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IN SEARCH FOR PERFECTION – AFFINITIES AND DIFFERENCES IN THE ARCHITECTURE OF PALLADIO AND LE CORBUSIER'S VILLAS

POSZUKIWANIA IDEAŁU – POWINOWACTWA I RÓŻNICE W ARCHITEKTURZE WILLI PALLADIA I LE CORBUSIERA

A b s t r a c t

The eternal pursuit of perfection in architecture has always been connected with the search for the ideal architectural form and composition, in a relation to location and the requirements of utility. Representative and, at the same time, exclusive character of residential architecture has been a result of a talent, an effort and craftsmanship of a creator, according to the prestige and social standing of a client. Over the centuries and in the modern and contemporary times, architects have been creating timeless quality and value of a building, by giving meaning and use of symbolism: of a pedestal, an entrance, a roof, a loggia… In this light, one can take a look at the architecture of the most famous villas of Andrea Palladio and Le Corbusier – analysing the similarities and differences between the architecture of Villa Stein and Villa Foscari, Villa Savoy and La Rotonda. The affinities of shapes and ideal proportions of solids, emphasising *piano nobile,* loggias and terraces, clash with differences in the composition of elevations, in the functional composition and in arrangements of plans, as well as in methods of roof forming.

Keywords: architecture of Andrea Palladio and Le Corbusier's villas, architectural form and composition, plots of significance in architecture

S t r e s z c z e n i e

Odwieczne dążenie do doskonałości w architekturze miało związek z poszukiwaniami ideału formy i kompozycji architektonicznej, w relacji do miejsca i wymogów stawianych przez użyteczność. Reprezentacyjny, a zarazem elitarny charakter architektury willowej był owocem talentu, wysiłku i kunsztu twórcy, stosownie do prestiżu

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i pozycji społecznej zleceniodawcy. Na przestrzeni wieków, w dobie nowoczesnej i współcześnie, architekci kreowali ponadczasową jakość i wartość budowli przez nadawanie znaczeń i symbolikę: postumentu, wejścia, dachu, okna, loggii … W tym świetle można spojrzeć na architekturę najsłynniejszych willi Andrea Palladio i Le Corbusiera – analizując analogie i różnice pomiędzy architekturą *Willi Stein* i *Willi Foscari, Willi Savoy* i *La Rotondy.* Powinowactwa kształtu i proporcji ideowych brył, akcentowania *piano nobile,* loggii oraz tarasów, ścierają się z różnicami w kompozycji elewacji, w założeniach funkcjonalnych i rozkładzie planów, a także sposobie kształtowania dachów.

Słowa kluczowe: architektura willi Andrea Palladio i Le Corbusiera, forma i kompozycja architektoniczna, wątki znaczeniowe w architekturze

Geometrically, both architects may be said to have approached something of the Platonic archetype of the ideal villa to which the fantasy of the Virgilian dream might be supposed to relate
Colin Rowe

1. MATHEMATICAL BEAUTY OF ARCHITECTURE

Human minds create mathematics and effectively use it in order to comprehend the world[1]. The thought of Michal Heller directs our attention to mathematics, which marked out the way towards cognition, aesthetics and beauty, inspiring human creation, including the art of architecture. A human being *creates works, which differ essentially from everything, which might be found in the world as a creation of nature itself*[2]. This distinction manifests itself in a need of order or in conscious resign from it as well as in a natural human tendency to geometrisation. According to Plato, there are three types of beauty – *the beauty because of something that is praiseworthy, something that is useful or something that has a saving character*[3]. The platonic idea of beauty has its spiritual and intellectual character. *For Plato the universe, order and beauty were synonyms. Pythagoras described the cosmic harmony saying 'everything is a number*[4]. In contrast, the Sophists of Athens directed the concept of beauty towards sensual and aesthetical experience, describing them as something, which is "pleasant for sight and hearing"[5]. Beauty and the semantic value brought by the Euclidian geometry, the power of symbolism of elementary solids runs through the entire history of architecture, showing its fulfilment in the ancient times, then

[1] M. Heller, *What Does it Mean That Nature is mathematical*, [in:] Mathematical of Nature, M. Heller, J. Życiński (ed.), Cracow 2010, p. 7–18.
[2] R. Ingarden, *Man and Value*, Cracow 1987, p. 15.
[3] D. Laertios, *Lives and Opinions of Eminent Philosophers*, Warsaw 1982, p. 202.
[4] Ch. Norberg-Schulz, *Significance in Western Architecture*, Warsaw 1999, p. 128.
[5] W. Tatarkiewicz, *A History of Six Ideas*, Warsaw 2012, p. 138.

the Renaissance, the classicism and the modern era[6]. Geometry, considered the language of architecture, defines an architectural form, proportions, relationships between certain parts of a work. *The timeless value of architectural things,* Maria Misiągiewicz says, *lies in the message of the rules of the form language*[7]**.** The composition based on numbers, together with their symbolism and mysticism, rhythms, relationships in the positioning of elements relating to each other and within the whole work, all of these categories and relationships are derived from mathematics, which appears in architecture as a mean to achieve completeness…

In the Renaissance, architecture was considered a mathematical science, which should reflect the cosmic order. They strongly believed that there was a relationship between perfect numbers, proportions of a human body and elements of musical harmony. The Renaissance man became interested in perspective as a mean of space description, considering proportions as the most important aspect of architecture. Leone Battista Alberti connected the beauty in architecture with three categories: *Numerus* (number), *Finitio* (proportion) and *Collocatio* (arrangement). Alberti described the beauty as *a harmony of all the parts, so that nothing can be taken away or added, or exchanged, without ruining a whole*[8]**.** The perfection in the art of building was identified with logics and divinity of geometry, leading to the ideal form of architecture, which managed to dominate the utility. The circle was considered the perfect shape, together with its perfect geometry, which consequently made architects struggle to achieve central composition. Such a concept of space was connected with clear articulation of form, which was supposed to be clear and self-sufficient in space.

The architectural beauty of mathematics can be also found in works of representatives of the Modern Movement. Since the beginning of the 20th century, the sought of a new style, reflecting the dynamics of the era, became visible. Architecture became a symbol of economic, political and social transformation… Technological innovations – widespread use of glass, steel, reinforced concrete and preference for flat roof, contributed to the aesthetical transformation in architecture. Adolf Loss calls for discovering beauty in a solid, instead of remaining dependent on ornaments, underlining conciseness of a solid. Mathematics, and especially geometry, bring technology closer to architecture. *Architects and artists found the key to connections between art and technology in geometry,* Przemysław Trzeciak says, *geometrical forms, conciseness, framework and smooth surface, hegemony of construction and sharp edges quickly extended its supremacy to all areas of formation*[9]**.** France is developing cubism initiated by Paul Cézanne, who claimed that everything that surrounds a man can be defined by elementary geometrical solids. Mathematics inspired artistic activity of the Dutch *De Stijl* group, which used geometry and two basic directions – horizontal and vertical as means of expressions. Le Corbusier praised the beauty of elementary solids. Writing *Le poeme de l'angle droit* preached the perfection of the right angle, putting mathematics on a pedestal.

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[6] D. Kozłowski, *Games of Architecture in the Recent Past*, [in:] Defining Architectural Space – *Games and Play of Architecture,* "Technical Transactions", issue 8-A/2015], p. 98–99.

[7] M. Misiągiewicz, *Architectural Geometry*, Cracow 2005, p. 11.

[8] D. Watkin, *A History of Western Architecture*, Warsaw 2006, p. 182.

[9] P. Trzeciak, *Adventures of 20th Century Architecture*, Warsaw 1974, p. 113.

Ill: 1. *Villa Foscari* (www.moseviero.it)
Ill: 2. *Villa Stein-de-Monzie* (www.fondationlecorbusier.fr)
Ill: 3. *Villa Capra* (fot. Monika Gała-Walczowska)
Ill: 4. *Villa Savoy* (www.fondationlecorbusier.fr)

2. TOWARDS PERFECTION – ARCHITECTURE OF PALLADIO AND LE CORBUSIER'S VILLAS

The eternal pursuit of perfection in architecture was connected with a search for the ideal architectural form and composition. The representative and exclusive character of villa architecture was a result of a talent, an effort and craftsmanship of the creator, according to the prestige and social standing of a client. Over the centuries and in the modern era, architects created eternal quality and value of a building by giving meaning and symbolism: of a pedestal, an entrance, a roof, a window, a loggia… In this light, one can take a look at the architecture of the most famous villas of Andrea Palladio and Le Corbusier – analysing the similarities and differences between the architecture of Villa Stein and Villa Foscari, Villa Savoy and La Rotonda.

Andrea Palladio chose Vitruvius to be his Master. The former studied the tract of the latter and took as a base for his creative work – theoretical and practical. Analysing the remains of ancient buildings, he praised the perfection of the Roman architecture. Palladio, recognising the Vitruvian triad, emphasised the primacy of beauty, and he considered this very quality to be the paramount target of architecture. *The beauty,* the architect says, *comes from beautiful forms and from the proper ratio of the whole to the parts between themselves and of the parts to the whole, as a building should consist a full and complete body*[10]**.** For Palladio the heritage of ancient architecture and its classical form was like a *color box for a painter, and he used it with a similar easiness*[11]**.** His villas based on Roman thermal baths and temples, are *variations on a façade of a temple with a portico, and two-storey villa with columns and loggias*[12]**.** Their architecture is characterised by a symmetrical composition of a projection and elevation, where the main solid was placed on a plinth or a pedestal, emphasising the representative character of a building. The architectural form was defined by an outline of a projection, number of floors and ratios of a solid or a composition of a number of solids. The entrance was emphasised by a columned portico, brought from an ancient temple, guaranteeing a connection of *piano nobile* with the surrounding nature.

Villa Foscari was built on request of the Foscari family between 1558 and 1560 and located on the Brenta Canal, on the outskirts of Mira, near Venice. The villa is called *La Malcontenta,* to commemorate the chimerical character of Mrs. Foscari. The architectural form of the building is defined by a cuboid solid, with a projection ratio 8x5.5 modules, and the height defined by a compositional base, *piano nobile* and an attic, with a total height of 5 modules. There is a central vestibule placed on the *piano nobile* level. It is composed on a cross plan, taken from Roman thermal baths. The central space became a key to the whole building, as staircases and suite of rooms were placed on opposite sides. Cleanliness and tidiness of the plan are juxtaposed with the complexity of an elevation – rationality of the Ionic order on the background of rustication, giving a rustic character to the *piano nobile* and the attic.

The attention is taken towards the eleven-meter tall compositional base with smooth walls, underlining terrain inveteracy. The elevations of the villa are suggestive, moving and theatrical. From the north side, the composition is outlined by three part separation, where

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[10] A. Palladio, *The Four Books of Architecture*, Warsaw 1955, p. 10.
[11] B. Paczowski, *Italy*, [in:] *To see*, P. Kłoczowski (ed.), Gdansk 2005, p. 260.
[12] D. Watkin, *op.cit.*, p. 208.

a centrally positioned columned portico, crowned with a tympanum, accentuates the entrance. The south elevation is less classical and sculpturally deconstructed and more mannerist. It is dominated by the composition of semicircular windows, crowned by a cut tympanum, reminding about the affiliation to the *heart of the villa.* The building is crowned by a hipped roof, with a gently gradient surface. The vertical character of the elevation composition was underlined by fancy chimneys. Palladio adapted motives of classical architecture, giving them a new meaning. References to the Pantheon, Roman baths and to the front of a Roman temple are given content and gain a new significant quality in the residential building. *By such apparatus the ancient house is not recreated,* Colin Rowe says, *but something far more significant is achieved: a creative nostalgia evokes a manifestation of a mythical power, in which the Roman and the ideal are equated*[13]*.*

Villa Capra built on the outskirts of Vicenza between 1566 and 1570, commissioned by Paola Almerico. The architectural idea of the villa, designed as a belvedere standing alone on a hilltop – *based, like a temple, on a symmetrical central plan, seems to be insensitive to the diversity of the surrounding landscape, but it is, in fact, ostensible,* Bohdan Paczowski says, *in fact it lives on continuously changing spectacle of the diversity of "mountains, sea, plains and cities"*[14]*.* The plan of the villa was based on an outline of a square, with a circular vestibule placed in the middle. The compositional perfection is based on centralisation and absolute symmetry. The representative position of the hall was underlined by a dome. In this villa, the significance of the compositional *heart of the house* was reflected in its name ***La Rotonda,*** showing the cylindrical shape of the vestibule – the space integrating an 8-room apartment. The monumental character of the architecture is set by the compositional base and the *piano nobile.* On each elevation, there are loggias in a shape of Ionic porticos, crowned by a tympanum. The transfer of the motive of an ancient temple to the Renaissance villa takes a symbolic meaning, showing a new significance of "a temple of everyday life". According to Palladio's intention, the loggias enable contemplation of the surrounding nature, formally highlighting the entrances. Stone stairs underpin the solid, connecting the *piano nobile* level with a garden. Sculptures crowning the tympanums underline the vertical character of the architecture, adding tapered character to the villa. *La Rotonda* is full of nobility, *slender Ionic porticos, frontons, a limited number of carefully placed windows and a dome in the middle – they all make it majestic*[15]*.*

The Palladio's villas are an example of architecture which follows classical rules. *Metaphors formed according to such assumptions,* as Dariusz Kozłowski explains, *fulfill the needs of perceiving shapes according to certain rules: a base of a form, a bottom part – a corpus, a main part – and a crowning, associating such a composition with a composition of a column: a base, a core and a head seem to be obvious and justified*[16]*.* The classical beauty is a lasting value, letting architecture develop in the way of continuity and evolution.

Architecture of an available house and luxurious villas were important parts of **Le Corbusier's** architectural work. A great passion of the architect was a painting, which

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[13] C. Rowe, *The mathematics of the Ideal Villa,* [in:] *Architectural Review,* London 1947.

[14] B. Paczowski, *La Rotonda,* [in:] *op.cit.*, p. 97–98.

[15] N. Pevsner, *op.cit.*, p. 216–217.

[16] D. Kozłowski, *What Vitruvius Could Not Foreseen? Or the Harp of Orfeus Case*, [in:] Defining Architectural Space – *Vitruvius' Theory in Contemporary Context*, "Technical Transactions", issue 1-A/2009], p. 69.

supported the search for a new concept of space. Le Corbusier developed and transformed into architecture a mutual interpenetration of inner and outer space, initiated by Cubists. It was possible because of the development of reinforced concrete and the *Dom-Ino* construction system, formed by six columns and three reinforced concrete slabs, connected by a staircase, completely independent from a plan. This inspiration and aesthetics of purism led Le Corbusier to *five rules of modern architecture,* which revolutionized architectural thinking. A slogan *house – the machine for living, was a warcry of the whole functional architecture of the 1920s,* becoming an inspiration for art[17]**.** *A house – machine* for Le Corbusier was both – modernity and comfort of living, as well as the pursuit of mass production, which had a clear target of developing a model of a *house – palace,* which would be cheap and widely available[18]**.** *Art should have the Mediterranean, classical character,* Le Corbusier used to say, *it should be dominated by tranquility, white and simple solids*[19]**.** The architect found the harmony with nature and conciseness of Mediterranean architecture highly ethical.

Willa Stein built in 1927 in Garches was based on *five rules of modern architecture.* The building was located on a vast area, where a driveway, as a composition axis, leads to a concise solid. The architectural form of the villa was derived from a lying cuboid of the golden ratio: projection A to 1.5 A and a height of four storeys. The north and the south elevations are determined by a rhythm 2–1–2–1–2, which is a scheme for a column grid, allowing a free arrangement of each storey. From the side of the entrance the compact shape was completed by ribbon windows and compositional elements: a balcony, a roof panel over the entrance and a loggia. All of the elements recall an Italian villa or a ship. The abstract character is emphasised by plain side walls. A sculptural decomposition of the south elevation was caused by a hollow of the south-west corner, which enabled composition of a loggia and partly roofed terrace and a garden entrance. The composition of the longitudinal elevations is dominated by dynamic horizontality, outlined by the ribbon windows. On the top level, a roof garden was placed. The small garden pavilion may be "a temple of love" as well as "a bridge of a ship". The architecture of *Villa Stein* is an accent in the midst of greenery, and the dominating whiteness emphasises the abstract character of geometry. The roof garden, the south terrace, the loggia and the balcony on the entrance elevation as well as the ribbon windows, were introduced according to *the three basic joys* defined by Le Corbusier – sun, space and greenery.

Villa Savoye was constructed between 1928 and 1931 in Poissy-sur-Seine near Paris. Architecture of the villa is read by geometrical clarity of a main dwelling level, elevated on pillars over a grassy plain, surrounded by a forest. *The building seems to be floating gently over the grass,* Bohdan Paczowski says, *like a trace of human presence, juxtaposing Nature with the abstract purity of its geometry and pristine white, as did so once a Greek temple, and later a Palladian villa*[20]**.** The impression of "floating over the ground" was achieved thanks to a pillar structure and significantly smaller outline of a basement with facility rooms and garages. The dwelling level was entered into the space defined by a square outline of walls cut by slits of ribbon windows. The interior was designed on a shape of the letter L, and due to the presence of a glass window is connected with an adjacent ter-

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[17] P. Trzeciak, *op.cit.*, p. 113.
[18] Le Corbusier, *Towards an Architecture*, Warsaw 2012, p. 47.
[19] Ch. Jencks, *Le Corbusier and the Continue Revolution in Architecture*, Warsaw 1982, p. 28.
[20] B. Paczowski, *op.cit.*, p. 328.

race. The stripe windows are on the one hand a guarantee of an intimate atmosphere, and on the other make a visible connection with nature possible. *Le Corbusier created a house "hunging" between the sky and the ground,* Maria Misiągiewicz says, *for residents not the ground but treetops were touchable and they were connected with the roof garden*[21]. A ramp permeating the building communicates the dwelling level with the sunny terrace – the roof garden.

Both villas were designed for wealthy and in the same time enlightened clients, connected with culture and industry and self-aware – *because of it Le Corbusier could see them as representatives of the society of a new multi-aspect sensitivity*[22]. Striving for perfection in architecture, Le Corbusier searches for the form of the ideal villa, in accordance to the character of the 20th century, *creating the whole with annexed space*[23].

3. A DREAM ABOUT ARCHITECTURE

In the architecture of Palladio and Le Corbusier's villas, the affinities of shapes and proportions of ideological volumes, figurative or abstractly emphasised *piano nobile,* loggias, windows…, collide with differences in the composition of the elevations, functional requirements, location of plans and the terraces and in roof design. Palladio focused on a plan, while Le Corbusier chose elevations as the most illustrative element of elementary mathematical rules. Comparing the villas of both great architects, it is important to emphasise the complexity and ambiguity of compositional dependencies. *A comparable process to that which occurs in the plan.* Collin Rowe says, *takes place also in elevation, where there is the same regular diffusion of value and irregular development of points of concentration*[24]. The most important way of expression for the Palladio's villa is the dynamic of horizontality, while Le Corbusier chooses the dynamics of horizontality. *But, symbolically and in the sphere of 'customary' beauty, Palladio's and Le Corbusier's buildings are in different worlds*[25]. In *Villa Foscari* and in *La Rotonda,* the purity of the plan, figurativeness of architectural motives and symmetry, perceived as the most memorable form of order, is juxtaposed with ambiguity and abstract sophistication of purist composition and aesthetics of Le Corbusier's villa. In *Villa Stein* and *Villa Savoy,* the latitude of the free plan, closed inside the outline of a tetragon, is connected with a severity of symmetry and receptiveness broken by a free arrangement of the formally important plots.

There is no reality, Paul Celan says, *the reality must be found and conquered*[26], the same with Architecture… Realisation of the mystical Vergil's dream might be found in the world created by Palladio and Le Corbusier, who took geometry as an ultimate rule of the perfect world of forms. The mathematical beauty of architecture makes it possible to the fantasy

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[21] M. Misiągiewicz, *op.cit.*, p. 87.

[22] Ch. Jencks, *op.cit.*, p. 92

[23] D. Kozłowski, *Classical Concrete and Architecture of Le Corbusier's Children*], [in:] *Concrete Architecture*, D. Kozłowski (ed.), Cracow 2006, p. 5.

[24] C. Rowe, *op.cit.*

[25] *Ibidem*

[26] [from:]D. Kozłowski, *Outskirts of a City – Outskirts of Architecture*, [in:] *Towards Polycentric Architecture*, P. Barbarewicz (ed.), Cracow 1999, p. 17

and realisation of the idea, accomplished in the analysed villas – icons of architecture, by the perfection and logics of a cuboid, proportions, rhythm, the game of motives and plots of significance, could constitute a fulfilled dream of the perfect villa…

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