



Research paper

Prefabrication in Władysław Pieńkowski's work as an example of the author's signature approach to architectural design

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Abstract: This article discusses the use of prefabricated concrete components in the work of the Polish architect Władysław Pieńkowski (1907–1991), which are particularly representative of the author's signature approach to contemporary sacred architecture. The evolution of the prefabricated components used and their properties are presented through the example of 8 churches of his design. They have been analysed in terms of their individual character, the potential to use similar components in a variety of designs and in terms of their aesthetic value. Contemporary and archived photographs, as well as design drawings from the archives of the architect's family have been used to illustrate the examples. The presented examples prove that the use of prefabricated elements offers a wide range of options in the creation of architecture. Their repetitive nature, when skilfully used, becomes an asset rather than a hindrance in the design of diverse buildings. Drawing attention to this aspect can not only inspire the creation of new buildings, but also contribute to the revitalisation of existing architectural structures.

Keywords: sacred architecture, Władysław Pieńkowski, prefabrication, individual creative approach

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1. Introduction

The 20th century was a turning point in the development of prefabrication, mass production and industrialization, when the logic of industrial production based on flexible construction sets and mass production began to be applied in architecture. Experimentation and repeatability in an effort to streamline the production process became a part of the rationalization and enhanced the attractiveness of the architecture created this way [1]. The structures used in the 20th century were usually made of wood, steel and reinforced concrete [2].

The essence of prefabrication is precasting the components intended to be installed as a whole in a building under construction off-site, either in an industrialised way or manually by craft workers [3]. There is also the process of planning, design, manufacture and assembly of components at the location other than the construction site. The technology is designed to produce standardized building components to allow deft and expeditious construction of the final structure [4, 5].

Generally, the term refers to any off-site manufacturing process or to the site, where components are manufactured prior to their installation on site [6].

The beginnings of manual and semi-industrial prefabrication in Poland can be traced back to the 1950s, when field prefabrication sites were created during the construction of residential housing in Warsaw. At that time, wall blocks, three-layer exterior walls, partition wall components and hollow ceiling blocks were made near the site [7]. Similarly, sacred architecture used prefabricates in various scales, configurations and forms to create facades, walls, ceilings, windows or architectural details.

Władysław Pieńkowski (1907–1991) was the author of several dozen religious buildings which he designed over a period of more than 50 years. A characteristic feature of his work was the use of precast reinforced concrete components in the interiors of sacred buildings. Their significance was not limited to the economic and functional aspects, but was largely visual, as evidenced by the evolution of individual prefabricated components and the constant strive to improve their appearance.

In most part Pieńkowski's work coincided with the Communist period of the Polish People's Republic, when religious architecture in the Eastern Bloc was outside the architectural mainstream, and was unknown in Western Europe due to the Iron Curtain. For this reason, the architect's work is now popular only among a small group of people. This article purpose to give an insight into the architecture and the person of Władysław Pieńkowski.

The aim of this work is to show that the dominant feature of the prefabricated elements used in architecture is not so much their typification, but the flexibility and variety of the components that contribute in an individual character of the work.

The article presents the characteristics of Pieńkowski's work in the field of church architecture. Then, his original prefabricated components are analysed mainly in terms of individualized solutions. Particular attention has been paid to the components most frequently used by the architect: precast windows and ceiling elements in the form of channel slabs with diaphragms.

The prefabrication used by Władysław Pieńkowski allowed for a wide range of artistic solutions. Through the development of prefabricated components used in individual sacred buildings, the architect created a pattern that was his own characteristic architectural 'language'. Despite the modernist nature of the buildings, prefabrication enhanced the individual creative effect through its plasticity of detail. It gave the works of architecture a specific and distinct expressiveness.

In this study, plasticity in the formulation of architectural elements is understood as a feature that allows forms to be shaped in a variable manner, while at the same time illustrating their shapeliness, distinctness and expressivity.

2. Materials and methods

As an interdisciplinary field, architecture implements a mixed methods research [8]. Our research method consisted in the search of available literature on the subject, analysis of materials concerning the designs and selected buildings of Władysław Pieńkowski. In addition we conducted a qualitative analysis, a case study, a diagnosis of the current state, and an anticipated direction for the development of prefabricated components in his churches.

Due to a very large number of implemented projects, the following objects were chosen as examples in the article: the Church of St. Theresa in Radom (designed with arch. S. Gałęzowski and structural eng. Trojanowski), the Church of Our Lady, the Queen of Poland in Tarnów (with arch S. Gałęzowski and structural eng. Wojtasiewicz), the Church of Saint Lawrence in Głowaczów (with the structural eng. J. Jeliński), the Church of St. Michael in Warsaw (with arch. J. Czerwińska and structural eng. J. Jeliński and K. Jankowski), the Church of Divine Providence in Kalisz (with structural eng. K. Jankowski), the Church of St. Joseph in Kielce (with arch. M. Szymanowski, cooperation: arch. K. Pieńkowska-Owsińska; structural eng. K. Jankowski and H. Jędrzejewski), the Church of St. Joseph in Włocławek (with arch. B. Eibel; cooperation: arch. K. Pieńkowska-Owsińska and H. Popławska; structural eng. K. Jankowski and H. Jędrzejewski) and the Church of St. Dominic in Warsaw-Służew (with arch. B. Eibel and arch. M. Szymanowski; structural eng. K. Kakowski and K. Donten). The above examples are the most representative of the architect's designs and demonstrate the evolution of his work.

As a part of preparation for the article Marek Pieńkowski and Kinga Pieńkowska-Owsińska were interviewed and shared their knowledge of their father's life and work.

Much of the material used comes from the home archives of the Pieńkowski family, including unpublished texts of the architect and an interview conducted with him in the 1980s by Sylwester Szefer (ca. 1980) Design drawings and technical descriptions were also helpful in identifying detailed architectural solutions.

Władysław Pieńkowski left one published text, "Functional Parts of the Church Interior", which can be found in the collective work Construction and Maintenance of Churches published by the Rada Prymasowska Budowy Kościołów in 1981. The author explains

there his main principles when designing religious buildings. As examples he uses his own projects in Poświętne, Kalisz, Włocławek and Kielce[9].

Władysław Pieńkowski's work has been studied by art historians. In 1982, under the supervision of Dr Andrzej K. Olszewski, Michał Janocha wrote his Master's thesis titled "Budowle sakralne projektu Władysława Pieńkowskiego z lat 1935–1982" [Sacral Buildings Designed by Władysław Pieńkowski in the Years 1935–1982] [10], in which he described all the churches completed by the architect at that time, as well as several chapels and church interiors. Another study was an undergraduate thesis written in 2015 under the supervision of Dr Marek Czapelski by Wojciech Glowacki, titled. "Kościołów. Michała Archanioła w Warszawie. Nowoczesność i kompromis" [Church of St. Michael in Warsaw. Modernity and Compromise] published in an abridged form as the article "Modernity and Compromise: The Church of St. Michael the Archangel in Warsaw and its Designer Władysław Pieńkowski" in the *Ikonotheka* journal [11]. Apart from the history and description of the building, the work contains a detailed biography of the architect prepared with the help of Kinga Pieńkowska-Owsińska, the architect's daughter. The author takes up the subject of prefabricated components used in the Church of St. Michael. Wojciech Glowacki also wrote an article for the magazine *Bloki* under the title "O zapomnianych początkach twórczości Władysława Pieńkowskiego" [On the forgotten origins of Władysław Pieńkowski's work] [12].

In 2019, Emilian Nagiel wrote his master's thesis, titled "Sacrality in a contemporary architecture. Revitalization of the ruins of the church in Osetnik for a liturgical function" under the supervision of prof. arch. Anna Maria Wierzbicka at the Faculty of Architecture, Warsaw University of Technology, where some of the unpublished materials for the analyses presented in the article come from.

3. Research findings

3.1. The context of architectural creation

The appearance of modern religious buildings has been influenced by two factors: the post-war international architecture movement, Modernism, and the tenets of the Second Vatican Council of 1964. After World War II, all of Europe was being rebuilt. At the same time, there was also a plan to rebuild churches in Poland [13]. Biuro Odbudowy Stolicy [Warsaw Reconstruction Office] focused on rebuilding the churches of pre-war Warsaw. During this period and until the early 1970s not many new religious buildings were erected in Poland, and there are no examples of new religious buildings described in any publication on Polish architecture [14]. The real breakthrough comes in the early 1970s. It was a result of the dynamic urbanization of cities and the need to build new churches, as well as a kind of loosening of the communist authorities' attitude towards the construction of religious buildings. Between 1971 and 1981, 1075 churches and chapels were commissioned, an impressive number for the time [15]. The design business was extremely difficult for architects at that time. The artists were exposed to repressions by the security services,

by the Fourth Department of the Ministry of the Interior¹ and by the Office for Religious Affairs, which, in practice, was subordinate to the latter. At that time, two publications on religious buildings were published in Poland: *Postconciliar Sacred Architecture* [16] and *Construction and maintenance of churches* [17]. Pienkowski's design work fell on this difficult period. The architect first worked as an apprentice in the Warsaw Design Office, then in the Europrojekt studio, and later he devoted himself exclusively to sacred architecture.

The primary guideline for the design of sacred buildings was the Second Vatican Council's recommendations for contemporary churches as recorded in the document *Constitution on the Sacred Liturgy* of December 4, 1964, and the subsequent study clarifying the General Instruction of the Roman Missal [18]. The document emphasized the role of the "deposit of tradition", but also of adopting "things new". There were also local recommendations to national episcopates adapting the general recommendations of the Council to national customs and traditions. The second factor affecting the shape of religious buildings was the difficult economic conditions and poor availability of construction materials. In this situation the use of prefabricated components in the projects was an opportunity to maintain the aesthetic quality of the execution of archetypal details, refer to tradition and meet the requirements of contemporary stylistic form.

The use of prefabricated components in various scales and forms in church architecture can be clearly seen in post-war projects and later in churches of the so-called postconciliar period. One of the earliest examples is the church of St. Andrew Bobola in the neighbourhood of Saska Kępa in Warsaw, built in 1948 according to the design by the architects Jerzy Ławiński and Jan Bogusławski [13]. The front elevation clearly shows the prefabricated architectural detail. A similar use of prefabricated components can be seen in St. John's Cathedral in Warsaw, rebuilt after World War II designed by architect Jan Zachwatowicz [13]. In later designs, architects also successfully used prefabricated components in sacred architecture, which is reflected in the work of Leopold Taraszewicz. It is evident in the prefabricated components of windows, stained glass, architectural details and ceiling elements of buildings, as exemplified by the form of St. Joseph's Church in Gdynia, 1960–1975 [19] or in St. Michael the Archangel in Gdynia, 1970. In both designs, prefabrication was used to fill the front façade and the side wall of the façade [14]. Prefabrication as a method of constructing window frames was also used in St. John Cantius Church in Poznan, architect Jan Węclawski, 1976–1980 [19], or in the church of St. Michael the Archangel in Sierpaw, architect Jan Maderski, architect Jan Rączy, built in 1968–1975 [15]. It has to be admitted here that Pieńkowski's design work was exceptional compared to his contemporaries.

3.2. Characteristics of Pieńkowski's work

Władysław Pieńkowski is mainly known for his religious works. A particularly interesting aspect of it was "sacrality". He believed that sacrality, as a hitherto intuitive matter, did not have to be expressed by grandeur, ornamentation or splendour, but by "otherness"

¹The Department fought against hostile "anti-state" activity of churches and religious associations.

– and this for both theological and purely functional reasons. Otherness in the silhouette, mass, rehabilitation of material, structure, aesthetics of execution – these are the elements of truth, and at the same time the specificity of a sacred building – the church [20]. Because “a temple is to be a sign of God’s presence among people”, its form must be different from residential or commercial architecture [21]. According to Pieńkowski, sacrality of the interior should create an atmosphere of concentration. The right ambience can be achieved by a composition that is as tranquil as possible, which “has no visual noise” and creates the best possible background for the liturgy [22].

The architect wanted to focus the attention of the participants in the liturgy on the most important element of the church – the altar. To this end, he applied the principle of “form on background”, according to which a light item placed against a dark background is the most visible. In order to highlight the altar even more, “active walls” were designed, whose composition influenced the form of the holy table.

He paid special attention to light: both natural and artificial (Figure 1). Forms are best brought out and accentuated by light, which is why it is used to highlight the most important places in the church. The element to be highlighted should therefore be illuminated, not its background [22].



Fig. 1. Interior of the church in Kalisz, photo: Emilian Nagiel, 2018

3.3. Building materials in Pieńkowski’s buildings

When creating the right ambience and designing the background for the liturgy, Pieńkowski considered colour and texture of the material to be the most important factors after light, which he believed to be the most essential [22]. Since no form of falsity or simulation is allowed in church, everything in it should be original and true [9]. He con-

sidered it important to show honestly the material from which the building is made, which immediately resulted in almost ready-made solutions of colour and texture [23].

Pieńkowski always worked with contrasts between different colours and textures. This was a defining feature of his work from the very beginning to the end. As early as 1935, the pavilion of the Ceramic Products Factory in Przysieka at the road exhibition at the Warsaw University of Technology, designed by Gałęzowski and Pieńkowski, was praised for its “good balance of the surface qualities of the clinker and the splashed plaster”, which were “more convincing than the flashy colour and visual dissonances” [24]. A continuation of this approach can be seen in his religious works. He used combinations of materials whose colours were not bright or “clashing with each other”, which translated into the ‘optical silence’ and the mood of prayerful concentration desired by the architect [22]. The most common combination he used were reinforced concrete precast components together with brick, stone or raw formwork concrete.

Brick was used in almost all of Pieńkowski's church designs. Its most characteristic use in his work was in reliefs forming “active” walls in the interior. It was a material commonly available in all parts of the country, but found in different shades, for example cream yellow in Toruń or red in Włocławek (Figure 2). By using a variety characteristic of a particular region, Pieńkowski continued local building traditions.



Fig. 2. Interior of the church in Włocławek, photo: Emilian Nagiel, 2019

He also appreciated the value of demolition bricks, which were used in the construction of St. Michael's Church in Warsaw. He believed that it was not “gaudy red and bright in colour, like the new brick, which can only be used in small patches, but is unbearable in the whole interior”. He pointed out that a masonry wall made of demolition bricks

had a “uniform and calm character, but not monotonously dull” and compared it to a fine fabric [25].

Another local material, that Pieńkowski was keen to use, was stone. Its use in the church in Glowaczów is particularly notable. External walls of the church (apart from the gables) and the internal apses were made from field granite, which is characterised by varied but consistent colours and a very rich, rough texture. This material contrasts with the modernist components made of reinforced concrete and the light plaster, creating a very interesting artistic solution [10]. Inside the church the dark stone serves as an “active” background for the altar.

Pieńkowski was very keen to use reinforced concrete, both cast in place and in the form of prefabricated components. The first variety was used primarily as a construction material. The architect believed that “under no circumstances should a reinforced concrete structure be covered with plaster, as not only is it an architectural fallacy, but also defies common sense” [9]. When carefully executed, the reinforced concrete should be left in its raw state. Otherwise, he allowed the application of cement with a twig broom, but only as a last resort. In later works, the shape of the frame and the formwork were carefully designed, as exemplified by the construction of churches in Włocławek and Służew. They were also intended to be left in their raw state.

Pieńkowski avoided excessive use of raw concrete in the interiors. He pointed out that many churches built in Western Europe at the time were characterised by “crazy gloominess of the interior” caused by the fact that all the walls were “concrete-grey”, failing to provide a proper background for the altar [22].

The material that Pieńkowski often used to introduce a harmonious contrast was plaster. For practical reasons he preferred rough plaster, which was less susceptible to staining, easier to maintain and better for acoustics [9]. It had a visual quality brought out by the light slithering on the wall. Smooth surface was more likely to stain and, additionally, increased the reverberation in the interior.

Wood was used relatively rarely by Pieńkowski, which was related to the general crisis of wooden construction during the Communist period in Poland. The architect used this material most often to make furniture – pews, confessionals and openwork doors. He regarded them as utilitarian rather than decorative, which is why they were aesthetically simple and functional in their design [9].

The materials described above do not include all those used by Pieńkowski. Also worth mentioning are the elements made of metals, such as tabernacles, light fixtures and candlesticks.

3.4. Precast concrete components

Prefabricated components in Pieńkowski’s early works

In the post-war period, Władysław Pieńkowski initially dealt mainly with industrial architecture. Due to the political situation, it was very difficult to obtain building permits for churches. Industrial architecture allowed more freedom of creativity than residential architecture, which was governed by strict standards and in the years 1949–1956 by the

imposed socialist realist style. An example of the widespread use of prefabrication was the Adamów power station in Turek, designed with the help of the later co-author of many churches, structural engineer Konstanty Jankowski.

Thanks to the experience gained while working on industrial projects, Pieńkowski used prefabricated components more and more frequently in the buildings completed after the war, that he had designed with Stanisław Gałęzowski's even before 1944: in Radom and Tarnów. In the first project, the Church of St. Theresa, the components only served as ornaments. They were used as decoration of the arcades and frieze (Figure 3). Their co-author was the sculptor Józef Trenarowski [10].



Fig. 3. Prefabricated ornaments in the church in Radom, photo from the archives of the Pieńkowski family, undated

Prefabricated windows

Pieńkowski first used openwork prefabricated windows prepared for glazing in the church in Tarnów. Their square-based form was inspired by the work of August Perret.

Concrete “razor” windows were used for the longest time (Figure 4). Their shape was not only dictated by aesthetic reasons, but also by functional and economic considerations. They were used because of the difficult access to the window profiles. In addition, this type of component worked like a grating and made it impossible to break into the church. “Razors” diffused light and sound well, thus creating the right ambience inside the church. The architect's later work features prefabricated windows with floral motifs. Prefabrications of this type allowed the possibility of various combinations, as in the churches in Kielce or Warsaw-Służew (Figure 5). The example of the latter shows the principle that was adopted in laying out the components. Two types of prefabricated components were used, forming a continuous pattern: a square (4) and a rectangle (5). Looking from the bottom, the following rhythm is formed: ab, aba, bab, abab, ababa.

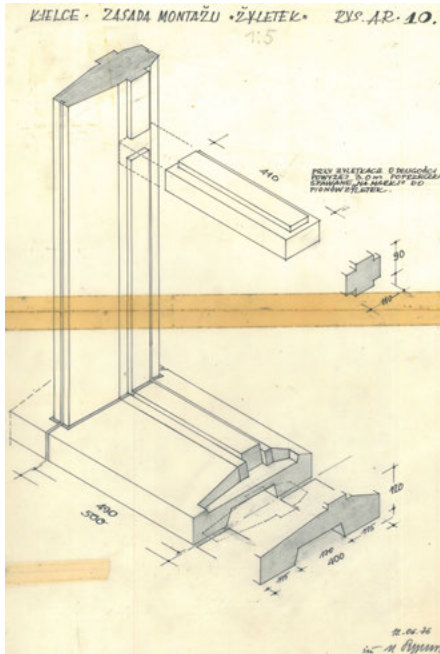


Fig. 4. Prefabricated windows. The principle of assembling the “razor” in the church in Kielce, drawing by M. Szymanowski, drawing from the archives of the Pieńkowski family, 1976

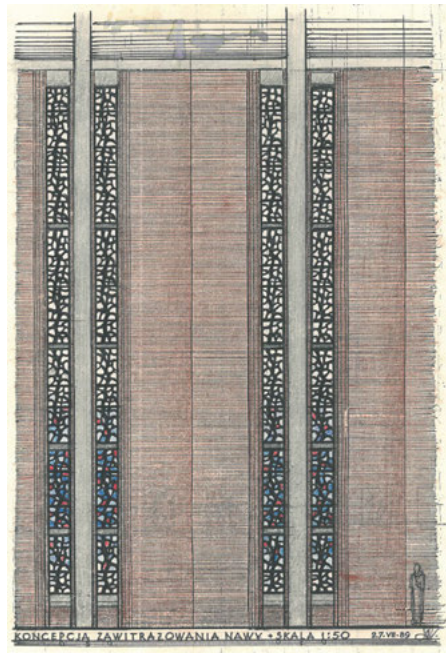

















Fig. 5. Prefabricated windows. A concept of the stained glass windows in the nave of the church in Służew, drawing from the archives of the Pieńkowski family, 1989

The prefabricated windows were designed to accommodate stained glass. For Pieńkowski, “almost the pinnacle of religious ambience” were the interiors of medieval Cathedrals of Notre-Dame in Chartres and St. Stephen’s in Bourges, where the stained glass by French masters from the 12th and 13th century played a key role [22].

An important role of coloured glass was to reduce the amount of light entering the interior. This was particularly important in churches where there were openings in the altar wall. The largest of such windows was designed at St. Michael’s Church in Warsaw. Pieńkowski emphasises that the most important in such a case is “the relation of the light background to the intensity of the light behind the altar”. This ratio can be adjusted by means of intensely coloured, dark stained-glass windows. Until the stained glass window, created by Tadeusz Wojciechowski, was installed, the interior was illuminated in the morning hours with a very unfavourable, glaring light [9]. A similar trick was used in the church in Włocławek, where a high, narrow window with dark stained glass was placed to emphasise the tabernacle [9].

A graphical presentation of the appearance of the various prefabricated windows, the extent of their use and a presentation of their evolution in the various projects are shown in Table 1.

Table 1. Overview of prefabricated windows in selected churches designed by Władysław Pieńkowski. Drawings of prefabricated components on the basis of photos and design plans from the archives of the architect's family. Drawings by Emilian Nagiel

Church	Year of the design	Type of window			
		Perret's style	"razors"	geometric	"organic"
Radom, Church of St. Theresa	1935	–	+1	–	–
Tarnów, Church of the Our Lady, the Queen of Poland	1943–1946		–		–
Głowaczów, Church of St. Lawrence	1953–1954	–			–
Warsaw, Church of St. Michael	1957				–
Kalisz, Church of Divine Providence	1965–1966	–			–
Kielce, Church of St. Joseph	1974	–		–	
Włocławek, Church of St. Joseph	1975	–			–
Warsaw-Służew, Church of St. Dominic	1982	–		–	

¹ In the Radom church "razors" were used to build a baptistery designed by Władysław Pieńkowski in the 1970s.

As a result of the comparative analysis of prefabricated window components applied by Pieńkowski, it is evident that they have evolved in terms of form and design. 2 patterns that were placed alternately were usually used for Perret's style pieces. "Razors" were placed with an offset of half the length of a component. Their shape in the first buildings differed from later ones, which was due to the fact that the components were initially bolted and later welded together. Geometric prefabricated components were originally made from 1 type of element that was arranged in 3 ways (vertically, horizontally and rotated by 180 degrees), which provided wide variety of windows, especially when combined with multi-coloured stained glass. Later geometric patterns were more complex, with many more types in a given building. They were most often stacked one above the other to form narrow, vertical windows. A similar approach was used for "organic" components. Several types were designed with transition of patterns to successive pieces.

Prefabricated ceiling components

Pieńkowski's most characteristic prefabricated components were the elements in the form of channel slabs with diaphragms (the architect called them "channels with diaphragms", Figure 6). They were very important for the acoustics of churches, as they dispersed sound and eliminated reverberation [9]. They evolved from the coffered ceilings that he used in his first projects. The "channels" were designed in 6-metre modules, that were used in all the churches where this element appeared – both small structures and the largest. For variety, the diaphragms were arranged in varying rhythms. This allowed to achieve different visual effects using a small number of types rotated by 180 degrees.

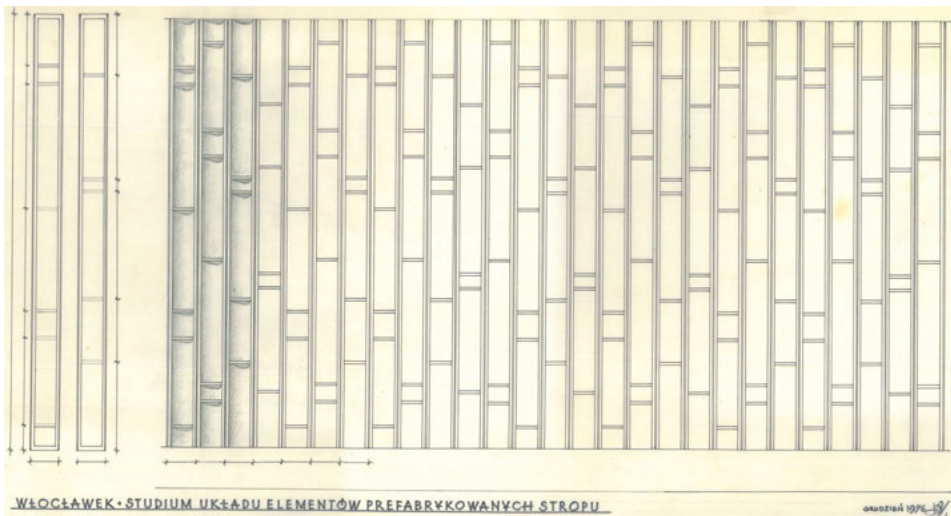
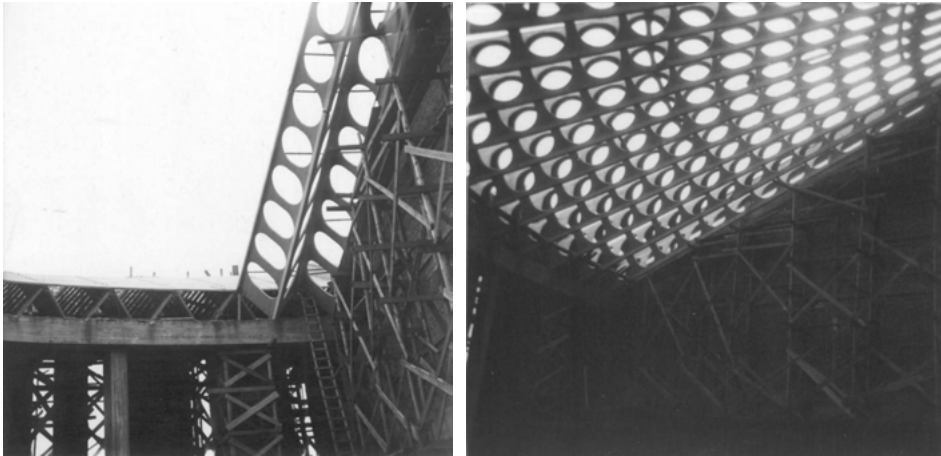


Fig. 6. "Channels with diaphragms" for the church in Włocławek, drawing from the archives of the Pieńkowski family, 1976

An unusual solution was the ceiling at St. Joseph's Church in Kielce, where the structural engineer Konstanty Jankowski was asked to design openwork beams. The architect wanted them to be made of as little material as possible. This created a unique effect, further enhanced by the skylight in the roof (Figure 7).



(a) Assembly of the first prefabricated beams

(b) The openwork ceiling before the construction of the roof

Fig. 7. Construction of the church in Kielce, photo from the archives of the Pieńkowski family, 1980

In addition to the typical prefabricated components used on a large scale in many churches, there were also those designed for a specific building, such as the beams on the façade in Warsaw-Służew (Figure 8), the balustrade in Włocławek, or the supports for the statues of saints.

The use of precast window and ceiling components in individual churches is presented in Table 2. The darker colour indicates the more commonly used components, while the lighter colour – the less frequently used ones. In addition, one example of a precast unit designed individually for each building was selected to demonstrate the very wide range of applications for this technology.

The detailed tabular analyses used in this article include the designed precast windows, which came in a number of variants and were individually designed for each building. Prefabricated ceiling sections – “troughs with diaphragms” – are shown by way of example, because they were not changed since they had been introduced into the designs and every time were designed with a 6-meter module in mind. The list of all prefabricated components used in Pieńkowski's work shows, however, how vast the possibilities are in prefabrication technology, and how they are limited only by the author's creative imagination.

Table 2. Overview of precast window and ceiling units used in the churches cited in the text

Church	Year of the design	Tarnów, Church of the Our Lady, the Queen of Poland	Głowaczów, Church of St. Lawrence	Warsaw, Church of St. Michael	Kalisz, Church of Divine Providence	Kielce, Church of St. Joseph	Włocławek, Church of St. Joseph	Warsaw- Służew, Church of St. Dominic
Prefabricated window components	Perret's style	+		+				
	'razors'		+	+	+	+	+	+
	'organic'					+		+
Prefabricated ceiling components	geometric		+		+			
	Coffers	+		+				
Example of a precast element made individually for a specific building	Channels with diaphragms							
		Ornaments in the arcades	Razor-shaped crowning of the belfry	Cupola over the chapel	Stepped ceiling of the main nave	Openwork ceiling beams	Choir balustrade	Beams for the façade



Fig. 8. Prefabricated beams with arches for the front elevation, Church of St. Dominic in Warsaw-Służew, technical drawing from the archives of the Pieńkowski family, 1986

Prefabrication

Due to the political system prevailing in Poland, churches were self-built by the parishioners. Prefabricated components could not be produced in industrial plants, but only on the construction site.

The common use of prefabricated components had a clear economic aspect. This technology allowed work to be carried out throughout the year. In winter the components were prefabricated in the auxiliary building or in the bottom floor of the church [TN: In Communist period, two-storey churches were popular in Poland, with the upper floor being the main one and the bottom one serving as an auxiliary], and during the warmer months they were assembled on site [26].

4. Conclusions

The examples cited above show the evolution of prefabricated components used by Pieńkowski. Initially, he used them on a small scale, and their forms resembled historical elements (ornaments in Radom, coffered ceilings in Tarnów and in Warsaw). From the moment he “invented” razor-type windows and channels with diaphragms, the architect used them continuously for the rest of his life (Table 1, Table 2). The skilful use of prefabrication lent architectural objects individual character and expressiveness. By using similar elements for different buildings, the architect created his own architectural language, making the buildings he had designed easily recognisable. Designing buildings of different scales, from small village churches to very large churches in housing estates with the use of typical precast components demonstrates their versatility and wide range of applications.

By using contrast between the concrete elements and other materials used in the interior, the architect achieved very pleasing visual effects, conducive to a contemplative mood in a sacred interior. By designing forms that were asymmetrical and could be arranged in different patterns, the architect avoided the impression of monotony, and used repetition to create rhythms.

Prefabrication technology was invaluable in the period, when building a church was extremely difficult. Due to the lack of specialists and construction equipment, the execution of ready-made elements enabled the architect to have much more control over the construction than in the case of traditionally erected buildings.

Today, many churches of Pieńkowski’s design have lost their original appearance as a result of unprofessional alterations. Often the original texture of the reinforced concrete is covered up and the colours are changed, as for example in the church in Kielce. It is important to pay attention to the aesthetic qualities of the precast elements, which were designed to be left raw. The architect attached great importance to their colour and texture, as well as to careful workmanship, in order to avoid the need to cover the prefabricated elements with plaster or paint. Such erroneous actions destroy the effect of sacrality intended by Pieńkowski, with the result that outstanding works of architecture are being degraded. In order to create such ambience, a key role, after light, was played by an appropriate colour scheme based on natural contrasts of materials and muted colours.

A separate issue are the elements beginning to crumble after several decades, as is the case on the façade of St. Michael’s Church in Warsaw (Figure 9). In this case, it is necessary to further explore the topic of prefabrication to repair the concrete windows that are exposed to adverse weather conditions or to make contemporary equivalents that meet the aesthetic criteria for this historic church. Another problem with this type of prefabrication is its poor thermal insulation, so modifications are needed to avoid the church interior overheating in summer and freezing in winter. So far, attempts have been made to add an external or internal layer of glazing or windows, but, with the exception of St. Dominic’s Church in Warsaw-Służew, the visual effect has been significantly compromised. This is an issue that needs to be developed in design in order to find a suitable solution.

The presented examples prove that prefabricated components, when designed in the right way, offer a wide range of possibilities in the creation of plastic architectural composi-

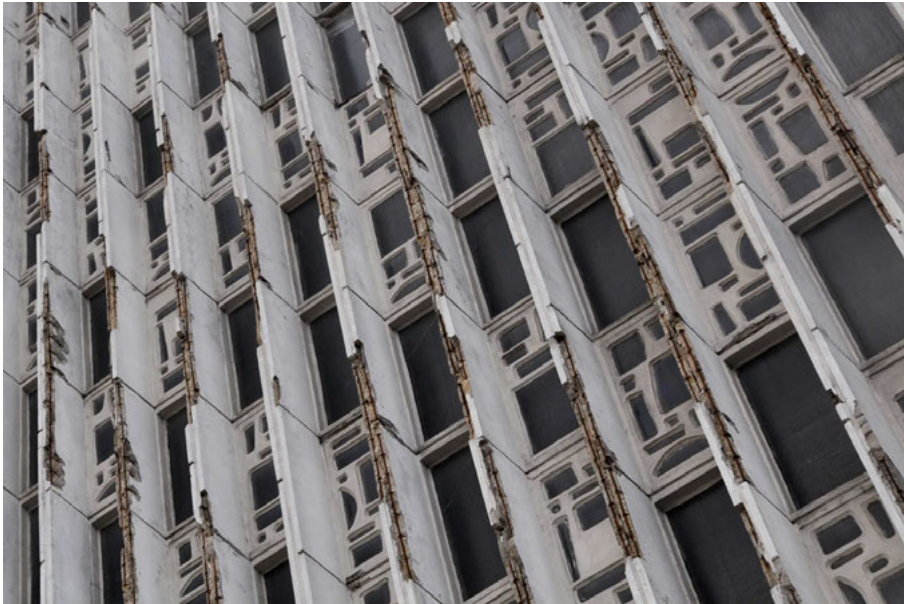


Fig. 9. West façade of St. Michael's Church in Warsaw, photo: Emilian Nagiel, 2021

tions. Their repetitive nature, when skilfully used, becomes an asset rather than a hindrance in the design of diverse buildings. Drawing attention to the aspect of plasticity might not only inspire the creation of new buildings, but also become a stimulus for the revitalisation of buildings which, after years of neglect, are now significantly diverging from the design ideas of Władysław Pieńkowski.

An analysis of Władysław Pieńkowski's work revealed the importance of the visual arts in the design and composition of prefabricated forms. Without the prominent role of visual arts, in combination with the prefabrication technology, developed throughout the entire period of his work as an architect, it would not have been possible to achieve the extraordinary interior effects. The role of prefabricated components is particularly evident in the ambience achieved in the religious buildings he designed. The architect's design work, due to the extensive selection of examples, shows the development of prefabricated forms. Prefabrication in architecture offers a wide range of possibilities to use prefabs not only in construction or building parts. Prefabricated detail gives a wealth of possibilities for artistic formation, as shown by the use of diverse and precise details in contemporary sacred architecture.

Acknowledgements

Our special thanks go to architect Kinga Pieńkowska-Owsińska for the archival materials she made available and for the knowledge she passed on about her father's work.

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Prefabrykacja w twórczości Władysława Pieńkowskiego jako przykład autorskiego podejścia do projektowania form architektonicznych

Słowa kluczowe: architektura sakralna, Władysław Pieńkowski, prefabrykacja, indywidualność twórcza

Streszczenie:

Prefabrykacja jest wytwarzaniem w sposób przemysłowy lub rzemieślniczy poza placem budowy elementów budowlanych przeznaczonych do zamontowania w całości we wznoszonym obiekcie. Jest to także proces planowania, projektowania, produkcji i składania elementów poza miejscem finalnej budowy. Technologia ta ma na celu produkcję ustandaryzowanych części budynku, aby montowanie i łączenie odbywało się sprawnie i bardziej efektywnie.

Początki produkcji prefabrykatów metodą rzemieślniczą i pół-przemysłową w Polsce notuje się w latach 50. XX wieku, kiedy powstawały poligony prefabrykacji polowej podczas wznoszenia architektury mieszkaniowej w Warszawie. W architekturze sakralnej stosowano prefabrykaty w różnej skali, konfiguracji i formie do tworzenia elewacji, ścian, stropów, okien czy detali architektonicznych.

Celem poniżej pracy jest pokazanie, że dominującą cechą stosowanych w architekturze prefabrykatów jest nie tyle ich typizacja, lecz elastyczność i różnorodność elementów, które wpływają na indywidualny charakter dzieła.

W niniejszym opracowaniu plastyczność w formułowaniu elementów architektonicznych rozumiana jest jako cecha umożliwiająca kształtowanie form w sposób zmienny, jednocześnie obrazując ich kształtność, wyrazistość czy ekspresyjność.

Władysław Pieńkowski (1907–1991) był autorem kilkudziesięciu obiektów sakralnych, które zaprojektował na przestrzeni ponad 50 lat. Charakterystyczną cechą jego twórczości było wykorzystywanie żelbetowych elementów prefabrykowanych we wnętrzach obiektów sakralnych. Ich znaczenie nie ograniczało się do aspektów ekonomicznego i funkcjonalnego, ale w znacznej mierze plastycznego, o czym świadczy ewolucja poszczególnych elementów prefabrykowanych i nieustanne dążenie do ulepszenia ich wizualnego odbioru.

W artykule zostały przedstawione cechy charakterystyczne twórczości sakralnej Pieńkowskiego. Następnie przeanalizowano jego autorskie prefabrykaty głównie pod kątem możliwości kształtowania indywidualnych form architektonicznych. Szczególną uwagę poświęcono najczęściej wykorzystywanym przez architekta elementom: prefabrykatom okiennym i stropowym “korytkom z przeponkami”.

Stosowana przez Władysława Pieńkowskiego prefabrykacja dała możliwość szerokich rozwiązań, charakterystycznych dla jego twórczości. Poprzez rozwój i ewolucję elementów prefabrykowanych wykorzystywanych w poszczególnych obiektach sakralnych architekt stworzył wzorzec będący jego własnym i charakterystycznym "językiem" architektonicznym. Pomimo modernistycznego charakteru budynków prefabrykacja, dzięki swej plastyczności detali, wzbogaciła indywidualny efekt twórczy. Nadała dziełom architektury specyficzną i odmienną wyrazistość oraz wzmocniła odbiór wizualny, sprzyjając nastrojowi kontemplacji w obiektach sakralnych. Projektowanie obiektów o różnej skali, od małych wiejskich kościołów, aż po bardzo duże kościoły osiedlowe, z użyciem typowych prefabrykatów, pokazuje ich uniwersalność i szeroki wachlarz zastosowań.

Wykorzystując kontrast między elementami betonowymi a innymi materiałami stosowanymi we wnętrzu architekt osiągał bardzo korzystne efekty wizualne sprzyjające nastrojowi kontemplacji we wnętrzu sakralnym. Dzięki projektowaniu form asymetrycznych oraz dających się układać w różne wzory, architekt unikał wrażenia monotonii, a powtarzalność wykorzystywał do tworzenia rytmów.

Technologia prefabrykacji była nie do przecenienia w czasach, w których budowa kościoła napotykała wyjątkowo duże trudności. Ze względu na brak specjalistów i sprzętu budowlanego wykonywanie gotowych elementów umożliwiało dużo większą kontrolę architekta nad budową niż w przypadku tradycyjnie wznoszonych obiektów.

Obecnie wiele kościołów projektu Pieńkowskiego straciło swój pierwotny wygląd w wyniku nieumiejętnych przeróbek. Często zakrywana jest oryginalna faktura żelbetu oraz zmieniana kolorystyka, jak na przykład w kościele w Kielcach. Należy zwrócić uwagę na harmonię elementów prefabrykowanych, które były zaprojektowane w sposób surowy bez wykończenia. Architekt przywiązywał dużą wagę do ich kolorystyki i faktury, a także starannego wykonania, aby uniknąć konieczności pokrywania prefabrykatów tynkiem lub farbą. Takie błędne działania niszczy zamierzony przez Pieńkowskiego efekt sakralności, wyniku czego degradowane są wybitne dzieła architektury. Dla wykreowania tego nastroju kluczową rolę, po świetle, miała odpowiednia kolorystyka oparta na naturalnych kontrastach materiałów i stonowanych kolorach.

Osobną kwestią są elementy, które po kilkudziesięciu latach zaczynają się kruszyć, jak ma to miejsce na frontowej fasadzie kościoła świętego Michała w Warszawie. W tym przypadku konieczne jest dalsze badanie tematu prefabrykatów w celu naprawy narażonych na niekorzystne warunki atmosferyczne betonowych okien lub wykonanie ich współczesnych odpowiedników, które spełnią estetyczne kryteria dla tego zabytkowego kościoła. W przypadku tego typu prefabrykatów innym problemem jest słaba izolacyjność termiczna, w związku z zachodzi konieczność modyfikacji w celu uniknięcia przegrzewania wnętrza kościoła latem i przemarzania zimą. Dotychczas podejmowano próby dodawania zewnętrznej lub wewnętrznej warstwy szklenia lub okien, ale, poza kościołem św. Dominika w Warszawie-Służewie, efekt wizualny został znacząco pogorszony. Jest to kwestia, którą należy rozwijać projektowo w celu znalezienia odpowiedniego rozwiązania.

Przedstawione przykłady pokazują, że elementy prefabrykowane, zaprojektowane w odpowiedni sposób, dają bardzo szerokie możliwości w tworzeniu kompozycji architektonicznej. Ich powtarzalność przy umiejętnym użyciu staje się walorem, a nie przeszkodą w projektowaniu zróżnicowanych obiektów. Zwrócenie uwagi na aspekt indywidualizacji form architektonicznych może być nie tylko inspiracją do tworzenia nowych obiektów, ale także stać się przyczynkiem do rewitalizacji obiektów, które po latach zaniedbań obecnie znacząco odbiegają od idei projektowych Władysława Pieńkowskiego.

Analiza twórczości Władysława Pieńkowskiego wykazała, że sztuki plastyczne mają znaczenie w projektowaniu i komponowaniu form prefabrykowanych. Bez wiodącej roli sztuk plastycznych, w połączeniu z technologią prefabrykacji, wypracowanej w ciągu całego okresu działalności architektonicznej, nie byłoby możliwe osiągnięcie niezwykłych efektów wnętrza. Rolę elementów

prefabrykowanych szczególnie widać w osiągniętym nastroju projektowanych przez niego obiektach sakralnych. Twórczość projektowa architekta, ze względu na bogaty przekrój przykładów, ukazuje rozwój form prefabrykowanych. Prefabrykacja w architekturze daje szeroką możliwość zastosowania elementów prefabrykowanych nie tylko w konstrukcji czy w częściach budowlanych. Detal prefabrykowany daje bogate możliwości formowania plastycznego, na co wskazuje zastosowanie różnorodnych i precyzyjnych detali we współczesnej architekturze sakralnej.

Received: 09.09.2021, Revised: 07.12.2021