The beauty of contemporary façade. Tradition, technique, technology

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Abstract. The article focuses on the contemporary diversity of creating facades of public utility facilities. Approaches, in which trends of the tradition of place, as well as technique and technology, have a significant influence on the architectural image and the beauty of the façade, are analysed and arranged. The elevation of the building plays an important functional and aesthetic role. It protects the interior against environmental conditions and, at the same time, is the characteristic feature of the building. The necessity of prestige, being distinguished in its surroundings and/or appearing in the consciousness of residents make the architects seek original, innovative and often beautiful solutions. The searches are multi-layered and depend on the architect’s conception. They become visible when the relation between the architecture of the building and the urban context is considered. Because of the geometry of the building and the material which is used in the façade influence, the perception of the building in urban surroundings, buildings of rectilinear geometry in urban space were analysed. The nonconventional materials implemented on the elevation or used in a non-conventional form may be grouped in the following way:

• Traditionalism of the material. Due to the technique and/or technology, the formal image of the elevation changes, yet remaining the matter which originates from the historic record of the implemented material. For example, ceramics used in contemporary architecture do not always resemble classical brick, however, its formal distinctiveness does not change the essence of materiality.

• Transparency and transience of the image. In contemporary searches, it leads both to the impression of levity and/or to the creation of an illusion, weightlessness of the building and creation of the impression of unity of the architecture with the surrounding landscape.

• Multilayering of contemporary shielding wall helps in introducing ‘additional’ functions into the external wall. Except for the basic function, the protection of the interior against surrounding conditions, multimedia, transparency, and energy-efficiency is also implemented.

The above relationships are described based on examples of the architecture of contemporary Poland. Krzysztof Kieślowski Film School at the University of Silesia (arch. Baas arquitectura, Grupa 5 Architekci, Maleccy Biuro Projektowe, 2017), fitted in the historic frontage shows the new form of traditional material-brick. The impression of transparency of the building is shown on the complex, glass elevation of The Polin Museum in Warsaw (arch. Lahdelma & Mahlamäki, 2013) standing among residential blocks. In contrast, the multimedia façade of the Centre for the Meeting of Cultures in Lublin (arch. Bolesław Stelmach, Biuro Architectonica Stelmach i Partnerzy, 2015) relates to the function of the building and the space of the urban square where it is located. The suggested approach shows that architectural innovation is
manifested by the search for solutions to contemporary multi-layered materiality of shielding walls

1. Introduction
The article focuses on the issue of diversity in creating facades of public utility facilities. Relationships and influences of tradition, technique and technology on aesthetics and functioning of modern elevations are considered. These reflections are the result of the authors’ cooperation with Prof. D.Sc. Arch. Nina Juzwa on the book ‘Polish architecture in contemporary innovation”, which is planned to be published in 2020 by the National Institute of Architecture and Urban Planning.

2. Diversity of modern architecture
A multiplicity and diversity of approaches towards designing are seen in modern architecture. City landscapes, architecture and urban planning do not surprise us with a lack of unity or accumulation of contradictions. Such diversity is largely the result of different needs of a changing society. Buildings of astonishing shapes, dominant forms as well as modest, but original buildings which impress with the architectural concept are very often created side by side. Such relations are observed in various examples around the world. Two of them are worth discussing in this article, namely: Thermal Springs in Val, Switzerland and 41 Cooper Square in New York.

Thermal Springs in Vals, designed by Peter Zumthor, opened in 1996, is situated on the hillside. Through the buildings material, it is tightly connected with the surrounding landscape. The interior consists of small, intimate bathrooms which are also finished with stone. Aesthetic building material, considered lighting and water create an atmosphere of peace and beauty of this place. The choice of stone was for Peter Zumthor important for both the idea of the project and further decisive process. The stone in architecture of Peter Zumthor went beyond pure utility; it was from the beginning of the designer’s thought-idea. Creation of the place – a modest building connected to the local culture was most important [1]. Context, idea and contents were crucial for the architect in this project. He writes: “Mountain, stone, water – building in the stone, building with the stone, into the mountain, building out of the mountain, being inside the mountain – how can the implications and the sensuality of the association of these words be interpreted, architecturally?”[2].

A different example is the academic building 41 Cooper Square in New York designed by Morphosis and opened in 2009. It is to promote cooperation and interdisciplinary dialogue among three departments, which previously were situated in separate buildings. The building has a perforated sheet cover, which creates the objects monolithic character. The shape resembles a rectangle with bends and curved lines. These are related to the curvilinear atrium in the interior of the building, which in some places connects to the elevation. The connection of the atrium to the housing is formally emphasized on the façade by folds and creases in the plane of the housing as well as fenestration in some places. The atrium winds along the height of the building and is its central place, the space for informal, social and intellectual discussions. There are places for meetings, conferences, lectures and debates, which should define an academic society. The atrium is organized around wide stairs, which are surrounded by a white truss with bent and wavy geometry [3].

Despite their diversity and the different creative attitudes of the architects-designers, each one is an expression of the aspiration for architectural perfection. It is also an expression of the need to satisfy human aspirations.

3. Architectural concept
An architectural idea often precedes the introduction of functional program content. However, it is usually the function, i.e. the content contained in the architectural form that confirms the importance of the object. This does not only refer to the visual aspect of the building. Many examples of
modernist architecture show that the concept of the buildings harmonizes with the contents and programme to a certain extent. Bernard Tschumi [4] pays attention to the fact that the building always exists in a certain surrounding, context, which may be defined geographically, historically, culturally and socially. The architectural concept which influences the form of the building may establish different relationships with the context. B. Tschumi describing the importance of context introduces three relations that are possible in the connection between the concept and context [4]:

- **Indifference** means independence of conception from context. The context of the object and its architectural idea coexists in the space independently without interactions between each other

- **Cooperation** is present when the idea and location complement each other so that seem to form a unity

- **Conflict** assumes the need for consensus between the form of the building and its context.

The architect’s concept does not have to consider all environmental conditions. While considering the location and cultural context of the object, architects have at least three approaches to the relation between the idea, content and context to choose from. Inspiration in the culture of the city or place is visible, for example, using materials related to the history and tradition of the place. Another, but related approach is the inspiration of forms related to a given culture. These forms can be transformed in the design by the designer, but their relationship to tradition should be understandable. Differently, some designers decide to cut off from local traditions by introducing an object which formally diverges from its surroundings. The new object can also be an impulse of novelty, an impulse that will influence changes in the environment - a change of context. In addition, it should be said that many people and social groups may affect the creation of an architectural object. Requirements of public, private or individual investors vary and are usually related to political, social and economic decisions. Apart from the complexity of the process of developing the idea, certain cohesion is observed due to which architects remain in the circle of chosen ideas or formal solutions. Architect’s conception is the basis of such cohesion.

The building's facades perform several important functions, protecting the building from external factors, influencing its thermal balance and lighting. There are many system solutions on the market which have been developed since these issues. The creative use of such systems and supplementing them with original solutions and materials is visible. It relates to the architects’ concept, which most often is also the basis for choosing the materiality of the building. This choice often goes beyond the purely functional framework. External walls of the building are usually the first element visible for the observer. Based on these observations, the beauty of the object as well as the way the architect integrated the building with the architectural and urban context will be assessed. Thus, elevations are a significant element affecting the economic aspect of building functioning, as well as its appearance and reception. In order to emphasize the issue of the façade material used on the beauty of the building, the focus was on buildings located in the urban area. Analysing them, three general directions of façade design can be distinguished in terms of the use of atypical materials or materials used in a non-typical form:

- **Traditionalism of the material.** The material can move away from the traditional form of use in architecture thanks to technique and/or technology. However, it remains the matter from the historical record of the material used. A change of form of a building element does not change the essence of materiality.

- **Transparency and transience of the image.** Such an approach gives the impression of levity to the building and its blending with the surrounding landscape.

- **Multimedia.** Multi-layering of contemporary shielding wall help in implementing ‘additional’ functions to the external wall.
4. Traditionalism of the material
The trend of traditional material, which was used in a formally innovative way, is a continuation of the modernist search, which was abandoned in mass production or social aspirations of that time. Such an approach may be called ‘new pleasure from materials’ in literature [1]. Stone cladding, the material which has always been implemented in architecture, made up the beauty of EXPO pavilion in Barcelona by Mies van der Rohe in 1933. Nowadays, Kengo Kuma (2004) implements stone tiles in the structure of shielding walls of the elevation of the residential-service building of Louis Vuitton in Osaka. Thin stone tablets are semi-transparent and let the light into the interior of the building. At night, the illuminated interior lightens the stone elevation from inside. Contemporary stone does not resemble traditional solutions. History and culture of place may be the inspiration for astonishing ideas using solutions known in the past. Herzog and De Meuron created the simple solid of the building from gabions placed one on top of another in the Dominus Vineyard California (1986-1988). The walls made of local stone ‘closed’ in metal nets perform two functions namely they are permeable to light and protect from excessive heating of the interior. The materiality of architecture places the building in the local landscape. Such reference to the history of place may have an impact on the value and recognition of the building. Therefore, it performs a very important marketing role [5].
important role. Historic, post-industrial buildings although raw in form still fascinate. Their main materials – brick and steel – fit into the architectural identity of the city and region. The new academic building completed street frontages which have deteriorated for the last couple of years. Its role is to rejuvenate the place. It was built not far from the University of Silesia Library and stands out from the building due to the modesty of form and consequent use of material. In 2011, the competition was won by a concept which, apart from its modest form, proposed to use the structure of an old, historic building. It is reflected in the façade, which apart from the historical brick walls is made of ceramic fittings. They form a fishnet and the colour and material refer to brick which dominates the adjacent housing. Fittings, called by the students ‘tv-sets’ are the continuation of traditional brick housing, giving it a modern look. The traditional form of brick changed, yet the material itself remained the same. The buildings floor plan is organized around the yard where the motive of ceramic fittings and brick is continued. The view from the inside and the terrace on the roof opens onto old, neglected brick outbuildings. Apart from teaching and office rooms, the building includes a cinema, a recording studio, production rooms as well as rest and integration areas for students. There is also a library located in the historic structure of the building [6]. The architects managed to maintain the continuity of the place’s tradition but were able to supplement it with a new expression, contributing to the beginning of the transformation of the degraded street. The project is the result of international cooperation of three architectural studios: Baas arquitectura, Grupa 5, Małecco Biuro Projektowe. The project was on the short list for the Mies Van der Rohe reward 2019 and got many distinctions such as Grand Prix of the Association of Polish Architects Award of the Year and the “Bryła.pl” Award of the Year.

5. Transparency and transience of the image

In order to create a unique, individual and at the same time modern building architects use advanced technological materials. It is often justified by the marketing role of architecture. It is worth quoting here examples of industrial buildings where economic and utility requirements impose pragmatic spatial solutions - the form of such buildings usually results from the technological requirements of the industry. An example is the warehouse of Ricola Europe candy factory in Mulhouse-Brunstatt, France, designed by Herzog and De Meuron. The building, opened in 1993, is characterized by simplicity of the form, the casing is an effect of semi-transparent polycarbonate panels, decorated with repeating ornaments, printed with plant motif graphics. Dominique Perrault designed the factory and headquarters of the Aplix Velcro fastener manufacturer in Le Cellier-sur-Loire (1999), France, as a rectangular building with a steel panel with a mirror-like surface. Subsequent panels are positioned at an angle to each other, reflecting the surrounding landscape. This gives the impression of the unreality of a large monotonous building, situated in an out-of-town landscape. This 240-meters-long and low building makes the form of clear character in cloudy days and blends into sunny, surrounding landscape in the rest of the days due to material solutions in elevation [5].

Suitably formed elevation allows creating a unique and modern building, which apart from its size does not dominate over the environment. The example may be the Museum of History of Polish Jews POLIN - designed by Rainer Mahlamäki and Ilmari Lahdelma, 2013 (Figure 2). The building is located in Warsaw close to the monument of Warsaw Ghetto in one of the residential areas downtown. The aim of the building is not to be the memory of the holocaust, but to talk about the input of the Jews into the history of Poland. It should also be the centre of culture and education. In 2005 Lahdelma and Mahlamäki won the first prize in the contest. The process of construction was supported by Association of Polish Jews, The Institute of History of Jews, City Council of Warsaw and more than 500 donors. The building has 4 ground floors and 2 underground ones. Geometric simplicity and the height of the building allow for its harmonic blending into the post-war housing. Architectural simplicity of the form is the essential feature of the building. The symbols are hidden in detail. Nevertheless, they are not aggressive either to visitors or passers-by [7]. The huge architectural ‘box’ on a square plan has a curvilinear form of entrance hall hidden inside. The height of the entrance hall
creates the impression of being ‘torn’ along its height. This ‘tear’ symbolically shows the history of Jews. It may be interpreted as a metaphor for crossing the Red Sea by the Jews or as the break off the history of Polish Jews during the Holocaust. Inside, it forms a high passage with irregularly folded walls, made of shotcrete (sprayed concrete). The gorge closes with the light which drips beyond glass tiles, intensifying the dramaturgy of the interior. The dramaturgy of the place is clearly felt. Moreover, it is intensified by the external, extremely balanced image of the architecture of the building. Looking from outside, the building resembles large glass case filled with Books of Torah. Glass panels which make up the cover have printed name POLIN. The architecture of the building is touching due to the simplicity of form and elegance of façade. The building won in the internet users’ poll in 2014, Architecture Award in Chicago and the Association of Polish Architects Award of the Year 2013 [8].

Figure 2. Museum of History of Polish Jews POLIN- designed by Rainer Mahlamäki and Ilmari Lahdelma. Photo: Wojciech Kryński/ Lahdelma & Mahlamäki architects, used with kind permission

6. Multimedia
Digital tools, operating in a digital environment, changed the medium in which architecture is designed and created. Digital environments can operate in many dimensions and simulate various processes. An architect may use them creatively. The possibility of working on a three-dimensional model or animation (i.e. a model that changes over time) supported by, among other things, concepts and algorithmic processes generating the form has resulted in new forms in both studio projects and architectural realisations. The change of medium enables an active co-creating of the building by the user or the viewer. Suitable appliances and sensors allow for the change of the image depending on the needs. A famous example is the Kunsthaus in Graz designed by Spacelab (Peter Cook and Colin Fournier) in the years 2000-2003. The object has a characteristic form, yet an important part of the
idea of promoting modern art is its multimedia elevation called BIX. It interacts with the architectural form, using film and art installations and enabling a changing message. It has been developed in collaboration with realities: united. 930 Philips 40W fluorescent light bulbs connected by the operating system were placed under curved panels. As a result, an interactive, individual installation made of relatively simple elements with a low resolution was achieved [9]. Information in architecture may have been expressed in the form and integrated with the material, for example carved in stone. Nowadays additional, changeable and direct statements are possible. Certain technical appliances like overhead projectors, displays, and loudspeakers are placed over the objects already existing to use elevation as a display. This type of approach to architecture may be observed in the words of Ewa Węclawowicz-Gyurkovich: ‘XXI century buildings will be perceived as animated objects which seem to guide our senses and react to their environment.’ [10]

Figure 3. Centre for the Meeting of Cultures in Lublin, designed by Stelmach i Partnerzy Biuro Architektoniczne, Photo: Marcin Czechowicz/ Stelmach i Partnerzy Biuro Architektoniczne, used with kind permission

The elevation of the Centre for the Meeting of Cultures in Lublin (Figure 3) is such an example. The construction lasted for 40 years; hence the building is also known as the ‘Theatre under Construction”. In 1971 the idea was born to create a theatre with 3 entertainment halls for 2300 people. The construction was often discontinued due to financial problems; however, the music theatre and philharmonic halls were opened in already finished parts of the building. This continuing construction marked the city centre for decades. In 2009 Boleslaw Stelmach won the competition to create the architectural and urban conception for the Centre for the Meeting of Cultures [11]. The project used building structures which were created in subsequent stages of the building process. New solutions implement elements of the old structure. Old, demolition bricks and walls were used. New constructing elements are made of reinforced concrete with different textures which were obtained by manual processing. Vertical glass laths, which are part of the multimedia elevation, are placed on the
outside. Glass performs a crucial role in the architecture of this building. As Bolesław Stelmach says: ‘The conception of the building presented three layers of different periods of constructing and functioning of the building: Tumuluses of Gutenberg in the square outside the entrance refer to the past, multimedia elevations symbolise the present, and hanging gardens on the roofs allow for easy permeation of sunlight into the inside of the building and its emission due to gigantic glass screens’ [12]. The roof of the building functions as a green public space highlighted on the elevation by glass passages with panoramic view on the area. The new building houses a modern opera hall for 942 people, a chamber hall for 200 people, a cinema and ballet rooms [13]. The monumental body of the Meeting of Cultures Centre organizes the urban layout and introduces a large, accessible public space both at the square level of the building and inside, extending all the way to the roof [14].

7. Conclusion
Evolution and development in architecture are associated with a constant search for new, innovative technical, aesthetic and formal solutions. It is related to the need for social prestige and acceptance, which the designer may obtain by crossing over borders of artistic, physical and/or intellectual abilities. Original, formal, material and functional solutions are looked for. Such features become visible while analysing elevations made up of multi-layered shielding walls. Elevations perform many important functions namely: they separate the internal structure from environmental conditions, affect the climate and lighting of the interior. Thus, their proper formation affects the utility of the building and maintenance costs. After fulfilling requirements of comfort and quality of exploitation, the elevation may get a cultural or at least a marketing dimension. In the creation of a building, or in the design process, it is crucial to maintain the continuity of thought from the idea through the concept creation to the project implementation. This continuity of thought gives consistency and distinguishes the object, creating its individual property. The building becomes recognizable. The examples presented in the article show the essence of the image of the shielding wall thus showing how important the choice of material is in the architectural concept. It may be related to the tradition of the place, however, processed by creative ideas of the architect receives a new form. Moreover, the conception of the shielding wall does not always show the materiality of modern architecture. It often becomes a ‘dress’ which veils materiality of the building. This enables to give the building the impression of otherness by giving it levity and or features of an interactive display.

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