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THE MYTHICAL ACT OF CREATING OF ARCHITECTURE

MITYCZNY AKT TWORZENIA ARCHITEKTURY

Abstract

Can we describe the process of creating architecture the way the ancient Greeks described the creation of man? Does the Architect-Prometheus mould it from clay mixed with tears and only when he is a truly divine titan does he have the power to endow his work with a "soul"? Can the ideal outline of a building's spatial form, drawn with a single movement of the hand, as by the master Rembrandt, prove the uniqueness of the work? Or do the spatial determinants of the surroundings, such as the outline of a building plot forcing a modification of the building's shape, enable the artist to achieve the ideal? And who decides whether an architectural work is already great Architecture and not a mere architectural object?

Keywords: architecture, design methodology, spatial form

Streszczenie

Czy proces tworzenia architektury możemy opisać tak, jak starożytni Grecy opisali stworzenie człowieka? Czy Architekt-Prometeusz lepi ją z gliny pomieszczonej ze łzami i tylko wtedy, gdy jest prawdziwie boskim tytanem, ma moc obdarzenia swego dzieła „duszą”? Czy o wyjątkowości dzieła świadczyć może idealny zarys formy przestrzennej budynku, rysowany jednym ruchem ręki, jak u mistrza Rembrandta? A może determinanty przestrzenne otoczenia, takie jak np. zarys działki budowlanej wymuszający modyfikację kształtu budynku, umożliwiają twórce osiągnięcie ideału? I kto decyduje, czy architektoniczne dzieło jest już wielką Architekturą, a nie zwykłym obiektem architektonicznym?

Słowa kluczowe: architektura, metodologia projektowanie, forma przestrzenna

1. THE MYTH OF CREATION

Shaping the spatial form of a building is one of the most interesting and at the same time one of the most mysterious, almost mythical stages of creating architecture. Standing in front of the entrance to the building, the user often wonders – why does the building have such a shape and not another? Why did the architect choose a particular spatial form? Was the main determinant defining the form of the building its function? Or perhaps the deciding factors for the adoption of a given form were the spatial determinants of the surroundings, such as the shape of the plot or the provisions of the local zoning plan. When analysing the spatial form, should one look at the shape of the building as if it were a work of art? Is the user interacting with an architectural object able to grasp, get closer to the mystery of the creative process? Is he or she able to discover the premises, the reasons why such a creative decision was made? Or is the user interacting with an architectural object similar to a viewer

in the Kenwood House museum in London, who looks at Rembrandt's¹ *Self-Portrait with Two Wheels* and wonders why the master placed such objects in the background of his work. Did he really want to give a creative answer, similar to that of Giotto di Bondone, who, when asked by Pope Benedict XI to present his work, sent the pope a piece of paper with a hand-drawn perfect circle?² The answer that the Pope understood correctly – here was a master who could draw an ideal shape without any utensils, with a single movement of his hand. And Rembrandt with his self-portrait says – look, Giotto was a master, he drew a circle; who am I then, who is able to make such a drawing twice?

Looking at the oval shapes of two contemporary educational facilities – kindergartens in Japan and Poland – should we look for inspiration in the field of fine arts or design? Did the architects, like Giotto and Rembrandt, use the oval as an expression of their creative artistry? Or is the oval shape of the buildings the result of other considerations? Will comparing the design methodologies of these two buildings bring us closer to understanding the mythical process of creating Architecture? Will isolating the factors and determinants influencing the adoption of given design solutions broaden our knowledge of Architecture? Or perhaps the application of comparative and critical analysis in the context of creating Architecture will prove the validity of the claim that Architecture is also a science?

2. CREATING ARCHITECTURE – FUJI KINDERGARTEN, TOKYO, JAPAN

The Fuji Kindergarten in Tokyo, designed by Tezuka Architects,³ is built on an oval plan. From a bird's eye view, the one-storey building with an open atrium looks like a wooden wheel in a green urban square (Ill. 1, 2). The green crowns of the Japanese birch trees grow through the roof covering of the building. If you look closely at the photo taken from the drone, in which the roof of the kindergarten is visible, you can see a number of small human figures that are on the roof. The figures grouped around the skylights, hidden under the crowns of the trees that grow above the roof, seem to be well accustomed to this part of the building.⁴ Watching a film illustrating the principle of the architectural space of the building, one can be reassured that the roof is the full usable space of the kindergarten. Preschoolers run on the roof, sit on the roof, climb on the roof with passion, and descend from the roof with equal commitment.⁵ The nursery school for 500 children was built in 2007. On a plot of land with an area of 4792 m², there is an oval, single-storey building with a usable area of 1095 m². The starting point for the Fuji Kindergarten design solution was the design concept Tezuka Architects used previously in 2001 in a villa in Hadano, which consisted of including

¹ *Self-Portrait with Two Circles*, oil on canvas by Rembrandt van Rijn, created between 1665 and 1668 is in the collection of the Kenwood House Museum in London.

² S. Eimerl, *The world of Giotto, c. 1267–1337*, Time-Life International, Amsterdam 1967, p. 106.

³ Takaharu + Yui Tezuka Architects. Tokyo, Takaharu Tezuka, Yui Tezuka, Chie Nabeshima, Ryuya Maio, Asako Kompal, Kousuke Suzuki, Naoto Murakaji, Shigefumi Araki, Shuichi Sakuma, Masa-hiro Ikeda/Masahiro Ikeda Co Ltd.

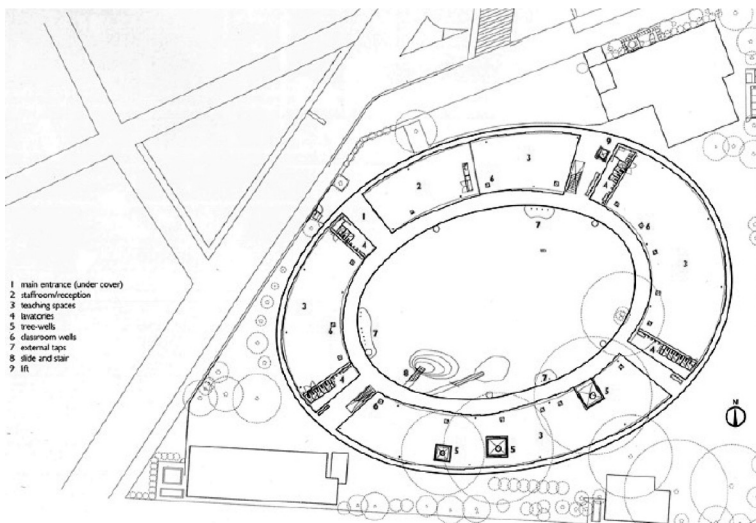
⁴ R. Gregory, *Kindergarten, Tokyo, Japan – TAKAHARU + YUI TEZUKA ARCHITECTS*, The Architectural Review, August 2007, pp. 32–38.

⁵ Najlepsze przedszkole, jakie widzieliście [in:] TED Talk, https://www.ted.com/talks/takaharu_tezuka_the_best_kindergarten_you_ve_ever_seen?language=pl#t-574060 (access: 21.06.2021).

the roof area of a single-family residential building as the usable area.⁶ The Fuji Kindergarten space was to be organised in a similar way – with the inclusion of the roof as usable space for the kindergarten children.



III. 1. Fuji Kindergarten, Tezuka Architects, Tokyo, Japan – bird's eye view of the roof playground. Source: Edmund Sumner/VIEW, *The Architectural Review*, August 2007, pp. 32–38.



III. 2. Fuji Kindergarten, Tezuka Architects, Tokyo, Japan – the ground floor plan. Source: *The Architectural Review*, August 2007, pp. 32–38.

⁶ C. Slessor, *Up on the roof: House By Tezuka Architects (Hadano, Japan)*, *The Architectural Review*, October 2001, pp. 74–76.

But why did the architects adopt an oval building shape? After all, the villa in Hadano is a traditional rectangular pavilion, and in many educational facilities the classical building form with its rectangular ground plan seems to be the dominant form? Did they want, like Giotto di Bondone and Rembrandt, to use the geometric perfection of the circle to demonstrate their own mastery of design? Was it an artistic whim, a desire to introduce an element which would distinguish the building from the many other traditional rectangular educational facilities? Or was the use of a specific spatial form the result of a well-considered design decision, rationally justified by the adopted utility programme of the facility?

In his TEDxKyoto talk in September 2014, Takaharu Tezuka described the spatial form of the kindergarten building as follows: “We designed the kindergarten on a circular plan. This allows the children to run endlessly on the roof. Every parent knows that children love to run in circles.”⁷ According to the architect, the decision to adopt the oval as the shape of the building plan was instinctive, intuitive. Recalling the behaviour of his own children drawing circles on the ground and running around in circles while playing outdoors – he reached for this shape in his first design sketch. The sketch, redrawn and rescaled, became the basis for further design work. The outline of the building on the plot, drawn on the basis of the sketch, allowed us to locate the next spatial determinants of the assumption – the trees which were to remain on the plot, growing into the spatial structure of the nursery school. Their trunks are elements of the interior design of the teaching rooms, and their crowns rise above the roof. The openings in the roof around the trunks have been secured with rope nets – a bit like hammocks stretched across the trees. And they have a similar function in the nursery. Children love to gather on the roof around the tree trunks and play on these nets that secure the openings. A constant and unchanging element of the building structure, besides the technical infrastructure, is the roof structure supported by a series of columns. The exterior and interior walls are sliding panels that allow the various spaces of the building to be open and connected. In this way, the interior space of the kindergarten seamlessly connects with the space of the atrium and the external garden.⁸ The open, continuous space allows the children to freely explore and interact with their surroundings – implementing one of the core elements of the Montessori educational system that is the basis of Fuji Kindergarten.⁹

In 2011, Fuji Kindergarten was honoured by the Organisation for Economic Cooperation and Development as the best educational institution in the world. The distinction was awarded as part of the Effective Learning Environments programme run by the OECD. The

⁷ Najlepsze przedszkole, *op. cit.*

⁸ R. Gregory, *op. cit.*

⁹ The nursery’s educational principles state – “Our aim is to ‘Create a happy future’. We believe that this will be possible by nurturing those who are able to make this a reality. As independent people, we want children to grow into adults who actively contribute to society. What we value most is ‘child development’. The campus and the people, the soil, the animals, the trees, the grass, the sandpits, the wells.... everything is a tool for children to develop. The children dynamically engage with their surroundings, so they discover the ‘power of self-development’ and move towards independence. (...) the Fuji Kindergarten space is a tool for children’s development. Running on the elliptical-shaped roof and the deliberately bumpy playground are designed to strengthen the children’s bodies. We create an environment that brings out the ‘Ability for Self-Development’ that children innately possess.” – Educational policy [in:] Fuji Kindergarten, <https://fujikids.jp/en/educational-policy/> (access: 21.06.2021); see also R. Gregory, *op. cit.*

nursery school was selected from 166 educational institutions submitted to the programme from 33 countries.¹⁰

3. CREATING ARCHITECTURE – M. KONOPNICKA KINDERGARTEN, ŻORY, POLAND

The Maria Konopnicka Kindergarten No. 4 located in Żory on Słoneczna Street was established in 2017. The building is located in the immediate vicinity of a primary school, with which it forms a municipal educational institution – school and kindergarten complex No. 1. In the immediate vicinity of the kindergarten building, single-family housing dominates. Slightly further, there are small clusters of four-storey multi-family residential buildings and industrial areas that give the character to the entire district. The kindergarten has been designed by the TOPROJEKT architectural studio. The architects from this studio were very aware of the task ahead of them. In the description of their design concept, they included the following sentences:

Preschool education is one of the most important stages in human development, so we should carefully take care of the quality of the space in which this process takes place. Children cannot be neglected and served only colourful interiors. A child is a serious, sensitive recipient who places the highest demands on the designer.¹¹

The shape of the plan of the kindergarten cannot be called a classic oval, but rather a rounded triangle inscribed in the shape of the plot intended for construction of the building (Ill. 3). And this is how the designers describe the process of shaping the spatial form of the building:

The small plot of land with an irregular shape close to a triangle intended for the construction of a kindergarten segment next to the existing school imposed a rather two-storey solution. Although somewhat overwhelming, it left some space for a playground. Instead, we opted for a single-storey building with rounded corners, which filled almost the entire buildable area, and for outdoor play we designed an extensive roof terrace.¹²

On the 5608 m² plot, a building with a built-up area of 1060 m² and a usable area of 912 m² was placed. The functional programme of the kindergarten with five departments, i.e., for a maximum of 125 children, was planned on this area. Classrooms with auxiliary rooms are “threaded” on the main compositional axis of the building – the internal corridor, whose space has been optically expanded by introducing a light atrium into the building (Ill. 4). In the area of the atrium there are stairs enabling entrance to the terrace located on the roof of the kindergarten.

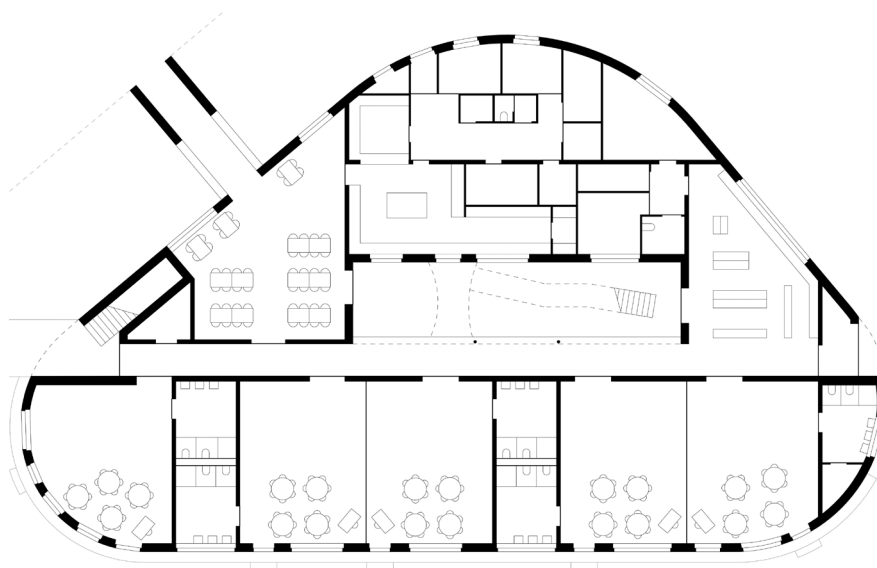
¹⁰ 4e Florilège d'établissements d'enseignement exemplaires du CELE: le jury s'est prononcé! [in:] OCDE, <https://www.oecd.org/fr/education/innovation-education/centrepourdesenvironnementspedagogiquesefficacescele/4eflorilegedetablissemmentsdenseignementexemplairesducelejurysestprononce.htm> (access: 21.06.2021).

¹¹ A. Szukalska, *Przedszkole w Żorach*, Architektura-Murator, 2018, no. 2, https://architektura.muratorplus.pl/realizacje/przedszkole-w-zorach_8381.html (access: 21.06.2021).

¹² *Ibidem*.



III. 3. M. Konopnicka Kindergarten, TOPROJEKT, Żory, Poland – the bird's eye view of school and kindergarten complex with oval kindergarten building. Source: <http://www.topprojekt.com/projekty/przedszkole-zory-kleszczowka/> (access: 21.06.2021).



III. 4. M. Konopnicka Kindergarten, TOPROJEKT, Żory, Poland – the ground floor plan. Source: <http://www.topprojekt.com/projekty/przedszkole-zory-kleszczowka/> (access: 21.06.2021).

The M. Konopnicka Kindergarten won First Prize in the 2018 competition of the Association of Polish Architects, in the category Educational Facility. It was also nominated for the EU Mies Award 2019 and won a number of awards and distinctions in industry competitions such as Rockwool 2018, Body of the Year 2018 and PLGBC Green building Awards 2018.¹³

4. COMPARATIVE ANALYSIS: FUJI KINDERGARTEN–M. KONOPNICKA KINDERGARTEN

The analysed educational facilities are buildings with similar surface parameters, such as plot area, building area and usable area (Table 1). Extremely interesting in this context is the difference in the number of children using both kindergartens. The Fuji kindergarten is intended for 4 times more children than the M. Konopnicka kindergarten. As a result, the area parameters of the objects are presented in similar proportions, defined in the context of the use of particular types of area by the user – a kindergarten child (Table 2).

Table 1. Number of users and surface parameters – facility context. Fuji kindergarten–M. Konopnicka kindergarten.

	Fuji Kindergarten Tokyo, Japan	M. Konopnicka Kindergarten, Żory, Poland
Number of children	500	125
Land area	4792 m ²	5608 m ²
Build-up area	1699 m ²	1060 m ²
Usable area	1095 m ²	912 m ²

Table 2. Surface parameters – user context. Fuji kindergarten–M. Konopnicka kindergarten.

	Fuji Kindergarten, Tokyo, Japan	M. Konopnicka Kindergarten, Żory, Poland
Site area per child	9.58 m ²	44.86 m ²
Build-up area per child	3.40 m ²	8.48 m ²
Usable area per child	2.19 m ²	7.30 m ²

The spatial form of the analysed kindergartens seems to be similar – they are one-storey buildings, whose projections are based on an oval or parts of a circle. In both solutions, the designers use the roofs of the buildings as places for children's playgrounds. An atrium has also been introduced in both these kindergartens. On the basis of the conducted observations of the principles of functioning of both educational facilities, the difference in the use of atrium space and terraces located on the roofs of kindergartens is noticeable. In Fuji kindergarten, the atrium and terrace on the roof are used very intensively, while the terrace of M. Konopnicka kindergarten is used relatively rarely.¹⁴ Undoubtedly, important factors

¹³ Toprojekt – pracownia architektoniczna, <https://www.toprojekt.com> (access: 21.06.2021).

¹⁴ R. Gregory, *op. cit.*

influencing the intensity of use of these kindergarten spaces are atmospheric factors and climatic differences that occur in individual locations (Tables 3, 4).

Table 3. Climatic conditions – average temperatures. Tokyo–Żory.

	Tokyo, Japan average temperature	Żory, Poland average temperature
January	9 °C	-1.9 °C
February	10 °C	-0.7 °C
March	13 °C	3.4 °C
April	18 °C	9.2 °C
May	22 °C	13.9 °C
June	25 °C	17.4 °C
July	29 °C	19.3 °C
August	31 °C	19.1 °C
September	27 °C	14.5 °C
October	21 °C	9.7 °C
November	16 °C	5.2 °C
December	12 °C	0.4 °C

Table 4. Climatic conditions – rainy days. Tokyo–Żory.

	Tokyo, Japan number of rainy days	Żory, Poland number of rainy days
January	5	10
February	6	9
March	9	10
April	8	8
May	9	10
June	11	10
July	9	11
August	9	9
September	10	9
October	9	8
November	7	8
December	5	9

For the purpose of the comparative analysis of the kindergartens, in addition to the size-related surface parameters included in Tables 1 and 2, descriptive parameters of the objects conventionally referred to as architectural parameters were also extracted. These are: the method of shaping the spatial form of the object, the roof as a playground, the open/closed space, the modelling of the internal space (Table 5). The comparison of the architectural parameters of the analysed buildings reveals a significant difference in the scope of the methods of shaping the spatial forms of the objects adopted by the design teams.

In the case of the Fuji kindergarten, the architect describes the decision to adopt the oval as the basis for the shape of the building's projection as an intuitive, somehow subconscious decision. The rounded projection of the M. Konopnicka kindergarten is the result of inscribing the object into the shape of a triangular plot. The 'roofs as playgrounds' found in both kindergartens also reveal differences in the design methods adopted. In the Japanese nursery school, the use of the roof as a fully legal usable space was the starting point for the design solution adopted. The roof was to be a playground – this was the solution expected by the investor. However, in the Polish kindergarten, the location of the playground on the roof of the building resulted from the adopted spatial solution of the facility – the utility programme of the single-storey building made full use of the land available for development, and therefore the playground had to be located on the roof.

The spatial divisions of the Fuji kindergarten are shaped in an extremely free manner – through sliding wall panels, the indoor and outdoor spaces of the building can freely intermingle. In the M. Konopnicka kindergarten, the traditional separation of teaching rooms by internal walls is used. The internal atrium is a form of illumination of utility rooms.

The adopted functional-utility solutions are undoubtedly influenced by climatic differences related to the location of the objects (Tables 3 and 4). However, equally important in this respect are social conditions connected with educational work methods applied in both kindergartens – Fuji Kindergarten works based on Montessori educational system, whereas M. Konopnicka Kindergarten uses traditional kindergarten education.

Table 5. Architectural parameters. Fuji kindergarten–M. Konopnicka kindergarten.

	Fuji Kindergarten, Tokyo, Japan	M. Konopnicka Kindergarten, Zory, Poland
Method of shaping spatial form	the shape of the projection is chosen intuitively referring to the user-child form of activity	the shape of the floor plan was chosen on the basis of a well-considered design decision – the single-storey building fitted into the shape of the plot
Roof as a playground	use of the terrace as a usable floor space – the starting point for the design solution to be adopted	location of the terrace on the roof – solution adopted as a result of a design decision related to the adopted spatial form of the facility
Open / closed space	indoor and outdoor spaces intertwined – use of wall panels to open up the classrooms and incorporate the atrium and garden space	clear division into indoor and outdoor spaces – atrium used as a form of room lighting
Modelling of internal space	open interior space of the kindergarten – possibility of free shaping of divisions in the interior	internal divisions defined in a fixed, unchangeable way – walls separating individual teaching rooms

5. SUMMARY

Comparing the method of design work in terms of the basis for shaping the spatial forms of the buildings of the two analysed kindergartens, one of them can be described as intuitive

(Fuji Kindergarten, Japan), the other as rational, based on spatial determinants (M. Konopnicka Kindergarten, Poland).

The description of the first method of design work as intuitive refers to the words of the architect describing that the use of the oval as the basis of the building plan was instinctive, intuitive, based on the observation of the activities of his own children who love to draw circles and run in circles while playing outdoors.

In the case of the Fuji kindergarten, the architect's intuition met with the specific vision of the investor – the director of the kindergarten – who wanted the designer to apply his concept, previously used in a residential building, of incorporating the roof area as a fully legal usable area of the building, also in the kindergarten. The location of the playground on the roof of the kindergarten was the starting point for the adopted design solution.

The designers of the M. Konopnicka kindergarten justify the choice of a rounded triangular ground plan shape for the building by spatial determinants such as the shape of the plot and the height of the building. They wanted to accommodate a wide range of uses in a single-storey building that would not be overpowering. The location of the playground on the roof of the nursery school was a necessity due to the lack of free land on the plot to be developed.

Different climatic conditions associated with the locations of the analysed objects determine the intensity of use of individual parts of the architectural space of kindergartens. Equally important factors influencing the manner and intensity of use of the kindergarten architectural space are the educational systems used in educational institutions. Watching scenes from the life of the Japanese kindergarten, one can see that the building, including the roof terrace, is “alive” – the playground is indeed a fully-fledged usable space. The M. Konopnicka Kindergarten stands out from the surrounding buildings by its simplicity of elegant, sophisticated form, but the roof terrace is used only occasionally. The playground on the roof is rather a kind of elegant, fashionable gadget.

Did Japanese and Polish architects want to prove their mastery, like Giotto and Rembrandt, through their architectural works? It is extremely difficult to answer this question, because to answer it on behalf of the authors, one would have to assume the role of architecture critics who, like art critics, interpret works of art and explain the hidden intentions of their creators. What remains for the architecture researcher is to apply a “glass and eye” – i.e., scientific research methods such as comparative analysis and critical analysis, and their application does not make it possible to discover the creative ambitions of the designers.

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