

Extraordinary Modernism in The Reconstruction of The City Center of Le Havre on The Example of The Church of St. Joseph According to The Design of Auguste Perret

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Abstract: The aim of the work is to reread the extraordinary architectural, structural and aesthetic values of a sacred architectural object from the period of reconstruction of the city center of Le Havre. The research used the method: case study on a selected example of the church of St. Joseph. The scope of research included spatial and structural analyses and material solutions in the context of the reconstruction of the Le Havre city centre area carried out in the current of academic modernism. Results: The church building, together with the town hall building and the cathedral, is one of the three main elements of the historical urban composition and the contemporary reconstruction of the city centre of Le Havre carried out by Auguste Perret. The church building in the style of academic modernism is still an inspiring and unusual example of the use of raw material, which are concrete and reinforced concrete in the implementation of a sacred object. The object is an example of modern construction thought, which also plays an artistic role in the creation of the form and interior of the object. The spatial, aesthetic and functional values of reinforced concrete construction and concrete detail are an enduring example of mastery of technology and implementation of spatial vision in this difficult and unattractive building material. To sum up, it should be stated that this object fits into the context of coherent and comprehensive thinking about sacred architecture and urban space reconstructed in reinforced concrete technology during the modernist period. It is a forgotten, but still extraordinary inspiration for contemporary needs in this area.

Keywords: academic modernism, August Perret, Le Havre, St. Joseph's Church in Le Havre

Introduction

The reconstruction of Le Havre falls on the period of development of modernism – the dominant architectural trend in the post-war years. This was essential to today's image of the rebuilt downtown of the city, which was influenced by Auguste Perret, called the father of reinforced concrete. It is reinforced concrete and concrete that have become symbols of the reconstruction of Le Havre and constitute a characteristic and unprecedented aesthetic expression of the architectural and urban structures of the city realized in the style of academic modernism (Szumigała, Szumigała, 2021).

The city of Le Havre (French: Le Havre) located at the mouth of the Seine on the English Channel (France, Upper Normandy) has always been of strategic importance. Le Havre was the most important port in northern France since 1517. The strategic location of the port and the city was the reason for its destruction during World War II. The main designer of the reconstruction of Le Havre in the years 1945–1964 was the architect Auguste Perret, born in 1874 in Ixelles (Belgium), a lecturer at the École des Beaux-Arts in Paris – a teacher of Le Corbusier.

Purpose of work

The aim of the work is to rediscover the extraordinary functional-spatial and aesthetic-impression values of implementation in the style of unusual and forgotten academic modernism, presented in the rebuilt objects and urban structures of the city center of Le Havre. Particularly noteworthy here is the sacral object – the church of St. Joseph, which together with the cathedral and the town hall constitute the three most important elements of the composition of the historical and contemporary functional and spatial layout of the fragment of the rebuilt structure of the city center of Le Havre [Fig. 1 B].

Methods

The research used analysis – a case study of the presented sacred object of modernist architecture with special material and architectural and structural values. Using qualitative methods, comparative analyses were carried out at the level of the form and architectural composition of the church and urban analysis for the downtown area, with particular emphasis on the historical and contemporary location of the church building. To illustrate the presented theses, in situ research was carried out and documented with posted photographs, which were taken in 2019.

Scope

The research covered an architectural object – the church of St. Joseph. – constituting an extremely important element of the historical urban structure of the city centre of Le Havre destroyed during World War II. The location and architectural and structural structure of the building, detail, material solutions and spatial aspects in the context of reconstruction from the war damages of the city center of Le Havre were analyzed.

Literature review

In the literature on the subject we find numerous archival materials. The first publications on the reconstruction of Le Havre date back to the 60s. In 1953, Auguste Perret himself, together with André Le Donne, described the subject of the reconstruction of urban structures in terms of technology and discussed problems in the field of construction and construction works. In 1957, Pier Dalloz dealt with the planning and design aspects of the reconstruction of downtown Le Havre. The issues of the reconstruction of Le Havre were also described in theoretical terms in aspects of the style and school of modernism. In 1985, Abram spoke about Auguste Perret's school in Nancy. Then, in 1989, Abram referred to the utopia aspects in the reconstruction of Le Havre and in 2020 he presented an album on the reconstruction of the city (Abram et al., p. 132). In 1999, Etienne-Steiner presented the figure of Auguste Perret in the context of the reconstruction of Le Havre. Interest in the modernist reconstruction of Le Havre increased significantly at the beginning of the twenty-first century, when in 2007 Martine Liotard discussed modernism as a kind of renaissance in urban activities. There are also completely different positions during this period. Minosh in 2007 reflected on the utopian aspects of modernist efforts to rebuild Le Havre. At the same time, new concepts of cities on the example of Le Havre were presented (Solarek, 2011; Le Havre, 2009). The trend of analysis of urban areas in terms of sustainable development in the context of the reconstruction of Le Havre is presented by: Schneider-Skalska in 2012 and Calgarotto in 2014. In the

20s of the twenty-first century, interest in modernist thought is growing again, which is given both to criticism, but also to rediscover the values of academic modernism presented by Auguste Perret, relating to the positive aspects of urban space planning. The advantages of the use of reinforced concrete by Auguste Perret were presented by the team under the name *Of the Architect* in 2019, while the issues of the history of modernist utopia were discussed by Chauvi (2021). In the same year, the architects Szumigała and Szumigała (2021) pointed to the advantages of the urban space of forgotten academic modernism in the reconstruction of Le Havre.

Around the turn of the century numerous publications on the Church of St. Joseph in Le Havre were published. Décultot (1992) described the churches of Le Havre and Blanchet and Vérot (2015) discussed the church building as part of an analysis of sacred architecture. The interiors and stained glass windows of the Church of St. Joseph in Le Havre were presented in aesthetic and sensational areas (Knap et al., 2002, *Église St. Joseph*, 2009) and aspects of the symbolism of the church form and the architectural-aesthetic aspects of the light-house filled with stained glass paintings (Mościcka, 2017).

Results

Buildings of the church of St. Joseph on the behind of the urbanistic structure Havr

The first chapel dates back to 1871, and was replaced by a second church in 1877. During the bombing of Le Havre on 5 September 1944, the church was completely destroyed. The third (today) temple was designed by Auguste Perret. The modernist church was built between 1951 and 1957 as an integral part of the urban planning of the new city center of Le Havre.

The reconstruction of downtown Le Havre, carried out by Auguste Perret, is an example of the modernist trend of post-war architecture and urban planning in its best academic form. The compositional, material and spatial-functional solutions used here continue to fulfil their tasks by ensuring a special climate and colour of the city as well as the character of the urban structures with good proportions of public spaces and a clear functional and spatial layout of the development plan. This can be seen in the moderate urban rhythms of multi-family, service, religious and industrial buildings, whose modules have been adapted to the requirements of reinforced concrete building technology (module multiplication 6.21 cm), while maintaining the essential elements of the existing composition. Comparison of city plans, historical and after reconstruction the continuation of historical urban rhythms is shown in the composition of new quarters of development [Fig. 1 A, B].



Fig. 1. A – Town Hall – 1, St. Joseph’s Church – 2 and Cathedral – 3 in the historical composition of downtown Le Havre, **B** – Town Hall – 1, St. Joseph’s Church – 2 and Cathedral – 3 in the composition of the contemporary downtown of Le Havre. Source: Szumigała P.P., Szumigała K.O.

The new development plan dominates the urban rhythms characteristic of historical divisions (in the road axes) with the dimensions: small quarters – 40×140 m, medium quarters – 140×125 m and 140×175 m and large quarters for the main public spaces of the urban structure – 140×215 m (park), 215×265 m (City Hall Square) and 130×800 m with harbour basin). In the case of Le Havre (in contrast to other projects), they produced a positive effect in the form of well-chosen cross-sections of streets, interiors of quarters and squares, and with a particular unique character of buildings and facades [Fig. 2]. The uniformity and stylish coherence of the reinforced concrete architecture with the preserved urban structures have been preserved here. This shows the timeless development of urban planning thinking in terms of a holistic approach to urban planning (Szumigała, Szumigała, 2021, p. 65).

The example of the development of the city center of Le Havre can now also provide inspiration for modern proposals and the planning of public spaces. The reconstruction area with the centre of Le Havre and the Church of St. Joseph was declared a World Heritage Site by UNESCO in 2005 and has since experienced a new boom.



Fig. 2. Facades of residential buildings in the form of quarters in the rebuilt downtown of Le Havre. Source: Szumigała K.O.

Three objects play a special role in the urban composition of downtown Le Havre. These include the town hall on the north side, the cathedral on the south side, which are connected by a north-south composition axis, and on the west side the Josefs kirche, which in the historical and no longer existing buildings was connected to the town hall by an oblique composition axis [Fig.1 A]. After the reconstruction of the city center by Auguste Perret, the quarter grid and the street layout were changed to a vertical layout in this part of the city center. As a result of this intervention, the church building is now located on an east-west composition axis, which links the north-south axis at the main junction of today's composition, i.e. at the central corner of the city's largest square, the Oskar-Niemayer-Promenade, formerly Gambett-Platz [Fig. 1 B].

Location

The redesign of the buildings in downtown Le Havre, in particular the new composition and layout of the quarterly grid according to Auguste Perret, also influenced the current location, the proportions of the church's floor plan and the shape of the square around the building. The new church building has been relocated to the south from its previous location in 1877 and is located on the south side of the Roe Louis Brindeau road axis, and the main axis of symmetry of the new layout of the church runs parallel to this road [Fig. 1 B, Fig. 3].

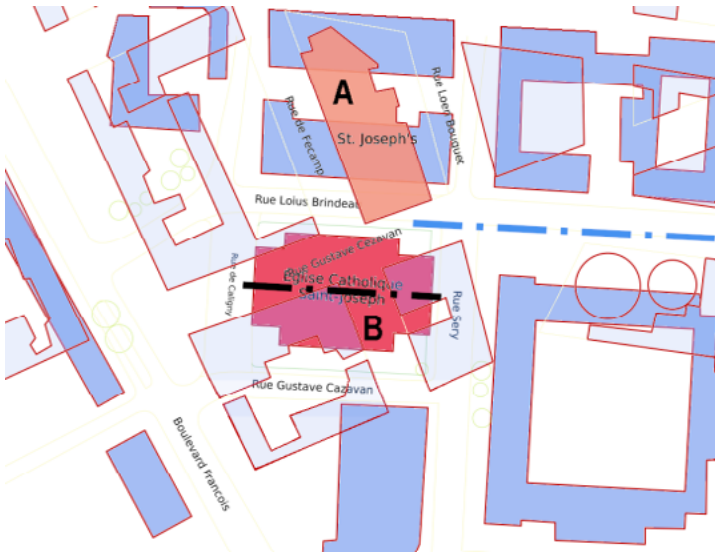


Fig. 3. Location of St. Joseph's Church in Le Havre: A – historic, B – after the reconstruction of downtown Le Havre by Auguste Perret. Source: Szumigala P.P., Szumigala K.O.

Litter

Auguste Perret designed the open church building of the Greek Cross with two wide risalites on the main axis: west on the entrance side and east on the sacristy side. The central arrangement of the interior was retained for liturgical functions. In the middle there is a confessional hall with an altar. On the main axis of the interior on the east side is a glazed chapel, followed by sacristy and sanitary rooms. The centrality of the system was further underlined by the fact that the tower was placed above the body of the building – in the middle of the intersection of the two plan axes [Fig. 4].

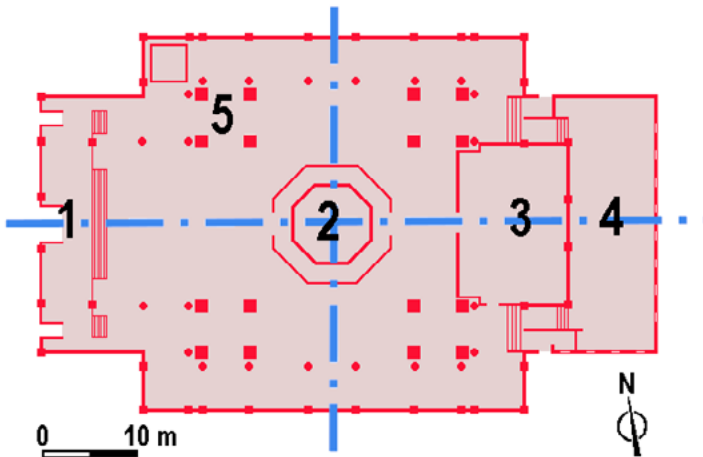


Fig. 4. Projection of the church of St. Józefa in Le Havre., 1 – main entrance, 2 – chancel, confession and tower, 3 – chapel, 4 – sacristy, 5 – one of 4 groups of quadruple pillars supporting the tower. Source: Szumigala P.P., Szumigala K.O.

Lumps

The structure of the church consists of a square plan, which connects to the plan of the Greek Cross, with a slight extension on the east-west axis. On the east and west side, two wide risals with vertical distortions in the corners adhere to the main body. This treatment dynamises and perfectly shapes the shape of the body, highlighting throughout the body the symbolism of the Greek Cross, which is contained in the horizontal floor plan of the building. The entrance portal in the west risalit has been greatly reduced and is emphasized only by a

cross above the door in the middle of the tripartite vertical risalit division. The main body in the middle section is covered with a rectangular elevation of the nave. On the elevation there is a square pedestal with bevelled corners forming a regular eight-sided contour, on which is a 107 m high tower. The tower was crowned by a characteristic lighthouse with eight outer ribs, which are connected to the small Gothic arches [Fig. 5].

Facades

The walls of the facade of the main body, the risalites, the superstructure, the tower base and the tower shaft have numerous vertical divisions in the form of vertical concrete strips. Horizontal subdivisions exist in the form of horizontal concrete strips in the fields between the vertical strips. The main structures of the facade are consistently kept in the modules of the elongated rectangles and squares. The strong horizontal crowning of the main body is characterized by a deep, solid cornice with an oblique subplane that surrounds the entire structure. The fractures in the form underline the dynamism of the building and the facade structure through the play of light and shadow cast by the cornice on the church walls. The facades are made of raw concrete with clearly visible coarse aggregates in the flat areas of the facade. Concrete tiles with a texture of natural coarse aggregate and fine stones were used. The warm colour of the facade is the intended result of the use of light, in the colours: sand, light brown and beige, natural aggregate for concrete. The use of numerous predominant vertical facade structures and the emphasis on the shape edges, which are particularly characteristic of the tower, creates the impression of lightness and sharpness of the church body. The impression of the "Gothic" shape is rounded off by numerous thick glass windows, which are directly embedded in the concrete. The arrangement of the stained glass in the form of vertical broken strips of walls, which give an effect of lightness to the whole body and especially to the tower, despite the "heavy" material of reinforced concrete used in aesthetic perception [Fig. 6].



Fig. 5. The building of the church of St. Joseph in Le Havre is visible from the main entrance. Source: Szumigala P.P.



Fig. 6. Detail on the façade of the church – visible stained glass windows, concrete bands and the structure of the wall. Source: Szumigala K.O.

Architectural-constructive structure

The architectural-constructive structure of the church building is the result of Auguste Perret's then new material reinforced concrete and concrete. The strong inspiration of reinforced concrete was evident in the entire architectural form and detail of the object. Beginning with an enormous construction that supports the then huge reinforced concrete tower, supported by four groups of four interconnected, mighty reinforced concrete masts [Fig. 4, Fig. 7]. Such an impressive reinforced concrete structure, which was loaded with a reinforced concrete tower more than 107 metres high, required a special foundation. Please note that Le Havre is located on coastal land with not very stable structure and low geotechnical parameters. Here a new foundation technology was used on Franka piles up to a depth of 50 meters, which was a completely new and almost experimental solution at the time. Today, this technology is already widespread. To illustrate the temple, 700 tons of steel and 50,000 tons of concrete were used to build the temple.

Interior



Fig. 7. Visible one of the four groups of four pillars supporting the tower. Source: Szumigala P.P.

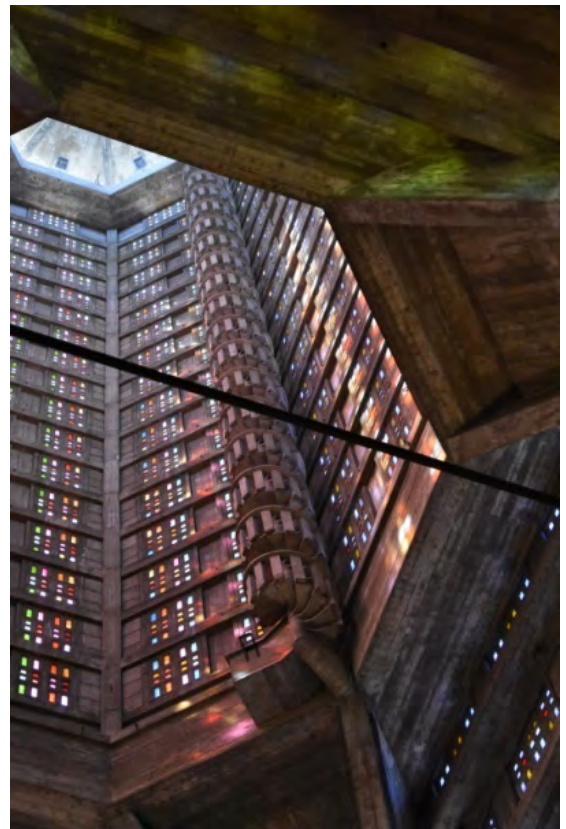


Fig. 8. The interior of the tower with a winding staircase visible from the level of the church floor. Source: Szumigala P.P.

The interior of the church is enhanced by the expressive play of coloured light, which is reflected in the walls of the nave and the tower, filled with stained-glass windows. Particularly interesting and impressive is the spatial creation realized by Auguste Perret, which consists in making the interior of the tower, which was suspended above the nave, visible from below. It can be seen all the way from the tower to the lighthouse. The light that falls through the tower's broken walls, filled with countless stained-glass windows, creates an incredible atmosphere, and the coloured patches of light show the rough but astonishing atmosphere of the interior, which

work together to create the sacred and the mystery of the Christian faith. The renowned artist Marguerite Hure, who has created more than 12,000 stained glass paintings, was commissioned to design the stained glass. "Although colors such as violet, green and blue have been used when the light shines through thousands of windows, the result is a warm, golden light that fills the entire interior of the church..." (Mościcka, 2017). The severity, firepower and the extent of the unplastered and untreated reinforced concrete construction of the church reinforce these impressions [Fig. 8, Fig. 9].

Detail

Also in the design of the temple, Auguste Perret consistently used solutions for reinforced concrete, such as a winding reinforced concrete staircase to the tower [Fig. 8], suspended inside the tower like a panoramic lift shaft in the modern interior of the hotel, the outside a spiral staircase to the temple roof, a solid cornice of reinforced concrete. Concrete, concrete bands and regular rhythmic separations facades that create an interesting and rich picture, and the play of light and shadow on the sunlit façade [Fig. 10]. Rhythms, coherence, material, colour and consistency in the creation of the modernist details of the church are linked to the facade structures of the rebuilt inner city [Fig. 3] and combine the fabric of housing and the sacred object in one organism. This coherence of space, colour and shapes makes the church and the cityscape unique.



Fig. 9. Colorful effects in the interior of the church caused by the light entering through the stained glass windows. Source: Szumigala K.O.

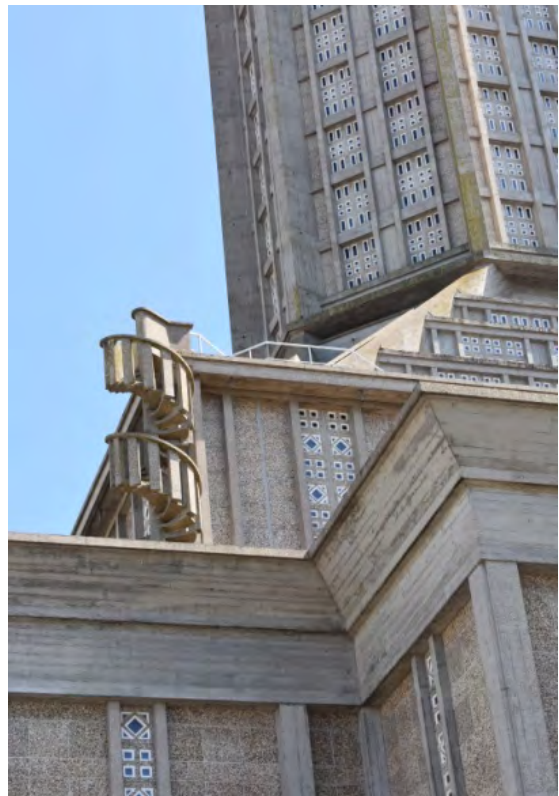


Fig. 10. Detail and divisions of the church facade. Source: Szumigala P.P.

Symbolism

It should be mentioned that the church building has a dual function. Today it is a parish church, but according to its original idea it was never meant to be just a church, but a memorial to the more than 5000 victims of the bombing of Le Havre and a symbol of the "resurrection" of the city from the ravages of war to its present glory (Mościcka, 2017).

Summary

The concept of modernity in the history of urban planning emerged at the beginning of the 20th century and brought new ideas for the design of space and architecture. Over time and numerous more and less successful application examples in project practice have also been criticized. The notion of the devaluation of modernity appeared both in social opinions and in the assessments of experts. Criticism of modernity was an expression of negative spatial assessments of cities – many monotonous and schematic realizations that did not respect the cultural values of the place and the spatial context of the neighborhood (Szumigała, Szumigała, 2021).

Auguste Perret's holistic approach to the space of the city was also of fundamental importance for the spatial and material design of relevant objects. One of them is the building of the Church of St. Joseph, which has acquired a completely new, unique, unmistakable and unmistakable form in the urban space through the reconstruction of Le Havre.

The Church of St. Joseph in Le Havre is one of Perret's most important works. The architect, who is known as the father of reinforced concrete, proposed a temple made of this material in accordance with his ideological explanation, his inspiration from reinforced concrete and his holistic view of the reconstruction of the inner city. Thus, it became an inseparable and coherent part of the entire urban planning concept of the new Le Havre. Its exterior architectural and aesthetic expression, based on the colour of the raw concrete, the architecture of the reinforced concrete and the helioplasmic of the building, perfectly matches the colour and climate of the rebuilt city. Its positioning in the new layout of the city centre and its arming with a high tower, which resembles the shape of the lighthouse, gave the church a special importance. Today, the reinforced concrete tower of the church, illuminated at night, is a characteristic element of the cityscape. The position of the church tower on one of the main axes of the city's composition, on the east side of the city in the coastal area, underlines its identification function and its local character. The tower is visible like a lighthouse from great distances both from the areas of the city and from the sea, even from a distance of 60 km in good weather. Today, the church is one of the most famous and extraordinary religious buildings in Europe.

The uniqueness of the academic modernism applied by Auguste Perret to the reconstruction of Le Havre impresses us with its stylish coherence, the urban composition, the functional and legible building plan and the most important – the character, colour and high standard of the public spaces, reinforced by the use of a special, peculiar material of steel. The aim is to give this urban area an individual and unique atmosphere at European level.

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Niezwykły modernizm w odbudowie śródmieścia Hawru na przykładzie kościoła pw. św. Józefa projektu Aguste'a Perreta

Streszczenie: Celem pracy jest odczytanie na nowo niezwykłych walorów architektoniczno-konstrukcyjnych oraz estetycznych sakralnego obiektu architektonicznego z okresu odbudowy śródmieścia Hawru. W badaniach zastosowano metodę: studium przypadku na wybranym przykładzie kościoła pw. św. Józefa. Zakres badań obejmował analizy przestrzenno-konstrukcyjne i rozwiązania materiałowe w kontekście rekonstrukcji obszaru śródmieścia Hawru realizowanej w nurcie modernizmu akademickiego. Wyniki: Budynek kościoła, wraz z budynkiem ratusza miejskiego i katedrą, stanowi jeden z trzech głównych elementów historycznej kompozycji urbanistycznej oraz współcześnie zrealizowanej przez Auguste'a Perreta rekonstrukcji śródmieścia Hawru. Budynek kościoła w stylu modernizmu akademickiego stanowi do dzisiaj inspirujący i niezwykły przykład zastosowania surowego tworzywa, jakim są beton i żelbet w realizacji obiektu sakralnego. Obiekt jest przykładem nowoczesnej myśli konstrukcyjnej, która pełni również rolę artystyczną w kreacji formy i wnętrza obiektu. Walory przestrzenne, estetyczne i użytkowe konstrukcji żelbetowej oraz betonowego detalu są nieprzemijającym przykładem mistrzowskiego opanowania techniki i realizacji wizji przestrzennej w tym trudnym i mało atrakcyjnym tworzywie budowlanym. Podsumowując należy stwierdzić, że obiekt ten wpisuje się w kontekst spójnego i całościowego myślenia o architekturze sakralnej oraz o przestrzeni miejskiej zrekonstruowanej w technologii żelbetu w okresie modernizmu. Stanowi zapomnianą, lecz nadal niezwykłą inspirację dla współczesnych potrzeb w tym zakresie.

Słowa kluczowe: August Perret, Hawr, kościół św. Józefa w Hawrze, modernizm akademicki