

IN-FILL DEVELOPMENT ARCHITECTURE, AS ELEMENT OF POST SECOND WAR RECONSTRUCTION OF CITY OF POZNAŃ. CASE STUDY OF JOSEPH STÜBBEN'S EXTENSION PLAN OF THE CITY FROM YEARS 1902-1918.

Adam NADOLNY¹, Yulia IVASHKO^{2*}, Katarzyna SŁUCHOCKA³,
Ioan Gabriel SANDU^{4,5*}, Przemysław BIGAJ⁶

¹ Poznan University of Technology, Faculty of Architecture, 2 Jacka Rychlewskiego street, 60-965, Poznan, Poland,

² Kyiv National University of Construction and Architecture, 31 Povitroflotskyi Avenue, Kyiv, 03037, Ukraine

³ Poznan University of Technology, Faculty of Architecture, 2 Jacka Rychlewskiego street, 60-965, Poznan, Poland

⁴Gheorghe Asachi Technical University of Iași, Faculty of Materials Science and Engineering,
Blvd. Mangeron, No. 41, 700050, Iasi, Romania

⁵Romanian Inventors Forum, Str. Sf. P. Movila 3, 700089, Iasi, Romania

⁶ Cracow University of Technology, Faculty of Architecture, 24 Warszawska Street, 31-155, Cracow, Poland

Abstract

The concept of the post-war reconstruction of many Eastern European cities, shaped as a result of the actions of German town planners at the turn of the 19th and 20th centuries, in many cases consisted of negation, non-continuation or abandonment of previously set development directions. The subject of studies in this text will be the city of Poznań, which continued to develop in the post-war period on the basis of spatial arrangement created as a result of actions of Joseph Stübben in the years 1902-1918. The post-war reconstruction of the city after 1945 preserved its main urban layout created during the modernization period with the participation of a German town planner. The structure of the city preserved in this way consisted mainly of multi-family residential buildings. Urban planning and architectural activities as part of the reconstruction of the city after 1945 were aimed at continuing this concept. A critical analysis of these activities is planned in the following text. Housing construction was an important matter in the period of socialism in Eastern Europe, which on the one hand, supported propaganda activities, but on the other hand, increased the prestige of the authorities, which contributed funds to building new houses for the so-called "working class". "The investor on behalf of the state were housing cooperatives, which were responsible for the preparation of project documentation, which was ordered from state design offices. The post-war reconstruction of the city of Poznań, with the use of complementary buildings, became an interesting experimental field for architects and town planners. The research presented in the text will aim to refer to the creative attitudes of the time, as well as to confront the activities on these issues carried out during the communist period and in the post-1989 period. The aforementioned urban and architectural activities can be treated as an important element of the concept of heritage protection, seen through the prism of over 100 years of history of the concept of a modern city created by Joseph Stübben at the beginning of the 20th century.

Keywords: Communist period; Joseph Stübben; Post war reconstruction; Heritage

Introduction

The shaping of the spatial structure of the city of Poznań, according to the concept of Joseph Stübben (1845-1936), was finally completed in 1918. The urban form, created in a very

* Corresponding authors: yulia-ivashko@ukr.net and gisandu@yahoo.com

short time, survived the Second World War with minor changes resulting from the war destruction of individual buildings. In relation to the destruction of the city centre in 70%, the layout of modern districts designed by the German urban planner suffered slightly. It should also be mentioned that the space of Poznań in its form from the beginning of the 20th century consisted mostly of multi-family residential buildings, forming compact quarters, mostly based on a geometric grid of streets and squares. The main elements of the new districts were local markets, which were originally the centres of former villages incorporated into the city after 1902. Bearing in mind the history of Polish urban planning after 1945 [1] and the strong influence of socialist realism until 1956 [2] and also modernism [3] in later periods, an interesting issue is the fact that in post-war urban planning plans the city layout, based on a geometric J. Stübben grid, was preserved. Nevertheless, the war devastation of Poznań in 1945 set new tasks for the planners, the culmination of which was to be the city development plan.

Similar to many cities in Poland, the old urban center of Poznan was restored using the modern concepts of Conservation Science [4-8]. A large part of the theoretical and practical aspects of overcoming being developed in universities in Poland (Warsaw, Krakow, Poznan, etc.), immediately after the Second World War [9-15].

Based on ethical principles, unanimously accepted worldwide, the quarters with modern houses were integrated into the old urban systems [16-18].

In this context, the paper presents the evolution of cadastral plans from the communist and post-communist period, which led to the development of Poznan, as a modern city, open to the tourist circuit [19-21].

This work aimed to show the process of creating complementary buildings in Poznań over the last 120 years, as elements of the puzzle proposed by J. Stübben in his project.

Master planning in Poznań and the plan of Joseph Stübben during the communist period

The conducted studies and analyses contributed to the creation of numerous planning studies in the years 1945-1968, in which an attempt was made to create a new concept for the development of Poznań as a modern city [13-15]. On the basis of source materials, it is possible explain the approach of individual authors of planning studies to the vision of the city's development as a whole, as well as their attitude to the issues of complementary buildings as an element of reconstruction. The general spatial development plan of the capital city of Poznań from 1946 assumed for the districts created as a result of J. Stübben's concept, among others: Wilda, Łazarz and Jeżyce to maintain the current status of districts and a compact spatial structure with a predominant residential function. In the mid-1950s, comments appeared, in which the spatial readability of the analysed districts was negated and their structure was considered chaotic. In a sense, the negative comments about the work of J. Stübben, which appeared in the period between 1918-1939, among Polish architects and town planners, graduates of the Berlin University of Technology, were repeated (Fig.1).

The general plan of the city of Poznań from 1951, developed in accordance with the ideas of socialist realism, was a very appropriate measure from today's point of view. The propagated compactness of the city space, based on a concentric urban model, was conducive to supplementing the city tissue with complementary buildings (Dietz d'Arma 1957). Despite the socialist connotations, this plan retained the shape of the city created by J. Stübben, and did not try to change the historical layout, it proposed to supplement it with a part of the city to the East. The investment activity on the eastern side of the Warta River provided for in this plan could not be started quickly due to technical reasons, i.e. the lack of infrastructure, mainly the underground. The districts located on the western side of the river, including Wilda, Łazarz and Jeżyce, were well equipped with an underground network, which facilitated the implementation of investments, including the complementary ones (Fig. 2).



Fig. 1. General spatial development plan for the city of Poznań from 1946:
1 - Wilda area, 2 - Łazarz area, 3 - Jeżyce area.
On the plan, the areas of the districts designated for housing developments are marked with diagonal outlines. Source: Kodym-Kozaczko 2005



Fig. 2. General plan of the city of Poznań from 1951, author Tadeusz Płończak with his team.
Source: Kodym-Kozaczko 2005

It should be mentioned here that at the beginning of the 1950s, the construction of complementary development was not practiced by state-owned housing cooperatives. Pursuant to the programs, efforts were made to develop areas with underground infrastructure in a way that would enable the creation of independent colonies of apartment blocks. Such action was dictated by both the investment costs and the ease of execution. Nevertheless, in the urban planning activities of the city authorities in relation to the districts of Wilda, Łazarz and Jeżyce after 1953, the dominant trend was to complement their structure with individual objects. Revolutionary changes to this spatial structure were not planned, the only visible actions on the scale of the city were to be complexes of new landmarks located in their area. A similar voice in the discussion on complementing the spatial structure of the city appeared in a report prepared by J. Ziółkowski at the request of the periodical "Przegląd Zachodni" in 1953. It included the following statement: *A feature of residential construction in Poznań in the coming years will be filling the gaps in the buildings of the city centre at streets with full infrastructure development, which will result in far-reaching financial and material savings. They will be the so-called seals that will create the continuity of the downtown development and give it a metropolitan character* [19].

In 1961, the General Plan of the City of Poznań (Fig. 3) was created, which influenced the further fate of the city and its shape in the next several dozen years.

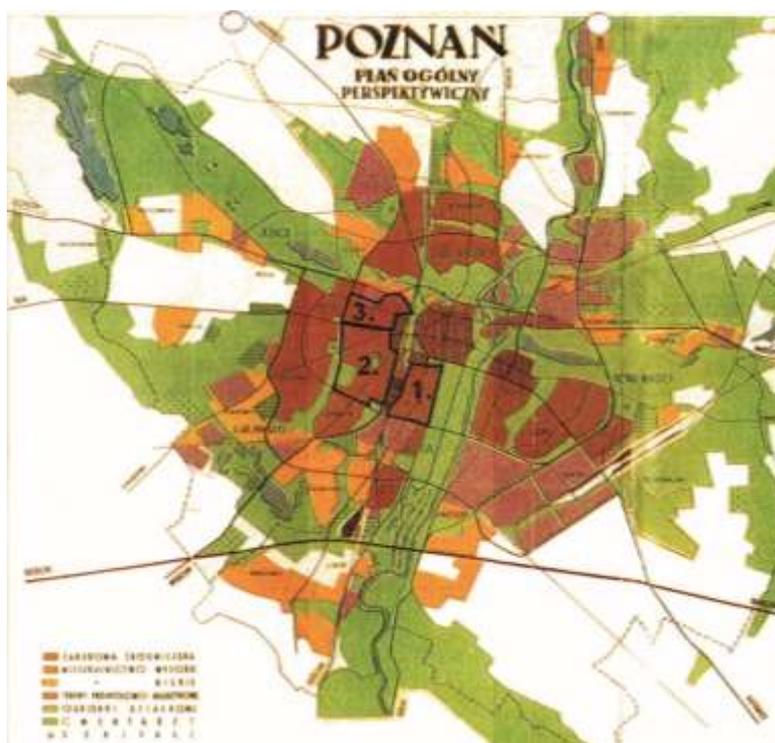


Fig. 3. General spatial development plan for the city of Poznań from 1961:

1 - Wilda area, 2 - Łazarz area, 3 - Jeżyce area. The area of the districts is marked on the plan in dark brown as spaces intended for "High downtown" buildings (General spatial development plan for the city of Poznań 1962).

Shaping modern Poznań in the early twentieth century according to the concept of Joseph Stübben

The city of Poznań, due to its geopolitical location, developed unevenly over the centuries, so as a result, an urban tissue diversified in terms of scale and form was created. Until the end of the 18th century, the city was in the orbit of Polish influence, and after its fall in 1793, it became

a part of the Kingdom of Prussia and then the German Empire until 1918. A variety of spatial forms - starting from the medieval city with a characteristic chessboard pattern through the city closed by the fortifications of the Poznań fortress from the years (1828-1902), became a field for new urban activities carried out by the German town planner Joseph Stübben (1845-1926) at the beginning of the 20th century. The beginning of modern Poznań was marked by the mass exodus of the German population from the city at the end of the 19th century, caused by the difficult housing conditions related to the functioning of the city as a fortress surrounded by belts of fortifications and forts (Fig. 4).



Fig. 4. Diagram of the fortification system of the city of Poznań fortress at the end of the 19th century.
Source: http://walkowiak.pl/archiwalia/Plany_Twierdzy_Poznan/index.html#poznan1892.jpg

The city authorities applied to Emperor Wilhelm II (1859-1941) with a petition to remove the fortifications of the Poznań fortress in order to allow the city to develop freely, as was the case with other German cities at the end of the 19th century. The first proposal to remove the city fortifications was sent by the city authorities of Poznań to Berlin on January 15, 1898. In a letter signed by the mayor Richard Wittig (1856-1923) it was stated that the city within the existing fortifications did not have any free areas suitable for housing development. In March 1898, a reply was sent from Berlin to the city authorities about the emperor's initial consent to the liquidation of the fortifications of the Poznań fortress. At that time, the area of the fortifications was 122ha. The emperor's final consent was waited until 1902. When the fortifications were

removed, the villages that were on its outskirts were joined to the town. One of the most important contributors to the future structure of Poznań as a modern city were: Jeżyce, Łazarz, Wilda, Sołacz and Winiary. A large-scale action was launched to unite the village with the city and to give these systems a large-city character in accordance with Stübben's concept [20].

The concept of city expansion according to Joseph Stübben

A commission chaired by J. Stübben, an outstanding German town planner, was entrusted with the elaboration of the concept for the development of the post-fortress grounds. In its plan, it assumed the construction of a representative avenue, varied with parks, residential buildings and monumental buildings - the imperial district – all of it on the site of the fortifications surrounding the centre. In 1903 J. Stübben prepared a zoning plan for the city, modified again in 1914 (Fig. 5). It distinguished between the building classes for the quarters designated by the regulatory lines. They differed in the building area of the plot, the number of storeys and the type of buildings. This plan allowed for the introduction of various buildings: compact, compact with front gardens and free-standing tenement houses. All information was also included in the graphic representation of the plan. The development of the city proposed by him was aimed at a strong intensification of housing development in the area of, above all, three districts of Wilda, Łazarz and Jeżyce.

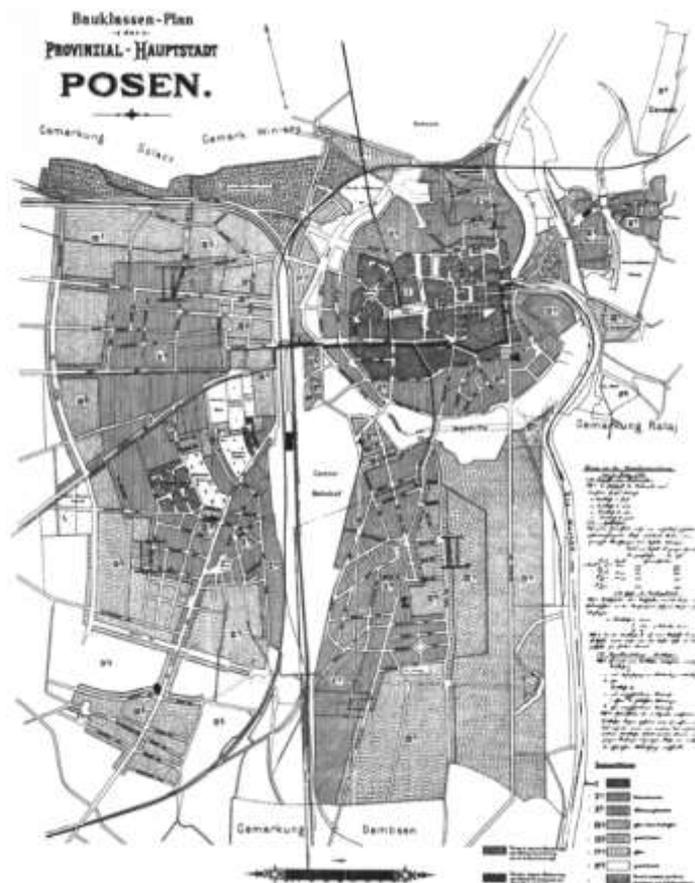


Fig. 5. Development zone plan for the city of Poznań according to the concept of J. Stübben from 1903, Source: Poznan University of Technology, Faculty of Architecture Archive

The introduction of the principle of building classes in the zoning plan was to ensure the creation of residential buildings in the area in question, taking into account the diversification of the number of storeys, building heights, slope of roofs and the location of buildings on the plots. This spatial structure became the basis of the urban layout, which, with slight modifications, continues up to this day. The shaping of the urban grid allowed for the creation of compact, quarters, which consisted of individual objects located on building plots. The overall composition of the quarter was a result of the process of erecting multi-family residential buildings on a complementary basis.

When Poland regained its independence in 1918, Poznań entered a new stage of spatial development. Actions were taken to further consolidate the city into a coherent whole, thus continuing the concept of J. Stübben. New quarters built at the beginning of the 20th century were supplemented with residential estates, mainly in the aforementioned districts of Jeżyce, Łazarz and Wilda. Despite the construction activities carried out in the interwar period, it was not possible to complete all the empty plots within the spatial structure created at the beginning of the 20th century (Fig. 6).



Fig. 6. View of a fragment of the layout of Jeżyce district, created in accordance with the concept of J. Stübben. The photo shows the state of establishment at the end of the 1940s.

Source: <https://cyryl.poznan.pl/kolekcja/jezyce-ul-roosevelta-mkz/>

During World War II, activities were carried out to change the image of Poznań towards town planning and architecture in the spirit of fascism. However, the focus was not on filling the gaps in the housing development of the J. Stübben plan. The program and spatial concept were more ambitious and related to the planning and implementation of wider spatial creations in the city. In a sense, the return to the idea of supplementing the city's districts (quarters) established at the turn of the 19th and 20th centuries with new buildings was caused by the war devastation of Poznań, which took place mainly as part of the city's liberation activities conducted by the Red Army in 1945.

Policy of shaping complementary housing in post-war Poznań, as an element of the continuation of J. Stübben's plan in the period of real socialism time

The liberation of Poznań by the Red Army in February 1945 resulted in significant losses in the city's buildings (Fig. 7). The city centre, located on the eastern side of the Main Railway Station, and the Old Town were particularly hard hit. In the districts of Wilda, Łazarz and Jeżyce, the scale of damage was smaller. Shortly after the liberation, the city authorities and private investors focused on rebuilding the city after the devastation. In the period from March 1945 to

February 1946, over 18,000 units were renovated. By the end of 1946, over 24,000 apartments were rebuilt or renovated, residential rooms within the city.

The post-war reconstruction of many Polish cities, including Poznań, began with the repair of municipal infrastructure and the resumption of industrial production. The issue of housing was moved to the background. After 1946, both private and state investors were involved in the reconstruction of residential buildings. Construction activities aimed at restoring the city to its original shape meant that in the period 1945-1949 no additional buildings were created in the area of Wilda, Łazarz and Jeżyce. After 1950, these trends changed, but not so much that the phenomenon could be called a mass one. In 1948, J. Goryński, in the pages of the magazine "Dom Osiedle Mieszkanie", lamented the state of reconstruction of Poland's housing potential.



Fig. 7. Residential buildings destroyed as a result of the war, Roosevelt street in Jeżyce, the second half of the 1940s.
Source: Sakson, Skarzyński 2008

It was understandable that in a certain period of economic recovery after the war devastation, the main emphasis was placed on the reconstruction of transport and communication and the production of basic consumer goods. However, this posed a risk that housing construction, as an apparently unproductive investment, would remain pushed to the far end of the list of hierarchical importance [21].

Due to the good spatial situation of Wilda, Łazarz and Jeżyce, districts created according to the concept of J. Stübben in the early 20th century, in the post-war period they were included in a program of activities related to the intensification of the use of the existing housing resources. This process progressed gradually from 1945. It turned out, however, that the scale of these activities was not sufficient in relation to the demand for new residential buildings. The centralist economy and the associated top-down allocation of investment funds made the construction of new buildings difficult. In 1957, E. Krzemień wrote in a magazine published by the city of Poznań entitled "Kroniki Miasta Poznania": *Not only the housing needs of Poznań, but also other needs of this city are treated unfairly as particularly subjective. Poznań's high city standard is indisputable. It is a convenient view for those who promote it when deciding on the allocation of investment funds. The divergence of views on this matter in Poznań and in the bodies of central authorities consists - it seems - in the fact that in Poznań housing matters are treated as a certain historical category, developed in the local conditions to which the population has gotten used to and which cannot be crossed out [22]*

Here it is necessary to define "local conditions". They refer to the strongly shaped spatial structure of the city from the beginning of the 20th century (Wilda, Łazarz and Jeżyce). It was there that there was a need to introduce new buildings of a complementary nature, which on the

one hand had the hallmarks of socialist realism [23], and on the other hand it perfectly fit into the existing spatial context. As I mentioned before, socialist realism struggling with gigantomania did not manage to transform the space of all Polish cities. The poor material, financial and ideological resources undoubtedly left their mark on the town planning and architecture of this period. Poznań avoided activities aimed at discounting the space of a historical city in favour of new urban spaces with ideological connotations. The process of supplementing the city space from the turn of the 19th and 20th centuries began as early as the mid-1950s and reached its peak at the end of the 1960s [24].

The example presented below shows the supplementation of the urban fabric of the city of Poznań in the first half of the 1950s. The plan of the building is in the shape of an elongated rectangle with the central part slightly recessed from the street. It has five residential floors (69 units) with an attic. In the ground floor part, there are three commercial premises and a branch of the public library. The underground storey is intended for cellars. The building has five staircases and two shelters, and there is no elevator (Figs. 8 and 9).



Fig. 8. Location of the building in question in a city block created as a result of the implementation of J. Stubben's plan, on the basis of the city plan from 1910.

The discussed supplementation is marked in black. Materials prepared by the author



Fig. 9. A multi-family residential building from 1957, complementary, at Słowackiego street nr 26, 26a, 28, 28a, 28b in Poznań. Location in a city block resulting from the implementation of J. Stubben's plan.

The existing investment is marked in grey, and the complement is marked in black.

In order to diversify the body of the building, five rows of reinforced concrete balconies were placed in the central part of the front elevation. Their alternating arrangement gives the building a specific dynamic. The outermost surfaces of the elevation were shaped with loggias and entrance gates to the yard. On the front elevation, we can distinguish three compositional planes: the strongly outlined ground floor, referring with the cornice line to the neighboring buildings, the horizontal body of the middle part shaped by a network of balconies and loggias, a clearly outlined roof zone, varied with dormer windows, which crowns the entire composition. This action evokes the concept of housing development provided for in the idea.

Due to its location, the building resembles the neighbouring structures with its architectural form, dimensions and arrangement of roofs. The whole composition works on the basis of a good fit, despite the difference in the height of the storeys in the complementary building and the adjacent buildings (Fig. 10a and b).



Fig. 10. A multi-family residential building from 1957, complementary at Słowackiego street nr 26, 26a, 28, 28a, 28b in Poznań: a. Location in a city block resulting from the implementation of J. Stubbens' plan in 2018. View from the street; b. Location in a city block resulting from the implementation of J. Stubbens' plan in 2023. View from the street.

In the case of Poznań, the socialist realist costume was introduced in those places that were prepared for it, either because of the total destruction of space or because of conscious creative activity. In the analysed districts, complementary buildings created new elements in the existing urban tissue on the basis of fitting, both in form and dimensions. We are dealing here with a kind of paradox: the historical buildings of the city from the turn of the 19th and 20th centuries become a perfect background for socialist realist creativity. It should be born in mind, however, that in some cases the new buildings were inferior to the "bourgeois" buildings in terms of quality, both workshop and ergonomic. Development of the city in the post-war period was carried out on various levels. The creation of complementary housing in the early 1950s was limited to single projects in the historic fabric of the city. There are few examples of such buildings, because at that time considerable resources and resources were allocated to the reconstruction of the old town and more dilapidated districts. In the Act on the promotion of construction of July 3, 1947 (Journal of Laws No. 52, items 269 and 270) in Art. 4 sec. 1, emphasis was placed on creating a housing environment in the form of "compact" and "loose" buildings. It was a good investment climate for the construction of complementary buildings.

After 1956, the fascination with socialist realism in architecture and urban planning came to an end. The departure from this doctrine in favour of rational thinking was visible on many levels. Despite the earlier lack of interest in the historical space of the city at the turn of the 19th and 20th centuries, on the wave of thaw rhetoric, there were voices calling for its preservation and reckoning with the existing investments.

Policy of shaping complementary housing development in post-war Poznań, as an element of the continuation of J. Stübben's plan in the period of return to modernism after 1956

It should be noted here that in Poznań, the transition from socialist realist architecture to modernist architecture was slow. This was caused, among others, by the lack of qualified architects, as well as the inability to change people's mentality. The long design cycles of buildings as well as prolonged construction and finishing activities also stood in the way. For these reasons, the turn of 1956 could immediately bring neither independent creative concepts, nor radical transformations in construction practice. Over the past four years, we have been observing the evolution of architectural and construction forms, along with changes in the designer's creative workshop, in the structure of contracting companies and in the assortment of materials used. *The new urban planning and architecture, based on models drawing on the achievements and accomplishments of modernism, did not fully meet with an enthusiastic reception. In the opinion of our society and in many statements of designers, modernity is identified with the flashiness of ornaments, with the use of new materials, flat roofs, horizontally striped window openings. All these elements can of course be used to construct a creative concept, but they themselves do not yet determine the architectural expression of our era* [25].

In works after 1956, we are dealing with a completely different program. The new architecture very dynamically enters the space of the historical city. Tied up by earlier ideological conditions, it takes on a new expression. It becomes a message of the new times, one gets the impression that both its spatial form and relations with the urban context work on the basis of a strong contrast. The example below shows how the urban tissue of the city of Poznań was complemented in the second half of the 1960s (Figs. 11 and 12).

A complementary multi-family residential building complements the quarter delimited by Słowackiego and Szamarzewskiego streets, which were originally a component of the modern urban concept, according to the idea of J. Stübben. The object with a transverse structural system was erected on the projection of an elongated rectangle with a side aspect ratio of approximately 1:2 (Figs. 13 and 14).



Fig. 11. Location of the building in question in a city block created as a result of the implementation of J. Stübben's plan, on the basis of the city plan from 1910. The discussed complementation is marked in black.

It has two staircases illuminated by windows harmonized with the body of the building. Each staircase leads to three apartments per floor. The building has seven storeys (six above-ground and one underground for basements with a drying room and a laundry room). There are 36 apartments of various standards. The ground floor of the building is intended for two commercial premises and an entrance gate to the yard. On each floor, from the first to the fifth,

there is one one-room apartment and two two-room apartments. Each of them has a bathroom with a toilet and a kitchen. All rooms, with the exception of the sanitary rooms, have daylight.



Fig. 12. A multi-family residential building from 1960-1964, complementary, at Wawrzyniaka 28/30 street in Poznań. Location in a city block resulting from the implementation of J. Stubben's plan. The existing investment is marked in grey and the complement is marked in black.



Fig. 13. A complementary residential building (from 1960-1964) at Wawrzyniaka street 28/30 in Poznań - view of the elevation from the street (archival materials of the Jeżyce Housing Cooperative in Poznań)



Fig. 14. A complementary residential building (from 1960-1964) at Wawrzyniaka street 28/30 in Poznań - view of the elevation from the street, 2022.

Policy of shaping complementary housing development in post-war Poznań, as an element of the continuation of J. Stübben's plan, an attempt to characterize the period between 1945-2023

The subject of the considerations contained in the text was the shaping of the post-war multi-family housing development of a complementary nature in the context of the urban structure of Poznań from the turn of centuries as a result of planning activities of J. Stübben. The continuation of the post-war infill development in the city centre was dictated by the following factors. Poznań, unlike other cities in Poland after 1945, such as Wrocław, Warsaw or Gdańsk [26] retained the pre-war ownership structure, the city was not included in the nationalization of private land. This state of affairs has undoubtedly contributed to investments in areas where, as a result of military operations, gaps in the compact buildings were created, or the buildings had not been built since the implementation of J. Stübben's plan. Acquiring construction land in the city centre was associated with the necessity to carry out long procedures for the purchase of land property or indication of a replacement property, sometimes carrying out expropriation procedures. In the first post-war years, this limited the availability of building plots. On the other hand, a favourable factor was the planning activity conducted in the discussed period, aimed at the steady development of the city inwards [6]. This created opportunities not only for the reconstruction of the city centre, but also for filling the gaps in the less damaged neighboring districts. This tendency changed in the early 1960s with the emergence of the concept of building large housing estates in the eastern and northern parts of the city. It returned at the beginning of 1989 and continues to this day [12].

As the research of archival materials showed, by the end of the 1960s, post-war planners recommended in a sense supplementing the existing spatial structure with new projects. Such action was dictated by the desire to rationally use the existing technical infrastructure (sewage, water, electricity, communication). Due to the costs associated with the reconstruction of the city after the war devastation, the use of free land was a rational move, although not necessarily in terms of propaganda (especially in the 1950s) due to the current political doctrine.

In any case, during the socialist period, housing construction was an important element of propaganda activities and raised the prestige of the authorities, which provided funds for the construction of new houses for the so-called working class. After 1989, complementary construction in the city area continued to develop, however under different conditions of the market economy. In order to summarize the material, it was proposed to present this process in relation to dates important from the point of view of the history of post-war Poland.

The years 1945-1948 (a short period of the country's democratization) was the time of post-war reconstruction of the city from the devastation of World War II. In the analyzed period, no complementary residential buildings were built in the aforementioned districts, such as Wilda, Łazarz and Jeżyce. This does not mean that no measures were taken to restore the residential functions of the damaged buildings. This was done by rebuilding more damaged buildings or carrying out necessary repairs. However, these were restorative activities.

The years 1949-1956 were also the period of the greatest intensification of socialist realism in architecture, and thus in construction, not only housing. At that time, the main design activity was still focused on the post-war reconstruction, of the city centre in particular. Few complementary projects from that time were part of the broadly understood socialist realism trend in terms of architectural costumes. The objects created at that time can be characterized as follows. Objects located in a historical context complemented the existing spatial structure, mainly specific quarters in districts created according to J. Stübben's plan. The dimensions of the new buildings corresponded to the dimensions of the neighbouring buildings, which in practice contributed to the completion of the street frontages. The elevation drawing alluded to the forms of socialist realist architecture. However, it was a very poor version, devoid of the characteristic decorativeness and the use of stone elements and details (e.g. MDM district in Warsaw).

The years 1957-1968 were a period of departure from the socialist realist doctrine and return to the experiences and achievements of modernism. Design activities were not focused on the post-war reconstruction of cities. It can be said that it was a period of heyday of architectural activities related to complementary buildings. In terms of the architectural costume, the new buildings were in clear opposition to those from the previous period. However, the standards for the usable floor space of flats were still in force. Buildings constructed during this period can be characterized as follows. They complemented the existing spatial structure but created a strong contrast to it depending on the location. First of all, flat roofs were used. The neighbouring buildings were referred to with similar dimensions. In some cases, the historical way of building the interior of the building plot was broken and the front building was located in the line of street development, without an outbuilding.

The years 1969-1980 were a period of departure from earlier modernism, with a clear pull towards late modernism. The resulting few examples of complementary buildings are characterized by the use of the structure and construction of the building as an ornament. Vertical and horizontal articulation was strongly marked. As in the earlier period, new buildings with a complementary character in terms of architectural costume were in visible opposition to the buildings from the earlier period. The new facilities complemented the existing spatial structure, especially specific quarters in the districts in question. The dimensions of the new buildings corresponded to the dimensions of the neighboring buildings, which in practice contributed to the completion of the street frontages. First of all, flat roofs were used. The historical way of building the interior of the building plot was abandoned and the front building was located in the street line, without the outbuilding, so characteristic for the spatial structure of the quarters from the beginning of the 20th century (negation of history) and purism.

The years 1981-1989 were a period of fascination with postmodernism. The completed examples of complementary buildings are characterized by a reference to the history of the place. There is a visible return to urban contextuality and the treatment of complementary buildings as an element of the revalorization of urban space, especially urban structures from the beginning of the 20th century. New buildings complementary in terms of architectural costumes remain in a visible dialogue with objects from the earlier period (eclecticism). The buildings constructed during this period can be characterized as follows: new facilities, as in earlier periods, constituted of supplementing the existing spatial structure of the surveyed districts [27]

The years 1990-2023 in Poznań were a period of searching for architecture that would be a symbol of the times in which it was created. Year 1989 gave the city and its architecture a new dynamic. The architectural and construction activities related to the creation of complementary buildings are undoubtedly among many activities that have left their mark on the structure of the city in recent decades. The architecture of this period in many cases bears the hallmarks of modernity [28]. Contemporary projects, similarly, to earlier objects, are based on the principle of contrast. The architectural form of the buildings refers to contemporary trends in shaping, primarily residential, architecture (Fig. 15).

Buildings constructed in this period can be characterized as follows. The new facilities complemented the existing spatial structure of the urban layout that was created at the beginning of the 20th century. The dimensions of the new buildings corresponded to the dimensions of the neighboring buildings, which in practice contributed to the completion of the street frontages. The use of multi-pitched roofs came back, in some cases flat roofs were implemented [15].

There has been a return to the historical way of building the interior of the building plot, dictated by economic considerations and the utilitarian nature of the solutions. The elevation drawing referred to a wide range of forms of eclectic, postmodern and other styles of architecture, and the spatial structure of the building was created by adjusting it to the existing spatial context. The most attractive flats were located on the top floors, thus equipping the buildings with lifts, which was not the case in the previous years. The number of small flats up to 50m² predominated

in these buildings. There was also a return to locating commercial premises on the ground floors of the buildings.



Fig. 15. Infill housing development - a residential building right corner, dating back to 1998 at Kochanowski 27/28 street in Jeżyce district designed by J. Klimaszewska, T. Biedak.
Source: Poznan University of Technology, Faculty of Architecture Archiv

This thought was followed by the following generations of urban planners and architects. As is known, there were several stages, with concepts specific to the respective periods for the preservation of this system for over a hundred years.

The first stage refers to the period after the First World War, when the city entered a new page in its history as part of Poland, reborn after many years. Of course, German urban planning was criticized at the time, but the utilitarian character of the solutions was conducive to the development of a modern city. Modern visions of the city were created as part of the wave of fascination with modernism, but nevertheless, no one questioned the approach to the city as a space that was the result of the continuation of history.

The second stage was the period after 1945, when the reconstruction of the city was imposed by the new political system, which was trying to establish itself in Eastern Europe. As is known, the analysis of the city's expansion plans was based on J. Stübgen's plan. During this period, there was no attempt to radically change it through reconstruction, as was the case in many cities in western Poland. An important factor was also the problem of the finances of the city as planned. Simply put, poverty and scarcity of resources allowed the plan to survive. During this period, the complementary buildings were not as much discussed in the media, as were the housing complexes created in the construction technology with large panels.

The third stage was related to the problem of changing the way of approaching the problem of urbanism and architectural heritage at the beginning of the 19th and 20th centuries. In the case of Poland, positive voices in this matter appeared only in the first half of the 1970s. This fact should be considered as another factor in the way of preserving the spatial arrangement of the city as an important witness of history [7].

The fourth stage refers to the two conservation concepts that developed in Poland during the reconstruction of many cities after the destruction of the Second World War. The first promoted the reconstruction of the historical city in the modern sense [29], the second emphasized the return to historical values based on the creation of a copy of the past. In the case of Poznań, the spatial framework became only a place for adding new objects and not a space for experimentation (Figs. 16 and 17).



Fig. 16. Infill housing development - a residential building right corner, dating back to 1961 at 28 Czerwca 1956 nr 138. The view of the ground floor windows in the form of cubic solids.
Materials prepared by the authors



Fig. 17. Infill housing development - a residential building right corner, dating back to 1961 at 28 Czerwca 1956 nr 138. A study of stone damage due to the use of improper facade paint. No possibility of air reaching the structure of the material.
Materials prepared by the authors

In many cases, the analyzed projects contributed to the discussion about the quality of architecture and its coexistence in the historical spatial environment. Regardless of the time of construction, the complementary buildings [30] have become a permanent element of the Poznań iconosphere. When considering complementary buildings in the context of a modern city, it must be linked to the past. Taking the city as it is, full of experiences from past centuries, in our opinion is a natural process of learning it. The identity of a place, defined by means of complementary buildings, becomes in this case a reflection of the search for a certain sign, symbol. The infill buildings, as included in the title, are a kind of metaphor for modern and past times. The ideology that accompanied modern Polish architecture is now only a memory that is not worth returning to. In concluding our considerations, we wished let's quote the words of Bruno Zevi [31] as a summary of these observations: *“All the techniques of representation and all the paths to architecture which do not include direct experience are pedagogically useful, of practical necessity and intellectually fruitful; but their function is no more than allusive and preparatory to the moment in which we, with everything in us that is physical and spiritual and, above all, human enter and experience the spaces we have been studying. That is the moment of architecture”*.

Conclusions

The concept of the development of Poznań created by J. Stübgen at the beginning of the 20th century became a turning point in the history of urban changes in the city. It allowed for the delineation of characteristic spatial frames using the geometric grid of streets and squares. Such a plan has become a field of investment activities that have been going on for over 120 years with breaks. Despite the historical turmoil in the form of two World Wars, the communist period and the post-1989 transformation period, this plan is still clear and visible in the structure of the city centre.

The considerations presented in the paper took into account the fact that the functional and spatial program created by German urban planners has not changed in most places. The plan at

the beginning of the 20th century was based on the creation of a comfortable living space as part of the expansion of the city after the demolition of the Poznań Fortress (Festung Posen).

As mentioned above, there were several stages, with specific conceptions for the preservation of this system over a hundred years.

The first stage refers to the period after the First World War, when the city entered history as part of Poland, reborn after many years, when Poznan became a modern city.

The second stage was the period after 1945, when the reconstruction of the city was imposed by the new political system, which was trying to establish itself in Eastern Europe. However, during this period, the analysis of the city's expansion plans was based on J. Stübber's plan.

The third stage was related to the problem of changing the way of approaching the problem of urbanism and architectural heritage at the beginning of the 19th and 20th centuries. In the case of Poland, positive voices in this matter appeared only in the first half of the 1970s. This fact should be considered as another factor in the way of preserving the spatial arrangement of the city as an important witness of history.

The fourth period refers to two conservation concepts that developed in Poland during the reconstruction of many cities after the destruction of World War II. Thus, the first concept promoted the reconstruction of the historical city in a modern sense, the second emphasized the return to historical values based on the creation of a copy of the past. In the case of Poznań, the spatial framework became only a place for adding new objects and not a space for experimentation.

References

- [1] A. Andrzejewski, *Sytuacja mieszkaniowa miast w Polsce*, 1951, **Miasto**, nr 1.
- [2] W. Adamski W. *O właściwe oblicze architektury*, 1949, **Architektura**, nr 5.
- [3] A. Basista, **Betonowe dziedzictwo. Architektura w Polsce czasów komunizmu**, Wydawnictwo Naukowe PWN, 2001.
- [4] O. Florescu, I.C.A. Sandu, P. Spiridon-Ursu, I. Sandu, *Integrative participatory conservation of museum artefacts. Theoretical and practical aspects*, **International Journal of Conservation Science**, **11**(1), 2020, pp. 109-116.
- [5] Y. Ivashko, K. Kuśnierz, M. Krupa, P. Gryglewski, A. Dmytrenko, I. Sandu, *Ways of Performance and Preservation of Monumental Art Works on The Facades of Architectural Monuments of the 19th – Early 20th Century*, **International Journal of Conservation Science**, **12**(4), 2021, pp. 1209-1230.
- [6] P. Spiridon, I. Sandu, *Muselife of the life of public*, *International Journal of Conservation Science*, **7**(1), 2016, pp. 87-92.
- [7] P. Spiridon, I. Sandu, L. Stratulat, *The conscious deterioration and degradation of the cultural heritage*, **International Journal of Conservation Science**, **8**(1), 2017, pp. 81- 88.
- [8] I.C.A. Sandu, P. Spiridon, I. Sandu, *Current studies and approaches in the field of cultural heritage conservation science. Harmonising the terminology in an interdisciplinary context*, **International Journal of Conservation Science**, **7**(3), 2016, pp. 591-606.
- [9] K. Słuchocka, *Perception of architecture in the context of an extended spectrum of cognitive factors. Selected issues*, 2022, **Architectus**, no 2(70)
- [10] M. Orlenko, Y. Ivashko, D. Kusnierz-Krupa, J. Kobylarczyk, O. Ivashko, *Conservation of the Residential and Public Architecture of the 19th – Early 20th Centuries (On the Examples of Kyiv and Cracow)*, **International Journal of Conservation Science**, **12**(2), 2021, pp. 507-528.
- [11] I. Sandu, M. Orlenko, M. Dyomin, O. Ivashko, Y. Ivashko, C.G. Lăzăreanu, K. Paprzyca, I.G. Sandu, P. Sztabińska-Kałowska, *Scientific Conservation of the Outstanding Theaters of the 19th Century and Their influence on the Creation of Modern Art-Space*, **International Journal of Conservation Science**, **12**(2), 2021, pp. 361-390.

- [12] L. Pujia, *Cultural heritage and territory. Architectural tools for a sustainable conservation of cultural landscape*, **International Journal of Conservation Science**, 7(1), 2016, pp. 213-218.
- [13] Y. Ivashko, T. Kuzmenko, S. Li, P. Chang, *The influence of the natural environment on the transformation of architectural style*, **Landscape Architecture and Art. Scientific Journal of Latvia University of Agriculture**, 15(15), 2020, pp. 101-108.
- [14] D. Chernyshev, Y. Ivashko, D. Kuśnierz-Krupa, A. Dmytrenko, *Role of Natural Landscape in Perception of Ukrainian Sacral Architecture Monuments*, **Landscape Architecture and Art. Scientific Journal of Latvia University of Agriculture**, 17(17), 2022, pp. 13-21.
- [15] A. Nadolny *Modernism in the architecture of Poznań, after 1945, based on the example of residential complementary development*, 2008, **Teka Komisji Architektury, Urbanistyki i Studiów Krajobrazowych**, t. 4A.
- [16] H. Jedrzejewska, **Etics in Conservation**, Institutet for Materialkunskap, Stockholm, 1976.
- [17] H. Jedrzejewska, *The concept of reversibility as an ethical problem in conservation*, **Problems of Completion, Ethics and Scientific Investigation in the Restoration. Proceedings of the third International Restorer Seminar**, Veszprem, 11-20 July 1981, Institute of Conservation and Methodology of Museums, Budapest, 1982. pp. 27-32.
- [18] M. Petzet, *Conservation of Monuments and Sites – International Principles in Theory and Practice*, **Monumenta II**, ICOMOS, 2013.
- [19] J. Ziółkowski, *Elementy rozwoju Poznania w Polsce Ludowej*, 1953, **Przegląd Zachodni**, nr 6 – 8, p.436.
- [20] G. Kodym-Kozaczko, *Rozwój Poznania w planowaniu urbanistycznym w latach 1900-1990*, **Architektura i urbanistyka Poznania w XX wieku**, Wydawnictwo Miejskie. Poznań, 2005,
- [21] J. Goryński, *Na drodze właściwego planu budownictwa mieszkaniowego*, 1948, **Dom, Osiedle, Mieszkanie**, nr 3 – 4, p. 2.
- [22] E. Krzymień E. (1957), *Poznański problem mieszkaniowy*, 1957, **Kronika Miasta Poznania**, nr 24 za lata 1951-1956.p.98
- [23] A. Sakson, A. Skarzyński, *Raport o stratach wojennych Poznania 1939-1945*, 2008, Poznań, Wydawnictwo Miejskie.
- [24] L. Dietz D’arma, *Aktualne problemy przeobrażenia przestrzeni miejskiej współczesnego Poznania*, 1957, **Kronika Miasta Poznania**, nr 24 za lata 1951-1956.
- [25] J. Modrzejewski, *W poszukiwaniu nowoczesnych form architektury*, 1961, **Kronika Miasta Poznania**, nr 1.
- [26] A. Nadolny A. *Renesans idei mieszkania w centrum na przykładzie Poznania początku XXI wieku*, [in] *Tendencje w kształtowaniu zabudowy mieszkaniowej współczesnych miast*, ed. H. Zaniewska, A. Tokajuk, 2006, Białystok, Wydział Architektury Politechniki Białostockiej.
- [27] A. Nadolny, *Witruwiusz i kontekst na przykładzie architektury Poznania XX wieku*, 2009, *Czasopismo Techniczne*, z. 7, Architektura z. 1-A.
- [28] Y. Ivashko, T. Kuzmenko, S. Li, P. Chang, *The influence of the natural environment on the transformation of architectural style*, **Landscape Architecture and Art**, 15, 2019, pp. 101-108.
- [29] K. Słuchocka, *Perception of architecture in the context of an extended spectrum of cognitive factors. Selected issues*, 2022, **Architectus**, no 2(70)
- [30] M. Orlenko, Y. Ivashko, D. Kusnierz-Krupa, J. Kobylarczyk, O. Ivashko, *Conservation of the Residential and Public Architecture of the 19th – Early 20th Centuries (On the Examples of Kyiv and Cracow)*, **International Journal of Conservation Science**, 12(2), 2021, pp. 507-528.
- [31] B. Zevi, **Architecture as a space. How to look at architecture**, Horizon Press, 1974.

Received: October 20, 2022

Accepted: February 11, 2023