

## CONTEMPORARY MEETS OLD IN REHABILITATING HISTORIC BUILDINGS

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**Aleksandra Cvetanović, Ana Momčilović Petronijević**

University of Niš, Faculty of Civil Engineering and Architecture, Niš, Serbia

**Abstract.** *Protection of architectural heritage is a very delicate mission that needs to be supported by a big set of knowledge and experience. Adding a new, dissimilar element to a historic building of big importance in a rehabilitation process is particularly disputed and needs to be addressed with even more research and justification. Contrasting architectural styles in one building can be even a controversial matter. In some cases, modern additions successfully preserve the originals while bringing something fresh and creative, while others fail to do so. The main question is: does a current trend of adding a new, modern extension to the architecture monument distinctly mean that it is obliterated, or can a mixture of contemporary and historic in old buildings produce good architecture?*

**Key words:** *rehabilitation, contemporary additions, modern meets old*

### 1. INTRODUCTION

When adding to an existing building, or designing within a rich historical context, there is always a key question: to what extent should the new structure look and feel like the surrounding ones? Does it make sense for the new structure to stand out or fit in? What are the advantages and disadvantages of both approaches? This paper originated from an ever-existing interest in determining whether the mixture between modern and old in historic buildings is good or bad. In order to answer this research question, the literature will be reviewed and the exemplary case studies from the practice will be analyzed.

Contrasting architectural styles is a very delicate issue, in some cases even controversial. The addition can outshine the historic buildings, while, on the other hand, these new elements can honor the original's heritage. Truly, in some cases, modern rehabilitations successfully preserve the originals while bringing something fresh and new, while others create a very unsatisfactory outcome [2]. The opinions about preservation and reconstruction differ, the

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**Corresponding author:** Aleksandra Cvetanović

Faculty of Civil Engineering and Architecture, Aleksandra Medvedeva 14, 18106 Niš, Belgrade

E-mail: [aleksandra cv.arch@gmail.com](mailto:aleksandra cv.arch@gmail.com)

strong opinions are often supported by political and social views, and, often, projects that include new, visible, different elements are perceived as controversial [5].



**Fig. 1** a) Castle of Matrera before and after the restoration, b) One of the proposals for Notre Dame's reconstruction

The subject became even more interesting with a controversial restoration in 2015 in Spain. The restored medieval Castle of Matrera from the 9<sup>th</sup> century is a national monument and an example of Heritage of Cultural Interest (see Fig. 1a). Rather than replicating the original stonework, the architect Carlos Quevedo has decided to fill in the missing sections with a contemporary addition. There have been three basic aims behind it: to structurally consolidate the elements at risk, to create a distinction between old and new (thus avoiding the imitative reconstructions that are prohibited by law), and to recover the volume, texture, and tonality that the tower would originally have had. The castle's restored tower has provoked many negative reactions. The Spanish heritage and conservation group, Hispania Nostra, has stood that the "consolidation and restoration is truly lamentable and has left locals and foreigners deeply shocked". By locals, it has been labelled as the world's worst restoration project, but by the architectural community, on the other hand, the project has been praised and won the 2016 Architizer A+ Award, in the Architecture Preservation category. Despite everything, the castle has now become a new tourist attraction in the area [6, 27].

The subject revived again when the debate was started about whether Paris's Notre Dame cathedral should be reconstructed in a traditional or in a contemporary way after the fire in 2019 (see Fig. 1b). The whole world argued about this burning matter. The idea of the modern undertaking was met with skepticism from numerous architects, conservationists, and academics, and polls showed that the majority of Parisians favored restoring Viollet-le-Duc's design. In the end, it was decided that Notre Dame Cathedral will be rebuilt just the way it stood before the devastating fire. The plan includes recreating the 19<sup>th</sup> century spire designed by architect Eugene Viollet-le-Duc that collapsed in the fire and "favors fidelity to the monument's form and a restoration of the cathedral in its latest state". The reconstruction plan states that the project will replicate original materials "to guarantee the authenticity, harmony, and coherence of this masterpiece of Gothic art" [16].

## 2. LITERATURE REVIEW

Architecture, both modern and old, defines city skylines and has a lasting impact on one's perception of a place. While historic architecture has its own charm, modern architecture also has the ability to be inspiring. Generally, people enjoy old buildings. Their

composition and massing are easy to understand, and their familiar ornamentation adds a richness of texture often absent in modernist architecture. As Adolf Loos claims in his 1908 essay "Ornament and Crime" modernists do tend to have an aversion towards ornamentation. Loos advocates that the application of ornament is "unnecessary and merely embodies fashion that will go quickly out of style". Many modern architects agree with Loos, but it is a fact that modernist buildings completely devoid of ornament are rarely embraced by the general public. It must be said that current architectural thinking has transcended modernism by light-years. The emerging contemporary architects of the twenty-first century have embraced the digital tools that allow the building elements to be combined in ways that resist categorization into any particular architectural style. The result is a captivating and stunning work, that is far from the familiar language of classical style both in appearance and theoretically. An obvious example of these claims is the Eiffel Tower. Now it is a symbol of French culture, but when it was newly installed it was declared as a monstrosity by many. The strength of emotional attachment that people have towards old buildings is in part due to a reaction against forms they do not find appealing [5].

The technical protection of historic buildings maintains the original aesthetic and provides us with an educational tool for the history, art, architecture, and engineering of the time period when the building was originally constructed. Also, every monument needs to be brought to life, to be revitalized, because an abandoned monument with a surviving purpose decays faster than a living monument. The technical protection of the architectural heritage would not be particularly difficult, given today's possibilities of using modern technology and modern materials, if we always knew everything that is needed about the architecture and forms of the monument's heritage. The problem lies in the fact that it is very rare to know what the monuments, which have been damaged or destroyed, once looked like. From these conditions and circumstances arise all the problems in the technical protection of monuments of architectural heritage.

The high level of modern technology in construction and a very rich selection of both old and new materials allows us to apply the most diverse methods in preserving monuments [14]. Choosing the most appropriate method depends on many [8] circumstances, and mostly from the condition of the monument and the documentation about it that we have [14]. The methodology choice requires careful decision making about a building's historical significance, considering the level of significance, physical condition, proposed use, code, and other regulations [8]. It is not possible to prescribe which method will be applied, because the choice of that method results from the mentioned criteria and it must be determined on a case-by-case basis.

The methods and treatments for the protection of architectural heritage are divided by their character in many different ways, but the [14] most common forms of technical protection are Preservation or Conservation, Restoration, Reconstruction, and Rehabilitation or Revitalization. Of the four treatments, only Rehabilitation allows alterations and the construction of a new addition, if necessary, for continuing or new use for the historic building. Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values [8].

The application of technical protection methods on a building with monumental properties only ensures the monument's existence and prolongs its lifespan, but if the monument is not brought to life and given a specific purpose, that lifespan will be much shorter. Therefore, the international charter from Venice stipulates that it is always better

for a monument to have a useful purpose for society. If it has one, the maintenance of the monument is also much easier because the means of maintenance are usually obtained from the user. On the other hand, if the monument is left without a purpose, it becomes a burden to a specialized profession, which is usually overloaded and not able to take care of it further, since the technical protection measures have already been performed. The monument remains to some extent left to itself and its destiny, that is, insufficiently protected. The use of historic architecture for modern purposes, or its revitalization, is a challenging problem and it takes a lot of enthusiasm, inventiveness, and economic resourcefulness to bring the monument to life. Anyway, the use of a monument is allowed only under the condition that its monumental properties are not damaged or destroyed [14].

Rehabilitation is the only treatment that allows expanding a historic building by enlarging it with an addition. However, the Rehabilitation guidelines emphasize that new additions should be considered only after it is determined that meeting specific new needs cannot be achieved by altering "non-character-defining" interior spaces. If the new use of the space cannot be accommodated in this way, then an attached exterior addition may be considered. New additions should be designed and constructed so that the "character-defining" features of the historic building, its site, and setting are not negatively impacted. Generally, a new addition should be to the historic building. A new addition should be compatible but differentiated enough so that it is not confused as historic or original to the building. The same guidance applies to new construction so that it does not negatively impact the historic character of the building or its site. When the rehabilitation is being implemented, there are some guidelines: new additions, exterior alterations, or related new construction can not destroy historic materials, features, and spatial relationships that characterize the property. The new work must be differentiated from the old and must be compatible with the historic materials, features, size, scale, and proportion, and massing to protect the integrity of the property and its environment. New additions and adjacent or related new construction should be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired [8].

Another problem when an architect is given the task to adapt a building can arise if the architect tries too hard to affirm his own work on that building and to give it a stamp of his own personality. Without thinking about it, the architect is thereby violating the authorship of one of the creators. Due to such relations, great damage was inflicted on many monuments of architectural heritage, especially in periods of changes in architectural styles and the emergence of eclectic styles. Without much restraint, new elements were added to the old monuments, which in most cases corresponded to the current fashion, the current taste, and time has shown how ignorant these procedures were. The creative abilities of an architect in protection must rest on other foundations and must be developed only with full respect for the integrity of the monument or the whole [14].

### 3. CASE STUDIES

Criteria for the valorization of buildings originated from the literature review, guidelines, and general principles in the application of technical protection of construction heritage monuments. Some of the criteria based on these principles:

1. The Question of Context
2. The Authenticity and monumental values preservation - the value of the original

3. Design Integrity and testimony of current style
4. Form
5. Scale
6. Color and material
7. Contrast

One of the most important questions when designing a building is the question of how that building should relate to its surrounding context. When new forms are physically joined to old forms the question of context is even more important. In this architectural fusion, it is very important if architects propose dissimilar individualistic interventions or designs that are seamlessly integrated into the existing urban fabric [5]. The basic principles of respecting the authenticity of monuments automatically lead to the requirement that technical interventions should be reduced to the most necessary measure [14]. The question of integrity is about whether the new addition testifies correctly about the time in which it is created, and whether it has value as a representative of the current style and trends. For a design to have integrity, it must be a product of its own time, an honest expression of the cultural forces active when the design was executed [5]. There is a rule that during the Rehabilitation everything that is added to the monument should be separated from the original parts. It should be presented in such a way that observers can easily notice what has been restored and what is original [14]. Contrast can lead to a better appreciation of both new and old.

The selected case studies are both good and bad examples from the practice, analyzed, and categorized by the defined criteria.

### 3.1. “Good” examples

This chapter intends to explore successful design approaches for visible interaction between modern and old architectural styles by conducting case studies of exemplary interventions made to old buildings. The common thread among the designs selected is a thoughtful and clear vision of how the new can interact with the old. These are historic buildings and their contemporary additions that work cohesively, respecting and advancing each other’s architectural significance.

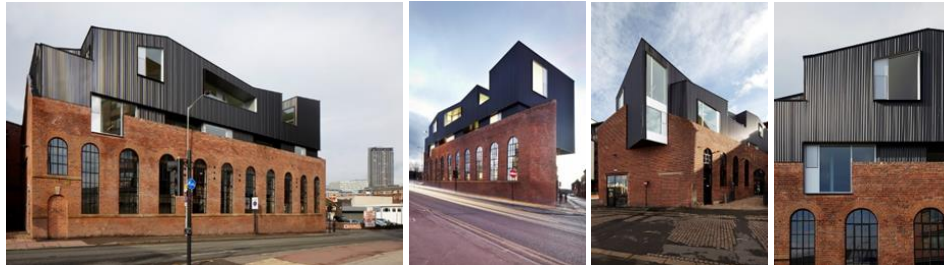
#### 3.1.1. *Shoreham Street / Project Orange*

192 Shoreham Street is a Victorian industrial brick building sited at the edge of the Cultural Industries Quarter Conservation Area of Sheffield. It is not listed but it is considered locally significant. Surrounded by other old brick buildings with dark roofs, this project is very finely incorporated into the urban tissue but also creates a new and vibrant context.

The idea was to rehabilitate the once redundant building and allow it to be once again relevant for use. The brief was to provide mixed-use combining a double-height restaurant within the original shell with duplex studio office units above. The raw industrial character of the existing building is preserved in a way that celebrates its industrial heritage.

Architects explain: “The new extension is contemporary yet laconic in form and an abstract evocation of the industrial roofscapes that used to dominate this part of the city. It is a contrasting but complementary volume, a replacement for the original pitched roof.” The upward extension replaces a pitched roof, creating three duplex studio offices within a powder-coated steel volume that both overlaps and bites through the original brick structure and looks like another building stacked on top (see Fig. 2). This project

creates a striking landmark on the inner ring road, a symbol both of the area's past and its aspirations for the future [1, 20, 21].

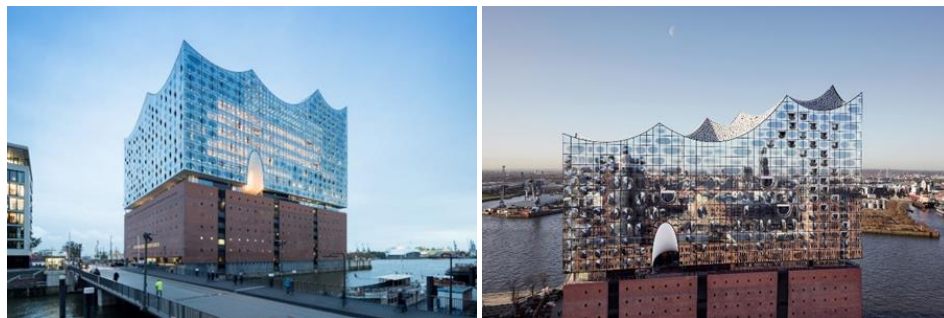


**Fig. 2** The old brick house with a contemporary addition

### *3.1.2. Elbphilharmonie Hamburg / Herzog & de Meuron*

The Elbphilharmonie, a new cultural landmark, lies in Hamburg's HafenCity, within the historic city port. It comprises three concert halls, a hotel, 45 private apartments, and a publicly accessible plaza.

This profile of the building is meant, according to Herzog & de Meuron, to contrast with the horizontality of Hamburg, "as an expression of reaching out into new territory". Around it, the HafenCity continues to come to life, with renovations progressing in the Elbphilharmonie's historic warehouse district along with futuristic new museums, offices, and housing [22]. The district is now set to become a new centre of social, cultural, and daily life for the people of Hamburg and for visitors from all over the world.



**Fig. 3** The new and shiny Elbphilharmonie

The old part, the magnificent neo-Gothic Kaispeicher building keeps the original and archaic feel. The external structure of the warehouse has been retained in its original form. It is a heavy, massive brick building like many other warehouses in the Hamburg harbour, but its archaic façades are abstract and aloof. The new glass part, consisting of curved panels, some of them carved open, transforms the building into a gigantic, iridescent crystal, whose appearance keeps changing as it catches the reflections of the sky, the water, and the city (see Fig. 3). The curvature of each panel depends on the particular area of the building [24]. The richly evocative edifice seems to represent mountains, waves, and sailing

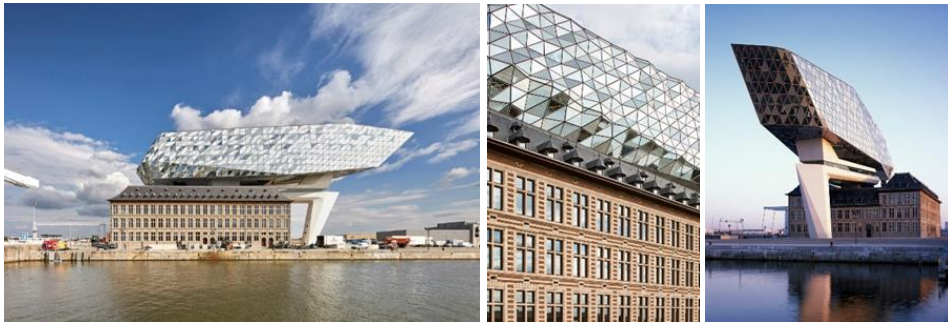
ships. Old and new conjoin in an exciting synthesis that is exceptionally radical. The two parts have contrasting facades. The warehouse below has a strong and robust appearance, whereas the new project has a glass structure extruding from and floating above the warehouse [23].

### 3.1.3. Antwerp Port House / Zaha Hadid Architects

The Mexico Island in Antwerp's Kattendijk dock on Quay 63, the threshold between the city and its vast port, is the site for the new head office for the Port of Antwerp. Zaha Hadid Architects' design is informed by detailed historical research and a thorough analysis of both the site and the existing redundant fire station. The design is an elevated extension, rather than a neighboring volume which would have concealed at least one of the existing facades. Like the bow of a ship, the new extension points towards the Scheldt, connecting the building with the river on which Antwerp was founded. With its dynamic, ambitious, and innovative design it stands as a symbol for the port.

The original building is preserved and it recalls the 16<sup>th</sup> century, Antwerp's "golden century", all the facades are restored in a very low-tech way. The existing building provides the base for the entire project, an equal part of the constellation.

Surrounded by water, the new extension's façade is a glazed surface that ripples like waves and reflects the changing tones and colors of the city's sky. Triangular facets allow the apparently smooth curves at either end of the building to be formed with flat sheets of glass. They also facilitate the gradual transition from a flat facade at the south end of the building to a rippling surface at the north. The striking and contemporary superstructure is in a shape similar to a diamond (see Fig. 4).



**Fig. 4** The new head office for the Port of Antwerp with a diamond like addition

A new volume that 'floats' above the old building, observing each of the old facades and completing the verticality of the original design's unrealized tower. The existing building and the new building are two entities, where one cannot work without the other. The new volume has a dynamic appearance in contrast to the static dignity of the existing building [4, 17].

### 3.1.4. Louviers Music School Rehabilitation and Extension / Opus 5 Architectes

The antique convent of the Penitents, in the city centre of Louviers -Normandy, is a very exceptional complex assembly of successive constructions, it is a monastery situated on the water, unique in Europe. This seventeenth-century convent has served a variety of uses over



the years and has housed a church, a prison, and a tribunal court, but was converted into a music school in 1990. The brief with a rehabilitation project was to offer Louviers a new modern, functional, and attractive musical school, and to highlight the archaeological heritage and its exceptional site in the heart of the city [11].

A plot is very tight so the architects had to fill all free spaces and raising extensions on top of existing walls. The south extension exposes its front to the water, towards the cloister and the city. Its incredible position represents the key to the project. It hosts the major element of the program: the big orchestra hall. This facade fits in a simple rectangular glass box with chrome stripes reflecting the surrounding environment and fading in the sky. The North façade is made of laminated glazed panels within the inside layer that has been coated with a mirror finish, and the frontier façades are made of prefabricated concrete panels. They are cut out to follow the surface of the ancient masonry [13].

The juxtaposition of old and new is clearly recognizable in the envelope (see Fig. 5). This is a compact project where the new parts dominate the ancient elements; however, the historical construction is still governing. Modern structural and material possibilities, shown through an acute geometrical form, permit the reflection of historical elements in the new addition [12].



**Fig. 5** The 3d model and the built extension

### *3.1.5. Musealization of the Archaeological Site of Praça Nova of São Jorge Castle / JLCG Arquitectos*

Set on a prominent hill overlooking the Tagus estuary, Lisbon's Castelo de São Jorge is the site of the first known human settlement dating to the Iron Age. The task was to devise structures that would make this fragile and disjointed palimpsest both physically presentable and museologically comprehensible to visitors. A series of new elements were added, all very consciously of their time, but inculcated with a reductivist, neutral spirit that plays against the desiccated remains and subtly enhances the relationship between old and new.

The blade-like planes of Corten thread precisely around and through the site, lining the sides of shallow excavation pits and forming a hovering structure to protect the remnants of a mosaic floor that once formed part of the Bishop of Lisbon's palace (see Fig 6). The underside of the cantilevered Corten structure is covered in a black mirror, enabling visitors to inspect a reflected image of the mosaics at closer quarters. Counterpointing the roughness and friability of the excavated remains, the same formal and material precision characterizes other new elements, such as limestone steps, landings, and seating. The most conspicuous



new addition is a pristine, white-walled box, itself resembling the temporary structures of archaeological digs, constructed over the foundations of a pair of Moorish houses. The white walls float above the visible foundations, touching the ground on a mere six points.

Not only do the new parts safeguard the site, but they also add an experiential dimension that brings its rich history more resonantly to life. This project radiates with clarity, sensitivity, and refinement of the new additions, and the way in which they connected with the existing archaeological remains and addressed the wider landscape of the castle is extraordinary [19].



**Fig. 6** A hovering protecting new structure

### 3.1.6. Kalø Tower Visitor Access / MAP Architects + Mast Studio

This is a project of an observational staircase within a 700-year-old medieval ruin (see Fig. 7). The ruin is one of Denmark's best maintained medieval castles and a part of the Realdania "Stedet Tæller" and "Steder i Landskabet", located on the south of Djursland, close to Århus. The building site was extremely challenging since the whole area is a cultural heritage and strictly protected, therefore, no damage to the tower was allowed and the process was closely monitored.

Behind the visual simplicity of the project lie layers of narratives and complex structural decisions, in order to create a staircase that is sensitive to the historical importance of the site. The Staircase is based on a steel frame construction, supported on the ruin at only four points to minimize damage to the historical monument. The sides and underside are clad in ash wood, specially treated with heat to maximize durability to up to 60 years without the paint. The stairs and handrail are metal, painted in matt black to ensure maximum durability since the site is at the coast and therefore under tough weather conditions [10].



**Fig. 7** Observational staircase

### 3.2. “Bad” examples

It is rather hard to determine whether a mixture of old and new is done positively or negatively. One can argue that this is very subjective and depends on someone's preferences. In this chapter, bad examples from practice are listed based on earlier mentioned criteria.

#### 3.2.1. *The Union of Romanian Architects / Dan Marin and Zeno Bogdanescu*

The building that houses the Union of Architects in Bucharest is situated at the intersection of Boteanu and Demetru Dobrescu streets, right in the heart of the capital. This controversial building from the 19<sup>th</sup> century has a long history, but nowadays it has become a tourist attraction due to its unique architecture. This building does not fit with the surrounding Revolution Square and is considered one of the strangest buildings in the whole country [25].

The lower part of the building, a historical landmark, has been consolidated, and behind the brick walls, a steel and glass tower was erected (see Fig. 8a and 8b). It is very peculiar that the architects decided that the historic facade should stay simply a shell, with a whole new 28 meters high glass building inside [26].

Some argue that the new construction appeared as a result of neglecting a historical monument, but others claim that the architects were limited by local laws about architectural styles and historic landmarks. But it is clear that the original building could have been restored to its full beauty and complemented by a more appropriate extension [2].



**Fig. 8** a) and b) The Union of Romanian Architects, c) Bagrati Cathedral

#### 3.2.2. *Bagrati Cathedral / Andrea Bruno*

The 11<sup>th</sup>-century medieval Bagrati Cathedral is sited in the Georgian province of Imereti in the city of Kutaisi. The story of this renovation is a political one. Heritage professionals like UNESCO thought the Cathedral would be better left alone, but the President decided to go with a renovation.

It was not known what the church originally looked like, making a full restoration impossible, so a modern component was added to the side of the building that was destroyed in past. This modern addition of the Touch and Peltrox finishes combined with glass was not welcome, because it significantly changed the character of the existing structure (see Fig. 8c).

After the renovation was complete, UNESCO even changed the church's status from a historic site to a cultural site to reflect the fact that the project was not completed with sensitivity to the structure's heritage in mind [2].

### 3.2.3. *The Renaissance office building / Vero-Art Bojanowski & Jean Jacques Ory*

Raised in the Plac Zbawiciela square, a trendy downtown spot full of cafes, restaurants, and traffic, the building stands in place of a tenement house called the Pawłowicz House. The Renaissance building does a good job at mimicking historical architecture and does not really seem alien to the square's outline (see Fig. 9a).

This reconstruction stirred a lot of controversies back when it was being done. The 19<sup>th</sup> century ornate neo-renaissance building managed to partially survive the war. After being renovated, it stood in the square until the 2000s, when it underwent reconstruction. Under the pretext of construction work (adding new stories, reshaping the interiors while retaining the exteriors) the house, amidst a scandal, was partially demolished in February 2002. In January 2003 it was demolished completely – only the front walls in Mokotowska Street and in the Square were left. In 2005 the reconstructed building was completed – the house gained a third story, but over it, two additional ones were built, with full-glass exteriors. Also, the historical balconies, that had been preserved, were torn down [15].

It is a successful reinterpretation of tradition, one that harmonizes with its surrounding, the extension does not deviate, but it could be done in a better way to be more complementary to the existing building.



**Fig. 9** a) The extension of the Pawłowicz House, b) and c) Studio extension of a church in Hoboken

### 3.2.4. *Studio extension of a church in Hoboken / Marchetto Higgins Stieve Architects*

This project is located in Hoboken, New Jersey, USA and it is an extension for the architecture studio, that resides on a historic location of a former church. It is a very extravagant design that is standing out from the former church and neighborhood.

The extension does not follow the same lines as the main structure and creates a dramatic contrast (see Fig. 9b and c). The architects used modern materials that contrast with the natural brick and stone that were used to build the original building. It is a very different strange shaped design from the original [7]. There is a view that the extension is "built on the thin line between kitsch and work of art" [3].

#### 4. CONCLUSION

The relationship between historic buildings and contemporary additions has always been a big issue in the historic preservation field, but old buildings, besides their historic value, also have a functional one. By reusing existing buildings, not only can we preserve the history behind them, but also, we can save the resources required to build new, prevent pollution, avoid the unnecessary accumulation of solid waste, and prevent the growth of urban sprawl [9]. Modern or not, the new addition can give a historic building a second life. Today, rehabilitation with contemporary elements is indeed permissible, but it should enhance the experience of the concept and not erase the story of the building for aesthetic reasons [18].

With a contemporary addition, the styles expressed on historic buildings represent the language of the past and the new styles represent the present. For this reason, it is important to create an environment where both can coexist and correlate with each other, building additions using contemporary architecture styles with an honest representation of the current social situation while protecting the historic structure which represents the social situation of the past [9].

The analyzed case studies presented many creative solutions, but rather by the personal preferences and taste, the good example is determined by detailed historical research and respect for architectural significance of both old and new. According to research, approaches evaluated as positive ones showed interventions that are integrated into the existing urban fabric, respecting the architectural context. It is a cohesive relationship between a historic building and its contemporary addition with the proper use of all architectural elements, in particular the surface articulations. They are respectful to the history, but also represent the current trends in architecture. The scale and used materials made a big impact on determining what is good and what is a bad intervention. All the examples had a good sense for contrast, there was a clear distinction between old and new, but that is not enough for one intervention to be successful. The best examples celebrate their surroundings and bring new life and people to the site and the building itself. After all, it is about the social usage, about a lively city.

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## **SPOJ SAVREMENOG I STAROG U REHABILITACIJI ISTORIJSKIH ZGRADA**

*Zaštita graditeljskog nasleđa je veoma delikatna misija koja treba da bude potkovana velikim spektrom znanja i iskustva. Dodavanje novog, različitog elementa istorijskoj zgradi od velikog značaja, u procesu rehabilitacije, naročito je sporno, i tom postupku se treba pristupiti sa još više istraživanja i obrazloženja. Spajanje kontrastnih arhitektonskih stilova u jednoj zgradi može biti čak i kontroverzna stvar. U nekim slučajevima, moderne dogradnje uspešno čuvaju originale, donoseći nešto sveže i kreativno, dok se u drugim slučajevima to ne uspeva. Glavno pitanje koje se nameće jeste: da li aktuelni trend dodavanja nove, moderne dogradnje spomeniku arhitekture obavezno znači da je on zbrisan ili kombinacija savremenog i istorijskog u starim zgradama može proizvesti i dobru arhitekturu?*

Ključne reči: *rehabilitacija, savremene dogradnje, spoj savremenog i starog*