

Converging Directions of Organic Architecture and City Planning: A Theoretical Exploration

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Abstract

The 'organic' direction and energy saving are key postulates of sustainable development today. The term "organic architecture" was first formulated in the 1890s in the works of Louis Sullivan, who used this phrase to distinguish himself from prevailing eclecticism. Later, its principles were defined in the works of Frank Lloyd Wright, developed in the works of Alvar Aalto, Richard Neutra, Luigi Fiumara, and others. This paper examines this issue of organic architecture and city planning and its relevance to the modern world.

It employs complex and systematic approach as a research methodology. Systematic approach was manifested in the analysis and synthesis of the main directions of organic architecture, their types and genres, which correlate with the evolution of city planning. Historical and urban planning analysis has been utilized to understand the impact of organic principles on cityscapes, and a scientifically based complex approach explores the relationships between organic architecture and a range of social, economic and environmental phenomena at the current stage. The research methodology employed in this study revolves around a comprehensive examination of the formation and evolution of organic architecture and city planning, with a focus on the integration of energy-saving and Nature-saving technologies.

The paper identifies four main directions of organic architecture. The first is based on a harmonious combination of Nature, Architecture, and Man. Here, 'organic' means 'subordinate to the landscape and climatic conditions of the environment.' The founder of this idea is Frank Lloyd Wright. The period of emergence and flourishing was the 20s in the 20th century. The second stage, biomorphism, was formed in the 1950s and 1960s and was based on imitating natural forms. Oleksandr Lazarev, Santiago Kalatrava and others promoted this aspect of organic architecture. The third which appeared at the end of the 20th century, is aimed at preserving natural resources using energy-saving technologies. The fourth is the reuse of building materials and products and recycling.

The paper shows a gradual convergence of all directions; that is, buildings are increasingly combined with the surrounding spaces, and simultaneously, their forms are becoming more plastic, reminiscent of natural ones. Energy-saving technologies and recycling building materials and waste are becoming integral to organic architecture. Nevertheless, the most important thing is a person's connection with the environment and creating comfortable living conditions.

Keywords: Organic Architecture, Sustainable Development, Harmonious integration, Biomorphism, Energy-Saving Technologies.

1. Introduction

Today, organic architecture is one of the main directions of architecture. Ecological orientation and preservation of natural resources are key postulates of sustainable development, proclaimed and enshrined in the 17 Goals of Sustainable Development of UNESCO (Mossin *et al.*, 2018). Organic architecture and urban planning principles reflect energy saving, responsible consumption and overcoming the deterioration of climatic conditions (Konbr *et al.*, 2023; Wei *et al.*, 2021; Tolegen *et al.*, 2022).

The concept of subordinating city planning and its architecture to the surrounding landscape has been found since the Ancient Greece in the theoretical treatises of Aristotle, and Vitruvius, later in the works of Louis Mumford, Jane Jacobs, Leon Krier, and others (Downey, 1976; Vitruvius, 1999; Jacobs, 2016).

At the turn of the 19th and 20th centuries, almost all the principles and various architectural styles aimed at implementing the laws of living Nature were laid down (Kuznietsova, 2017; Eldardiry and Konbr, 2022). Some urban planning theories of the late 19th and early 20th centuries also had developed along the lines of "organic" (the concept of "Garden City" by Edward Howard and Peter Abercrombie, etc.). Frank Lloyd Wright (1953), who formulated the basic principles of organic architecture is considered the founder of the trend. Today, many scientists are studying organic architecture. Among them are Luigi Fiumara (Fiumara, Horbyk and Ushakov, 2003), Svitlana Linda, Svitlana Zymina (Zymina, 2017), David Pearson (Pearson, 2001), Olena Oliynyk (Oliynyk, 2020) and others. Oleksandr Lazarev (Lazarev, 2008) considered the formation of the main provisions of bionics as a science in architecture and design. Charles Kemp and Joshua Tenenbaum (2008) highlighted the research of structural forms and flows. Luigi Fiumara describes the features and principles of organic architecture. Svitlana Zimina studies interiors and ecological principles. Olena Oliynyk formulated and defined four stages of the development of organic architecture and design. The principles of building of energy-efficient smart houses and methods of recycling in construction were demonstrated in Architectuur MAKEN (no date;Zavari, 2023). However, analyzing various directions of organic architecture, and their development in the 21st century is still rare.

In this context, this paper aims to analyse the formation and evolution of organic architecture and city planning, with a focus on the integration of energy-saving and Nature-saving technologies. The investigation delves into historical developments and contemporary trends to discern key principles and directions of organic architecture.

2. Research Methodology

The research employs a comprehensive and detailed examination of the formation and development of organic architecture and urban planning, as a methodology. It examines the modern trends in the development of organic approaches based on energy-saving and Nature-saving technologies.

The research used the following methods: a systematic approach, historical and urban planning analysis, historical and architectural analysis, statistical and selective analytical methods, analysis and generalization of statistical data, and analysis of the source database.

The study analyzed the scientific and creative works of the founders of organic architecture and carried out a comparative analysis of the development of this direction at the current stage. The technologies of recycling and reuse of elements of prefabricated reinforced concrete structures as a promising direction in the reconstruction of social housing and areas of panel buildings are considered.

The investigation delves into historical developments and contemporary trends, analyzing the works of prominent figures in organic architecture to discern key principles and directions, using the following methods:

- (a) Analysis of the history of urban planning from the point of view of the interaction of forms of urban settlements with the landscape. The formation of a landscape planning system as a prototype of an organic approach.
- (b) The method of comparison: The study incorporates a comparative analysis of different stages of organic architecture's development, highlighting the evolution of the four main directions: harmony with nature and environment, biomorphism, energy-saving approaches, and the reuse and recycling of building materials.

3. Findings

3.1. The Organic Approach in Urban Planning

The organic approach to architecture has significant implications for urban planning. By emphasizing the connection between the built environment and the natural world, organic architecture can help to create more sustainable, livable cities (Kabylov *at al.*, 2017; Mossin *at al.*, 2018).

Key principles of organic urban planning include:

- Landscape, open city-planning, subject to the features of the landscape.
- Emphasizing walkability and bike-ability to reduce reliance on cars and promote healthier lifestyles.
- Incorporating green spaces and natural elements into urban design to enhance the connection between people and Nature. Large areas of greening, connected in continuous strips.
- Promoting mixed-use development to create vibrant, diverse communities.
- Encouraging the use of sustainable materials and building practices to reduce environmental impact. (Olijnik and Khodorkovski, 1997; Jacobs, 2016; Mossin *at al.*, 2018).

By adopting an organic approach to urban planning, cities can create more harmonious, environmentally-friendly communities that are better equipped to meet the challenges of the 21st century.

Historical Practices

Among the factors affecting the formation of cities during their existence, natural ones can be singled out as the most permanent. Therefore, the planning of settlements in areas with pronounced relief always differed with greater individuality. Thus, the cities of Ancient Greece were formed in the conditions of distinct relief. Most cities was landscaped and had an open character; cities were developed by increasing residential units from the center to the periphery (Bunyn and Savarenskaia, 1979; Kabylov *at al.*, 2017; Hall, 2021).

Aristotle defined "polis" as a natural environment where a person can achieve the highest good. He stated that the beauty of a city and its buildings is as important as clean air, water, and a healthy location (Downey, 1976).

Scholars also consider medieval European cities as "organic" city development examples. Lewis Mumford evaluated the medieval city as having an organic connection between people and their "living environment" (Olijnik and Khodorkovski, 1997; Mumford, 2009). The Dutch architectural historian Wim Borefijn, having analyzed the urban processes in Europe in the 11th-14th centuries, concludes about this period as the "high period of the urban foundation", when at least 1,500 cities were built, and their architectural and spatial features were based on the structure of landscapes (Fesenko, 2018).

Byzantium and later Old Russian settlements also relied on natural factors in urban planning. In Constantinople, as early as the 6th century. A special law regulating the development of the city has been issued. This law, "Prochyron", was laid as the basis of the ancient Russian urban planning legislation and was borrowed at the time from the ancient Palestinian norms (Bunyn and Savarenskaia, 1979; Mohamed *at al.*, 2022). These laws proclaimed the need to preserve the view of the sea; houses were placed isolated from each other, with windows "facing Nature" and the blind end facing the street. At the same time, the next row of houses was in the gaps between the houses of the previous one. Even the trees on the plot could not grow closer to the neighboring allotment than the norms allowed. The building module was the shadow of a pole (Olijnik and Khodorkovski, 1997). The building rarely had a clearly defined "street" facade; it seemed to dissolve in the natural environment, creating a transparent, shimmering background for the main religious buildings of the city, which could be seen from any point in the city.

The center (Dytynets, later - the Kremlin) occupied the most advantageous position on the mountain, in the river's bend. The location of the city on a cape was widespread. This location determined the orientation of the entire composition to the river. At the same time, the composition of the city actively included the external space on which the leading buildings of the center were oriented. Dominants occupied the highest points of the city above the river. The streets served only as landmark axes that connected separate religious and public buildings and did not have their own architectural and spatial solutions (Olijnik and Khodorkovski, 1997).

For the Slavs and Byzantium, in contrast to the linear European perception of the world, a multi-dimensional perception of space and time was characteristic, and Nature, terrain, the location of the city, and buildings had a magical meaning. Landscape planning, sometimes perceived as imperfect and primitive, corresponded to a worldview different from the modern Man. Such an organic concept of urban planning, based on the subordination of architecture to the features of Nature and landscape, is still preserved in many Mediterranean cities or areas with pronounced relief.

The urban planning of the Baroque era was quite organic, aimed at aestheticizing space and its visual surroundings. The building was considered a "pearl in a bowl" - a perfect form in a beautiful natural environment. Nature and landscaping become an integral part of urban planning.

The concept of a garden city returns to the idea of a city surrounded by Nature - Riverside, created in the suburbs of Chicago by the design of landscape architect Frederick Olmsted, creator of Central Park in Manhattan. Then parks in New York's Brooklyn and Montreal were ahead of the European experiments of "garden cities" and greatly impacted *Ebenzer Howard*, whose name this concept was later associated with forever. Letchworth is the first of the built 'garden cities', created later by a joint-stock company under the leadership of Ebenzer Howard himself (Tolegen *at al.*, 2022). Howard's theory aimed to reduce the number of people in large cities.

Abercrombie, developing this concept, proposed the idea of satellite cities around the big city. Robert Whiten modified the satellite city, changing the concept of transport, functional content, dimensions, and distance from the central city. The protective belt of the city was set aside for reservoirs, parks, playgrounds, etc. The later Concept of the "City of Beauty" considered the city as an organic whole, forming a "landscape" approach to planning based on a regular hyper-scale; this concept was embodied in the reconstruction of Chicago designed by Daniel Burnham. "City of Beauty" interpreted the city as a form created according to the Baroque models (Hlazychev, 2008).

The era of modernism changed the spatial paradigm of the traditional "organic" city, which led to a loss of connection with Nature. Cities gradually began to lose their spatial integrity, and the unformed spaces around high-rise buildings did not allow them to be fully used for social functions.

Thus, in the second half of the 20th century, criticism of the concept of the decline of historic city centers and the growth of suburbs brought to life the idea of "*new urbanism*", reviving attention to the best qualities of ancient cities with their organicity: small quarters with continuous street facades, pedestrian squares, cozy places for recreation, landscaping.

Ideologists of the direction Jane Jacobs (2016), R. and L. Krier (Krier and Rowe, 1979), (Examples are Seaside and Celebration in Florida).

In the 1970s, Canada experienced an economic and management crisis that led to a review of urban planning principles. The "Livable Cities" movement was born. Vancouver, located on the shores of the Pacific Ocean, has won a leadership position in developing and implementing the most fully balanced strategy for developing a huge territory. This strategy is based on the concept of "quality of life" and is associated with the opportunity to use the advantages of an urbanized area for residents with sufficient food, clean air, affordable housing; a broad employment market; with available rest areas.

3.2. The Emergence and Development of Organic Architecture

Organic architecture has a rich history, dating back to the early 20th century and the work of Frank Lloyd Wright. Since then, organic architecture has evolved and developed in several ways, incorporating new materials and technologies while remaining committed to its core principles.

One key development in organic architecture has been using sustainable materials and building practices. Many contemporary organic architects use passive solar design, green roofs, and recycled materials to create beautiful, environmentally friendly buildings.

Another trend in organic architecture has been a focus on modular and prefabricated construction. This approach allows for greater efficiency and sustainability, as buildings can be assembled quickly and with minimal waste.

Overall, the emergence and development of organic architecture represent a significant shift in how we think about the built environment. By prioritizing sustainability, livability, and a connection to Nature, organic architecture offers a compelling alternative to traditional approaches to building and design (Curtis, 2014).

Although organic architecture was a trend only in the 20th century, its first ideas appeared much earlier. Thus, Marcus Pollio Vitruvius, in his treatise "Ten Books on Architecture" made studying Nature the main task. He emphasized using natural laws in architecture, namely studying ways to adapt organisms to a certain area (Vitruvius, 1999). Leon Batista Alberti (1404-1472) also noted that the building should arise as a whole organism. Referring to living Nature, he does not separate function from beauty and form in architecture and draws attention to constructive analogies in architecture and the living world (Bragina, 1977; Konbr *at al.*, 2022). The German scientist and theorist August Wilhelm Schlegel (1772-1829) said that architecture should imitate Nature not in individual objects but in the general method. He considered architecture from the point of view of reflecting "organic" in it (Kuznietsova, 2017).

John Ruskin also proclaimed the "faithfulness to Nature" principle and praised the Gothic style for its commitment to nature and natural forms. His greatest merit is that he was the first to state that the prototype and criteria of beauty can be found only in wild nature because "only it is not distorted or defiled by anything." Before Ruskin, in the Western cultural tradition and aesthetics, only cultivated landscapes were considered beautiful. Wild Nature had no aesthetic value (Ruskin, 1892).

Art Nouveau again turns to natural forms in decorating facades and interiors at the turn of the century. In the concept of art nouveau, the return to Nature, flora, and fauna, as the primary forms of formation, played a special role. Curvilinear forms and lines characteristic of plants, the random Nature of their interweaving, and picturesqueness become the source of the language of the new style.

In the 1890s, the organic direction of architecture was formulated by the American architect Louis Henry Sullivan (1856-1924), who denoted the correspondence of function and form with this term and used it in his works on architecture to distance himself from the eclecticism prevailing at that time. However, the generalized principles of organic architecture were first formulated in the works of Frank Lloyd Wright (1867-1959) (Wright, 1953).

Wright considered the organic connection of the house with the surrounding landscape as the main basis of architecture. In his opinion, the form of the building should derive from its specific purpose and the unique environmental conditions in which it is built and exists.

He formulated the Principles of organic architecture as follows (Wright, 1953).

- The house and the landscape create an organic unity; the shape of the building fits into the landscape.
- The height of the house is commensurate with a person.
- The house stands simply on the ground: a roof without an attic, a house without a basement, and walls without eaves; the contour of the house becomes lighter, smoother, and simpler.
- Open combined space on the first floor.
- Use of glass walls and built-in furniture to combine interior and exterior spaces.
- Use of natural materials.
- The connection of architecture not only with the present but also with the past - the influence of ancient civilizations.

The basis of Wright's concept was the continuity of architectural space, as opposed to the emphasized separation of its parts in classical architecture. A building inscribed in Nature; the exterior emerging from the inner content; rejection of the traditional laws of form formation - these are the characteristic features of the architectural discourse peculiar to him, which can be defined by the concept of "organic architecture". Wright first implemented this idea in the so-called 'Prairie House' (1901-1910).

Despite all the compositional diversity of Wright's buildings, the main principle remains harmony with the surrounding landscape, which can be traced even in the design of large public buildings. In 1904, he was the first to use the 'Open Space' layout and atrium volume-planning structure for the 5-story office building of the Larkin firm in Buffalo, abandoning the traditional corridor layout of offices.

Opposing the crushing of form, F.L. Wright was among those who pioneered one of the basic principles of form creation in modern architecture and design. The idea of integrity ("integrality", according to Wright) is of great importance in the concept of "organic architecture". He wanted the building to give the impression of a whole and not assembled from separate parts and details.

"Organic architecture is an architecture in which the ideal is integrity in the philosophical sense, where the whole relates to the part as the part relates to the whole, and where the nature of materials, the nature of purpose, the nature of everything that is done becomes clear, acts as a necessity. From this nature, it is clear what character a real artist can give a building in these conditions."

Frank Lloyd Wright, 1953

Arguing with the extremes of functionalism, contrasting it with the desire to consider people's individual needs and psychology, organic architecture became one of the leading trends in the mid-1930s.

Under the influence of its ideas, regional architectural schools in the Scandinavian countries developed (for example, the work of Alvar Aalto (Aalto, Hugo Alvar Henrik, 1898 - 1976). In Aalto, the environment determines the image of the future building, and the essence of architecture is subordinated to human needs. "True architecture exists only where one stands in the center." (Aalto *at al.*, 1998).

In the USA, the principles of organic architecture were used by the California school led by *Richard Neutra*. In the second half of the 1940s, the theory of organic architecture was picked up in Italy by the architect Bruno Zevi. In 1945, the ARAO group (Associazione per l'Architettura Organica, Association of Organic Architecture) was created in Rome, emphasizing the humanistic orientation of the basic principles of organic architecture in its program. Some general principles of form formation, individual techniques developed by organic architecture, are also widely used in design.

Further Development of Organic Architecture

Organic architecture and design continue to develop actively and are one of the more general directions. Oliynyk singles out the following main types of organic architecture (Oliynyk and Chopyk, 2019):

1. The first direction epitomizing (Architecture as a part of Nature and the surrounding context) is attributed to Wright, Aalto, Neutro, and Fiumara. It is based on the idea of a harmonious combination of Nature, architecture, and Man. Here, the term "organic" means the use of natural materials and subordination to the conditions of the natural landscape, that is, to the climatic conditions of the environment and the totality of its aesthetic qualities. Origin - the beginning-middle of the 20th century.
2. The second direction epitomizing (The imitation of natural forms and structures, bionics, and biomorphism) is attributed to. Eames, Makovecz, Calatrava, and Utzon. Origin, the 60s of the 20th century.
3. The third direction epitomizing (Architecture and design using Nature- and energy-saving technologies) is attributed to Lovegrove, Origin - the end of the 20th century.
4. The fourth direction epitomizing (recycling) involves reprocessing of used materials. Its origin is at the end of the 20th century (Fig. 1).

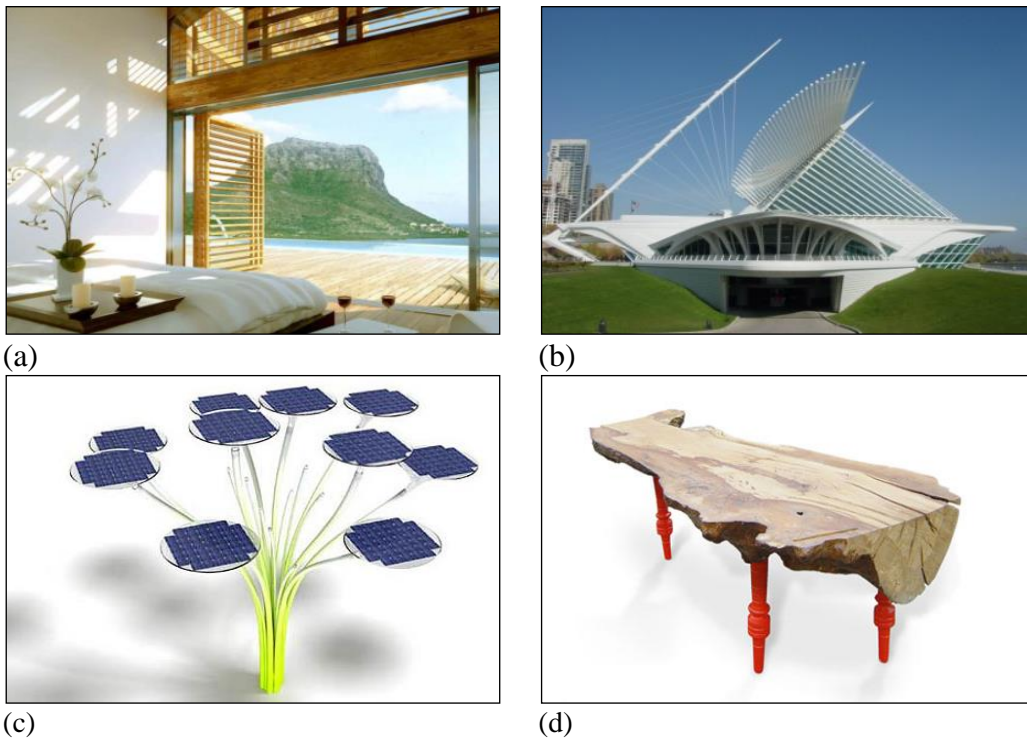


Fig. 1: Four directions of organic architecture and design: a) harmonious combination of the house with nature; b) Biomorphism and biotech - Art Museum in Milwaukee, arch.S. Calatrava; c) energy-saving technologies - "Solar tree", dis. R. Lovegrove; d) recycling - table "Lost & Found", London design studio & Made. Source: Oliynyk, 2020.

We have already considered the formation and development of the first direction (Architecture as a part of nature and the surrounding context). Let us consider the next three stages of the development of organic architecture.

The second direction: Bionics

The second direction (Biomorphism and bionics) is also far from new. The outstanding Spanish architect *Antonio Gaudí* actively developed it in Art Nouveau architecture. However, the concept of biomorphism received a new development in the 60s of the 20th century.

Since 1970, there has been a Center for the Development of problems of architectural bionics under the leadership of Yuri Lebedev in Moscow. The scientific output formed by his laboratory turned out to be so meaningful that even today, the results are relevant and promising. Moreover, unlike the world's developed countries, where bionic research and practical implementation never stopped, in the USSR and later in Russia, an architecture based on bionic and tectonic principles never developed. In Ukraine, too, there was a Center of architectural bionics based at the Zonal Research Institute of Experimental Design in Kyiv. It was headed by the famous architectural theorist Oleksandr Lazariev (Lazariev, 2008; Kozlov, 2019).

In Hungary, organic architecture was formed around 1960 and was associated with the revival and continuation of national traditions as opposed to globalist and colonial tendencies. Two prominent representatives are undoubtedly György Csete and Imre Makovecz (1935-2011), who used bionic forms, shingles, and columns from tree trunks in their works (Fig. 2).



Fig. 2: Imre Makovecz. Villa Gubsci, Budapest, 1985.

Source: The authors

The revival of interest in organic architecture at the beginning of the 21st century is attributed to biotech's development, a biomorphic variety of high-tech. Houses in this style are often asymmetrical and have the shape of cocoons, trees - everything found in Nature. The forms of animals, people, or parts of their bodies (zoomorphism, anthropomorphism) and plants (phytomorphism) are also borrowed. The works of *Santiago Calatrava* can be an example of this direction (Fig. 3).



Fig. 3: City of Arts and Sciences, Valencia. Arch. S. Calatrava.

Source: Oliynyk, 2020



Fig. 4: Dietikon, a residential complex of nine earthen houses, Switzerland. Arch. P. Vetch
Source: Oliynyk, 2020

Biotech embodies a philosophical concept: creating a new space for human life as a creation of nature, combining the principles of biology, engineering, and architecture. That is why issues in this style are often ecological.

The third direction: Energy saving

The third direction involving (energy saving) has many uses, from grass roofs, which have become the perfect insulation, to solar systems and nanotechnologies. In addition to the obvious advantages (decorativeness, environmental friendliness, and fire safety), a green roof protects the building from sunlight in the summer and creates a comfortable, cool temperature in the room. Furthermore, in the winter, the grass structure significantly reduces heat loss. Such a roof does not require long-term and expensive repairs for many years; the structure's appearance only improves over time. A representative of this trend in architecture is the arch. Peter Vetch built an elite housing complex, "Dietikon" in Switzerland with semi-buried houses (Fig. 4).

At the end of the 20th century, the idea of Nature protection through energysaving technologies is embodied in architecture. Energy-efficient facilities are built from environmentally friendly materials, have high energy-saving indicators, and use alternative energy sources, primarily solar energy, air, and earth energy.

In developed countries, due to many household appliances, about half of the energy is spent on operation. Therefore, there is a trend in the world to reduce energy consumption and build facilities that provide themselves with renewable energy. The first "green" high-rise building was built back in the 1970s. In Finland, a block of buildings with solar panels is built into their facades. In Estonia, the so-called Khrushchevs began to be converted into energy-efficient smart houses (Architectuur MAKEN, no date). Objects will be equipped with solar panels and modern windows, and heating, insulation, and ventilation systems will be installed.

As for Ukraine and Kazakhstan, almost 70% of buildings built in 1946-1990 have extremely low energy efficiency characteristics. These countries began to take the first steps in this direction roughly 20 years after the EU states.

The fourth direction: Recycling

Recycling, the fourth direction in organic architecture, is characterized by reusing recycled materials and quickly becoming innovative.

The term *Recycling* means processing, secondary processing, or disposal of waste, i.e., implementation of any technological operations associated with changing the physical, chemical, or biological properties of waste to prepare it for environmentally safe storage, transportation, disposal, or disposal, reuse or recycling of production waste or garbage. The most common are secondary, tertiary, and other processing of such materials as glass, paper, aluminum, asphalt, iron, fabrics, and various types of plastic. Most construction and industrial materials - concrete, bricks, glass, and plastics - can be reused.

Upcycling, in contrast to the more well-known term "recycling", means not just recycling waste with all possible production losses but such that its result exceeds the quality of the waste. Considering the issue more deeply, it has a philosophical, valuable dimension.

One example is a house in Rotterdam, made of 15 tons of compacted industrial waste formed into bricks (Fig. 5). Also, in the fall of 2017, the "People's Pavilion" at the Netherlands Design Week became a showpiece for construction structures that produce almost no waste. The multi-colored roof is made of recycled plastic, and the wooden platform is made of borrowed parts that can be returned to the owner (Fig. 6).



Fig. 5: A house in Rotterdam, Arch. Architectuur Maken, 2016. Source: Architectuur MAKEN



Fig. 6: The "People's Pavilion" at the Netherlands Design Week, 2017
Source: Guzzo, 2017

Another type of recycling became the so-called reuse, which involves the reuse of entire fragments of reinforced concrete panels after the demolition of buildings. European countries already have a law that provides for the demolition of 40% of panel houses built in the 1970s, and this norm necessitated the development of new technologies for the reuse of reinforced concrete panels. As a rule, they are used in landscaping, small architectural forms, temporary structures, retaining walls, etc. (Figs. 7-9).



Fig. 7. A fragment of paving from recycled reinforced concrete panels.
Source: D.I.R.T Studio, 2011



Fig. 8. A resting place made of recycled reinforced concrete panels. Source: Zavari, 2023



Fig. 9. Using recycled concrete on the "Bench project". Source: Zavari, 2023

4. Discussion

Organic architecture is more than just a style in architecture; it is a fundamental approach, concept, and principle that has been present throughout the history of architecture, from ancient civilizations like the Greeks and Byzantium to modern-day UNESCO goals. It emphasizes using natural materials, energy conservation, and ecological orientation in urban planning and architectural design.

The principles of organic architecture are now being incorporated into various architectural styles, including high-tech design, leading to the emergence of a new direction known as "eco-tech." However, the approach may clash with the trends of globalization and commercialization in architecture and urban planning, particularly the "landscape approach."

Furthermore, organic architecture is often at odds with investment projects since it is seen as unprofitable. As a result, it requires separate support and protection from various sections of the population to be effectively implemented.

5. Conclusions

This paper analyzed the formation and development of the organic direction in architecture and urban planning and identified the four main directions of modern organic architecture.

- The first trend is based on the harmonious combination of nature, architecture, and man and considers architecture as part of the landscape. The work of the founder of this direction (Frank Lloyd Wright) and his followers are analyzed.
- The peculiarities of the second stage of the development of organic architecture, which was formed in the 50s and 60s - biomorphism, are considered. It was established that the basis of this type of organic architecture is the imitation of natural forms and structures, which was reflected in the theoretical developments of Lazarev and Lebedev, and in the realized objects of Calatrava and others.
- The third direction, which appeared at the end of the 20th century, ensures the protection of nature through energy-saving technologies. The area related to reusing materials and whole fragments of buildings - recycling, upcycling, and reuse - was also considered.

Thus, the analysis of the development of organic architecture at the current stage shows that the idea of integrity ("integrality", as Wright said) continues to play a large role in the concept of "organic architecture". It is notable that there is a gradual convergence of all directions; that is, houses are becoming more and more contextual, oriented to the landscape and ecology, and at the same time, their forms are becoming more plastic bio form. Today, energy-saving technologies are also becoming integral to any direction of modern architecture, and organic - in the first place. However, one important principle of architecture remains unchanged - Man. The main driver of organic architecture throughout the centuries remains a person's connection with the environment, the building, and the feeling of inner comfort.

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