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## THREE IMAGES OF CONCRETE TRANSMUTATION IN KRAKOW ARCHITECTURE SINCE LATE 1950S

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### TRZY OBLCZA TRANSMUTACJI BETONU W ARCHITEKTURZE KRAKOWA OD SCHYŁKU LAT 50. XX WIEKU

#### Abstract

A number of buildings were completed in Krakow c. 1965: the Kijow cinema, the concert shell in Wola Justowska, Lupinka at the Cracow University of Technology, the BWA exhibition pavilion. In 1967, the construction of the Lord's Ark church in Bińczyce started to last for nearly a decade. They were the first such significant Krakow manifestations of architectural form expression offered by the use of concrete. A review of Krakow architecture since the late 1950s until the present has been presented in the paper, taking into consideration the impact of selected material, i.e. concrete upon the achieved architectural form. Three groups of works have been distinguished as reflecting the "transmutation" degree. A number of cases have been discussed in the context of the leading subject: apart from the quoted ones, the churches in Wzgorza Krzesławickie, in the former Airport, in Krowodrza and Bronowice Nowe districts, the Resurrectionist Seminar, the Museum of Polish Aviation; a number of other works have been mentioned, too. The structural and formal problems have been discussed as well as the protection of the works as being part of cultural heritage.

*Keywords: Polish architecture, Modernism, Brutalism, Expressionism, reinforced concrete*

#### Streszczenie

Okolo 1965 roku ukończono realizacje kina Kijów, muszli koncertowej na Woli Justowskiej, baru Łupinka na Politechnice Krakowskiej, pawilonu wystawowego BWA. W 1967 roku rozpoczęła się, trwająca blisko dekadę, budowa kościoła w Bińczycach, zwanego Arką Pana. Były to pierwsze w Krakowie, tak doniosłe manifestacje możliwości ekspresji formy architektonicznej z użyciem betonu. W artykule dokonano przeglądu architektury Krakowa od schyłku lat 50. XX wieku do chwili obecnej uwzględniając wpływ wybranego materiału – betonu – na osiągniętą formę architektoniczną. Wyróżniono trzy grupy dzieł z uwagi na stopień „transmutacji” betonu. W aspekcie wiodącego tematu omówiono przykłady architektury krakowskiej; oprócz wymienionych m.in. kościoły na Wzgórzach Krzesławickich, na Lotnisku, na Krowodrzy i w Bronowicach Nowych, Seminarium Zmartwychwstańców, Muzeum Lotnictwa Polskiego, wspomniano także szereg innych dzieł. Poruszono zagadnienia konstrukcyjne i for-

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malne, a w zakończeniu – również problematykę ochrony tych dzieł jako elementu dziedzictwa kulturowego.

*Słowa kluczowe: architektura polska, modernizm, brutalizm, ekspresjonizm, żelbet*

## 1. Introduction. On transmutation

This paper deals with selected works of Krakow architecture, built with structurally and aesthetically meaningful use of concrete. They are presented in the context of the 2017 Defining of Architectural Space conference's main topic, namely the transmutation of concrete. Therefore, one has to start the discussion with determining the basic notions.

The six-volume "New common encyclopedia," published in 1997, does not contain the word "transmutation", which is, however, discussed in Polish, English, and other Wikipedias. The authors of contemporary Polish lexicon, when referring to transmutation, noted only nuclear transmutation. It was described as *transforming a chemical into another one as a result of nuclear reaction; a notion deriving from alchemy – alchemists' aimed at the transmutation of base metals into gold via so-called philosophical stone* (transl. – MM)<sup>1</sup>. Therefore, we enter the field of alchemy, whose main, though not exclusive occupation were attempts of obtaining gold, or silver, from other substances.

The story of that phenomenon, including its Krakow episodes, was scientifically discussed, quite early, by Tadeusz Estreicher in 1927, in the publication "On the alchemy's history". The author was a researcher and lecturer, the professor of the Jagiellonian University, a former student of Olszewski and Wroblewski, so he approached the problem with proper respect. He presented an outline of alchemy's history in the chronological order. He described the alchemy's roots as a classical chemistry branch and its great importance in the Antiquity and Middle Ages, the latter including the Arab world and the Church circles. Continuing, he noticed a decline in alchemy's importance in the Renaissance, a process to be reversed in the Baroque period. Then, especially in the first three decades of the 17<sup>th</sup> century, Michal Sedziwoj played an important role as an alchemist and author of experiments as well as a diplomat, entrepreneur and writer. Estreicher finds transmutation (which he sometimes calls projection) almost exclusively as obtaining gold from other materials, its other forms being marginal. On the one hand, he finds meeting alchemists' expectations impossible; on the other hand, he appreciates the importance of the very phenomenon for its inspiring effect on a number of individual and group undertakings, which often affected business, economy, culture, art. One can, therefore, notice the lasting influence of alchemy and transmutation, even facing a proven lack of rational basis for their existence. As Estreicher writes, *That branch had no rational base and, despite developing lavishly in the past centuries, it is now [in 1927 – MM] of course a part of history's shut book, where it occupies extraordinarily interesting pages, which are important for learning the history of culture. Despite that irrationality, it enjoyed, however, a sense of being, for it suited a soul and notions of the time and its development brought about the most precious fruit both in the past and for the future* (transl. – MM)<sup>2</sup>.

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<sup>1</sup> *Nowy leksykon PWN*, Wydawnictwo Naukowe PWN, Warszawa 1998, p. 1799.

<sup>2</sup> T. Estreicher, *Z dziejow alchemji*, Wyd. Przeglądu Powszechnego, Kraków 1927, p. 5.

## **2. Application of concrete in architecture**

The beginning of concrete goes back to Antiquity, especially to Rome, when the so-called Roman concrete was used. The concrete, close to what it is now, i.e. based on the Portland cement – has been used since the late 1840s. It was used more often by the end of the 19<sup>th</sup> century – an interesting example is an experimental footbridge next to the Lviv Polytechnic main building, which still exists (by Eng. Maksymilian Thullie, built 1894).

The first large reinforced concrete structures were built in the early 20<sup>th</sup> century. Among outstanding examples is the Centennial Hall in Wrocław (by arch. Max Berg, arch. Richard Konwiarz, eng. Günther Trauer, built 1912–1913). However, the traditional masonry structures and the steel structures still dominated in the first half of the 20<sup>th</sup> century. The reinforced structures were used when it was specially justified for the object's scale or for the specific structural needs, e.g. in bridges, dams, water towers. A Krakow example was the water tower in the municipal slaughter (by Eng. Jakub Spira, built 1931, pulled down 2003).

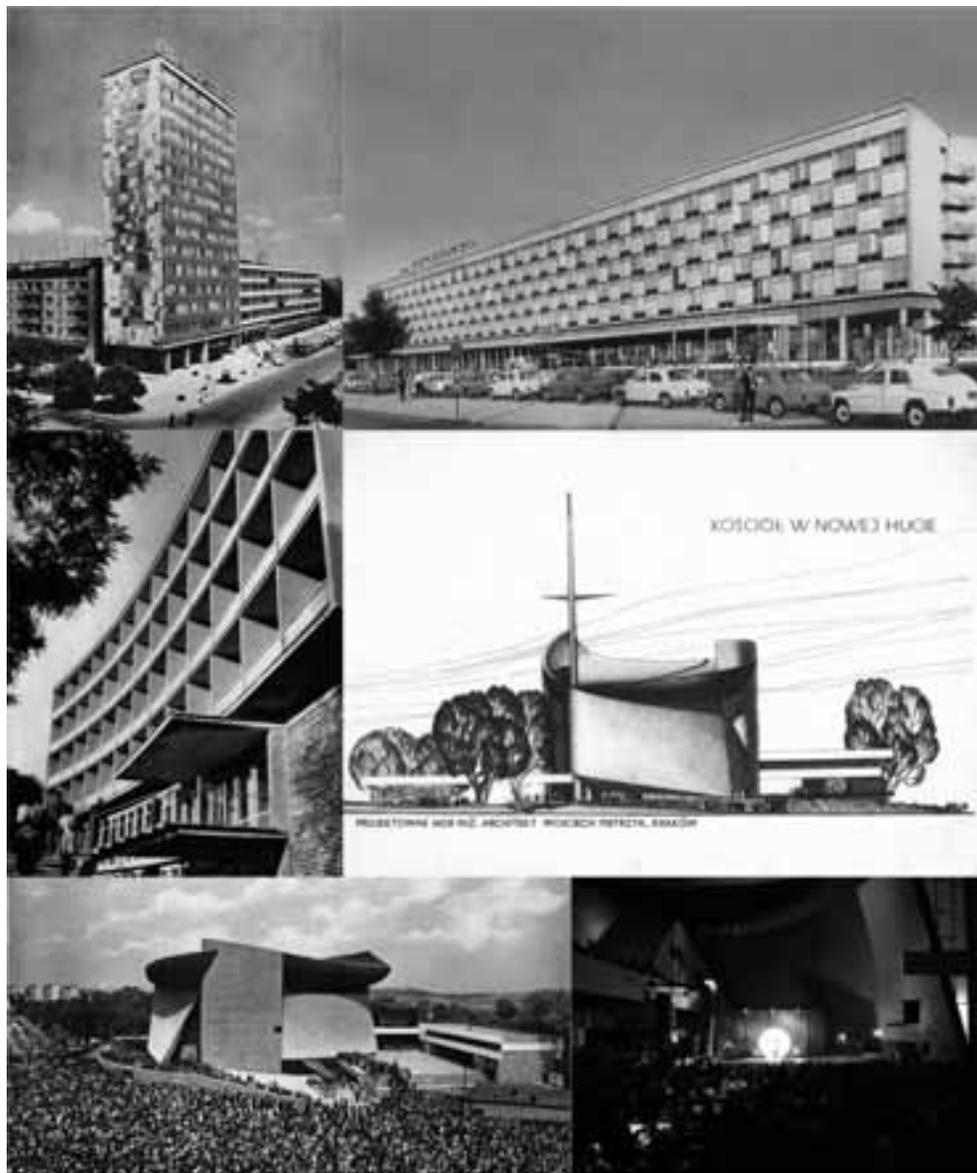
Concrete and reinforced concrete began to flourish in the second half of the 20<sup>th</sup> century. Concrete became both a structural and a sculptural material, which was exemplified by e.g. the Marseilles Unit (by arch. Le Corbusier, built 1947–1952), the chapel of Notre Dame du Haut in Ronchamp (by arch. Le Corbusier, built 1950–1955), the Guggenheim Museum in New York (by arch. Frank Lloyd Wright, built 1957–1960). The thin shell structures of curved surfaces were especially impressive, such as the Palace of Sport in Rome (by Eng. Pier Luigi Nervi, built 1956–1957), the TWA Terminal in New York (by arch. Eero Saarinen, built 1956–1962), the Sydney Opera House (by arch. Jørn Utzon, competition 1957, built 1959–1973), the Congress in Brasilia (by arch. Oscar Niemeyer, built 1958–1964). An important place in that group was taken by the multi-purpose arena in Raleigh, North Carolina (by arch. Maciej Nowicki, built 1950–1952, now Dorton Arena), whose reinforced concrete saddle-shaped roof is supported by steel pillars.

The echo worldwide achievements was reaching Poland especially after 1956, when the iron curtain separating Poland from the West slightly weakened and when the compulsory application of Socialist Realism style was no longer in use.

### **3. Krakow way concrete. Three types of transmutation exemplified by the works built in 1957–2017**

A large number of works, in which a concrete structure was exposed for its forms, were built since the late 1950s. They were mostly public buildings, then churches since the late 1960s until the late 1990s, and museums in the 21<sup>st</sup> century. Apart from the typology offered by chronology or function, there is at least one more way to systematise those works, which is related to the leading notion of transmutation and means three groups that are based on the degree of transmutation:

1. Limited transmutation: buildings of a concrete structure that were exposed partly or to a limited extent. The examples are the Biprostal office tower, the Jubilat department store, the Cracovia hotel (which was coupled with the Kijow cinema).
2. Strong transmutation: buildings of the concrete structure, which were exposed strongly and determine the perception of architectural form. The examples are



Ill. 1. Biprostal building, the reinforced concrete pillars visible at the ground floor. Phot. by Henryk Hermanowicz, Tadeusz Dobrowolski, *Sztuka Krakowa*, Krakow 1971; Ill. 2. Cracovia hotel, the external reinforced concrete pillars visible on the righthand side. Phot. by T. Bilinski, postcard by Biuro Wydawnicze Ruch, 1971, author's archive; Ill. 3. Tourist House, the entrance part. Phot. by S. Arczynski, postcard by Biuro Wydawnicze Ruch, 1964, author's archive; Ill. 4. Project of the Church of St. Mary the Queen of Poland – the Lord's Ark. Drawing by Wojciech Pietrzyk, a donation for the church construction, c. 1965, author's archive; Ill. 5. The consecration of the Lord's Ark. Phot. by unknown author, a donation for the church construction, author's archive; Ill. 6. Interior of the Lord's Ark during the Edyta Geppert concert. Phot. by Maciej Motak 2004.

mainly churches (in Bienczyce, Mistrzejowice, Wzgorza Krzeslawickie, Krowodrza, Bronowice Nowe, Resurrectionist seminar) and some other buildings – the so-called Bunker of Art, the Museum of Polish Aviation.

3. Absolute transmutation: buildings of limited sizes, which are entirely subject to ideological structural solutions. The examples are a concert shell in Wola Justowska and the Lupinka (i.e. Shell) Bar at the Cracow University of Technology.

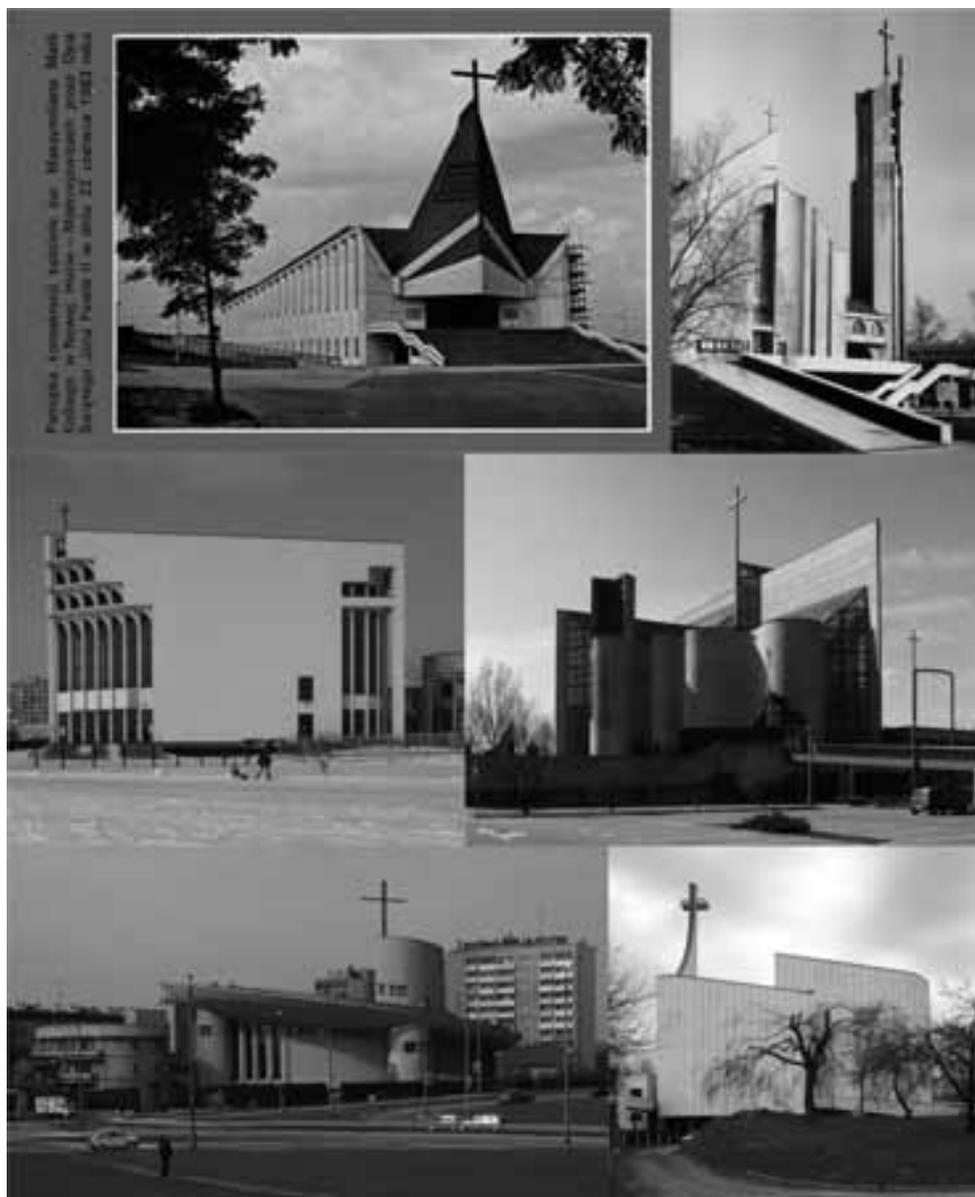
#### 4. Limited transmutation. Public buildings

The reinforced concrete structures were becoming more popular in 1950s. It did not necessarily mean the concrete being reflected in their architectural forms. An example is the Jubilat department store at the Krasynskiego Alley and Kosciuszki Street, near the Debnicki Bridge (by arch. Henryk Marconi, arch. Jadwiga Sanicka, built 1966–1969), whose impressive reinforced concrete structure was veiled by glass panels and, more efficiently, by a raster system creating slightly shivering external rhythms.

The Biprostal office building (by arch. Marek Wrzesniak, arch. Piotr Czapczynski, eng. Jan Oleksik, eng. Marian Wentland, built 1960–1964), which was built for the Office of Metallurgical Industry Projects and Studies, in the corner of the 18 Stycznia (now Krolewska) and Inwalidow (now Kijowska) streets, consisted of two cuboids: a horizontal 4-storey one and a vertical 14-storey one, which emphasised the street corner. The reinforced concrete frame structure, which enabled a free plan of floors, was not exposed on the exterior, whose two main elevations were covered with bluish aluminium curtain walls while the third one – with vast, abstract mosaic made of square ceramic tiles (by painter Celina Styrylska-Taranczewska). It played, however, an important formal role at the tower's ground floor, its slightly recessed external walls and once exposed, oval pillars introduced an impression of the tower's lightness and it floating (ill. 1). The design of Biprostal reflected Modernist trends in high-rise building design in the Western world in the 1950s. In 2009–2011, the building was modernised, which resulted in new curtain walls while the mosaic wall was kept intact.

Almost in the same years was the Cracovia hotel (by arch. Witold Ceckiewicz, built. 1961–1966) constructed between the representative Three Poets Alleys and the green Blonia common. The building was granted highly horizontal proportions, which was emphasised by a characteristic rhythm of aluminium panels. The structural reinforced concrete pillars exposed in the side spans were of somewhat a minor importance (ill. 2). In 2016, the building, no longer used, was purchased for the National Museum (whose main edifices faces the Cracovia building) with plans to convert it into the gallery of architecture and design.

Both Biprostal office tower and Cracovia hotel were found as part of Krakow architecture canon just after a few years (!) – which was long before such lists became so popular. In 1971-published history of Krakow art (from the very beginning until the then contemporary) the author noted that *War-destroyed Warsaw became a great proving ground although Krakow, especially recently, follows the capital and achieves praiseworthy results. A great formal clarity is characteristic of the elongated and aluminium panel clad „Cracovia” hotel with the „Kijow” cinema, by Witold Ceckiewicz, as well as 1964-completed blue mosaic-supported “Biprostal” tower by Mieczyslaw Wrzesniak and Pawel Czapczynski at the 18*



Ill. 7. Church of St. Maksymilian Kolbe in Mistrzejowice. Phot. by unknown author, consecration commemorating postcard by unknown publisher, 1983, author's archive; Ill. 8. Church of Lord's Mercy at the Wzgorza Krzeslawickie. – front elevation with bell tower. Phot. by Maciej Motak 1991; Ill. 9. Church of St. Brother Albert in Czyzyny – “at the Airport”. Phot. by Maciej Motak 2004; Ill. 10. Church of St. Jadwiga the Queen in Krowodrza, northern view. Phot. by Maciej Motak 2004; Ill. 11. Church of John Cantius in Bronowice Nowe, northeastern view. Phot. by Maciej Motak 2004; Ill. 12. Church of St. Mary of Fatima at the Podwawelskie Neighbourhood, eastern view. Phot. by Maciej Motak 2004

*Stycznia Street, which was supplemented with new buildings, some of which were quite successful (shopping pavilions) (transl. – MM)<sup>3</sup>.*

With the use of external, reinforced concrete circular stairs, the Kijow cinema was connected with the Cracovia hotel. Situated in the corner of the Three Poets Alleys and Smolensk Street, it was the biggest (960-seat) and most impressive Krakow cinema (by arch. Witold Ceckiewicz, eng. Jerzy Tombinski, eng. Andrzej Kozlowski, interior by arch. Krystyna Zgud-Strachocka, designed 1958–1960, built 1961–1967). The building of the compact volume and a parallelogram plan was granted various external images: fully glazed entry wall on the western side, a monumental wall of the reinforced concrete pillars rhythm behind the backstage along Smolensk Street, mosaic-covered western exit wall. The volume was covered with a impressive and dynamic suspended roof. The cinema was modernised in 2001, its interior much altered, while the exterior, including the impressive mosaic on the southern wall – mostly intact.

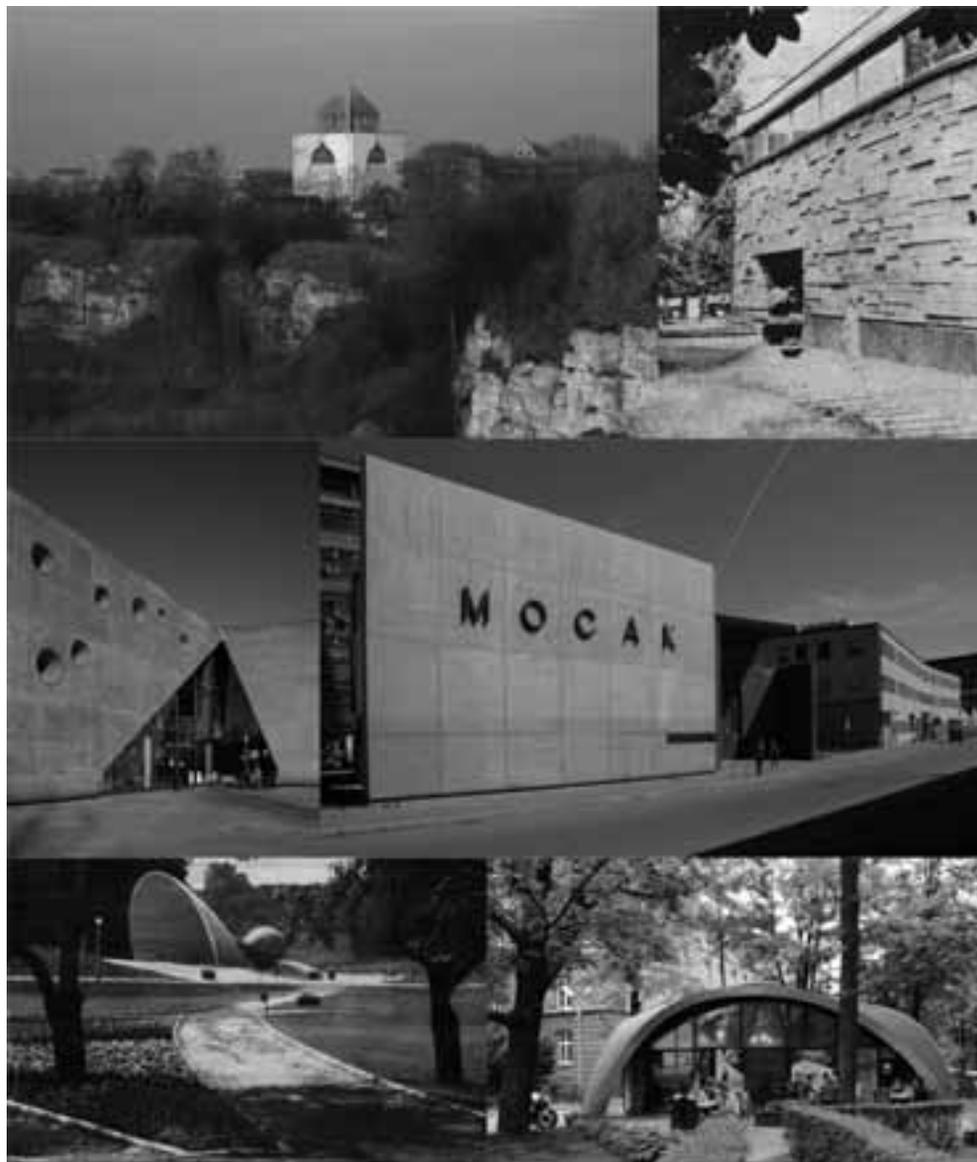
There were more buildings belonging to that group. One of them is the Biprocemwap office building at Wloczkow Street (by arch. Wojciech Bulinski, designed 1959–1961, built 1962–1966), its elevation slightly curved, smoothly fitting the urban context. Another example is the Dom Turysty (Tourist House) at Westerplatte Street (by arch. Stanislaw Spyt and arch. Zbigniew Mikolajewski, built 1959–1962), its partly circular plan reflecting the nearby Planty gardens and former medieval city walls (ill. 3).

## 5. Strong transmutation. Churches and exhibitions

For a long period after World War II, almost no churches were built in Krakow, except for the completion or extension of some churches whose construction had begun before the war. The city, then district, of Nowa Huta specially lacked churches since the number of residents was growing. An idea of building a church in the Teatralne Neighbourhood was stopped shortly after a very popular design competition in 1957 and the allotment was given – despite society's protests and riots, which were very rare at the time – for a new school project. The idea of building church in Nowa Huta was renewed after a decade (ill. 4). The church of St. Mary the Queen of Poland (by arch. Wojciech Pietrzyk, built 1967–1977), which was called the Lord's Ark, was therefore the first big temple built in Krakow after the World War II (ill. 5). It was localised in Biencyzce, a former village that became part of Nowa Huta housing projects when the district's original size was enlarged. The church in Biencyzce was special for many reasons. It was one of the first churches that adapted the guidance of the Second Vatican Council, which suggested the compactness of the interior shared by worshippers and focusing their attention on the high altar<sup>4</sup>. The shape of the church was unusual due to the curved lines and surfaces; the interior, based on various heights and levels, featured additionally gentle inclination of the floor towards the altar. The author of the description of the not-complete-yet church found the building *in the system of mutually penetrating reinforced concrete shells ... the dominating forms are oval, floating, soft, treated in a sculptural way. The walls are inclined towards the centre, the roof is folded outwards and covered with*

<sup>3</sup> T. Dobrowolski, *Sztuka Krakowa*, Wydawnictwo Literackie, Kraków 1971, p. 496.

<sup>4</sup> See: Henryk Nadrowski, *Kościół naszych czasów. Dziedzictwo i perspektywy*, Wydawnictwo WAM, Kraków 2000.



Ill. 13. Resurrectionist Seminar in Zakrzówek, southwestern view. Phot. by Maciej Motak 2005; Ill. 14. Pavilion of Art Exhibitions – now Art Bunker. Phot. by Daniel Zawadzki, *Srodmiescie Krakowa*, Krajowa Agencja Wydawnicza, Krakow 1978; Ill. 15. Museum of Polish Aviation, the entrance. Phot. by Maciej Motak 2010; Ill. 16. Museum of Contemporary Art MOC AK in the Lipowa Street. Phot. by Maciej Motak 2007 Ill. 17. Concert shell in Wola Justowska. Phot. probably by Jan Litynski, 1967 postcard, courtesy of Mr Krzysztof Jakubowski; Ill. 18. Lupinka Café Bar in the courtyard of the Cracow University of Technology. Phot. by Maciej Motak 2017

*shingles symbolising the ark carried upon the waves* (transl. – MM)<sup>5</sup>. The application of concrete provided most spectacular results – apart from the cover – in the southeast wall, creating an impression of a sail nailed merely at a couple of points (ill. 6).

The Lord's Ark is one of many bi-level churches that were built in Poland in the last thirty years of the 20<sup>th</sup> century. They consist of the main upper interior and the so-called lower church whose function goes far beyond the traditional programme of crypts. Such buildings were built in the past as well – a great example is the church of the Holy Cross. (upper) and St. Bartholomew (lower) at the Ostrow Tumski (Cathedral Island) in Wroclaw, built in 1288–1350. It was, however, in the discussed period that so many of them came to existence, which was caused by a number of numerous functions, both religious and social, the churches served at the time.

In the coming decades, the next churches were built in Nowa Huta. The first one was the church of St. Maksymilian Kolbe in Mistrzejowice (by arch. Jerzy Dutkiewicz, eng. Jerzy Stanis, built 1976–1983). The expression of architecture was also important there; however, unlike in the Lord's Ark – the lines were mostly straight ones (ill. 7). The next well-known church in the Nowa Huta area was the church of Lord's Mercy at the Wzgorza Krzeslawickie (by arch. Witold Ceckiewicz, arch. Andrzej Lorek, eng. Edward Motak, eng. Ryszard Maka, built 1983–1991). It was localised nearby, or even at the foot of, Wzgorze Krzeslawickie Neighbourhood, which consisted of high-rise residential towers ("point blocks" in Polish – MM). Its three-nave plan draws upon a traditional church shape, but it also differs from that, as the quite narrow aisles are of various sizes in particular spans. The nave stands out for its concrete and wooden ceiling and the cascaded arched cantilevers, the latter feature used a few times by architect Ceckiewicz in some of his numerous religious works. The 50-metre slim bell tower is a vertical dominant. The asymmetrical front elevation was enriched with recesses and wavings. This church was also built as a bi-level one, too: both levels are united on the front elevation with monumental, asymmetrical ramps carried upon a series of reinforced concrete arched frames of various heights. Those arcades hid the entry to the lower church (ill. 8).

The church of St. Brother Albert in Czyzyny, called "At the Airport" (by arch. Witold Ceckiewicz, arch. Wojciech Oktawiec, eng. Edward Motak, built 1985–2000) was placed in the northern part of the former Krakow airport Rakowice-Czyzyny. The church's interior is compact, based on the square plan, the diagonal axis leading from the entrance to the altar. The most outstanding element of that simple, cubic volume is the entrance corner that was originally under-cut at several levels, which brought about a series of cantilevers resembling the structures of multiplied Gothic cross-and-ribbed vaultings (ill. 9). The church landmark, i.e. a separate 75-metre bell tower was never built.

The church of St. Jadwiga the Queen (by arch. Romuald Loegler and arch. Jacek Czeka, built 1981–1997) was constructed near a large neighbourhood and the Wyspianskiego Park laid out at the former Krowdrza fort. The church's compact, the central-plan volume is the effect of modifications preferred by the architects towards the base volume that is the cube – which made it original. The modification meant making the front elevation lower and waving (as seen from the neighbourhood's blocks and the nearby streets' intersection), introducing

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<sup>5</sup> T. P. Szafer, *Nowa architektura polska. Diariusz lat 1971–1975*, Wydawnictwo Arkady, Warszawa 1979, p. 171.

skylights along the diagonals of the roof that created a cross of light, “broken” corners with side entrances and stained glass windows (ill. 10). The lower church was designed below the main interior as well as the access road and new pedestrian route next to the street. The massive, concrete volume of the church terminated the western vista of the Wybickiego Street.

At the edge of the Bronowice Nowe neighbourhood the church of St. John Cantius (by arch. Krzysztof Bien, built 1981–1992) emerged – bi-level, for 800 worshippers in the upper church and 300 in the lower one. The oval plan combined with slightly inclined roof resulted in the expressionist form, which poses a contrast towards cuboidal, typical buildings of the neighbourhood (ill. 11). That is why the church was nicknamed a “Flying Saucer”. The shape of its volume, like the cases of the Lord’s Ark and the church of St. Jadwiga, reveals the influence of some late Le Corbusier projects.

Near the Podwawelskie Neighbourhood, the church of St. Mary of Fatima was built (by arch. Malgorzata Grabacka, arch. Przemyslaw Gawor, eng. Jan Grabacki, built 1985–1993). It also stands out for its expressionist form, inseparably related to its reinforced concrete structure. The plan evolved from a few curves, which is continued by the curved windowless walls of rising heights. The volume culminates at the spatial cross, which smoothly rises to its top over the temple (ill. 12). The external walls’ surfaces are cut over the grade and the entrances are linked with the church vicinity by footbridges, both resulting in the sort of visual lightness of the church.

In the south-western district of Zakrzówek, the Resurrectionist Higher Seminar was built, planned as a religious multi-purpose complex (by arch. Dariusz Kozłowski and arch. Wacaw Stefanski, built 1985–1993). It consisted of the convent and church as well as the higher school, small dorm, archive, library, museum, publishing house and the convent provincial headquarters. The seminar complex stands out for its size but also for an unusual form and rich symbolism. Its spatial concept was based on the idea of the road leading through four “gates” of consecutive stages of life, placed along one axis: Initiation (crack in the complex’ external fence), Hope (in the front wall of the main wing), Knowledge (passage between the audience hall and temple in the inner courtyard), Faith (incomplete bell tower which, combined with Zakrzówek limestone rock horizon, was to create the image of a cross).

The exposed concrete played important role in many places of the seminar complex. The concrete surfaces with formwork imprints accompany the surfaces of colourful mortars. The Krakow panorama was marked by the concrete hipped roof over the chapel, which was specifically broken at the corners and thus opened towards the Heaven (ill. 13). In the top part of one of the wings, which can be seen from the courtyard, two “false temples” were made of raw concrete, including an incomplete façade inspired by the small Bernardine chapel in Radom. The Resurrectionists Seminar complex, which has been recognised as highly representative for Polish Postmodernism, shows the influence of the quasi-ruined buildings designed by the SITE group. After the seminar project was completed, its co-author defined architecture as *the art of building fictitious things so as to make them look real* (transl. – MM)<sup>6</sup>.

The pavilion of the Office for Art Exhibitions (by arch. Krystyna Tolloczko-Rozyska, built. 1959–1965) stood out in the group of non-religious buildings for the specific use of concrete; it is now active as the Bunkier Sztuki (Art Bunker) Gallery of Contemporary Art. It

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<sup>6</sup> D. Kozłowski, *Trwałość i trwanie architektury (betonowej)*, [in:] *Nowe rozwiązania konstrukcyjno-materiałowo-technologiczne. Konstrukcje żelbetowe*, Warsztat Pracy Projektanta Konstrukcji Ustroń 2002, vol. II, p. 82.

was built in an especially sensitive place – on the edge of the former medieval town, within a block of buildings next to the Planty gardens (ill. 14). The relics of the 18<sup>th</sup>-century building were included into the project; it also inspired a strip of tiles on two elevations separating concrete and glass surfaces. The concrete on the walls was a reference to the former defensibility – the city walls existed over there until the beginning of the 19<sup>th</sup> century. The rawness of walls, upon which the wooden formwork marks were intentionally left, remind about the former inaccessibility of the site. From the very beginning, the construction raised strong emotions, and they have never ceased entirely. Its origin can be traced to its highly contrastive form, but also the fact it replaced the café pavilion called Drobnerowka that was well known in the townscape. One can add that the BWA pavilion, i.e. the Art Bunker now, which was found an important work of Brutalism, was also called a multivalued object for its rich contents and meanings accompanying its avant-garde and misleadingly simple architectural form<sup>7</sup>. Part of the main elevation was veiled for many years with the permanent, external cage garden. At the turn of the century the extension was considered – the design competitions dedicated to that idea were held in 2001 and 2016.

A recent example of concrete used for exposing the form is the new building of the Museum of Polish Aviation at the Jana Pawła II Alley (by arch. Justus Pysall, arch. Peter Ruge, arch. Bartłomiej Kisielewski, competition 2005, built 2008–2010). It was localised at the former Rakowice-Czyżyny Airport, which operated as a military airport since 1912, and as both civil and military airport – since 1923. It was closed in 1963 (and in 1964, the new airport opened in Balice). Part of the Rakowice airport was built-up with time, a large part was neglected or used occasionally for mass events. In another part, a museum of valuable collection opened soon – in the former hangar and open air. Its capability increased significantly when the new museum building was completed. It was granted an original, three-wing shape. Two wings house exhibition halls and the third one (three-storeyed) – other spaces: shop, office, library, conference hall. Tall exhibition halls permitted the suspension of a large number of airplanes against the background of large glass panels. The building features uniform concrete surfaces, which are smoothly chamfered between walls and ceilings, with few circular windows in the administration wing, resembling the passenger plane windows (ill. 15). It should be emphasised that the Museum of Polish Aviation has the shape of a plane propeller that can be traced both in the plan and in bird's eye view. The Minimalist form draws on the necessity of precise designing of airplanes and on the principle of beauty resulting from the structural logic. The exposures of basic structural material, i.e. concrete, refers generally to technical achievements; the steel structure elements were left invisible.

There are of course more buildings in which concrete played a crucial role. One of them is an office building (by arch. Wojciech Obtulowicz, arch. Andrzej Pieta, arch. Ryszard Brajer, eng. Zdzisław Piątek, built 1997–1999) near the 19<sup>th</sup> century Lasocki palace in Debniki. It was built for the company specialising e.g. in water engineering. The company profile was reflected by raw concrete being exposed on the elevation and the walls inclined so as to resemble a dam. To the same author the ComComZone sports complex in Nowa Huta – Mogiła is attributed (by arch. Wojciech Obtulowicz with team, built 2006–2008). Among the religious objects, one should also point the funeral house at the Batowicki cemetery, called

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<sup>7</sup> P. Winskowski, M. Przewłocki, *Pawilon Wystawowy BWA (Bunkier Sztuki) w Krakowie w nurcie architektury rzeźbiarskiego modernizmu połowy XX wieku*, typescript, Krakow 2002.

the Gate to the City of the Deceased (by arch. Romuald Loegler, built 1993–1998) – one of the very few examples of deconstruction in Krakow. Another very well-known built project is the Museum of Contemporary Art, called MOCAK (by Claudio Nardi Architects – arch. Claudio Nardi and arch. Leonardo Maria Proli, built 2009–2010) in Zablocie, i.e. the eastern part of Podgorze district. It was created as a result of adaptation and significant extension of the former Rekord factory (more known as the Emalia factory during the Second World War) and was emphasised by a large concrete wall along the Lipowa Street (ill. 16).

## 6. Absolute transmutation. Small objects

The third group, very limited in numbers, contains small objects, in which the transmutation, as it is discussed, can be perceived as the overwhelming power of architectural expression in the creative process. The former concert shell in the Decjusza Park belongs to that group (by arch. Jan Litynski, built 1965–1966). It was placed in the western part of Krakow, in Wola Justowska, near the Renaissance Justus Decius villa, or rather a palace, which took place soon after the surrounding park was renovated (ill. 17). The scene-protecting thin shell structure, of subtle proportions, was accompanied by equally elegant reinforced concrete sphere housing auxiliary space, which was somewhat suspended between the scene's shell and the bridge providing the access. The sphere has remained intact, while the rest of the structure, after being unused for some time, it was adapted in 1994–1995, along with its vicinity, into the Boleslaw Chromy sculpture gallery and it still serves this function.

The other small object is the so-called Lupinka (small shell – MM) in the courtyard of the Cracow University of Technology campus in the Warszawska Street (by arch. Jerzy Ullman, arch. Andrzej Bojes, eng. Stanislaw Karczmarczyk, eng. Irena Bobulska, built 1965). It originated as an experimental object of reinforced concrete structure, being part of the Exhibition of Progress in Building, held there in 1962–1963 (which also left a pavilion that houses the reading room of CUT library). The thin shell structure was made in a quite simplified way, to a large extent with hands<sup>8</sup>. The Lupinka, intended to be an ephemeral object (it was thought to be a research example of a temporary structure that could be easily disassembled and removed), had originally no precise destination. After the exhibition was over the structure was kept and for some time used informally as a small parking lot for a couple of cars or bicycles. After a few years, following the March 1968 student demands, it received a function, namely, it became the “Lupinka” Café Bar; with time – a very popular place at the Cracow University of Technology (ill. 18).

## 7. Conclusion

One has to emphasise that in the recent 60 years a huge number of reinforced concrete, of many types, were built in Krakow. In most of them, the structure was mostly of utilitarian character and does not reveal concrete's specificity, or does so to a limited extent only and not

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<sup>8</sup> The information obtained from the conversation with Mr Stanislaw Karczmarczyk (June 2017), to whom the author expresses his gratitude.

for artistic, aesthetic purposes. That group consists mainly of the most numerous residential buildings of the prefabricated structure as well as most of the industrial buildings and some other ones. Among the buildings upon which the „transmutation” was performed by using aesthetic and/or expressing values of concrete, there is quite a large group of high aesthetic quality. Some of them have been described or mentioned in the paper.

Most of the objects discussed in the paper have already been covered by particular ways of protection, although the scope of protection is limited with regards to such new works (as compared to over-1000-year architectural heritage of Krakow). The Biprostal office, Cracovia hotel, Kijow cinema, Art Bunker have been placed in the Local Record of Monuments; none of them has been listed so far. These buildings have also been recognised as works of contemporary heritage – as well as some other ones were: Biprocemwap office building, the churches in Bienczyce, Mistrzejowice and Krzeslawice, the churches in Krowodrza and Bronowice Nowe, Resurrectionists Seminar, and – despite conversions – former concert shell in Wola Justowska and the Lupinka Bar<sup>9</sup>.

Though it sounds most improbable from the rational point of view, the alchemical transformations performed hundreds of years ago sometimes resulted in successes. It is difficult to establish whether it was an ability to perform an experiment or an ability to carry on the presentation and to make a report. The success could be of material character (obtaining a lump of gold) or more of symbolic one (winning or creating interest), while its scale could vary. We can refer similar remarks – on the condition of necessary care resulting from different conditions – to the “concrete transmutation” – most of the concrete applications pass unnoticed, however quite a big number of intended projects and successfully built projects have been proving for many years the particular values of that material – not only structural but artistic as well.

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