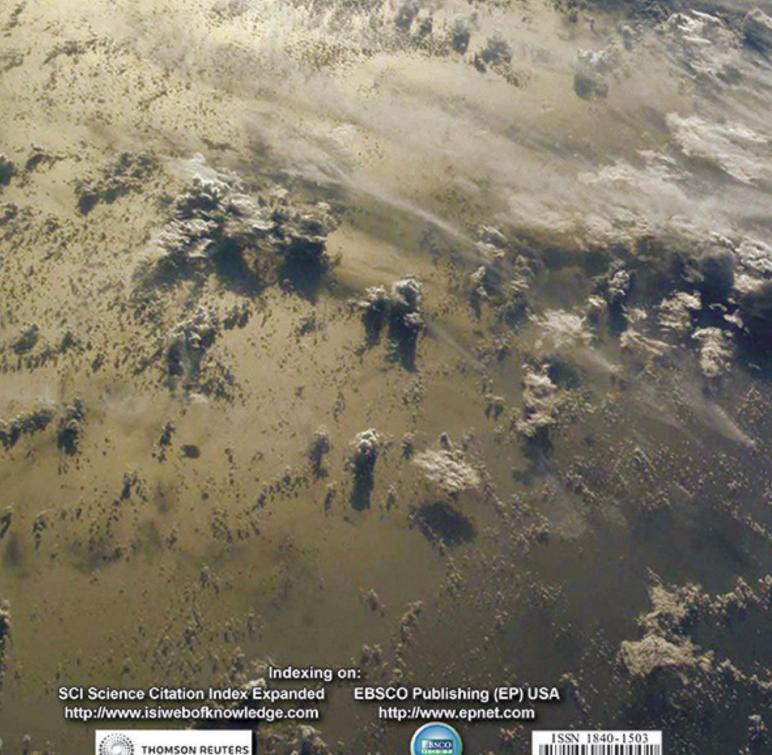
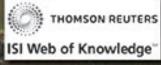
TECHNICS TECHNOLOGIES EDUCATION MANAGEMENT

JOURNAL OF SOCIETY FOR DEVELOPMENT OF TEACHING AND BUSINESS PROCESSES IN NEW NET ENVIRONMENT IN B&H











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Published by DRUNPP, Sarajevo

Volume 7 Number 3, 2012 ISSN 1840-1503

Impact Factor 0.351 (ISI Journal Citation Reports 2011)

Science Citation Index Expanded http://www.isiwebofknowledge.com EBSCO Publishing (EP) USA http://www.epnet.com



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Reconstruction of a traditional house and its functional modification into a "Town House" Museum in Leskovac

Jovana Miholcic¹, Milan Radojevic²

- ¹ Faculty of Civil Engineering, Belgrade University, Serbia,
- ² Faculty of Architecure, Belgrade University, Serbia.

Abstract

Bora Dimitijevic Piksla's traditional house in Leskovac, Serbia, is a rare representative example of traditional urban architecture of the 19th century in Serbia. For its architecural and constructional value as well as for the traditional building materials used, the house was labelled a monument of exceptional cultural value by the state authorities. Located in the very centre of town, the house nowadays functions as an independent building with a permanent exhibition and operates as a constituent part of the National Museum. The methods applied during the reconstruction are presented in this paper which provides a detailed insight into two different restoration procedures of both exterior construction details and interior architectural characteristic elements. From a museological aspect, the interior of the house reflects the typical interior of a 19th century town house and contains original household items, which is a true representation of the period's life-style. This house is one of Leskovac's landmarks. It is a cultural and historical "must see". The aim of this paper is to try to provide an educational insight into application and implementation of various expert knowledge and experience for the purpose of reconstuction and functional modification of traditional residential spaces into exhibitional venues.

Additional attention was paid to the maintenanace and preservation methods and procedures.

Key words: 19th century town house, cultural landmark, functional modification, museum, reconstruction, education, maintenance.

Introduction

The house was bought in 1948 from the Dimitrijevic family, who were its owners at the time. That was the first time that the house was restored

and adapted to serve the purposes of the National Museum in Leskovac. In 1974 the Museum was moved to a new building while the house was turned into a branch of the National Museum.



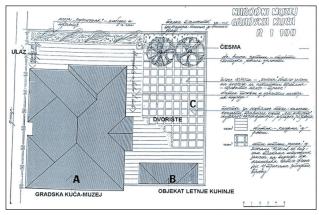
Picture 1. 19th century Town House, Leskovac, Serbia

In 1995 a reconstruction and adaptation project¹ was made which provided an outline of a detailed functional modification of the existing facility into a town house with an ethnographic exhibition. The facility was opened for public on May 9th, 2002, with a permanent exhibition of a 19th century town house interior typical of Leskovac. The house is located in the very town center. Architecturally, the house is a detached building with an additional facility positioned on a fenced lot surrounded by garden.

Reconstruction and adaptation project, permanent exhibition project and interior design project were done by Prof. A. Radojević and J.Radojević-Miholčić.

Constructional restoration project was done by Prof. M.Lazić. Conservational work on the original funishing was done, by prof. Z. Petković.

A synopsis of permanent exhibition was authored by S.Rajković, ethnologist.



Picture 2. Situation /A-town house-museum facility; B-additional facility (summer kitchen); C-yard with a garden and a drinking fountain

History

The house was built by Atanasije Dimitrijevic, the President of the First Degree Court in Leskovac, together with his wife Dara, who was a teacher, and his son Bora (a.k.a. Piksla), more than 150 years ago.

Bora Dimitrijevic Piksla was born in 1915 in Leskovac. He studied to be an agronomist, but turned an actor and director only to become a theatre manager later in life. He was shot by Fascists in 1942.

Stylistically, the house is a typical representative of a Balkan-style 19th century traditional town house

It was remodeled into a town house and its interior with the restored original furnishing exhibited in all the rooms on both floors present the visitors with the life-style and life habits of town dwellers of Leskovac in 19th century. The house hosts one of the most beautiful collections of items typically found in wealthy, old town houses of the Leskovac area.

The procedures adoped in the reconstuction process

A team of renowned experts from different fields had gathered with a main task to provide an efficient development and organization of project documentation followed by its practical implementation on the site, once the works started. The team was monitored by the Monument Protection and Preservation Office from Nis.



Picture 3. Photos showing the existing condition of characteristic architectural elements (entrance overhang of "divanhana", dauble buy windows-"erker", entrance part, roof eaves and fasade walls) before reconstruction

Once it had been determined that the the only records on the property in question were cadastre and property records, while no technical drawings could be traced in the archives, the team could start their work. For that reason the following steps were taken:

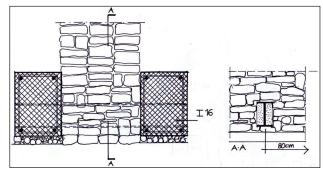
- 1. A thorough inspection of the building, with an emphasis on the constructional aspect, showed visible signs of damage at the fasade bearing walls, interior wall and at the overhang of "divanhana" above the main entrance. All window and door openings as well as console wood supporters on the corners of floor overhang, roof eaves and the roof construction cover showed significant damage.
- 2. The interviews with the locals and review of the written sources showed that the interior of the house was not functionally violated and that all the premises on both floors had retained their original purpose.
- 3. The cadastre data showed that the auxiliaury building with a summer kitchen was removed from the yard.
- 4. Entrance gate with the fence facing the street was in an exceptionally bad condition. First, it was photographed and then pulled down. The remake of the gate and fence was made based on the original design.
- 5. Remains of an old drink fountain were found in the yard, while the rose gardens towards neighbouring properties together with the garden in the centre were completely destroyed.

Constructional restoration of the facility

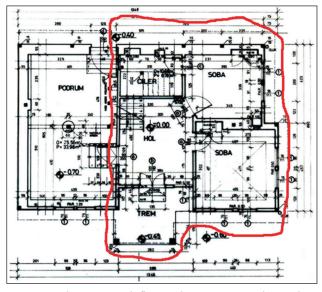
After the research had been completed and the necessary data collected the complete restoration of a construction elements was done. The following steps were taken:

- 1. The existing stone linear footings were inspected on the particular spots both from the inside and from the outside. The exact dimensions of the foundations were measured. The footings was analysed and the exact points of damage were determined, which helped define the precise order of structural restoration.
- 2. Through the exisitng old stone footings of all bearing walls the steel sections, I 16 in the lower

- zone, were placed in a perpendicular position. The distance between them were 80-100cm along the bearing walls. A reinforcement for the new foundations made from the reinforced concrete was placed on both sides. The main reinforcement was 4 Ø 14 and its stirrups were Ø 8 placed at every 15 cm.
- 3. The house foundations having been restored, the wooden floor construction was being removed.



Picture 4a. A detail from a cross section through the old stone foundations widened at both sides with reinforced concrete foundation beams. The connection between old stone foundations and the new concrete ones was made with the steel sections I 16 in the lower foundation zone.



Picture 4b. Ground-floor plan: rooms where the floors were restored

Before the reinforced concrete plate was laid, the base coats with adequate insulation were put. The plate was inacted with the openings in the bearing fasade walls.

- 4. During the restoration process the building was structural secured, both on the floor and on the ceiling in the shape of the cyrillic letter "Π".
- 5. The fact that the primary construction was structural secured, was very important for the reconstruction process as it allowed for all irregularities and visible roughness on the fasade (on the front, entrance and street-facing side) to be smoothed.
- 6. "Divanhana" was completely restored toghether with the supporting columns at the entrance part with the stone staircase.



Picture 5. "Divanhana" - a raised resting -area also used for guest-entertaining.

7. Heavily deformed wooden window frames with rosettes were carefully removed and reconditioned and put back to their original position, once the walls and the openings had been repaired and restored.

a wooden window with rosette (on the left) and a fragment of the street-facing fasade

8. Upon a close inspection the ceiling construction between the floors showed no damage. Therefore, no intervention was suggested in the protection and restoration project.



Picture 6. A part of 350



Picture 7. A segment of the ceiling construction

A detailed inspection of the roof construction showed that old original chimneys could not be restored, so after being photographed they were pulled down. Based on the photographs of the old chimneys, the new ones were erected which were true replicas to the original ones.

Original windows and doors, wooden staircase with its railing, wooden columns with capitols and wooden carving pillows, ceiling constructions were restored and preserved, while special attention was paid to preserving their original craftsmanship.

With interior reconstruction of the foundations, floors and walls complete, the house was given its original shape.



Picture 8. Street-facing fasade



Picture 9. Yard-facing fasade

Functional modification

Once the above mentioned phases of reconstruction had been completed, the house went through a functional modification and transformation. This called for the adjustment of the existing functional organization of the house to its new purpose, namely that of an exhibition venue.

All rooms on both floors kept their original functions, apart from the space left to the entrance hall which had a separate entrance as it was originally used for keeping cattle. In the organization of the house space, this area was turned into a selling galery which can operate independetly from the Museum. This area is also used by the members of the Museum Lovers Club.

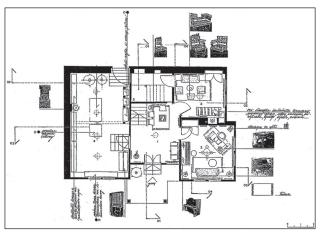
The kitchen with a hearth is entered from the central entrance hall. A dining table and a "dolap" (a large wooden cupboard) can be seen here. A spacious food pantry called "ciler" is situated next to the kitchen. The room that used to be the room for guest-enetertaining was turned into a study furnished with original items of furniture and personal items of doctor Jacques Confin, a doctor and a writer, who used to live and work in Leskovac.





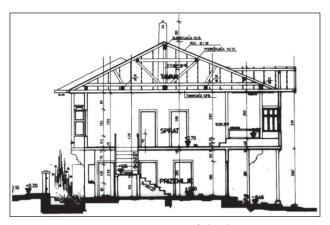


Picture 10. Interior of the different rooms containing exhibits from the 19th century



Picture 11. Ground-floor blueprint of the "Town House" Museum with its permanent exhibition

A massive wooden staircase leads from the entrance hall on the gound floor to the central hall on the first floor. The following rooms can be accessed from this hall: "kandil" room, the lounge and the study, as well as a small guest room and the "divanhana" area which is a raised area a few steps higher than the other rooms.



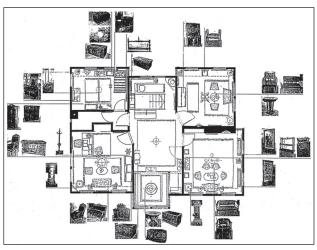
Picture 12. A cross-section of the house

The "divanhana" area faces south and overlooks the garden, and it was used as a rest-area or a guest-entertaining area.

Not only the house itself but the auxiliaury building with a sanitary section and the garden paths, a rose-garden and a drinking fountain were restored in the restoration project.

The complete reconstruction and restoration of Bora Dimitrijevic Piksla's family house and its conversion into the "Town House" Museum with a permanent ethnographic exhibition was a result of the thirty years of hard work of Prof. H. Rakic, who was at the head of the Museum at the time, and Prof. A. Radojevic, who authored the proj-

ect. They made temendous efforts to preserve the house as a part of the National Museum.



Picture 13. First-floor blueprint of the "Town House" Museum with its permanent exhibition.

The methods and procedures used during the restoration and preservation process were approved by Monument Protection and Preservation Office from Nis. Nowadays, the Town House is an architectural, historical and museological gem of Leskovac and Serbia, a true representative of the urban life-style and culture in the 19th century Serbia.

Museum maintenance

The present buildings hosting museum exhibitions are both functionally and constructionally complex spaces which require special equipment, wiring systems etc. Such spaces are multifunctional and interactive attracting a growing number of young visitors who expect a dynamic approach to information-sharing and education.

Such complex facilities require contemporary and adequate maintenance and management, which applies not only to the the buildings themselves but to all the equipment and devices necessary for ther operation. Therefore, various aspects of the building were examined and analysed prior to project designing. The aim was to instruct the future owners and users on the best possible mainenance procedures which would lead to the controlled, economical and efficient mainetnance so that the facility life-cycle would be prolonged, and its users would be offered as comfortable experience as possible with the lowest possible operational costs.

Conclusion

"Town House" Museum, from an architectural aspect, is a representative example of a Balkan-style building typical of the 19th century Serbia.

For that reason it was an impertative that only the most eminent experts from various fields be included in the process of reconstuction and restoration, since the most adequate restoration and preservation methods were to be defined. Once the reconstruction had been successfully completed, wherever it was allowed, the elements of construction wooden system-,,bondruk" of the 19th century were applied. Furthermore, the expert knowledge of the the specialists involved was implemented, the appropriate building techniques were demonstrated and the maintainance methods of the facility and its equipment were proposed. The facility went through a functional transformation from residential unit to an exhibition venue, which allowed the facility to exist in the future as a profitable and self-supporting unit.

The size of the project as well as its realisation show a great respect for our tradition and cultural heritage, while its importance lies in its educational value for the future experts.



Picture 14. A segment from the street-side fasade with typical double bay windows-,, erker"

Reference

- 1. Deroko, A.; Iz materijalne kulture prošlosti–etnografske beleške, Odeljenje društvenih nauka nova serija 14, Naučno delo, Beograd, 1963.
- 2. Deroko, A.; Narodno neimarstvo, SANU, Beograd, 1968, knjiga druga "Varoš", Beograd, 1968.
- 3. Devetaković, M.; Radojević, M.; Ćosić, G.: Integrisano modelovanje instalacija Identifikacija nastavnih objekata i moguće primene u arhitektonskom obrazovanju, II naučno–stručni skup Instalacije & Arhitektura 2011, Beograd, Srbija, 27-28. oktobar 2011., str. 213-220, ISBN 978-86-7924-058-3
- 4. Kojić, B.; Stari balkanski gradovi, varoši i varošice, ICS, Boegrad, 1976.
- 5. Miholčić, J.; Analiza arhitektonskog i konstruktivnog sklopa ruralne kuće u centralnoj Srbiji i Asturiji severna Španija, magistarska teza, Beograd, 2002.
- 6. Milenković, B.; Petrović, Z.: Prizren grad spomenikslika grada, Pokrajinski zavod za zaštitu spomenika kulture Priština-Leposavić, Beograd, 2006.
- 7. Pavlović, D.St.; Angelova, P.; Mucopolus, N.; Stojka,K.; Sezgin, H.: Narodno graditeljstvo na Balkanu, Beograd, 1987.
- 8. Petrović, Z.; Doksati i čardaci, Građevinska knjiga, 1955.
- 9. Radojević, M.; Ćosić, G.; Miholčić, J.: Facility Management Instalacije i uputstva za održavanje, II naučno–stručni skup Instalacije & Arhitektura 2011, Beograd, Srbija, 27-28. oktobar 2011., str. 153-160, ISBN 978-86-7924-058-3
- Vučenović, S.; Obrada konaka kneza Miloša i knjeginje Ljubice u Beogradu, Zbornik radova sa savetovanja o zaštiti spomenika narodnog graditeljstva, str. 127-132, Društvo konzervatora Srbije, Beograd, 1984.
- 11. Zdravković, I.; Dokumenti narodnog stvaralaštva, spomenici gradske i seoske narodne arhitekture u Srbiji, Beograd, 1990.
- 12. Živković, N.: Iskonska harmonija-narodno graditeljstvo opštine Sopot, Zavod za zaštitu spomenika kulture grada Beograda, Beograd, 2007.

Corresponding Author
Jovana Miholcic,
Faculty of Civil Engineering,
Belgrade University,
Serbia,
E-mail: jovana@grf.bg.ac.rs