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TOWARDS THE PERFECTION OF MATTER – APOTHEOSIS OF THE AESTHETICS OF CONCRETE

KU DOSKONAŁOŚCI MATERII – APOTEOZA ESTETYKI BETONU

Abstract

The latest, over one hundred-year period of the material evolution of concrete (reinforced concrete) has turned it into a modern architectural material, which, being exceptionally susceptible to plastic moulding, allows one to combine, within one matter, the visual expectations of the creator-artist with the possibilities of designing its engineering properties. The process of transforming concrete from a “common”, purely utilitarian material into a kind of ideological matter whose primary role has become its aesthetic value can be termed as *transmutation*. This phenomenon seems to have a determinative significance in shaping theoretical foundations for a certain area of architecture, which aspires to the name of the contemporary avant-garde, today commonly referred to as “concrete architecture”. Concrete itself has gained some kind of ennoblement, understood in terms of the idealised apotheosis of matter.

Keywords: transmutations of concrete, concrete architecture, aesthetics of concrete

Streszczenie

Ostatni, przeszło stuletni okres ewolucji materiałowej betonu (żelbetu) sprawił, że stał się on nowoczesnym, wyjątkowo podatnym na plastyczne uformowanie tworzywem architektonicznym, które pozwala łączyć w jednej materii wizualne oczekiwania twórcy-artysty z możliwościami projektowania jego właściwości inżynierskich. Proces przeobrażania betonu z materiału „pospolitego”, o przeznaczeniu czysto użytecznym, w rodzaj ideologicznej materii, której nadrzędną rolę stała się jej wartość estetyczna, można określić mianem *transmutacji*. Zjawisko to wydaje się mieć determinujące znaczenie w kształtowaniu teoretycznych podstaw dla pewnego obszaru architektury, aspirującej do miana współczesnej awangardy, którą zwykle się dziś nazywa „architekturą betonową”. Sam beton zyskał pewien rodzaj nobilitacji, rozumianej w kategoriach wyidealizowanej apoteozy materii.

Słowa kluczowe: transmutacje betonu, architektura betonowa, estetyka betonu

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1. Sources of the aesthetic transformations of concrete

The turn of the 19th and 20th centuries is the period of the emerging aesthetic revolution in architecture, determined by the technological and material changes taking place as a result of the dynamic industrial development in the world. Fascination with the new possibilities for the construction of spectacular and original forms of architecture found its place in the increasingly popular modernist creative doctrines of contemporary architecture. Concrete (reinforced concrete) occupied a special place in them – a pioneering material whose aesthetics and constructional possibilities were to permanently alter the face of modern architecture. As early as in 1914, one of the postulates in the *Futurist Architecture* manifesto published by Antonio Sant'Elia proclaimed to replace the then used traditional materials with the new ones so as to shape the architecture based on the aesthetics of reinforced concrete, iron or glass¹. In the expressive visions of the Futurists, one can trace the beginnings of transforming concrete from a purely structural material into a kind of ideological matter whose key element becomes the monolithic aesthetics. Le Corbusier also saw the need to replace natural materials with their artificial counterparts, making it one of the engineering bases for formulating the five principles of modern architecture. This was particularly evident in his reflections on the “spirit of serialism”. In his work *Toward an Architecture*, he justified this necessity in the following way: “Natural materials, which are infinitely variable in composition, must be replaced by fixed ones. On the other hand, the laws of Economics demand their rights: steel girders and, more recently, reinforced concrete, are pure manifestations of calculation, using the material of which they are composed in its entirety and absolutely exactly(...)”². This utilitarian character of concrete (reinforced concrete) oriented towards structural-engineering possibilities, evolves over time towards the creation of a distinctively aesthetic tendency in contemporary architecture, underpinned by theoretical ideology behind the term “concrete architecture”. As emphasised by Dariusz Kozłowski: “After the millennia of the reign of wood, stone and brick, together with steel, concrete became the basis for the progress of architectural thought. It allowed the extension of symbolism, metaphor and individuality of form. It became the basis of global architecture”³.

Although the material is still referred to as an “artificial stone”, it has gained its own aesthetic identity over the past century, which has received a kind of ennoblement in the world of modern architecture. It would not be possible without the effort and creative achievements of the great masters of the twentieth-century architecture. Today, concrete is sometimes called a “liquid stone”⁴ or “stone of the present”⁵, thus avoiding pejorative associations

¹ A. Sant'Elia, *Futurist Architecture. Manifesto*, Manifesto, Milan, July 11, 1914 [in:] G. Celant (ed.), *Architecture & Arts 1900/2004*, Skira, Milan 2004, p. 110–111.

² Le Corbusier, *W stronę architektury* (transl. by T. Swoboda), Fundacja Centrum Architektury, Warsaw 2012, p. 256.

³ D. Kozłowski (ed.), *Architektura Betonowa*, Polski Cement, Cracow 2001, p. 1.

⁴ The term “liquid stone” is used in the title of a book about the contemporary achievements of concrete architecture: J.-L. Cohen, G. M. Moeller (editors), *Liquid Stone New Architecture in Concrete*, Brichhäuser, Basel-Boston-Berlin 2006.

⁵ Dariusz Kozłowski used the term “stone of the present” while discussing the architecture of Carlo Scarpa during the conference *Beton na progu nowego milenium* (Centrum MANGGHA, Cracow, 9–10 November 2000, organizer: Polish Cement and Association of Cement and Lime Producers).

with “artificiality”, even becoming synonymous with a certain “material honesty”⁶ for modern architecture that is full of aesthetic falsifications. These transformations, which consist in imparting the significance of an ideologically perfect material to a common material in the process of artistic creation, seem to restore the faith of the architects themselves in their ability to master the art of transmutation of matter. The ability to shape matter according to the artist’s intent is not only a matter of design alchemy but, above all, a question of talent. An architect who does not evince his talent becomes a craftsman – a master who does not make mistakes in his learned profession. Works, which are original and unique in their aesthetic design, are expected from the architect-artist (grandmaster). In addition, he is capable of transforming materials considered common into an unusual and, perhaps, perfect thing. We can then say that the creator possessed the ability of transmutation of matter – that is providing it with a unique meaning by properly forming the original shape of the thing from it. Talent, combined with the artist’s imagination, gains the importance of a mysterious, effective factor – *lapis philosophorum* – necessary to conduct the transmutation of common matter – concrete, into an unusual thing of noble appearance.

2. Apotheosis of concrete matter

Today’s apotheosis of concrete matter would not be so discernible without the exceptionally rich implementation achievement of the twentieth-century architects, whose often pioneering accomplishments allow to grant them the title of grandmasters of concrete architecture. Whether we look at them as “inventors”, “explorers” or “composers” of concrete architecture⁷, one should take into account the fact that each of them tried to find the aesthetic meanings typical of their artistic work in this monolithic matter. In this way, the variety of use not only of the structural properties of the reinforced concrete but, above all, of the artistic values of the exposed surfaces of concrete, contributed to turning it into an ideological matter whose physical properties can be shaped (designed) according to the aesthetic and architectural needs of a particular work of architectural art. The basis for the aesthetics of concrete is the emanation of the physicality of form, emphasizing the material nature of a structure. This is confirmed with the words of Rem Koolhaas who claims that: “Initially malleable at first, then suddenly hard as rock, reinforced concrete can objectify vacuity and fullness with equal ease: it is the architects’ plastic”⁸. The basis for the transformation of this “architects’ plastic” into a perfect material is the continuous evolution of concrete technology, taking place in various fields of artistic activity, aiming at obtaining universal matter – a “synthetic” stone for modernity. The basis of the universality of concrete is the possibility to design its

⁶ The issue of “material honesty” is discussed, among others, by W. Niebrzydowski in the text *Nieszczera szerość materiału*, [in:] D. Kozłowski (series ed.), Technical Transactions – Architecture – Z.9-A/2006 – special issue, Wydawnictwo Politechniki Krakowskiej, Cracow 2006, p. 317.

⁷ Referring to the way of distinguishing between architects proposed by Professor Dariusz Kozłowski, Marcin Charciarek interprets this kind of division, relating it directly to the achievements of the creators who use concrete matter, distinguishing among them: “inventors”, “explorers” and “composers”. [in:] M. Charciarek, *Związki idei i materii w architekturze betonowej*, Wydawnictwo PK, Cracow 2015, p. 41–42.

⁸ R. Koolhaas, *Deliryczny Nowy Jork*, Karakter, Cracow 2013, p. 282.



III. 1. Coop Himmel(b)lau, *UFA Cinema Center*, Dresden, 1993–1998, photo. P. Bigaj

physical properties and the continuous development of this material, giving infinitely many opportunities for its aesthetic use. Today, this material is used in ever more sophisticated works of architectural or engineering art, whose basis seems to be a monolithic effect that significantly ennobles the perception of such a work. Monolithicity gives a sense of homogeneity of matter, recalling the ideological inclinations of an architectural thing with sculpture. As Konrad Kucza-Kuczyński emphasizes, this phenomenon results “from the real possibility of casting an architectural sculpture – similar to bronze or cast iron”⁹. The homogeneity of mould casting achieved through the aesthetic cohesion of matter in a work provides an opportunity to develop the theoretical foundations of architecture that can be reflected in the implementation of sophisticated avant-garde structures. The emphasis on the superior role of concrete – as the matter visually coming to the fore of creative choices in the design of today’s architectural works, allows one to formulate a belief in the apotheosis of the aesthetic values of concrete, professed mainly by those architects who consider themselves followers of modernist thought. It was during the twentieth century that both pioneers and great masters of concrete architecture came to discover the laws of the alchemy of this monolithic matter. Today’s architects not only draw on these experiences, but also continue and develop them, presenting the “liquid stone of the present” with more and more aesthetic challenges while often setting further records of engineering art along.

3. Alchemists of concrete and creators of concrete architecture

Looking at the distant past, we see the Pantheon – the symbol of the triumph of the art and engineering of the Roman Empire lasting to this day. For centuries, the structure had not allowed one to forget about the material idea of Roman concrete until the pioneering times of modern concrete and reinforced concrete’s alchemy. Along with the discovery of the methods of obtaining cements by Joseph Aspdin, Isaac Ch. Johnson, and the technology of concrete reinforcement by Joseph Monier, there came the time for the precursors of concrete architecture. Among the earliest promoters of this matter were both the engineers, such as François Hennebique, with his villa in Bourg-la-Reine, France (1901–1904) and propagators of exposed concrete technology in architecture still tipped towards classical forms, as is the case with Auguste Perret’s works. One should not forget about Tony Garnier’s visionary work on *Cité Industrielle*. In turn, Robert Maillart creates sophisticated reinforced concrete structures, which, over time, take on almost organic shapes of bridge skeletons. In 1913, an impressive structure is constructed in Wrocław, gaining the name of the modern pantheon – *Jahrhunderthalle* designed by Max Berg. In 1914, the first theoretical works for the mass architecture of Le Corbusier’s houses appear, such as the innovative *Dom-ino* concept, introducing a free plan with the use of a reinforced concrete framework.

It is only the third decade of the twentieth century that opens the period of aesthetic transformations of concrete in architecture more clearly. In 1922, Auguste Perret implemented the church of Notre Dame du Reincy. David Watkin described it as “the first major aesthetically satisfactory use of exposed ferro-concrete, not covered with decorative cladding”¹⁰. In turn,

⁹ K. Kucza-Kuczyński, *Beton w architekturze mieszkaniowej*. Retrieved from http://www.dnibetonu.pl/page/archiwum_abstract/?pa_id=108 [retrieval date: 2.04.2017].

¹⁰ D. Watkin, *Historia architektury zachodniej*, Arkady, Warsaw 2006, p. 527.

on the North American continent, in the 1920s, Frank Lloyd Wright began working on the original, in terms of its architectural idea, prefabricated system consisting in erecting a residence from smooth and geometrically decorated concrete blocks called *textile block system*. One of the ground-breaking works directing the architectural community's attention towards the possibilities resulting from the use of brutalist aesthetics of concrete became Marseille's *Unité d'Habitation* (1947–1952) designed by Le Corbusier. During the inaugural speech, he made a statement: "It seems to be really possible to consider concrete as a reconstructed stone, worthy of being exposed in its natural state"¹¹. Le Corbusier's further significant implementations, such as the Notre Dame-du-Haut church in Ronchamp (1950), the Dominican Convent of La Tourette in Eveux (1957–1960), or the whole complex with the building of the Supreme Court in Chandigarh (1952–1959), present a consistent continuation of the use of *béton brut* aesthetics in his artistic work. The significance of Le Corbusier's achievements in popularising concrete aesthetics in original works of architectural art grants him the title of the grandmaster of concrete architecture of the 20th century. Louis I. Kahn, with his monumental concrete aesthetics, disclosed in such buildings as the Jonas Salk Research Institute in La Jolla (USA, 1959–1965), where smooth concrete surfaces were used, or the impressive building of the Parliament in Bangladesh (1962–1974), should be included in this group of creators exploring the secrets of the alchemy of concrete matter. Charles Jencks argued that the hallmark of Kahn's architecture was the "love to express the method"¹², which can be seen in the meticulous way of working on concrete textures and in the record of truth about the technological principle of erecting the building in the concrete imprint. The architect himself was very humble with regard to this matter, stating that: "Concrete is a very refined material, it does not tolerate being treated as a secondary thing, woe betide the creator who will not respect its specificity and purpose"¹³.

In the second half of the twentieth century, a significant group of artists continuing to use the aesthetics of exposed concrete not only in architecture but also in sculpture began to come into prominence as well. They contributed to the further exploration and development of concrete alchemy, which in consequence allowed for implementations of other impressive works. One should mention the artistic work of the Japanese brutalist Kenzō Tange with his carefully developed concrete surfaces. It is also difficult not to mention the exceptionally elegant works of Carlo Scarpa with clever, "stepped" details whose true craftsmanship can be traced in the grave complex designed for the Brion Family in San Vito di Altivole, Treviso (1969–1978). Among the monumental structures of this period, there are also numerous monolithic temples, such as the pilgrimage "church-mountain" in Neviges (1967–1972) designed by Gottfried Böhm, or the Vienna Church of the Most Holy Trinity (1974–1976) by the sculptor Fritz Wotruba, whose form was composed of huge blocks of concrete. The Swiss architects co-creating the so-called "Ticinian School", i.e. Luigi Snozzi, Livio Vacchini, Aurelio Galfetti and Mario Botta, also construct their works from concrete, applying both monolithic and prefabricated technologies in an equally successful way. Ricardo Boffil should be recognized as

¹¹ [After:] S. Giedion, *Przestrzeń, czas i architektura. Narodziny nowej tradycji*, PWN, Warsaw 1968, p. 573.

¹² Ch. Jencks, *Ruch nowoczesny w architekturze*, Wydawnictwo Artystyczne i Filmowe, Warsaw 1987, p. 256.

¹³ [Quoted after:] A. Darlak, Z. Pilch (ed.), *Natura betonu – siedzisko*, publication accompanying concrete workshops for students of architecture and sculpture, Polish Cement, Cracow 2006, p. 9.

a true master who has mastered the arcana of the concrete art of prefabrication in architecture along with his postmodern poetics, revealed in the metaphors of processed detail taken directly from the past, as shown in the housing complexes *Les Espaces d'Abraham* (Marne-la-Vallée, Paris, 1978–1982) or *Antigone* (Montpellier, 1979–1981). Since the 1970s, Tadao Ando, a Japanese self-taught architect, has also been consistently developing his creative activity in which he has perfectly mastered the process of designing and erecting buildings in a velvety smooth, monolithic concrete technology. He is still considered to be one of the leading artists creating concrete architecture in the spirit of Japanese minimalism.

The last decades of the twentieth century constitute the development of ever more expressive, deconstructed and original, in their artistic expression, forms. It is also a period of the deepening pluralism of creative doctrines in contemporary architecture, which continues to this day. Every creator either has begun to seek his own way or sought inspiration in the accomplishments of his predecessors. Thus, the era of the so-called “Star-Architects” has crystallised. Among them, we can also find many of those being able to use the aesthetics of concrete for their creative needs in an original manner, individualizing its expression. Examples here are the architects classified as representatives of deconstructivist trends, such as the team from the Coop Himmel(b)laustudio with the *UFA Center* building (Fig. 1., Dresden, 1993–1998) or Zaha Hadid with her numerous implementations, such as: *Vitra Fire Station* (Weil am Rhein, 1990–1994), Bergisel ski jump in Innsbruck (1999), *Phaeno* – Wolfsburg Museum of Science (2005), or *MAXXI* Museum in Rome (2009). As Wojciech Niebrzydowski quotes: “Hadid believes that in-situ cast concrete is »the best material to achieve sculptural expression and structurally ambitious large spans and overhangings«”¹⁴. The 21st century brings other, technologically spectacular solutions using the aesthetic qualities of concrete. A number of modern-day architects reach for the monolithic material, finding in it the unique matter that they can subject to *transmutation*– that is the process of imparting the meaning of an “unusual” thing to a “common” one. One can mention here the works of the Chilean studio Pezo von Ellrichshausen, seeking varied textures and colours of concrete surfaces or the Austrian studio marte. marte architects. Also worth noting are the numerous concrete houses designed by BAK Architects in Mar Azul (Buenos Aires, Argentina), restoring the aesthetics of *béton brut*. The works of concrete architecture erected in the first decades of the 21st century testify, not only with their quantity but above all with quality and originality, that the transmutation of concrete, despite numerous satisfactory results and achievements, still remains a continuous quest for perfect solutions for the matter. The works being done along with it seem to be just as much a mysterious alchemy as a dangerous play associated with aesthetically unexpected consequences.

4. Perfect imperfection of matter – conclusions

Liquid concrete in its shapeless, mouldable mass creates associations with the Platonic “prematter” from the *Timaeus* dialogue. The Demiurge – the Great Builder of the World – combining it with the idea of things, by ordering its amorphous form, implements in it an

¹⁴ W. Niebrzydowski, *Beton i żelbet a formy architektoniczne XX wieku*, Wydawnictwo Politechniki Białostockiej, Białystok 2008, p. 67.

image of the temporal and perpetual world of the senses, created only in imitation of eternity¹⁵. Thus perceived perfect matter is the foundation of all that is imperfect – perceptible. These arising analogies to the creative work of the artist-architect, attributing to him a demi-urgic-causative role in the process of creating the world of sense through the ability to mould their form in appropriate matter, explain the phenomenon of the apotheosis of concrete – the material intended to materialize the architectural idea of a work of art. We consider *transmutation* as its base – the process of transforming a shapeless, unformed, liquid, concrete mass into a tangible thing, imitating the nobleness of shape, perfection and the eternal permanence of the idea of this thing. The essence of the purpose of the alchemists of concrete – engineers, seems to be the pursuit of technological perfection of such matter in the process of giving things the right shape. This goal, however, will never be fully attained in the platonic conception of the theory of world's construction, but it will only come close to imitating the perfect design of the idea of thus realized things.

The creator using concrete matter should take into account its dual nature, considered both in the field of theory and practice. In the theoretical aspect, it should be perceived in philosophical terms as synonymous with perfect matter – “prematter”, which can be freely designed according to the artist's intent, so as to reproduce the universal idea of the work in it. In practical terms, it should be treated as a building material – having its physical and technological limitations, i.e. generating defects and faults in concrete casting that occur during the process of shaping things. Such imperfections, decisive for the aesthetically “defective” specifics of this material, become the essence of its unique monolithic nature, which, treated idealistically, as perfect matter, could be unbearable in the universal perception of the works erected from it.

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¹⁵ Platon, *Timajos*, [in:] Platon, *Dialogi* (transl. by W. Witwicki), Unia Wydawnicza “Verum”, Warszawa 2007, p. 297–366.

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