

BOGUSŁAW PODHALAŃSKI*

GOLD INTO CONCRETE, OR VICE-VERSA?

ZŁOTO W BETON CZY VICE-VERSA?

Abstract

If the transmutation of matter¹ becomes possible, then it can also become the basis for the transmutation of form. The latter process is not alchemy any longer, it is the essence of architecture. Architecture becomes a certain form of transmutation and is usually performed invisibly and intuitively – first in a designer’s imagination and then taking on a visible form – that of a sketch, a design or a model. Another alteration is a reaction in the form of the construction of this design using timber, brick or concrete, of course with the necessary addition of a catalyst, which (which is funny in the context of alchemy) has to be gold or its substitute – money. When searching deeper, we can see the transmutation of concrete, or rather – of forms that are made out of it, in the context of psychological influence on humans and their direct physical surroundings – from the house to the city, and within them – also on elements that make up the profane and the sacred of a space and of architectural form.

Keywords: transmutation, form, material, concrete, gold, the profane, the sacred

Streszczenie

Jeżeli transmutacja materii staje się możliwa, to może być również podstawą transmutacji formy. Ten ostatni proces nie jest już alchemią, a to istotą architektury. Architektura staje się pewną formą transmutacji, a zwykle dokonuje się niewidzialnie i intuicyjnie – wpraw w wyobraźni projektanta, a dopiero potem przyjmuje formę widzialną – szkicu, rysunku, projektu czy modelu. Kolejna przemiana – to reakcja w postaci realizacji tego projektu z drewna, cegły czy betonu, oczywiście przy niezbędnym udziale katalizatora, którym (co zabawne w kontekście alchemii) – musi być złoto, ostatecznie jego substytut – pieniądz. Poszukując jeszcze dogłębniej, możemy dopatrywać się transmutacji betonu, a właściwie form z niego wykonanych w kontekście oddziaływania psychologicznego na człowieka, jego bezpośrednie fizyczne otoczenie – od domu po miasto, a w nich – także na elementy składające się na profanum i sacrum przestrzeni i formy architektonicznej.

Słowa kluczowe: transmutacja, forma, materiał, beton, złoto, profanum, sacrum

* D.Sc., Ph.D. Arch. Bogusław Podhalański, City Rebuilding Laboratory, Institute of City and Region Design, Faculty of Architecture, Cracow University of Technology.

¹ www.findpatent.ru/patent/256/2563511.html&prev=search.



- Ill. 1. Ktisis, fragment of a mosaic in Eustolis' House, around V century CE, Kourion, Cyprus, phot. by the author
- Ill. 2. F. L. Wright's profane: section, sketch, Guggenheim Museum, New York, USA (source; internet)

1. Introduction

*Money makes the world go round*², but we can also observe that – in a wider sense – it is *gold that makes the world go round*. Where there was no stone or gold, timber was the basic material from which architectural forms were created, but, when referring to the reach of this phenomenon, we should take into account the time and place, from both a geographic and environmental perspective, as timber is scarce in some regions of the world. Stone played the main part as a fire- and water-resistant material. When referring to the ancient world, we can observe that it was a young woman – Ktisis³ – who was the personification of the creation of the world, and thus of all of its forms, including, of course, architectural ones. Holding a measurement tool in her hand – a Roman foot, imagined as an instrument in the form of a bracket with two skewers on both of its ends – shown on the Koukليا mosaic⁴, Fig. 1., appears to be measuring her creation. Measurement is an important component of composition, and composition is, in turn, the opposite of chaos. The durability of stone is completely different from the durability of timber, time differently affects organic and inorganic matter, destroying forms made out of these materials at a different pace. Archaeological findings have confirmed that timber structures were built already over 5 thousand years before the Common Era, but they have only been partially preserved⁵. However, we can find timber structures whose age is believed to be over 900 years, Roykstovan farmhouse at Kirkjubour on the Faroe Islands. It is the oldest inhabited wooden house in Europe, lived in by the same Faroe family since 1550 Fig. 2, or such as the timber huts near Trondheim, Norway⁶. Thus, we can attempt to refer to the influence of the fundamental factor that shapes architectural forms – climate conditions (ignoring humanity's obvious part in shaping them) over time. When visiting museums and archaeological sites of the world one gets the impression that the only things that can withstand time (of course only to a certain degree) are legend, stone and ... gold. The method in which the first two can transmute stone into gold has so far remained undiscovered. However, the transmutation of the third into a time-resistant architectural form appears to be achievable. Concrete is a sort of intermediate material, whose beginnings go as far back as Assyria, through Rome and its Pantheon – tying into one the largest dome constructed out of this material to this day – with legend. This apparently good example, which combines matter and architectural form with a legend that stands unchanged through time gives us hope that technological development in terms of construction materials will bring us a material that will be even more durable than concrete and that will hopefully not be harmful to the natural environment of man's surroundings. The vision of a completely artificial environment in which man would be forced to live appears to be a very grim projection of the future of the urban form, and all the more in regards to the landscape that surrounds it. An absolute durability of form and matter can, however, be perilous – as Diodorus Siculus⁷ warns us, pointing to the fate of Midas as an example.

² Quote from a song featured in a musical and film by John Kander and Fred Ebb, produced in 1927.

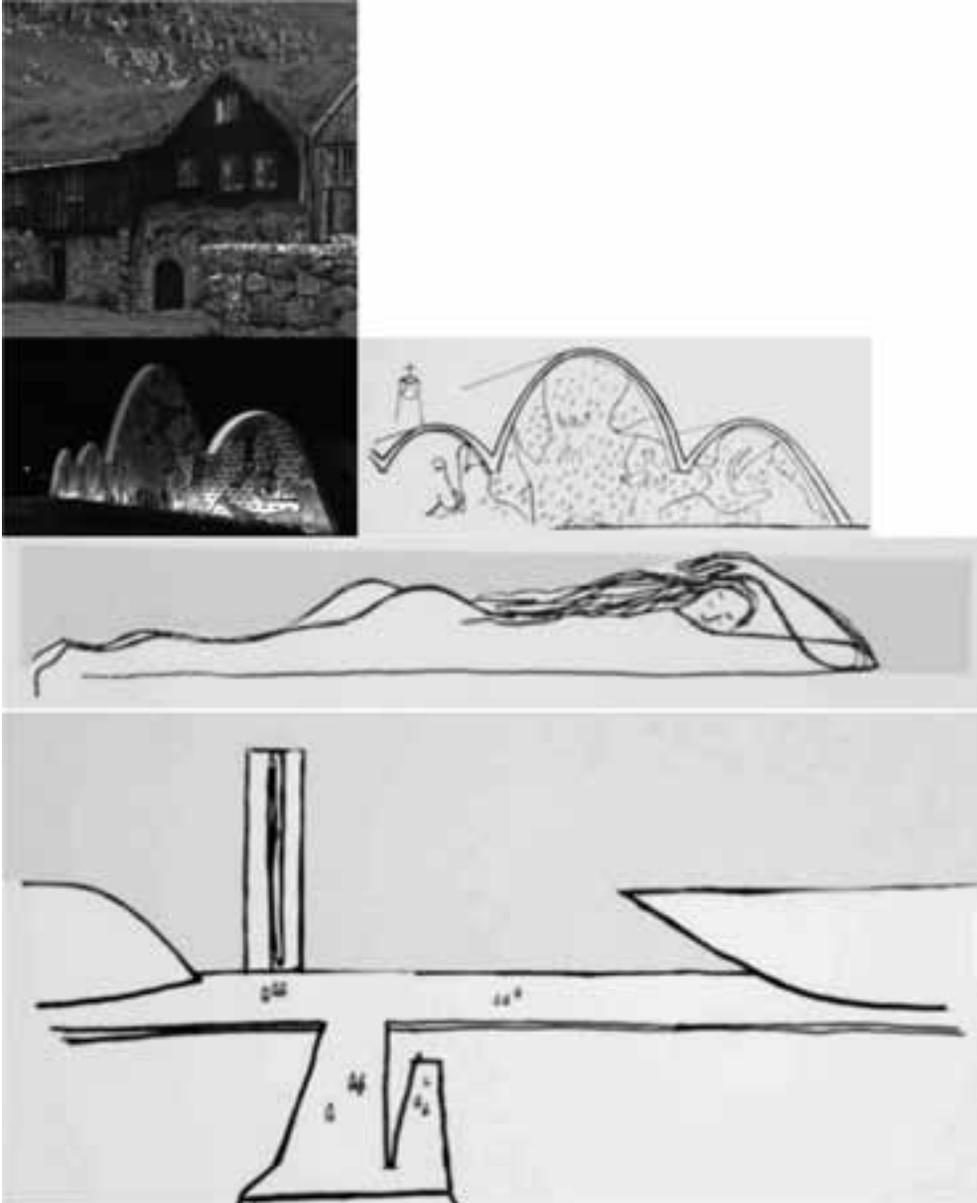
³ <http://www.biblestudytools.com/lexicons/greek/nas/ktisis.html> <http://biblehub.com/greek/2937.htm>.

⁴ Cyprus, western region, archaeological park, the so-called Eustolis' House.

⁵ <http://www.geekweek.pl/aktualnosci/11366/odnaleziono-najstarsza-drewniana-konstrukcje-swiatastudnia>.

⁶ http://www.biblioteka.teatrnn.pl/dlibra/Content/89903/Drewniany_Skarb_Publikacja_Poprojektowa_www.pdf.

⁷ S. Dworacki, *Czyny i dzieła herosów i półbogów*, [in:] *Diodor Sycylijski, Fontes Historiae Antiquae*, Wydawnictwo UAM, 2013.



- III. 3. The oldest inhabited timber house in Europe, Faroe Islands (source; internet)
- III. 4. Niemeyer's sacrum: The Church of Saint Francis of Assisi in Belo Horizonte, Brazil (source; internet)
- III. 4a. Niemeyer's profane: sketch (source; internet)
- III. 4b. Niemeyer's profane: sketch of Congress Building Brasilia, Brazil (source; internet)

2. Gold into concrete – in the search of an alchemy of the architectural form

Alchemy usually brings to mind the philosophical stone and the attempt to obtain gold through the transmutation of a different material. However, if we could loosely use the context of its meaning and use the word “alchemy” in relation to a creative process directed at the creation of an architectural form, or even, on a larger scale – an urban form, we can observe that the beginning of the creation of the material incarnation of a form is an immaterial thought, an idea. This element, which is the most interesting one from the point of view of analysing the process of the creation of a work, can be analysed from a scientific standpoint in numerous aspects – starting with *licentia poetica*⁸, through time-consuming methods of multi-criteria analysis⁹ to cybernetic perspectives like the “black box” or the “glass box”¹⁰. Regardless of the use of more or less scientific methods, the creative process itself fascinates with its non-obviousness, bearing many similarities to poetry, music and art, it fascinates us because of the fact that it leads to the creation of something new: a poem, a melody, a painting or a sculpture. The latter is the most reminiscent of architecture, or – more widely – urban design, because a logically constructed, useful structure is made as a part of this process, a structure that is then incorporated into a more or less ordered set of such structures, which forms a city. It is no coincidence that every person interested in the creative process in architecture is eager to observe the initial sketches of the author of a conceptual design, as their charm is based on not determining that which finds its final expression in the form of a technical design and, afterwards, in the very physical manifestation of the initial overall idea. The degree of synthesis that was achieved by contemporary masters of architectural form, like Corbusier (ill. 3), or Niemeyer (Fig. 4) in their sketches is unbelievably high, sometimes bringing to mind the poeticism of haiku¹¹, in which we can find certain mythological connotations, or associations with the directions of the flux of art styles:

From time to time
The clouds give rest
To the moon-beholders.
- Matsuo Bashō

Blowing from the west
Fallen leaves gather
In the east.
- Yosa Buson.

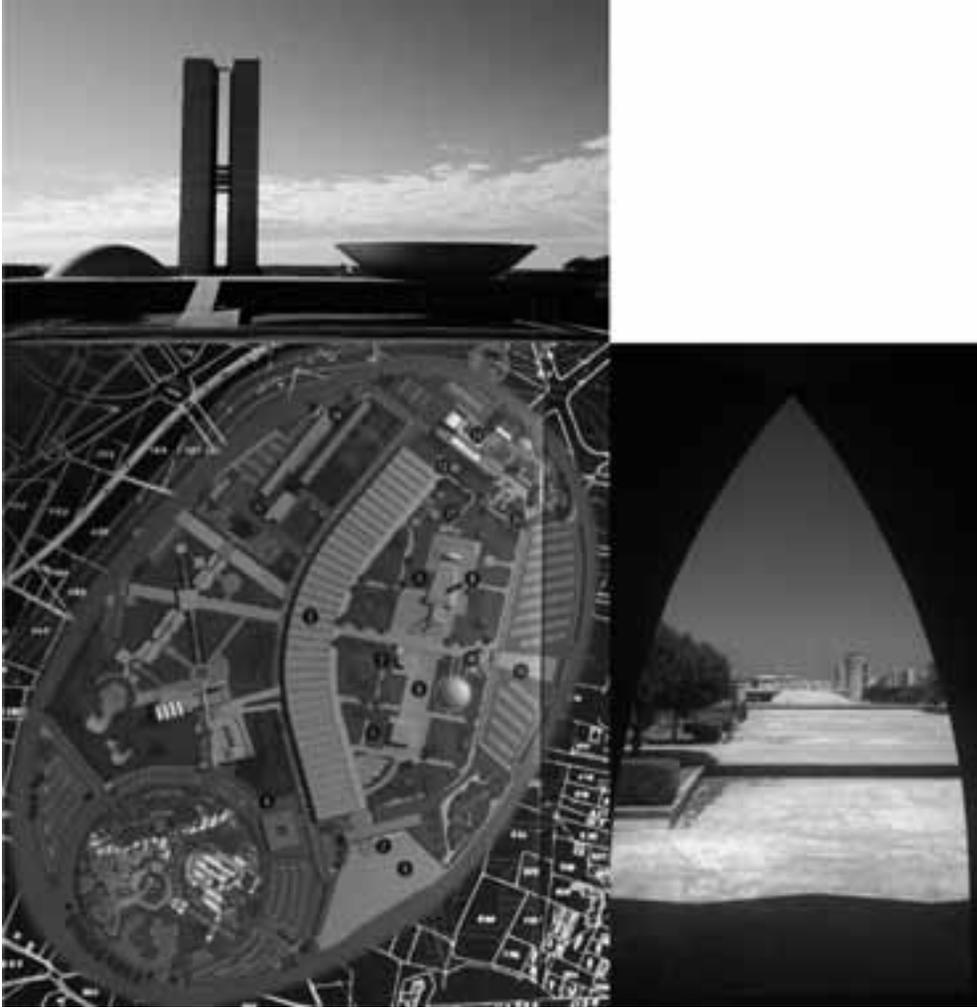
The non-obviousness of every creation, including architectural creation, discussed in the context of the quality of the “product” of this process appears to be a sort of challenge: we cannot predict whether another work – even by a great master in a given field – will be exceptional

⁸ Poetic freedom allows departure from linguistic norms, formal rules or faithfulness in the description of facts, https://sjp.pwn.pl/sjp/licentia_poetica;2566010.

⁹ M. Stangel, *Kształowanie współczesnych obszarów miejskich w kontekście zrównoważonego rozwoju*, Wydawnictwo Politechniki Śląskiej, Gliwice, 2013, p. 140.

¹⁰ M. Mazur, *Cybernetyka i charakter*, PIW, Warsaw, 1986.

¹¹ Source: <http://www.haiku-poetry.org/famous-haiku.html>.



Ill. 4c. Niemeyer's profane: Congress Building Brasilia, Brazil (source; internet)

Ill. 5a. O. Niemeyer, Plan of the International Fair in Tripoli, Lebanon, phot. by the author

Ill. 5b. View onto the main compositional axis from the Lebanon pavilion, phot. by the author

and good or not. The fact that there always exists a certain wholly unpredictable element in every creative process gives it a unique and exceptional character. In a certain sense, all artists deal with a similar phenomenon in terms of the matter in which they create, while the margin of the unknown potentially remains within the reach of their control. Modern economy has proven that concrete, due to its widespread use, is a relatively cheap construction material, cheaper than stone, without a doubt. Any mistakes that might be made while building a structure using a relatively cheap material are surely easier to repair than in the case of expensive materials. Referring this problem to unique materials like marble or quartz, there is a possibility to check their quality in terms of the existence of any hidden physical flaws before using them in a work. It is much harder to do so in the case of large architectural works, especially if we take into account the possibility of the occurrence of a mistake being made during the construction of a structure, which is usually performed with its creator's indirect involvement, as they are not able to personally build a large project. This is even more visible in the sphere of economics, for without gold – discussed in two forms: as a decorative material and as the equivalent of money – for it is, of course, possible to physically erect a large structure from this material, but so far there has been no proof – neither in the history of architecture nor in archaeological discoveries – of the existence of such a case. Legends are another matter – although are we sure whether or not they contain a grain of truth in them?

3. Concrete into gold – searching for a gold-bearing function

Concrete is rarely associated with the philosopher's stone and the attempt to obtain gold through the transmutation of this construction material. Instead of gold, it usually contains aggregate. In the form of reinforced concrete, metal is surrounded by concrete as an equal construction material, however, this metal is not gold, but iron and, contrary to gold, it undergoes corrosion. The use of modern methods of "financial alchemy" on buildings made of concrete allows it to be transformed into gold, although it is performed indirectly, unfortunately. We can assume that this is possible without magic and the philosopher's stone, with the appropriate use of architecture with form and function being sufficient. Let us point to the most obvious example that we can imagine – the Guggenheim Museum in New York – a perfect design by Frank Lloyd Wright. It would be interesting to compare the worth of this building in gold in terms of three factors: its unique function, content and perfect location and how many times it has increased, for it is certain that it broke even as a project. Following this train of thought, we can find numerous examples of similar transmutations of concrete and reinforced concrete understood as a material, matter which can be used by the genius of an artist to change into gold indirectly, through converting it into a unique form, causing an economic effect measurable in gold. By slightly broadening our thinking, we can point to buildings made of concrete, whose worth can exceed the worth of gold, as they become unique and famous enough that, through leaving their mark on the development of architectural forms, they take up a permanent place in the history of modern architecture, while in themselves being quite cheap to build (for instance the Bruder Klaus Field Chapel in Wachendorf, Eifel, Germany by Zumthor¹², without which

¹² Swiss saint. Nicholas von der Flüe, known as Brother Klaus, Field Chapel , 2007 Wachendorf, Eifel, Germany.



modern architecture would not be the same. Ingenious in its simplicity and aesthetic depth, this form, created out of concrete, can thus create this “*Mehrwert*”, added value, whose economic definition states that it is created by work. It would be better to use a different definition in this case: “it is an increase in the value of an item or a service that results from a productive or creative process”¹³. However, we should not stop at searching for unique manners of changing concrete into gold by using the Magic of Architecture. It is also necessary to point to the most utilitarian forms of using the aforementioned approach. By using concrete to provide structures with the necessary properties for them to be used in industry, an architect causes these purely utilitarian buildings and structures to play their part in the modern alchemy of today. The forms of the cooling towers of industrial power plants, by becoming some of the most exposed spatial forms within the landscape, being made of concrete, are not only proof of the elegance of solids of revolution, but also of the possibilities that lie in achieving an optimisation of the shape and technical and technological capabilities of modern construction methods. Returning to a sort of mastery in the use of concrete as the basic material for an architectural form, justified not only by economic and technological reasons, but also the local availability of materials and the pace of construction as outlined in a design, we can use a relatively unknown example in the form of an unfinished never fully occupied work by Oscar Niemeyer in Tripoli, Lebanon. This structure, designed in 1963 and meant to service the International Fair in Tripoli, Lebanon, which was to take place after 1975, when the civil war caused the building’s construction to be halted, can constitute a particularly valuable example of a unique, overarching urban and architectural composition, distinct of the period of the domination of modernist, expressive forms in this architect’s body of work. We do not know whether it would have exceeded the built Brasilia project in terms of its qualities: the uniqueness of its forms, compositional grandeur or innovation. The framework of this article does not allow an in-depth analysis of even the compositional qualities of the urban whole, not to mention individual structures that are a part of it. All that remains is presenting a set of photographs that can familiarise us with some of the elements of this exceptional work, with particular attention to the consistent use of concrete as the basic construction material (see: ill. 5–8).

4. CONCLUSION

The history of archaeology has proven that the most durable elements of an urban form are: myth, legend and the shape of a city, recorded in the composition of the layout of the foundations of architectural forms that have not survived to this day – in other words, stone, concrete – and golden decorations.

The durability of an architectural form, which is a function of the speed of the destruction of the material from which a form is built, as well as changes in taste associated with the current understanding of the concept of beauty, make it impossible to logically find an answer to a problem that has been formulated in such a manner, due to its ambiguity and immeasurability, unless we accept that legend is the answer.

The most durable element of an architectural form is also that which is usually hidden and invisible – yet solid, that which an architect usually pays little attention to – the rest, this

¹³ <http://kdobrowolski.pl/tag/dodawanie-wartosci/>.



most important complement, if it does not survive – we can find it as a painting in the arts, the idea in legend, the description in literature. Otherwise a form simply vanishes, leaving behind a wide space for interpretation and conjecture on the basis of preserved traces.

It is the creative process that constitutes the most valuable element of development – both in terms of the economy as well as in other aspects of human activity, especially in the sphere of widely understood art, whose immanent part is architecture.

References

- [1] Mazur M., *Cybernetyka i charakter*, PIW, Warsaw, 1986.
- [2] Dworacki S., *Czyny i dzieła herosów i półbogów*, [in:] *Diodor Sycylijski, Fontes Historiae Antiquae*, Wydawnictwo UAM, 2013.
- [3] Stangel M., *Kształtowanie współczesnych obszarów miejskich w kontekście zrównoważonego rozwoju*, Wydawnictwo Politechniki Śląskiej, Gliwice, 2013.
- [4] Uścińowicz J., DOI: 10.5593/SGEMSOCIAL2016/B43/S15.064 *The Problem of Conversion in Sacred Architecture – Some Axiological Aspects*.

Online sources (retrieved in 09.2017)

- [1] https://sjp.pwn.pl/sjp/licentia_poetica;2566010
- [2] <http://www.biblestudytools.com/lexicons/greek/nas/ktisis.html>
- [3] www.findpatent.ru/patent/256/2563511.html&prev=search
- [4] <http://www.haiku-poetry.org/famous-haiku.html>
- [5] <http://www.artway.eu/content.php?id=1146&lang=en&action=show>
- [6] <http://www.niemeyer.org.br>
- [7] http://www.biblioteka.teatrnn.pl/dlibra/Content/89903/Drewniany_Skarb_Publikacja_Poprojektowa_www.pdf
- [8] https://www.pbs.org/flw/buildings/guggenheim/guggenheim_drawings02.html
- [9] <http://kdobrowolski.pl/tag/dodawanie-wartosci/>