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Fig. 1 Study for the renovation of the empty and abandoned facility of Fužine hydroelectric power plant on the right bank of the Ljubljanica River
Sl. 1. Studija obnove praznog i napuštenog pogona hidroelektrane Fužine na desnoj obali rijeke Ljubljanice

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Adaptive Re-use of the Built Heritage
Fundamental Principles in the Doctrine of Heritage Conservation

Obnova i prenamjena graditeljskoga naslijeđa
Temeljna načela očuvanja naslijeđa

ADAPTIVE RE-USE
RENOVATION
REVITALISATION
THEORY

OBNOVA I PRENAMJENA
OBNOVA
REVITALIZACIJA
TEORIJA

The adaptive re-use of buildings of the cultural heritage is one of the key components of a sustainable development model and fundamental principle in the doctrine of heritage conservation. With the re-use of buildings, a society's development can be provided with environmental, social, economic and other benefits. Presented selected examples as case studies confirm the theses and starting points from the first part of the paper.

Prilagođena ponovna uporaba graditeljskog naslijeđa jedna je od ključnih komponenata modela održivog razvoja i istovremeno temeljno načelo doktrine očuvanja baštine. Ponovnim korištenjem graditeljskog naslijeđa razvoj društva može imati ekološke, socijalne, ekonomske i druge koristi. Prikazani odabrani primjeri kao studije slučaja potvrđuju teze i polazišta iz ovoga rada.

Introduction

Uvod

Ensuring the use or establishing re-use of the building heritage for modern needs is one of the key components of a sustainable development model and is a fundamental principle in a creative strategy for the preservation of heritage. Sustainable development has long been an imperative for most advanced societies in the search for an appropriate development model. Advanced societies want to balance and harmonise 'environmental health', on the one hand, and economic growth on the other. The efforts are contradictory in their elemental essence and in principle mutually exclusive. The building heritage is a key source of balanced development. It is an indicator of the quality of the living environment and an important part of the local, regional, national and European identity.

Protection of the immovable heritage is in the public interest. The building heritage is not just something of material value. Public benefit can also be understood in other senses: cultural, educational, developmental, symbolic, identity etc. The preserved cultural heritage is therefore one of the pillars of a sustainable society, since it builds national affiliation and strengthens our sense of space, creates favorable conditions for economic prosperity in society, contributes to protection of the environment, actively creates social bonds and contributes to the health and well-being of all. Ensuring the use or establishing the re-use of the building heritage is a key component of various models of revitalization and cultural heritage development.[1]

The European Union declared 2018 to be Cultural Heritage Year. The key objective of the campaign was to raise awareness of the positive effects that cultural heritage has on all aspects of what happens in society: the economy, tourism, employment, international relations, cultural diversity, social inclusion and intercultural dialogue. In February 2017, the Committee of Ministers of the Council of Europe adopted a Recommendation entitled *European Cultural Heritage Strategy for the 21st Century*, which also highlights a new role for the building heritage in Europe. Among the recommendations, it stressed that "...the heritage has not only cultural value, but also has an undeniable economic value, which is poorly or incorrectly perceived. Similar to all goods and services, the heritage has market value and can be a safe investment. In terms of real estate, it is part of the organic form of spatial organization and /.../ can create the right energy savings and, therefore, from an energy point of view, is a convincing alternative to new building. An appropriate re-use of the cultural heritage is one of the essential means of tackling the negative effects of demographic change in urban and rural areas."[2]

The European Strategy of the Cultural Heritage for the 21st Century (Strategy 21) is based on principles and provisions already adopted in the past in the Conventions of the Council of Europe in the sphere of heritage, in particular the *Convention on the Value of Cultural Heritage for Society*[3], adopted in Faro, Portugal. At the same time, Strategy 21 takes into account the work carried out by the European Union and a number of UNESCO organizations that took part in the creation of the document.

Researchers have found that adaptive re-use of buildings is in line with the global requirement for sustainable forms of development. The re-use of buildings is environmentally friendly and contributes to the circular economy. The process of urban regeneration is a key condition for ensuring the effectiveness of interventions.[4] Again, the reuse of buildings often offers added quality: preserving the identity of buildings, which is directly related to their history. Stories from the history

1 *** 2017

2 European Cultural Heritage Strategy for the 21st Century, 2017. At its 1278 meeting of deputy ministers on the 22 February 2017, the Council of Ministers of the Council of Europe adopted Recommendation CM/Rec(2017)1 Council of Ministers of State Members on the European Strategy of the Cultural Heritage for the 21st Century. The strategy was presented to the wider public on 6 and 7 April 2017 on Cyprus.

of buildings usually attract people and allow them to establish a relationship with the buildings, since it is quite obvious that old buildings have their own cultural significance. In an age of turbulent political and social events, in which ever more people are living more and more in a unified, automated and sometimes even thoughtless manner, this may be what society increasingly needs: not merely to be a *tabula rasa*, but a layer of history.[5]

Recycling waste and unused products has become a general pattern of practices of modern societies that strive for environmental sustainability. The goal of recycling is to reduce the consumption of raw materials and to give new life to everything that has already been in use once: from bottles and packaging, to clothing, vehicles and buildings. Re-use of the architectural heritage is also a specific type of recycling, which transforms an abandoned or inefficient, obsolete building unit into a "new" unit that can be used for a different purpose. Adaptive re-use is the transformation of the building heritage, or an entire complex of buildings in a particular location, from one, usually abandoned use, to another – new use. In cases in which the heritage has a recognized value, the new use should contribute to the interpretation and understanding of the cultural significance of the heritage, while allowing a new purpose, new content. Adaptive re-use should give new life to the building or complex, which is more appropriate than "freezing" the building with restoration, as a museum exhibit at a particular moment in its existence.

With the concept of building renovation based on a plan of adaptive re-use, we are actually exploring all the possibilities that exist between two extremes: demolition or transformation of a building into a museum. By adding a new layer, represented by interventions in the renovation, without erasing previous layers, the project of adaptive re-use can become a new development phase in the history of the building and allow it to survive. This can sometimes be achieved with minimal interventions and adjustments, and with a minimum impact on the importance of the building heritage and its environment. It is important for investors to understand why the building has cultural heritage status, its cultural significance, and thereafter they strive for a manner of renovation that is appropriate and acceptable for a cultural heritage object, which also acquires with renovation new contents or a new purpose.

Adaptive re-use is one of the concepts of renovating the building heritage, which combines the preservation and presentation of the remains of the heritage with a new content. It is important that we preserve the valuable remains of the building heritage and do not destroy them with the intervention of renovation. Valuable remains are an opportunity, something exceptional, to incorporate them creatively into the renovation project. By doing so, we preserve them and make them available to future generations. Planning adaptive re-use brings the potential of added value to the heritage and can be an integral part of projects of regeneration and re-urbanization of wider areas.[6]

The importance of the architectural heritage as part of the wider urban structure is very often an inspiration for adaptations, which are usually carried out in such a way that at least some of the original elements of the building are restored, with or without additions that represent a contrast to the original and existing building.[7]

Re-use, on the other hand, can also be destructive of the building heritage if it does not take into account the heritage values. Re-use is not merely the preservation of the building envelope. The building heritage or an area must be understood in its entire extent. When planning projects for the re-use of the industrial heritage, we must also strive to preserve evidence of former technologies, materials, people and work processes. Projects of re-using the building heritage therefore require a higher level of creativity, adaptability of planning and innovation; what to preserve and what to change for long-term heritage management. In the case of a newly designed building project, it is not necessary to consider all the above.

The most successful examples of re-use of the building heritage are projects that to the maximum extent respect and preserve the importance of the cultural heritage and add to the heritage a "modern layer", which enables it to survive, to be used sensible and gives it added value. In cases in which the building can no longer function in its original purpose, adaptive re-use is the only way for the architectural structure of the heritage adequately to be preserved, presented and its cultural significance retained.[8]

Examples of adaptive re-use exist all around us. Few are higly celebrated conversions of notable heritage buildings. The majority, however, are simply part of contemporary practice often driven by economics; schools converted to condominiums, jails to hotels,

3 Convention on the Value of Cultural Heritage for Society, Faro, 27.10.2005.

4 Ažman Momirski, 2018: 158-159

5 See: Meurs, Steenhuis, 2017: 5

6 See also: Wong, 2017; Lah, Seljak, Krmelj, 2015

7 Uffelen, 2011: 8

8 Australian Government, Department of the Environment and Heritage, 2004: 3

factories to artist studios, churches to restaurants. Which of these many conversions are successful? How is that success calibrated? Is it through the merits of the new use? Or is it through a meaningful dialogue with the existing structure? What is the role of economics? What of the conservation of materials and energy?[9]

Some countries and their institutions are already producing guidelines for suitable interventions in the building heritage. By drawing up appropriate criteria and guidelines, they want to ensure in advance that projects of re-use have a minimal impact on the values of the heritage. The most emphasised are:

– deterring "facadism" – which means that renovation only preserves the facade, while all internal building structures are removed,

– requirements in the criteria that new interventions in the heritage are recognizable as modern and are not just a poor imitation of the original historical styles of the building,

– searching for new contents/purposes of buildings that are compatible with their original use.

It is very difficult to achieve good adaptive re-use of heritage without effort. It is necessary effectively to implement an appropriate process and encourage the mutual cooperation and participation of all stakeholders. Re-use of the heritage must be supported by clear documents that direct the development and future use of the heritage or its areas. The role of the heritage should be planned in the early stages of the preparation of spatial strategies and plans, which must be supported by a system of financial incentives and norms. Moreover, plans for heritage management, conservation plans and feasibility studies are crucial for ultimate success.[10]

Australia is known to be a country with a life-oriented and very practical attitude to its cultural and, in particular, its architectural heritage. The Burre Charter[11] is a document reflecting the development in Australia of an understanding of the theory and practice of managing the cultural heritage. The first version of the document was already adopted in 1979. The Charter is regularly updated every few years. The current version of the Charter was adopted in 2013. In Australia, based on realisation of its Charter, they have succeeded in promoting a number of examples of adaptive re-use of the building heritage. The guidelines from the Charter are perhaps the simplest and most clearly expressed wishes that define the doctrine of protection of the cultural heritage within the framework of the international organization ICOMOS. In Australia, 2004 was declared the year of the built environment. Attention was paid in particular to the suitable preservation of the building heritage. By publishing examples of good practice, they have tried to highlight and promote the importance of re-using the building heritage as the most sustainable form of development, highlighting the diverse and all-round benefits of projects of re-use of the heritage.[12]

The industrial building heritage is particularly at risk in comparison with other building heritage. It is clear that the industrial architectural heritage in developed countries has survived great economic and social changes and shocks in past decades, which are also reflected in the management of space and the real estate market. Due to the threat, it is difficult to ensure a use for the industrial heritage, especially in cases in which we are confronted with the collapse of factories and whole branches of industries.

Recommendations from the Committee of Ministers of Members of the Council of Europe on the protection of the architectural heritage of the twentieth century – R (91) 3) – and the recommendation of the same committee for the preservation and protection of the industrial, technical and engineering building heritage – R (90) 20)[13] are important starting points for forming the approach to protection of the industrial heritage.

The International Committee for Conservation of the Industrial Heritage TICCIH[14] is becoming an increasingly influential and important international organization for the study, protection, promotion and interpretation of industrial heritage. It works closely with ICOMOS. TICCIH is recognized as an organization for its advisory function, in particular on all industrial heritage issues.[15] To summarize the positions and definitions of TICCIH, areas and buildings of the industrial heritage are an important and integral part of our built space or landscape. At the same time, they are part of the material and intangible heritage associated with our past and have great potential and an important role in shaping the future of our cities and rural environments. The industrial heritage is the remains of an industrial culture, which have historical, technological, social, architectural or scientific value. These can be various buildings, factories, workshops, mills, machinery, mines, warehouses, shops, power stations, transport infrastructure and assets, as well as places and build-

9 Wong, 2017: 33

10 Australian Government, Department of the Environment and Heritage, 2004: 3

11 Burra Charter & Practice Notes. See: http://australia.icomos.org/publications/charters/ Australia ICOMOS

12 Burra Charter & Practice Notes; See also: Australian Government, Department of the Environment and Heritage, 2004.

13 The Council of Europe and Cultural Heritage 1954-2000: intergovernmental work: basic texts, 2001

14 TICCIH – The International Committee for Conservation of the Industrial Heritage, http://ticcih.org/ [28.1.2019.]

ings that were used for social activities related to industry, such as housing, religious and educational buildings.

The cultural significance of the industrial heritage can therefore be of an historical, aesthetic, social or purely technical nature. Protecting the building heritage and preserving knowledge of the history of national development projects is a challenge for the current generation of all those professions whose aim is preserving the heritage. Owners can accept this kind of heritage as an opportunity and development potential, or as a problem that can be most easily resolved by demolition. This means that adaptive re-use is particularly important in the conservation of industrial sites. This is often the only way to ensure the survival of the heritage, of retaining the memory and knowledge for the generations to come.

A temporary use measure can be a good way of preventing a worsening of the situation until the time when we are able to find a suitable long-term use for heritage. Long abandoned and empty buildings in cities are the most unused and problematic. The temporary use of buildings appears to be an informal practice that effectively addresses the problems of degraded urban areas, including abandoned industrial or factory buildings. Unused buildings in urban structures represent negativity. Without purpose, they are aliens in the urban tissue. Their temporary use can act as a catalyst for long-term urban development and can be the first step in finding a more appropriate and sustainable re-use of the building heritage.[16] At the same time, there is a danger that unsuitable temporary use may also be an obstacle to planned long-term renewal.

Environmental and all other Benefits of Re-use of the Building Heritage

Korisnost prenamjene graditeljskog naslijeđa za okoliš i ostalo

The re-use of the architectural heritage enables the preservation of cultural heritage and is one of the holders of a sustainable society. As is known the built environment is one of the most destructive factors, with consequences for the global climate and the environment. It is estimated that the construction sector is responsible for more than a third of global resource consumption, which includes 12 percent of all drinking water consumption and 40 percent of total solid waste production.[17]

Together with all this, one of the main environmental benefits of re-use of buildings is preserving the 'embodied energy' that was needed to construct the original building. 'Embodied energy' means the total energy required for the acquisition, processing, production, supply and installation of building material on the construction site. Energy consumption produces carbon dioxide, which contributes to greenhouse gas emissions, so 'embodied energy' is an indicator of the overall impact of building materials and systems on the environment.[18]

'Embodied energy' can thus be understood as all the energy that we consume for all processes and materials in the construction of a building: from the acquisition and construction of building materials, equipment, transport, to the energy needed for all works for constructing a building. 'Embodied energy' can also be converted in a simple way into an equivalent, expressed in litres of oil. For a building fully constructed from brick for which was used, for example, 200 m^3 of building material, this can be expressed as the equivalent of 32,000 litres of oil. This would mean that a cubic meter of brick used in the building is the equivalent of 160 litres of oil. The expressed 'embodied energy' in existing buildings thus becomes tangible and comprehensible to a layman. By re-using the building, this embodied energy is preserved, which gives projects greater environmental sustainability than the construction of an entirely new building.

Much more energy is needed for the construction of new buildings than for those obtained through renovation or with adaptive re-use. In 2001, new building in Australia represented about 40 percent of the total annual energy and raw material consumption, 25 percent of timber, 16 percent of consumed water, 44 percent of newly-used space, 45 percent of carbon dioxide produced, and at least half of all greenhouse gas emissions from industrialized countries. At the same time, the Australian Greenhouse Office notes that the re-use of building materials usually generates savings of approximately 95 percent of the "embodied energy", which would otherwise be wasted. In this context, the re-use of cultural heritage buildings is a major contributor to conservation of the environment.[19]

Preserving and re-using valuable historic buildings can have long-term social benefits

15 Industrial Heritage re-tooled, TICCIH Guide to Industrial Heritage Conservation, 2012

16 Cotić, Lah, 2016

17 United Nations Environment Programme. See: https://www.unenvironment.org/explore-topics/green-economy [7.1.2019.]

18 European Commission, Energy, Content, Introduction: https://ec.europa.eu/energy/en/content/introduction-3 [21.1.2019.]

19 See: Australian Government, Department of the Environment and Heritage, 2004: 4

for communities. Renovation of the building heritage preserves knowledge, professions, jobs and favorably impacts on economic development. At the same time, there must be awareness that a high quality of design of the built environment is of key importance for our standard of living and the conservation of natural resources. The re-use of buildings has an extremely important role to play in ensuring sustainable development.

The adaptive re-use of buildings maintains the identity of the space, the appearance of the landscape and its attractiveness. The re-use of objects of the cultural heritage in already formed residential areas can provide the community with a new addition to the building fund for housing and business opportunities. A good location, accessibility and usually already provided public transport to existing buildings can additionally attract potential investors, which can all together have a positive impact on social development.

There are many different financial, economic and macroeconomic advantages and benefits that can be expected by establishing renovation and re-use of the building heritage. As already pointed out, the buildings have a lot of embodied energy. The savings that can be expected from not opting for demolition will increase year after year, since the price of energy is expected to increase in the future. Although there are no detailed studies of the market value of renovated and re-used buildings, market values are expected to grow in future, in view of the originality and historical authenticity of such buildings.

Adaptation and re-use of buildings of the cultural heritage is a real challenge for architects and designers who want innovative solutions. There is always more than just one appropriate solution for renovating a building. The renovation of a building depends on the goal, the available financial resources and all the other restrictions. The accordance of the goal of renovation with the cultural significance of the building itself is the basis for a good final result of renovation, or for a suitable solution. Project planners, conservators and all other consultants must creatively work together to find the right solutions in order to develop and implement the best project for a building in the circumstances.

Analysis of Applicative Studies of Adaptive Re-use of the Building Heritage

Analiza primjenjivih studija prenamjene graditeljskog nasljeđa

There are many successful examples of the re-use of building heritage in the treasury of world architectural practice published in numerous magazines and monographs.[20]

At the Faculty of Architecture in Ljubljana, we also try to apply theoretical starting points with students. The final work in master studies is an opportunity to introducing theoretical principles from the internationally established architectural heritage protection doctrine into applied projects and – in selected cases – show how they could be implemented in practice. Below are briefly presented four examples of analyzes of applicative studies examples of the renovation of buildings with an emphasis on their appropriate re-use.

The aim of the analysis of selected case studies is to confirm the theoretical starting points and the findings set out in the introductory part of the article. The main criterion for the selection of the analyzed objects of cultural heritage and their common characteristic was the inappropriate use or even their non-use. Selected and analyzed objects of cultural heritage are different according to their typology, function and age. Therefore the models and approaches to their renovation are different and adapted to their characteristics and possibilities offered by selected objects in their environment. In the first two cases, we can talk about models of industrial heritage renewal, follow the model of restoration of the abandoned mansion and the model of renovation of the modernist villa. Analyzes show that ensuring proper re-use of buildings is the most important component of their comprehensive renovation and a key element in achieving environmental and all other benefits of reusing the building heritage.

- **Conceptual study of renovation of Fužine hydroelectric plant on the right bank of the Ljubljanica**[21] – The still operating Fužine hydroelectric power plant on the right bank of the Ljubljanica River in Ljubljana is a typical example of early industrial architecture and, at the same time, a monument of cultural heritage of local importance.[22] The industrial facility of the power plant, together with the water channel, was built in 1922. The present equipment of the power plant, with two turbines and a generator, is technologically obsolete and insufficiently efficient. According to experts in the field of energy, new equipment – modern and much more efficient – could be completely installed in the dam on the water channel. The relatively well-preserved building could thus be entirely devoted to new content.

With the concept of renovation, based on the re-use of the emptied building, we proposed

20 Meurs, Steenhuis, 2017; Uffelen, 2011; Wong, 2017; Ifko, 2006

21 Author: Tina Krmelj (2015); Supervisor: Assist. Prof. Dr. Ljubo Lah, u.d.i.a.; Consultant for construction: Assist. Prof. Dr. Lara Slivnik, u.d.i.a.; Consultant for building details: Igor Seljak, u.d.i.a.

Fig. 2 The abandoned railway warehouse in Škofja Loka renovated with appropriate multifunctional content
Sl. 2. Napušteno željezničko skladište u Škofjoj Loci, obnovljeno prikladnim polivalentnim sadržajem

in the detailed conceptual study two new purposes: to dedicate part of the building to accomodation, and the remainder to commercial activities. The new program re-designed the associated garden, a terrace above the water channel and the narrower surroundings of the building.

Suitable seismic and energy remediation can be achieved by using a new 'inner' circumferential structure using cross-laminated wood technology [Kreuz Lagen Holz – KLH]. The existing building is designed as a classical building made of bricks, which would be supplemented from the inside by means of easily assembled cross-laminated panels. By anchoring the KLH-plates to key points of the existing brick-built structure, it is possible to provide energy and seismic remediation. With the cross-laminated plate construction, it is possible to install new floor support plates. Due to the prefabricated elements, the construction is fast, precise, with little waste and has a long lifespan. It is also fireproof and seismically safe.[23] The concept of renovation of the building is an innovative solution with economic, social and other benefits (Fig. 1).

- **Conceptual plan of renovation of the railway warehouse in Škofja Loka**[24] – The railway station in Škofja Loka is a characteristic building type beside what is known as Rudolf's Railway from 1870. The main station building remains a vital facility that has been in use since its construction, while the railway warehouse has lost its original function over time and is now an empty, abandoned building. They are two units of the architectural industrial heritage created at the same time as functionally complementary buildings (Fig 2).[25]

The conceptual plan of renovation of the warehouse is based on the concept of re-using the warehouse with new content relating to the existing station building. We will renovate the existing object and preserve its original appearance. We will install in it a new facility that is modernly designed, low-energy and useful throughout the year. The technology of constructing the new structure is based on cross-laminated wood elements. The content is flexible: from a 'waiting room' with all the modern multimedia support needed by today's users, to a space for projections, exhibitions, lectures to closed

22 Mihelić, Košir, Ifko, 2002

23 Dujić, 2008

24 Author: Lidija Hajnrihar (2015); Supervisor: Assist. Prof. Dr. Ljubo Lah, u.d.i.a., Consultant for construction: Assist. Prof. Dr. Simon Petrovčič, u.d.i.g.

25 Mihelić, Košir, Ifko, 2002

Fig. 3 With reconstruction and suitable additions the ruins of Matzenauer manor in Prosenjakovci could become boutique hotel
Sl. 3. Obnovom i prikladnim dogradnjama, ruševine imanja Matzenauer u Prosenjakovcima mogle bi postati *boutique hotel*

Fig. 4. Present condition of Matzenauer manor in Prosenjakovci
Sl. 4. Postojeće stanje imanja Matzenauer u Prosenjakovcima

groups, which the open, flexible space allows. There will be sanitary facilities and an information office. The warehouse after renovation will be part of a modern public space intended for rest, waiting, meeting, getting information. The facility is adaptive for functionally impaired persons. Special attention is paid to the external arrangement. The space in front of the station is open, organized with an area for temporary stopping and fitted with a new bus station. New car parks (P+R) can be arranged in the western part beside the railway line. The re-use project provides the possibility of further survival of railway warehouse with new multifunctional content.

• **Conceptual plan of renovation of Matzenauer manor in Prosenjakovci: from ruin (shame) to boutique hotel (pride)**[26] – The manor house at the edge of the village of Prosenjakovci is a typical example of 19th century neoclassical architecture. The former summer residence of nobles became the home of Count Carlo von Matzenauer in 1900, after whom the manor is also named.[27] Despite the fact that the manor, with the estate and associated buildings, is a cultural heritage monument, today it is sadly in a state of decay. For those who see farther than ruins and a neglected estate, the facility still has great potential, in an exceptional environment and in an exceptional location.

The main guide to the renovation concept is to preserve and reconstruct the characteristic external image of the building, remove the inferior or destroyed elements and restore those that have exceptional cultural and artistic value, which are supplemented by the new architectural design. The associated estate is also a part of the cultural heritage, and together with the castle it creates the ambience of a prestigious residence.

The concept of renovation also includes the preservation of the former components of the neo-baroque park and additional arrangement of the park within the entire estate. In the spirit of the summer residence, a new boutique hotel program is established in the mansion, which is based on the quality of the local offer and can work in conjunction with the complex of hotels in the immediate vicinity – Terme 3000 in Moravske Toplice. For the needs of its accompanying program, new, modernly designed facilities are planned that summarize the character of the original estate buildings of the former manor house. The boutique hotel complements the tourist offer of the wider area and becomes, with its revitalization, a key part of its own environment – both in popular awareness and in terms of re-used heritage. The project combines all the environmental and other benefits of re-using the architectural heritage (Figs. 3 and 4).

• **Conceptual plan of renovation of Villa Grivec in Prule in Ljubljana**[28] – The villa is

26 Author: Tina Kerćmar (2015); Supervisor: Assist. Prof. Dr. Ljubo Lah, u.d.i.a.; Co-supervisor: Aleš Golja, M.Sc., Consultant on the conceptual plan: Assist. Prof. Dr. Simon Petrovčič, u.d.i.g., Consultant for building detail: Igor Seljak, u.d.i.a.

27 Zrim, 2011

28 Author: Petra Mendušić (2018); Supervisor: Assist. Prof. Dr. Ljubo Lah, u.d.i.a.

29 Zupančič, 2008; 2017

Fig. 5 The concept of renovating Villa Grivec in Prule in Ljubljana is adaptive to the cultural significance of the modernist villa
Sl. 5. Koncept obnove vile Grivec u Prulama u Ljubljani prilagođen je kulturološkom značenju modernističke vile

one of the most exemplary examples of Le Corbusier's modernist influence on Slovenian architecture, and thus one of the most beautiful and important functionalist architectural creations of the first graduate of the professor of architecture, Jože Plečnik, in Slovenia.[29] The task is to enhance the cultural significance and exploit the possibilities of renovating a two-storey building constructed to the plans of the architect France Tomažič between 1934 and 1936.

The villa has been poorly maintained for a long time. In fact, only one part is in use. The conceptual plan of the work is a plan of renovation of the building for its appropriate re-use. The redesigned new program of Villa Grivec in a foreign ambassadorial residence provides a suitable standard of living and, at the same time, takes into account the specific way of life of the ambassador and his family.

The planned renovation of Villa Grivec takes into account its cultural significance and all the benefits of re-using the architectural heritage which were presented earlier. The renovation plan envisages the removal of poor-quality interventions, the preservation of the characteristic external appearance and the creation of a new interior in accordance with the modern new program for the building and with the necessary technological improvements of the building. The new villa program is also adaptive to the design of the external arrangement and the layout of a public park in the immediate vicinity (Figs. 5 and 6).

Conclusions

Zaključci

Theoretical and practical research demonstrates numerous and diverse benefits of renovating existing buildings against the construction of new ones. All four presented and analyzed examples of renovations prove, that re-use of the architectural heritage is a

Fig. 6 The new villa program can be a residence of an ambassador or consular representative
Sl. 6. Novi program predviđa ovu vilu kao rezidenciju ambasadora ili konzularnog predstavnika

special form of recycling that, in the process of innovative renovation, converts abandoned or inefficient, obsolete objects into objects that are used in a different, adaptive way. Different methods and approaches can be used to achieve this goal, using different criteria for new interventions and use of heritage. Adaptive re-use is the conversion of the architectural heritage, or an entire complex of buildings at a particular location, from one, usually terminated use, into another, completely new one. In cases in which there are recognized heritage values, the new adaptive use of the facility should contribute to an interpretation and understanding of the importance of the heritage. Adaptive re-use should give new life to a building.

All this is shown by the presented conceptual studies from the conclusion of the paper: Fužine hydroelectric power plant, railway warehouse in Škofja Loka, Matzenauer manor house in Prosenjakovci and modernist villa Grivec in Prule in Ljubljana.

The uncritical demolition of still useful buildings and, consequently, their rebuilding at the same location, are usually wasteful interventions that do not contribute to the efficient use of energy, materials, space and the general development and benefits of society. The use of the building heritage for the needs of modern society remains an extremely important factor in a sustainable development model and is a fundamental principle in the creative strategies of heritage conservation.

The best way to preserve buildings, or entire building complexes of the heritage, is for them to be in use. If the building heritage is not in use, there is a great danger that it will sooner or later disappear from our space and life. Re-using the heritage is the greatest guarantee that the heritage will be preserved. The adaptive re-use of the building heritage must have a minimal impact on the cultural significance of the architectural heritage and its environment. In addition, it must be as compatible as possible with the original form of use of the buildings. Adaptive re-use actually constitutes a link to life – it connects the past with the present and is usually a project of the future.

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Illustration Sources
Izvori ilustracija

Fig. 1	Tina Krmelj
Fig. 2	Lidija Hajnrihar
Figs. 3 and 4	Tina Kerčmar
Figs. 5 and 6	Petra Mendušič

Summary

Sažetak

Obnova i prenamjena graditeljskoga naslijeđa

Temeljna načela očuvanja naslijeđa

Prilagođena ponovna uporaba graditeljskog naslijeđa jedna je od ključnih sastavnica modela održivog razvoja i istovremeno temeljno načelo u doktrini očuvanja kulturne baštine. Graditeljsko naslijeđe nema samo materijalnu vrijednost, zaštita nepokretnog naslijeđa javni je interes. Javna je korist razvidna i u drugim vrijednostima: kulturi, edukaciji, razvoju, simbolici, identitetu i dr. Očuvana kulturna baština stoga je jedan od stupova održivog društva jer gradi nacionalnu pripadnost i jača naš osjećaj prostora, stvara povoljne uvjete za gospodarski napredak u društvu, pridonosi zaštiti okoliša, aktivno stvara društvene veze i doprinosi zdravlju i dobrobiti sviju.

Europska unija proglasila je 2018. godinu Godinom kulturnog naslijeđa. Ključni je cilj kampanje bio podići svijest o pozitivnim učincima koje kulturno naslijeđe ima na gospodarstvo, turizam, zapošljavanje, međunarodne odnose, kulturnu raznolikost, socijalnu uključenost i interkulturalni dijalog. Odbor ministara Vijeća Europe usvojio je 2017. godine preporuku pod nazivom „Europska strategija za kulturnu baštinu za 21. stoljeće", koja također naglašava novu ulogu graditeljskog naslijeđa u Europi. Prilagođena ponovna uporaba jedan je od koncepata obnove graditeljske baštine. Konceptom obnove zgrada koji se temelji na prilagođenoj ponovnoj uporabi zapravo istražujemo sve mogućnosti koje postoje između dviju krajnosti: rušenja ili preobrazbe zgrade u muzej. Dodavanjem novoga sloja, kojeg predstavljaju zahvati u obnovi, bez uklanjanja prethodnih slojeva, projekt prilagođene ponovne upotrebe može postati nova razvojna etapa u povijesti zgrade i omogućiti njeno preživljavanje. Važno je da se sačuvaju vrijedni ostatci graditeljske baštine i da ih se ne uništi pri obnovi. Ti se vrijedni ostatci moraju na kreativan način uključiti u projekt obnove. Tako će se očuvati i biti na raspolaganju budućim generacijama. Planiranje prilagođenoga ponovnog korištenja donosi potencijal dodane vrijednosti baštini i može biti sastavni dio projekata obnove i reurbanizacije širih područja. Važnost arhitektonskog naslijeđa kao dijela šire urbane strukture često je inspiracija za adaptacije, koje se obično izvode na takav način da se barem neki od izvornih elemenata zgrade obnove, sa ili bez dodataka koji bi predstavljali kontrast izvornoj i postojećoj zgradi.

Neke zemlje i njihove institucije, primjerice u Australiji, već izrađuju smjernice za primjerene zahvate u graditeljskoj baštini. Izradom odgovarajućih kriterija i smjernica žele unaprijed osigurati da projekti ponovnoga korištenja imaju minimalan utjecaj na vrijednost baštine. Najistaknutije su ove smjernice:

– odvraćanje od 'fasadizma': što znači da obnova očuva samo fasadu, dok se uklanjaju sve unutarnje građevne strukture;

– uvjeti pri određivanju kriterija: novi su zahvati u prostore naslijeđa prepoznatljivi kao suvremeni i nisu samo loša kopija izvornih povijesnih stilova zgrade;

– traženje novih sadržaja/namjena zgrada koji su kompatibilni s njihovom izvornom uporabom.

Vrlo je teško pronaći dobru i održivu ponovnu uporabu naslijeđa. Potrebno je učinkovito provesti odgovarajući proces te potaknuti međusobnu suradnju i sudjelovanje svih dionika.

Prilagođenom ponovnom uporabom zgrada možemo pridonijeti razvoju društva kroz ekološke, socijalne, ekonomske i druge koristi. Glavna ekološka korist ponovne uporabe zgrada jest očuvanje 'utjelovljene energije' koja je bila potrebna za izgradnju izvorne zgrade. 'Utjelovljena energija' ukupna je energija potrebna za akviziciju, obradu, proizvodnju, nabavu i montažu građevnog materijala na gradilištu. Potrošnja energije proizvodi ugljični dioksid koji doprinosi emisijama stakleničkih plinova, tako da je 'utjelovljena energija' pokazatelj ukupnog utjecaja građevnih materijala i sustava na okoliš. Očuvanje i ponovno korištenje vrijednih povijesnih građevina može imati dugoročne društvene koristi za zajednicu. Obnova arhitektonske baštine čuva znanja, zanimanja, poslove i ima pozitivan utjecaj na gospodarski razvoj. Postoje i mnoge ekonomske, financijske te makroekonomske prednosti i koristi koje se mogu očekivati uspostavom obnove i ponovnoga korištenja graditeljskog naslijeđa. Naposljetku, adaptacija i ponovna uporaba zgrada kulturne baštine pravi je izazov za arhitekte i dizajnere koji žele inovativna rješenja.

Industrijska je arhitektonska baština posebno ugrožena u usporedbi s ostalim graditeljskim naslijeđem. Kao rezultat prijetnje industrijskoj baštini, teško je osigurati stanje stalne uporabe, pogotovo u slučajevima kada smo suočeni sa zatvaranjem tvornica i cijelih grana industrije. Međunarodni odbor za očuvanje industrijske baštine TICCIH postaje sve utjecajnija i važnija međunarodna organizacija za proučavanje, zaštitu, promicanje i tumačenje industrijske baštine, a usko surađuje s ICOMOS-om.

Cilj istraživanja i analize četiriju odabranih primjera jest potvrditi teorijska polazišta iznesena u uvodnom dijelu članka. Glavni kriterij za odabir analiziranih građevina kulturnoga naslijeđa bilo je njihovo neprimjereno korištenje. Odabrane i analizirane građevine razlikuju se po tipologiji, funkciji i starosti. Stoga su modeli i pristupi njihovu obnavljanju različiti te prilagođeni obilježjima i mogućnostima koje nude odabrane građevine sa svojim okruženjem. U prva dva slučaja može se govoriti o modelima obnove industrijske baštine, slijedi model rekonstrukcije i obnove ruševine dvorca te model obnove modernističke vile.

Najbolji je način očuvanja građevina, kao i cjelokupnih sklopova zgrada graditeljske baštine, njihova uporaba. Ako arhitektonska baština nije u uporabi, postoji velika opasnost da će prije ili poslije nestati iz naših prostora i iz naših života. Ponovno korištenje naslijeđa najveće je jamstvo da će se kulturno naslijeđe očuvati. Prilagođena ponovna uporaba zgrade mora imati minimalan utjecaj na njeno kulturno značenje kao graditeljsko naslijeđe te njenu okolinu. Nova namjena mora biti što je više moguće kompatibilna s izvornom namjenom zgrade. Prilagođena ponovna uporaba zapravo predstavlja vezu sa životom – povezuje prošlost sa sadašnjicom i obično je projekt budućnosti.

Biography

Biografija

Ljubo Lah, Ph.D., architect, assistant professor at the Faculty of Architecture, University of Ljubljana, Department of History and Theory. In his research field of architectural conservation and renovation, he focuses on the introduction of integrated forms of heritage protection. He has published over thirty academic articles and seven scientific books. He was involved in the creation and management of the State Technical Office after the earthquake in the year 1998 in the Soča Valley in Slovenia.

Dr.sc. **Ljubo Lah**, arhitekt, docent na Arhitektonskom fakultetu Sveučilišta u Ljubljani na Odsjeku za povijest i teoriju. U svom istraživačkom radu na arhitektonskoj zaštiti i obnovi bavi se uvođenjem integriranih formi zaštite naslijeđa. Objavio je preko trideset znanstvenih radova i sedam znanstvenih knjiga. Bio je angažiran na stvaranju i upravljanju Državnim tehničkim uredom nakon potresa 1998. godine u dolini rijeke Soče u Sloveniji.