaveyn N.I. Opyt rekonstruktsii istoricheskikh zdaniy v tsentre Sankt-Peterburga s izmeneniyem ikh funktsionalnogo naznacheniya [Experience of reconstruction of historic buildings in the heart of St. Petersburg with the change of their functional purpose] (2006) Nauchnyye trudy. 2006. № 2. S. 33-68.