

Розділ 4

ТЕОРІЯ АРХІТЕКТУРИ, МІСТОБУДУВАННЯ ТА ПЛАНУВАННЯ СІЛЬСЬКИХ ПОСЕЛЕНЬ

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HETEROCHRONY OF GAUDI'S ARCHITECTURE

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Kiuntsli R., Stepaniuk A., Besaha I. Heterochrony of Gaudi's architecture

Today in the scientific literature there are active discussions about the architectural style of the Sagrada Familia Cathedral. Gaudi's architecture is often referred to as organic or bionic. The presence of the bionic style in Gaudi's architecture is supported by the fact that the Sagrada Familia has complex shapes, which are known today as helicoids, hyperboloids and hyperbolic paraboloids. Gaudi borrows these forms from nature and bases the construction of columns, vaults and other structural elements of the temple. However, the architectural image of the Sagrada Familia was also influenced by Gaudi's existential experiences, which were the result of many factors. First of all, it is the emotional experiences of childhood. Other important factors in shaping the image of the Sagrada Familia were Catalan modernism, which emerged at the turn of the 19th – 20th centuries in Barcelona, the influence of German Expressionism, the interaction of contemporary Gaudi architects and the influence of Goethe's philosophy on A. Gaudi. Goethe's organic worldview, which was based on the understanding of the world as a living monadic whole, revolutionized not only philosophy but also architecture. The fundamental principle of the Sagrada Familia is a kind of proteism, the desire for constant renewal, expressed through both the interior and exterior of the building. The transformation of living integral formations, depicted on the three facades of the Sagrada Familia, demonstrates a series of metamorphoses of pra-phenomenon (Urphanomen – germ. after Goethe) and metamorphosis of the human soul under the influence of Christ's teachings.

Antonio Gaudi's architecture is special for its emotional content, which hides the author's emotional conflicts and contradictions. Opposing one to the natural environment and emphasizing harmonious coexistence with it is an oxymoron that the author laid down in the architectural forms of the Sagrada Familia. The Church of the Holy Family can be seen as a symbiosis of advanced technology and creative expression, the skill of presenting the author's architectural ideas and happy coincidences. The artist's original vision and understanding of the relationship between the anthropogenic and natural environment in the creation of architectural space, the place and role of man in this process determined his exclusively individual architectural style.

Keywords: Antonio Gaudi, Sagrada Familia, architecture, architectural style.

Кюнцлі Р., Степанюк А., Бесага І. Гетерохронія архітектури Гауді

У науковій літературі сьогодні точаться активні дискусії щодо архітектурного стилю собору *Sagrada Familia*. Архітектуру А. Гауді найчастіше відносять до органічної або біонічної. Зауважено, що про наявність в архітектурі Гауді біонічного стилю вказує те, що в конструкцію храму *Sagrada Familia* закладені складні форми, які сьогодні відомі під назвами «гелікоїд», «гіперболоїд» та «гіперболічний параболоїд». А. Гауді запозичує ці форми у природи і застосовує в конструкції колон, склепінь та інших структурних елементів храму. Проте на архітектурний образ *Sagrada Familia* вплинули і екзистенційні переживання А. Гауді, які були наслідком багатьох факторів. Насамперед це емоційні переживання дитинства (смерть матері, брата й сестри), постійні ревматичні болі і нерозділені почуття.

Виокремлено не менш важливі чинники формування образу *Sagrada Familia*, зокрема каталонський модерн, який виник на межі XIX–XX століть у Барселоні, вплив німецького експресіонізму, взаємовпливи сучасних із Гауді архітекторів та вплив філософії Гете на А. Гауді. Органічний світогляд Гете, який ґрунтується на розумінні світу як живої монадної цілості, зробив переворот не тільки у філософії, а й у архітектурі. Основоположний принцип Саграда Фамілія – це своєрідний протейзм, прагнення до постійного оновлення, що виражено як через інтер’єр, так і екстер’єр будівлі. Трансформація живих цілісних утворень, зображених на трьох фасадах Саграда Фамілія, показує послідовний ряд метаморфози прафеномена і метаморфозу людської душі під впливом Христового вчення.

Виявлено, що архітектура Антоніо Гауді вирізняється своїм емоційним змістом, який приховує внутрішні конфлікти та протиріччя автора. Протиставлення людини природному середовищу та підкреслення гармонійного співіснування з ним – оксюморон, який автор втілює в архітектурних формах Саграда Фамілія. Храм Святого Сімейства можна розглядати як симбіоз передових технологій і творчого вираження, майстерності презентації авторських архітектурних ідей та щасливих збігів. Зауважено, що оригінальне бачення й розуміння художником взаємозв’язку між антропогенним і природним середовищем у створенні архітектурного простору, місця та ролі людини в цьому процесі визначили його індивідуальний архітектурний стиль.

Ключові слова: Антоніо Гауді, Саграда Фамілія, архітектура, архітектурний стиль.

Problem setting. The Church of the Holy Family will remain a mystery for researchers for a long time, a subject of discussion and a topic for debate. The architect's exceptional personal life and death, the events he witnessed, the people who surrounded him, and the ideas that dominated the Western European intelligentsia created an extraordinary individual who was able to express an entire era in the structure of the cathedral.

Analysis of recent research and publications. The works of Isabella Artigas [2], Bergos J. [4], Bessegoda N. H. [5], Gill D. [8], Kalimova E. V., Khvorostukhina S. [19], Hensbergenvan G. [16], Giral-Miracle D. [9] were dedicated to Gaudi. Yastrebova O. G. wrote about the peculiarities of “nonlinear” geometry in his architectural works. [33], T. V. Donchuk, E. N. Poliakov, O. V. Volichenko [31], O. I. Leksina [22], S. A. Stessel [29]. Kalimova E. V. wrote about the decorative-symbolic formations in Gaudi's work [18] and many others.

Modern architecture is characterized by freedom of ideas and spatial solutions. Architectural objects are becoming an important measure of culture, ecosystems and society as a whole. The principles he professes and the tasks that the architect wants to achieve in creating a living environment determine his style.

The **task of the study** is to investigate the factors that influenced the formation of Gaudi's individual style.

Main Materials

Nature as a source of inspiration and imitation in architecture has always been present to architects of all ages and all cultures. With the development of man-made society based on science, technology and urban environment, many artists saw nature as a powerful source of transmission of special information hidden in structures and architectural forms.

When studying the architecture by Gaudi, the question arises: in what style did the architect work?

Gaudi's architecture is often referred to as organic or bionic.

It is worth noting that today in the scientific literature there is a blurring of boundaries in the concepts of organic and bionic. The term organic is often used to mean natural, which confuses the concept of “organic style”.

Organic architecture has its founders (Louis Sullivan, Alvar Aalto, Frank Lloyd Wright, Frei Paul Otto) and followers (Gaetano Pesche, Bernhard Hans Henry Sharoun, Frei Paul Otto), some of whose works are made in the style of organic architecture. The organic style professed by Frank Lloyd Wright in his prairie homes has been adjusted over time and improved with the latest technology. The organic architecture of the 21st century differs significantly from the spatial solutions of Wright's “prairie houses”.

Luigi Fiumara, an honorary professor at Kyiv National University of Civil Engineering and Architecture, believes that “Organic architecture is not a style in the usual sense of the word, with a set of certain shapes and smooth lines. Rather, it is an approach to design based on an understanding of human needs and the impact of the architectural environment on it” [32].

When discussing bionics, it refers to the imitation of natural forms and the use of complex biological structures found in various elements of flora and fauna to replicate them in building designs. A prime example of this is the Eiffel Tower, which is inspired by the structure of a large tibia. Unlike organic architecture, buildings designed in a bionic style are not meant to be large-scale in relation to their environment.

Antonio Gaudi's La Sagrada Familia dominates the city's architectural environment, as both the function and the volume of the building require it. Many critics tend to use the phrase that the Cathedral seems to “grow out of the ground” to tie the temple to the organic style. Other critics attribute Gaudi's temple to the Art Nouveau style or modernism [30], calling it “the

most recognizable” natural “style” [19]. Here we should emphasize the main feature of Art Nouveau – its decorativeness, which is opposed to natural.

The bionic style in Gaudí's architecture is evident in the complex shapes found in structures of La Sagrada Familia and the columns of Park Güell, which are known as helicoid, hyperboloid, and hyperbolic paraboloid. Gaudí draws inspiration from nature to create the columns, vaults, and other structural elements of the temple. O. I. Leksina, in her work "Lined Surfaces as a Constructive, Functional and Artistic Tool in Gaudí Architecture," discusses the design features of the Crypt of the Colony of Güell, La Sagrada Familia, and the parish school building at the church, using the term "organic" to describe their characteristics while clarifying its meaning as "natural." This distinction is crucial for understanding Gaudí's architectural style. Leksina argues in favor of bionics by highlighting the use of linear surfaces in construction, which are “products” of linear geometry... “These straight lines create linear surfaces, such as hyperboloid rotation, hyperbolic paraboloid, helicoid, and conoid. Therefore, we can consider a line that generates Gaudí's "organic architecture" - a line that produces surfaces with curvilinear plasticity, rather than remaining flat on a plane [21].

Such characteristics of Gaudí's architecture suggest that in his buildings he applied the acquired knowledge and experience in geometry in favor of bionics.

Today, the question of Gaudí's existential experience remains interesting and unexplored.

There is no doubt that the visual perception of the Sagrada Familia is based on Gothic examples, which Antonio has known since childhood. First of all, it is the Church of St. Peter in Reus, which became the starting point for the construction of the Church of the Holy Family (Fig. 1). There are various memories of Gaudí's childhood. The fact that he was “the third child to survive in the family and grew up very weak”, that “after pneumonia he developed rheumatoid arthritis” [7] and he could barely walk, speaks of the difficult life of a child who promotes special thinking and analysis of things, as well as the deep faith that his mother instilled. St. Peter's Church in Reus was the first church associated with childhood memories, a building that a sick child could see during worship, which was an indisputable reason for Sunday walks, and therefore gave rise to a major triad in his memory.



(a)



(b)

Figure 1. (a) a rose on the façade of the Prior Church of St. Peter [26];
(b) a rose on the façade of the Sagrada Familia [1]

Catalan modernism emerged in Barcelona at the turn of the 19th and 20th centuries and significantly influenced the work of Antonio Gaudí. This architectural style blended Gothic traditions with Arab Mudejar elements. The resulting hybrid art form, enhanced by unique decorative features, became a hallmark of Catalonia. Initially, Catalan modernism “was rooted in political aspirations, reflecting the Catalans' desire for independence from Spain. In Catalonia and Aragon, one can find temples and palaces where Gothic and Mudejar elements beautifully complement each other.

It was the Catalans who first proposed the idea that southern and northern architectural styles could coexist harmoniously. The Arabic layout of buildings could be adorned with Gothic ornaments and bas-reliefs” [23]. The essence of this Catalan style was to showcase originality and self-identity, highlighting cultural distinctiveness and aspirations to establish a national cultural center.

The constellation of Catalan modernist architects, in addition to Antonio Gaudí-i-Cornet, included

Josep Puig i Cadafalch and Lluís Domènech i Montaner. Their work was united by the Quarter of Discord (Manzana de la Discordia), where each of the three architects presented their version of Catalan Art Nouveau (Fig. 2, 3).

Each house in the quarter is an original work of art, and the architects are well-known representatives of Art Nouveau in Catalonia.



Figure 2. Casa Amatller by Josep Puig i Cadafalch (left). Casa Batlló – Antonio Gaudí-i-Cornet (right) [6]



Figure 3. Casa Lleó Morera by Lluís Domènech-i-Montaner, Passeig de Gràcia 35, Barcelona [17]

Each of these architects remained recognizable and original, although the influence on each other was inevitable. According to critics [25], it is possible that some stylistic motifs of the Palace of Catalan Music by Lluís Domènech i Montaner, considered a symbol of the revival of Catalan culture, received an original interpretation in the works of Gaudí.

An important factor influencing the image of the Sagrada Família was also the creative period when Antoni Gaudí lived and worked.

The Sagrada Família, like most buildings of the time, was to be unique. After all, at the beginning of the twentieth century, a number of prominent architects declared themselves. The world discussed Le Corbusier's Sunny City, Ludwig Mies van der Rohe's International Style, Frank Lloyd Wright's Prairie Houses, and Rudolf Steiner's Goetheanum. Gaudí's creation could not be left out. After all, the young Gaudí was an impulsive ambitious man, his work was to complement the architectural masterpieces of the twentieth century.

“The house of Lleó i Morera, built by Lluís Domènech i Montaner, stood out with exquisite ornaments, colonnades and rotundas. The house of Amalho Puig-i-Gadafalch impressed with its neo-Gothic multi-colored façade and unusual stepped pediment. Gaudí triumphed in the architectural dispute with his Casa Batlló, a design that features not a single straight line, filled with intricate symbols and fantastical images” [25].

The Sagrada Família, like many buildings of its era, was intended to be unique. At the beginning of the twentieth century, several prominent architects were making their mark on the world. The conversation often centered around Le Corbusier's plan for the Sunny City, Ludwig Mies van der Rohe's International Style, Frank Lloyd Wright's Prairie Houses, and Rudolf Steiner's Goetheanum. Antoni Gaudí's work could not be overlooked in this context; he was a young, ambitious man whose creations aimed to complement the architectural masterpieces of the twentieth century. For him, this endeavor became a significant part of his life, driven by a blend of opportunity and desire.

The urban situation itself required an unconventional approach from the architect.

In contrast to the direct axes of Barcelona, its balanced and large-scale architecture, clear quarters that emphasize the measured rhythm of life of the city, the Cathedral stood like an eruption of volcanic lava, frozen grimaces of fear and admiration of Gaudí's unique personal nature, his psycho-emotional uniqueness (Fig. 4).



Figure 4. *Sagrada Família in the architectural and compositional structure of the city* [28]

Gaudi's Gothic is devoid of its clear contours, strict images and traditional light content. It favorably divides the temple into two emotional worlds: external, earthly, suffering, where the spirit of spiritual repentance is propagated, and internal – Eden, heaven, paradise, where the sublime and fascinating reigns.

Undoubtedly, German Expressionism did its job, but seeing and understanding it, and even more so visualizing it in architectural forms, became unpredictable. A powerful wave of innovation in architecture, experiments with forms have contributed to discussion and criticism. The best motifs were embodied in new architectural forms, demonstrating interactions and borrowings. Marina Agranovskaya (Emmendinger) writes that Steinner's analysis of the Goetheanum shows that in the accounting of the building one can see “echoes of the organic architecture of the American Frank Lloyd Wright, a roll with the architectural

fantasies of the Spaniard Antonio Gaudi, we see common with the architecture of German Expressionism”.

Stein's motifs can also be traced in Gaudi's architecture, as Fiona Gray [14] writes in detail in her article. The author notes that the idea of metamorphosis, a new round of transformation is expressed in the columns of both Steiner and Gaudi.

Gray draws attention to other similarities between the two architects, including the lush, three-dimensional facades of the Second Goetheanum and the Düldeck R. Steiner House (1915–1916), reminiscent of the winding, wavy façade of Gaudi Casa Mila (1906–1911), reflecting their common conceived forms, although Gaudi achieved his forms in stone, while Steiner used reinforced concrete [15].

Similarities can be found in the use of colors, which R. Steiner developed based on Goethe's theory of color.

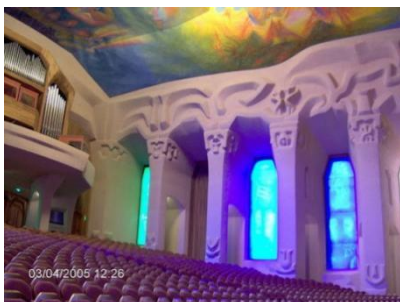


(a)



(b)

Figure 5. (a), (b) *Interior of the Sagrada Família* [24]



(c)



(d)

Figure 6. (c), (d) *Interior of the Goetheanum* [3; 12]

Both architects were fascinated by Goethe's philosophy. A. Gaudi was fluent in German, had the opportunity to read Goethe in the original.

Undoubtedly, Goethe's "Metamorphosis of Plants" (1790) with original ideas of "organic" worldview and "Formation and transformation of organic beings" were significant for both architects. Goethe's authority is also seen in the use of symbols in the architecture of both artists.

Goethe's organic worldview, which was based on the understanding of the world as a living monadic whole, revolutionized not only philosophy but also architecture. In fact, A. Gaudi and R. Steiner were architects who applied Goethe's theory of morphology and metamorphosis. R. Steiner boldly interpreted Goethe's theory of universal metamorphosis, expressing through anthroposophical architecture the process of metamorphosis of spiritual man, and through the sculptural composition of the Representative of Mankind – anthroposophical vision of the interaction of polarities, dynamic and oppositely directed, but at the same time interpenetrating Gaudi's architecture is devoid of anthroposophical philosophy, but Goethe's perspective on the world around him is present. The fundamental principle of the Sagrada Familia is a kind of proteism,

the desire for constant renewal, expressed through both the interior and exterior of the building.

It is possible that under the influence of R. Steiner, his first Goeteanum (1913–1919), Gaudi laid the foundation of the temple the principle of metamorphosis. However, for Steiner it is a metamorphosis of the creation of the anthroposophical world, while for Gaudi it is a metamorphosis of the creation of the Christian world.

The panorama of the creation of the Christian world by A. Gaudi is represented by plots on three facades: the Nativity of Christ, the Passion of the Christ and the Glory.

The Nativity façade resembles a building with a stone core piercing the world, and a viscous mass of gunpowder and water flows from the still vague outlines. The facade demonstrates the process of the birth of new values of humanity, Christian morality, a new picture of the world and relationships where harmony reigns.

With its artistic content and symbolism, the Nativity facade carries important information about the beginning of a new era in human history. Animals, birds, reptiles, which are an important element of a person's harmonious life with the world, his test of mercy, take their places.



(a)



(b)



(c)

Figure 7. Sagrada Familia, from left to right: (a) the facade of the Nativity of Christ; (b) the facade of the Passion of the Christ; (c) the facade of the Glory [27]

The eastern facade – the Nativity of Christ – presents sculptural compositions made in a romantic spirit. The proportions of the bodies, the spirited faces of the characters, the calm animals speak of the spiritual harmony that the Nativity of Christ brought.



(a)



(b)

Figure 8. (a), (b) Sculptural compositions on the Nativity facade

The next important stage in the formation of the Christian world is the facade of the Passion, which with its rib constructions suggests the evolution of the spiritual body, the formation of a strong organism of faith, which arose and established through self-sacrifice and love of Christ.

The facade of the Passion was built after the death of A. Gaudí. The Catalan sculptor Giuseppe Maria Subirachs, having studied Gaudí's drawings in 1986, conveyed the mystery of Golgotha with particular difficulty. The author endowed this facade with heavy emotions, which are carried by the figures of exhausted and distorted people. Their emotional collisions, transmitted through a heavy stone, look so imperfect along with the dynamics of the Cathedral. It is this architectural expressionism that creates a special aura that strains the most respected critics.

The third facade is the Glory. With its laconic forms and smooth lines, the Cathedral speaks of tranquility and perfection. The sculpture of lily forms of the Glory facade declares the final stage of earthly life and the transition to another world.

The triune face of the Sagrada Familia shows the world the era of Christianity, this era is represented not only by the most significant scenes conveyed through sculptural compositions, but also allegorically, embodying abstract concepts that can always be revealed analytically.

Conclusions

The early 20th century marked the emergence of a new concept in public life, encapsulating both architecture and fine arts - modernism. A key element of

modernism is technological progress and mass construction. Architectural styles of this period were thematically linked to the development and achievements of industrial society, expressing its values through forms such as functionalism and constructivism.

In contrast to the prevailing styles that reflected industrial society, new movements emerged, focusing on the emotional and philosophical aspects of humanity. Among these were organic, bionic, and anthroposophical architectures - each with its distinct character and spiritual essence.

Antonio Gaudí, a proponent of the organic worldview, viewed the world as a living, interconnected whole. The three facades of the Sagrada Familia illustrate a series of transformations that reflect both the natural world and the evolution of the human soul under the influence of Christ's teachings. For example, the facade of the Passion represents a "rib" structure symbolizing the strength and maturity of nature and Christ's crucifixion, while the Glory facade showcases linear forms that symbolize the perfection found in nature and the teachings of Christ.

Goethe described the concept of "pra-phenomenon" as "akin to reading the book of nature and grasping its essence. This understanding is productive and leads to deeper insights into phenomena, revealing their significance [13]".

Gaudí successfully captured this idea in his work. The design of the Sagrada Familia evokes the feelings Goethe described: "Witnessing the pra-phenomena leads us to deeper reflections and an awareness of our own limitations" [11].

A defining feature of Gaudí's architecture is his departure from traditional styles, instead seeking innovative forms, images, and materials while infusing them with Goethe's philosophical principles. The combination of advanced technologies, diverse spatial solutions, and Gaudí's respect for national culture, ecosystems, and society shaped his architectural style. The Sagrada Familia stands as a testament to Gaudí's life work, showcasing the metamorphosis of nature and the teachings of Christ.

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