PROBLEMS OF SUPPLEMENTING THE FORMED HISTORIC DEVELOPMENT WITH NEW OBJECTS (ON THE EXAMPLE OF POZNAŃ)

Karolina SOBCZYŃSKA[1,], Adam NADOLNY[1*], Katarzyna SŁUCHOCKA[1],
Vladyslav SMILKA[2] , Oleksandr IVASHKO[2]

[1] Division of History, Theory and Heritage, Faculty of Architecture, Poznan University of Technology,
60-965 Poznan, Poland
[2] Kyiv National University of Construction and Architecture, 31 Povitroflotskyi Avenue, 03037 Kyiv, Ukraine

Abstract

In the article, the authors discussed the course in the subject of heritage protection, including the conservation of historic buildings and placing new objects within historically formed development, at the Faculty of Architecture of the Poznan University of Technology. The authors emphasise the importance of analysing the composition of historical buildings' elevations existing in the vicinity of the designed object. Capturing the main compositional structures and guidelines of the facades of historical objects is difficult, and hence the authors show different ways to achieve this, emphasising different ways of observing the object and graphically recording the layout of the composition and later using these effects in the design stage. The aim is to acquire and improve the ability to fit the designed object into its historic context.

Keywords: Historical buildings; Historical context; Heritage protection; learning in exercise

Introduction

A characteristic feature of heritage protection is the issue of combining contemporary architectural knowledge with a background in the history of architecture. An important element in these design and teaching activities is work in the historical spaces of the city of Poznań, relating mainly to the period of the 19th and 20th centuries. In the case of the analysed works, the focus was on three downtown districts named Wilda, Łazarz and Jeżyce, which became the backbone of the new structure of the city of Poznań after the abolition of fortifications at the turn of the 19th and 20th centuries. The urban structure of the city preserved in this way, which was not destroyed during the Second World War and the communist period, became the site of design activities.

Taking into account the relevance of the topic of historic development conservation and its completion by new objects, the authors worked out the source base in the following directions:

1) issues directly related to repurposing methods and analysis of existing examples – publications by *A. Dmytrenko et al.* [1], *M. Dyomin et al.* [2, 3], *O. Ivashko* [4], *J. Kobylarczyk et al.* [5], *M. Orlenko et al.* [6, 7], *K. Stefański et al.* [8];

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* Corresponding author: adam.nadolny@put.poznan.pl

2) the issue of architectural education in modern conditions – the article by *D. Kuśnierz-Krupa et al.* [9];

3) the influence of modern artistic trends on the revitalization of industrial enterprises – articles by *M. Dyomin and O. Ivashko* [10, 11];

4) the issue of preservation of the historical architectural environment in a modern city – article by *V.A. Nikolaenko et al*. [12];

4) artistic aspect in restoration – the article by *M. Orlenko and Y. Ivashko* [13];

5) urban aspects and questions of the formation of modern architecture – publications by *K. Havik and A. Sioli* [14], *R. Locke et al.* [15], *M.E. Smith and C. Hein* [16], *D. Hayden* [17], *K. Słuchocka et al.* [18];

6) works devoted to the architectural and urban development problems of Poznań in different periods – articles by *A. Nadolny* [19, 20], *J. Skuratowicz* [21], *G. Kodym-Kozaczko* [22], *Z. Ostrowska-Kębłowska* [23];

7) issues of creativity in modern architecture – publications by *C. Rodriguez et al.* [24], *B. Taneri and F. Dogan* [25].

The analysis of the source base proved that the problem of revitalization and modernization of historical buildings is international, and the world has accumulated a powerful positive experience of repurposing. The most common is repurposing for offices and business centres, large shopping centres, hotels, and even luxury housing (here we should mention the experience of massive repurposing of factories in Łódź). A specific direction of the repurposing of former plants and factories is their repurposing for an artistic function with the introduction of the specific concept of "art cluster". Such an art formation is distinguished by the fact that all participants work for a common result—an artistic product.

The main goal of the study was to analyse the historical stages of the development of Poznań and, by analysing the existing historical buildings, provide specific project proposals for the modernization of facades, taking into account the aspect of preserving the authentic environment.

The tasks of the research were as follows:

- Analyse the development of Poznań at the turn of the 19th and 20th centuries;
- Consider the aspect of memory in architecture and ways of its expression;
- On the basis of the analysis of the historical situation, urban aspects, and existing world experience, propose measures for the facade design of new objects in the formed historic development based on the preservation of the integral historical environment, the "memory of the place," and determine the successive stages of experimental design.

Materials and Methods

In many cities, in their historical buildings, empty spaces have been filled with modern buildings that refer only to the size of the neighbouring buildings and possibly to the angle of inclination of the roof slope. In newly constructed buildings, there is often a lack of references to the composition of the facades of neighbouring buildings and the specific genius loci of the place.

It can be said that designing new buildings in a historic architectural context is a difficult task that is not easy for both students and professionally working architects. Facades of historical objects usually have a complex composition and many details or ornaments. According to the authors, the difficulty of designing in such a compositionally complicated context as historical facades is due to several reasons. One of them is the designer's habit of designing modern

buildings with curtain facades. This also applies to specialists in the Faculty of Architecture, who design modern objects in most subjects. Other reasons are: lack of knowledge about the traditional construction, which always determines how the facade will be; lack of ability to analyse the composition of rich, complicated facades of historic tenement houses; lack of ability to empathically look at neighbouring buildings in order to create an object that fits compositionally to neighbouring buildings; and lack of ability to recognise the main compositional guidelines of historical facades resulting from the lack of the ability to properly look and use various ways of looking, from detailed viewing to a quick look embracing only the most important elements and structure of the composition.

In accordance with the objectives of the research, the methods of historical analysis (for the analysis of the development of the city of Poznań), comparative analysis, the grapho-analytical method, and the method of experimental design (for the development of project proposals for the modernization of facades) were used.

The acquisition by architects of the ability to perform analyses of the composition of existing historical objects is preceded, among other things, by learning various ways of looking at the building. According to the authors, the use of different ways of looking at the building will enable: separating from the facade its main, important elements and those less important; determining the hierarchy of individual parts and elements of the facade in order to find the main compositional assumptions; finding certain connections, dependencies, and proportions of individual elements of the facade; defining the rhythms of windows; and defining the main compositional guidelines of the facades of existing historical buildings. The following working methods are used:

– giving examples of the use and application of architectural vocabulary to describe a given building;

– comparative analyses, quantitative methods and logical argumentation, methods of observation using empathy, and perception components such as: active research, making choices, capturing what's important, simplifying, analysing, and synthesising, completing, comparing, associating, differentiating, placing in context, and solving problems.

In order to see and distinguish the most important compositional assumptions of a given building, the author encourages people to use different types of looking, for example, squinting their eyes when observing the facade, i.e., turning off sharp vision, which records a lot of details, and seeing the most important elements. Until you determine the main assumptions of the composition of the facade, you can proceed to the secondary details.

If the order of observations "from the general to the detail" was difficult and didn't give results, the teacher recommended reversing the order of observation methods. Although the sequence of analyses consisting of the transition from the analysis of the general to the analysis of details seems to be objectively the best and most commonly used method of analysis, the author noticed that some students have a problem assessing and capturing the main, general compositional assumptions of the facade and then encouraged them to start their work by analysing details and groups of elements and then trying to determine the main compositional idea.

At the design stage, the authors didn't persuade students to design and reproduce historical details and forms of historic buildings but encouraged them to recognise and grasp a specific fragmentation, a certain delicacy, and a certain subtlety characterising the existing historic buildings. According to them, the purpose of designing new objects in the historical context of the city is to ensure that a given place does not lose its genius locci and therefore they urge

students to attempt a deeper, more detailed fit in the existing context of historical buildings on the subject they conduct.

Results and Discussion

The spatial structure of the city of Poznań at the turn of the 19th and 20th centuries

The beginnings of settlement in Poznań date back to the first half of the 9th century. Such a convenient location contributed to the development of the city. After the Congress of Vienna in 1815, Poznań was incorporated into the autonomous province of the Grand Duchy of Poznań (1848–1851) and became its capital. The proximity of the Russian border (60km from Poznań) meant that the Prussian authorities decided to transform the city into a fortress. From 1828, works on the fortification of Poznań were carried out, to be definitively completed in 1864. Over time, it turned out that the fortifications greatly limited the functioning of the city, negatively affected the living conditions of residents, and degraded the city as a place of residence [20].

Fig. 1. 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 mass exodus of the German population from Poznań at the end of the 19th century caused the city authorities to approach Emperor Wilhelm II with a petition aimed at removing the fortifications of the Poznań fortress with the possibility of free development of the city [21]. It was determined that the city within the existing fortifications did not have any free land suitable for housing development. The emperor's consent was delayed until 1902. When the fortifications were removed, the villages located in their foregrounds were incorporated into the town: Jeżyce,

Łazarz, Wilda, Sołacz and Winiary [22]. A large-scale action was launched to unite the village with the city and give these systems a big-city character.

The concept for the development of the post-fortress grounds was entrusted to a commission chaired by Hermann Joseph Stübben (1845–1936), an outstanding German urban planner. In his plan, he assumed the construction of a representative avenue, varied with parks, residential buildings, and monumental buildings, on the site of the fortifications surrounding the centre. In 1903, H.J. Stübben developed a zoning plan for the city's expansion and then modified it in 1914. It became the basis for the development of modern Poznań. The development of the city, as proposed by him, was aimed at a strong intensification of housing development in the adjoining districts of Wilda, Łazarz and Jeżyce.

The introduction of the principle of building classes [23] 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 plots. This spatial structure became the basis for the creation of an urban layout that, with slight modifications, continues 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 the result of the process of erecting multi-family residential buildings as supplementation.

Until 1918, the city structure was enriched with new housing projects in the form of entire quarters. With the regaining of sovereignty by Poland between 1918 and 1939 within the districts of Wilda, Łazarz and Jeżyce, the process of supplementing the existing spatial structure with complementary projects begins. Due to the occurrence of this process and a certain planning continuity, which was continued after World War II (1939–1945), we can talk about a certain kind of architectural activity serving as a continuation.

Wilda, Łazarz and Jeżyce are districts that, on the one hand, became the backbone of the development of modern Poznań at the beginning of the 20th century, and on the other hand, during the post-war planning activities, they retained their spatial structure. In the presented research, significant in addition to the issue of context, will also be the perception of architecture created in a historical spatial context as a sign that can be defined as memory in architecture [26]. For the sake of clarity in our argument, we would like to describe this phenomenon in a few sentences.

Problems of memory in architecture

Addressing the issue of memory is not a product of postmodern discourse. Already in antiquity, architectural form was used as a material to illustrate the mental transformations of the human mind. Architectural memory can be divided into three basic thematic groups. The first one includes the architectural memory of the 18th century, which was strongly integrated into the scientific search for the world. This activity existed in correlation with the expansion of culture and civilization in Europe. The eighteenth-century architecture of memory is also a kind of attachment to traditional architectural forms, proportions, verticals, and levels emphasising the composition and a search for links with antiquity.

The second group consists of discussions carried out in the nineteenth century, where the shaping of the tradition of cultivating the past took place through the art of gardening and an interest in history and ruins. It was a kind of activity aimed at preserving architectural memory, but in a completely different context. The architectural memory represented by the eighteenth and nineteenth centuries was a kind of dissonance between the actual play of architectural elements creating space and the mental world of memory. Aldo Rossi (1931–1997) believed that

without forgetting, there is no memory. The value of memory is perceived through a dialogue with forgetting.

The third group consists of discussions conducted in the 20th century. During this period, there is a return to the observation of the phenomenon of memory in architecture. Building museums, archives, historical studies, and caring for the national heritage All these activities clearly prove that we are dealing with a culture that does not want to and cannot forget. Walter Benjamin (1892–1940) had a different understanding of history and memory. In his opinion, history in its nineteenth-century form is a search for the dominant force, while memory is a fragment of the past that passes to the present in an uncontrolled and expressive way. Thanks to such an action, the individual is able to feel the hegemony of history.

The architecture of memory, without which we can live but cannot remember without it, has become a determinant of the new times. We are looking for the past in our present existence. Realising that memory becomes synonymous with searching for the phenomenon of context in architecture Charles Jencks (1939–2019), in Late-Modern Architecture and Other Essays [25], quoted Peter Eisenman, who stated that he was not concerned with the function of a building, its context, or sometimes even the owner. According to him, architecture is responsible for itself, with its own laws, beauty, and possibilities. However, is the creation of architecture—the architecture of memory—really an activity that has anything to do with the context, or is it just a game that the architect plays with the recipient? The game is ruthlessly conducted in order to achieve success that is not only commercial but also prestigious.

Learning to design historical buildings as part of education

During the classes on the subject of heritage protection, including conservation and modernization of historic buildings, I made a project of an object located between historical tenement houses. The aim is to acquire and improve the ability to fit the designed object into the historic context (Fig. 2).
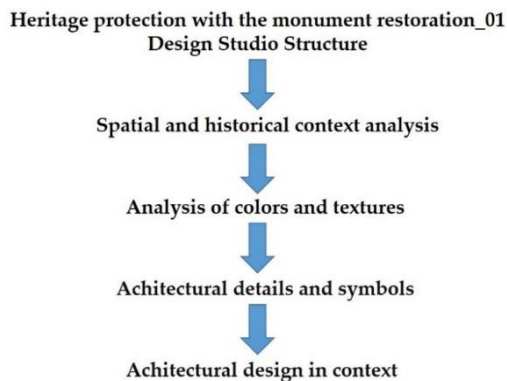

Fig. 2. Heritage protection including conservation and modernisation of historic buildings 1 at the Faculty of Architecture of the Poznan University of Technology (Karolina Sobczynska, Adam Nadolny)

An important pre-design stage is analysing the composition of the facades of neighbouring historical objects located on the frontage directly next to the designed building. Analyses of the height of the surrounding buildings and the type of roofs on neighbouring objects are not a particular difficulty and are relatively easy to perform. The most difficult task for students is to perform analyses of the composition of the facades of historic objects located in the vicinity of the designed building, which is to become a complement to the historical buildings. The authors, as the lecturers on the subject, place great emphasis on performing this part of the task.

An analysis of the composition of the facade of a historical building consists of describing the details, window rhythms, horizontal and vertical divisions, etc. At the beginning, students also find it difficult to freely use the architectural language, that is, to name the compositional elements of the facade. At the initial stage, during the online consultation, the student shows the analysed object on the screen and discusses the shape of the object and the type of roof in general. In the next stage of the classes, the lecturer gives examples of architectural language formulations used to describe the composition of the building's facade, such as vertical and horizontal divisions, intermediate cornices, crowning cornices, pilasters, avant-corps, window rhythms, axis of symmetry, main axis of the elevation running through a given part of the building, etc. Providing examples of wording is intended to help students in the initial analysis of the elevation, but above all, it indicates what to look for when viewing and describing the object.

Initially, the descriptions of the facade made by students are very poor in vocabulary and detail, but when describing the facades of individual objects on the group forum, the rest of the students come to mind with more associations, and their observations about their own selected objects become more detailed. Each student shows the location and object of their choice for analysis. Based on the analysis of subsequent examples of different objects, students who listen gain some kind of experience in describing their objects through comparative analysis. Classes at this stage teach not only the use of architectural language but also how to look at an object and notice certain dependencies and the most important compositional divisions, which is not easy and unambiguous.

The discussed elevation is shown on the computer screen, on which the teacher or student draws and emphasises (by colour and texture) the discussed compositional divisions and rhythms. During live, stationary classes, students show printouts of the facade; these are small drawings, and during consultation with the teacher, other students are not able to see the discussed details. During online classes, students are forced to view the facades of all the objects shown and their details on the computer screen. The advantage of online learning in this case is that it shows the building on the screen and its analysis in the group forum. As a result of the fact that students also observe the analysis of objects performed by their colleagues, they gain experience through the number of observed and analysed examples.

Awareness of different ways of looking and the basic types of articulation of buildings and applying them to recognise the different features of a facade composition

The most frequently used words about seeing and looking are also related to the type of human behaviour and movement. A person can look, see, watch, look around, peep, look, observe, look for something or someone, that is, look carefully—search with their eyes, take a look at something, or just glance at something (throw a brief look at something) and have something in front of their eyes. According to the authors, knowing the purpose of looking can determine whether looking is attentive or less attentive and accurate, whether attention is attracted by details, or whether only the eye slips on the surface of the seen building. Different people observing a given space may pay more attention or notice other things. Some may notice elements of space that others do not pay attention to. Looking can take place in many different ways, each characterised by different features. A person can look attentively, inattentively, searchingly, sharply, fleetingly, lazily, or thoughtlessly. It depends on the individual characteristics of the observer, his intentions, the purpose of looking, and his attitude towards the object, as well as partly on the object itself or its location. The way of looking may even depend on whether a person knows this place, whether it is new to them, when, for example, they see an object for the first time, etc.

Different from mindless looking will be watching, which occurs when the observer is deliberately looking at something specific attentively. To watch something is to look at it from many angles. It can also be stated that during the process of viewing an object, its evaluation also takes place. Viewing most often concerns individual elements of the environment, for example, an object or building, and not a complex space. In view of the above, it is impossible to see, for example, the whole city, because the continuity of space makes the observer move and notice subsequent new fragments of space, which can be unexpected and surprising and remain as if in constant motion [27].

The word "to watch" contains a note of admiration, for example, when one looks at buildings of historical, cultural, aesthetic, or architectural value. Thus, viewing the building also makes it possible to assess its value. You can also look in a way in which you do not notice details but only feel the impression of the whole space and see only accents and the most interesting features or elements of a building. One way to look is to look briefly, to "take a look. A brief glance can be cast at a small space, or rather at an object rather than a space. It is important to cover the whole thing with this short, quick look. The number of elements that a person observes then depends on his individual attributes and predispositions, as well as on the training, experience, and perfection of his or her sight, his perception capabilities, and the ability to record the image he sees, etc. Another type of looking is glancing at something or wandering around, for example, architectural buildings, urban interiors, city panoramics, or vast landscapes [28].

To sum up, looking at space, including architectural objects, can be done in many different ways, which can even be extremely different from each other. You can look at something carefully, with tension, and you can also look without tension, unknowingly, everwiously, almost "thoughtlessly". There may also be different goals for looking, different levels of interest in space or objects, different predispositions, the ability to record and interpret the image seen, and different moods, mental tensions, and perception abilities of the observer.

In the process of analysing the composition of the facades of historic buildings, it is necessary to know the basic types of articulation of objects, which Niezabitowski discusses in depth [29]. He believes that architectural objects are sets of spatial universals. In architectural objects, regardless of the historical time of their creation, one can distinguish certain repetitive elements of a basic nature, and it is these elements that he calls spatial universals. The author distinguishes the levels of spatial analysis of architectural objects.

First, he mentions the "substantional-perceptual space analysis" concerning the material from which the object was made and the way it is perceived by the observer's eyes and other senses. On the second level, there is the "morphology of space," consisting of the separation of spatial units in the process of articulation. The third level of analysis is "spatial syntax," which is a set of rules and ways of assembling or combining elements into larger wholes. The articulation process can manifest itself through fragmentation of the spatial whole, i.e., its division into parts, and hence he lists the basic types of articulation of spatial objects: articulation of linear objects, articulation of surface objects, and articulation of solid objects. Taking into account the dimensionality of the articulating elements, it is possible to distinguish the articulation of space using the following elements: point, line, surface, and solid. According to the authors, the use of different ways of looking in combination with knowledge of the basic types of articulation of objects is necessary when analysing the composition of the facades of historic buildings.

Application and implementation of various ways of looking and basic types of articulation during analysing facades of historical buildings

The authors decided to use their knowledge and awareness of the existence of these above-mentioned ways of looking in the analysis of the composition of the facades of historic buildings

and the search for genius loci, place, and historical context. When analysing the facades of historical tenement houses, the authors proposed working methods consisting of different ways of looking at the buildings and noting the observed elements in the form of sketches and scarves on photos of these objects.

The authors encouraged their readers to wander the facade with their eyes in the first stage of their work [28], to simply look at the object a bit untitled or even thoughtlessly for some time, to notice certain features, and in fact, their specific set, simply the whole compositional idea. It is important to note the overall impression coming from the whole, i.e., not only recording individual, single features and elements but also capturing the general specificity of the building. A superficial or even brief look at the facade of the analysed building can make capturing the most important elements and impressions [25] of the whole easier.

In the next step, you should record and start noting details such as vertical and horizontal divisions of the facade, arrangement of windows and details, etc. At the same time, you should try to isolate the main parts of the façade, register differences in texture and colour between individual parts of the building, determine the type and leading motifs of the details used on the facade, etc. (Fig. 3).

Fig. 3. Marking the shape of accents and avant-corps on facades using point articulation according to Niezabitowski
(author Paulina Szadkowska)

In the next stage, you can proceed to an even more detailed look to determine the types of rhythms of individual elements of the facade (for example, the rhythm a b a b a; aba c aba, etc.), the shapes of bay windows, projections, attics, and roof gables, for careful observation and interpretation (for example, of the location of details), their connections, dependencies, rhythms, etc. (Fig. 4).
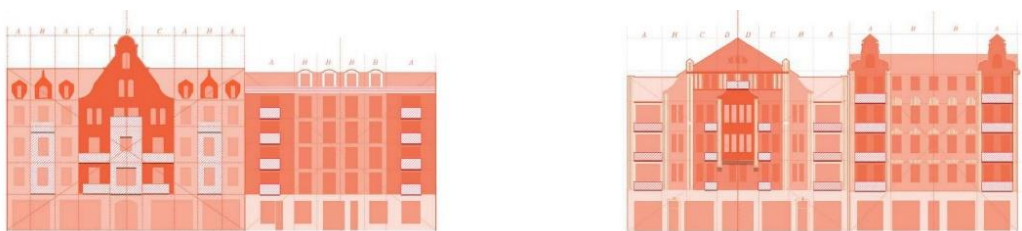

Fig.4. Marking the rhythms of accents and windows on the facades of existing buildings (author Izabela Alwin)

Recognising and capturing the general compositional guidelines of the object in the first stage of work very often turned out to be a difficult task. Even an experienced architect may find it difficult to read the general compositional idea of the facade of a historic building. These skills depend on the individual characteristics and perception abilities of the observers. Therefore, the authors suggested to students who had difficulties with this that they start analysing the

composition of the building's facade with a slightly mechanical, simple analysis of its individual parts and elements by dividing them into groups. For example, the analysis of the facade can begin with determining the main division of the facade, marking the horizontal and vertical divisions, marking the main projections of elevation, etc.

For example, you can put a check mark on the elevation photo and only on the window to define their rhythm. In the next sketch, you can mark only the cornices as horizontal divisions (ranges) of the facade. In the next sketch, you can mark only vertical elements or elements/ protruding from the face of the object. The elements and accents of the building that attract the observer's attention should also be highlighted. Then, sketches with charts from the analyses of individual groups of elements can be superimposed on each other and thus try to find the main compositional idea of the object (Fig. 5).

Fig. 5. Analysis of the composition of the facades existing in the vicinity of the designed objects of historical buildings. Analysis of the rhythms of windows, gables, and the shape of projections (superimposing of the shraf), as well as an attempt to hierarchize the elements of the facade of existing historical objects (author Izabela Alwin)

According to the authors, the final stage of these analyses should be to capture the general compositional ideas of the facade, which may consist of a specific rhythm of windows and, for example, symmetrically or asymmetrically located avant-corps, topped with an accent in part of the roof, etc. And here it is important to be able to look at the whole facade and define, for example, the order of the elements seen, which can be a hint or information as to which of these elements are the most important and build the entire compositional matrix and which are the less important filling of the facade, background, "the rest". Because, as in every composition, some elements are accents and others constitute the background for them.

When looking at a facade in order to determine the main compositional ideas, it is necessary to exclude (turn off) detailed looking, associated with the registration of details and individual, single elements of the facade, in order to see the whole and capture the overall impression from this whole. The purpose of this watch is to make a sketch using a few lines, which will reflect the compositional idea of the object and in which the examined object can be recognised (Fig. 6).
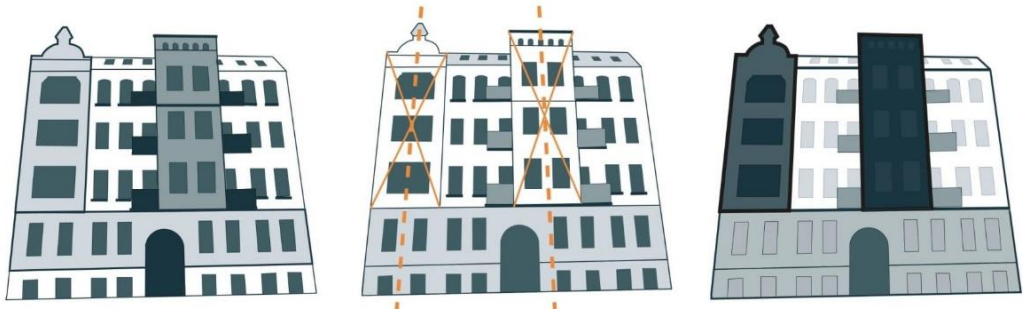
Fig. 6. Analysis of the composition of the facades existing in the vicinity of the designed objects of historical buildings. An attempt to graphically record the most important elements of the facade and the compositional idea (author Marta Nowak)

According to the authors, while analysing the composition of the facades of adjacent buildings with the designed one, the most important thing is the need to use different ways of looking at the elevations. It is important to look in different ways, from different points of observation, and try to sketch the facades and note their main compositional assumptions and elements that most attract the observer's attention. In the next stage, you can compare these sketches with photos and choose those sketches that best reflect the compositions or the atmosphere of the analysed buildings (Fig. 7).

Fig 7. Examples of designed new buildings in empty spaces between historical buildings as a result of facade composition analyses [author Filip Gałązka]

Sketches made quickly without deeper reflection are very often made to make a note and record the facade elements that the observer's eye recorded the fastest. This is a very valuable activity because it can show the main compositional idea, the atmosphere of the building, which is sometimes intangible for observers focusing on details and not on the overall impression.

A quickly made sketch shows an impression from the whole and detailed analysis of many details, of which it is sometimes difficult to determine which of them are important and which are less important. Both ways of analysing and looking at the building are important for searching

for the genius loci of the place and obtaining the composition most similar to the neighbouring facade of the designed building.

Both a quick look catching the main impression and the main compositional idea of the building as well as detailed analyses of window rhythms, detail, horizontal and vertical divisions of facades, etc. According to the authors, the combination of even extreme ways of looking can give the best effect when analysing the composition of the facades of existing historical buildings. The order of analysing the facade from the general to the details or vice versa depends on the individual's perception, predispositions, and abilities. The effect is to capture the main compositional assumptions of the facades adjacent to the designed object in order to best fit in and respect the existing context as much as possible. It can be concluded that the methods adopted and described in the article for analysing the facades of historical buildings turned out to be correct as they resulted in excellent design effects.

Conclusions

To sum up, you can first look at the details, individual elements, horizontal or vertical divisions, etc., that is, "disassemble" the facade into individual parts, and then try to capture the dominant compositional idea, this "something" characterises the building and is specific and special only for it. "This something" can be in the specific rhythm of the windows, or maybe only in the specificity and motifs of the details. Another way is to try to capture the main compositional elements of the object first and then proceed to a more detailed analysis.

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