

Futurism Concept in the Design and Architectural Solutions of the 20th and Early 21st Centuries

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Abstract The article studies the Futurism concept in the stylistic ontogenesis of design and architectural solutions of XX - early XXI. The author refers to the origins of futuristic architecture to fix the primary ideology of this style and then evaluates its congruence with the conceptual views and the worldview position of the artists who created their architectural works at each stage of Futurism development. The hypothesis is put forward that architectural styles formulated as a result of visual art evolution, really accepted by the public and recognized by the professional community, and which occupied steady positions in the world arena of architecture, are the result of performance in which the artist, keeping the ideology of the style, integrates the extra perspective art elements, corresponding to trends of the particular epoch of architecture. The verification of this hypothesis, undertaken through the "sketching" of the contemporary Futurism image, was carried out by researching the actual trends in architecture of the 21st century, identifying their main features, and formulating the parameters of the order on their basis, which will define the nature of the new steady state of the architectural system, expressed in a futuristic performance. The futuristic performance was defined as a processual kind of architectural art that extends and spreads to all the new stylistic solutions, thus becoming an interdisciplinary phenomenon, characterizing the synthesis of architectural, visual (painting, graphics, sculpture) and digital (visual effects, created through digital technology) arts, which allows us to see the eclectic vectors of its development. The study of the Futurism directions mentioned above allowed us to conclude that each architect, each artist or designer sought to reflect in

their work not only the extrospective (material message) but also the introspective image of the environment (artistic and spiritual message), in which this work is embedded.

Keywords Futurism, Design and Architectural Solutions, Neo-Futurism, GOO-Ghee-Architecture, Performance, Social Utopia, Deconstructivism, Bauhaus, Art Deco

1. Introduction

Architecture, along with any other kind of visual art, is a "mirror" of existence, a "mirror" that captures and reflects any manifestations of time and space. For centuries it has embodied in material form pictures of history and prophecies of the future. Architecture is a complicated, multifaceted system reflecting the world and birth to something new: the artificial environment, the human habitat, and his "second nature". However, while performing since ancient times, the primary function of protection (from aggressive manifestations of nature, attacks of animals, etc.), the material utilitarian component of architecture was consequently supplemented by a no less crucial non-material element: aesthetics. It happened when a man could first express his feelings and emotions with the help of menhils, dolmens and cromlechs. Architecture manifested itself as art and a form of social consciousness by that very act. As the Russian art historian D.O. Shvidskovsky notes very precisely, "in comparison

with the history of civilization <...> the traditions of beautification of the living environment turn out to be so unimaginably ancient that the motives of the first decisions on the transformation of the human space are not even in consciousness, subconsciousness or genome, but the factors which influenced the formation of the latter. The depth of human memory associated with art and architecture <...> turns out to be grandiose and lost in epochs” [1].

Moreover, the need to address the issues of retrospective architectural practice, and the accumulation of knowledge and experience on its basis, contributed to the formation of architecture as a branch of scientific knowledge. Within the framework of this “architectural symbiosis” of science and art, rational and irrational thinking, practice and theory, a material, spiritual work is born, which in the broad sense is called the architectural form; it is what represents the worldview of a particular time, society, culture and ethnicity. The architectural concept cannot claim to be complete without the architect’s knowledge about the formation process, that is, architectural shaping. This process is carried out following eternal universal values, historically changing worldview attitudes of culture, and with those or other selected conceptual principles associated with a figurative, constructive, functional component of the architectural form or its material [2]. In the theory and practice of architecture, the priority tool of such reflection, evaluation of empirical material and explanation of historical processes has become a style.

The formation of each in the potential new architectural style becomes possible not so much within the cultures of individual national, ethnic and/or confessional systems and formations as within the “supranational, super ethnic and supraconfessional” culture, manifested throughout the world as a result of global integration processes. For example, from a material point of view, futurism and later neo-futurism were formulated to react to the following scientific and technological revolution. From the conceptual point of view, the idea of futurism was to reject antiquity and its heritage, to break with the former historical tradition, not only in architecture but also in other types of visual art, and, as a consequence, to create a new language of images capable of visualizing the future, of conceptualizing in a new way the philosophy of space, which also began to lose its traditional symbolic meaning and was increasingly interpreted from a future perspective. As Friedrich Nietzsche wrote, “the future speaks already in a hundred signs, this destiny announces itself everywhere; all ears are already sensitive to this music of the future” [3]. The reassessment of all values proposed by the philosopher became determinative of the absolute essence, and the world of the past collapsed. A new, “mythical” view of the future appeared; “Mythology, mysticism - it is all behind us now!” emphasized in his “Manifesto of Futurism” F.T. Marinetti, “Before our eyes, a centaur is born - a man on a motorcycle - and the first angels soar into the sky on the wings of aeroplanes!” [4]. Traditional values began to lose

their meaning; society had the opportunity to renew itself, move away from the models of the imperial era, and create something new. As the Russian scientist and architectural theorist I.A. Bondarenko noted very accurately, “the geocentric model of the Universe began to seem absurd, so many rituals and traditions, including architectural ones connected with its reproduction for centuries, turned into certain metaphors, conventional signs, symbols and simply habitual patterns to follow”[5].

Thus, futurism started the process of framing the future as an “ideal space for life”, and this idea was not only preserved in its post-futurism formations (neo-futurism, new futurism) but was also proved again by new elements and properties brought into art, and consequently into the worldview of society and artists, at each new stage of industrialization. As H. Ibelings notes, “each new style originates in innovation, in a deviation from the current practice” [6]. At the same time, the author notes that the temporal argumentation of futurism, as well as any other style in architecture, is associated with a situation where “the imitation of patterns is accompanied by theoretical and ideological declarations, acting as imperatives that determine the direction of this evolution” [6]. As a result of such a process, which in the history of architecture happened quite often, theoretical activity reduces the number of works of art, which in one way or another, claimed to be a mirror of the “new language of images”, that is, the formation of architectural style as such became as a result project, quasi-project or short-lived. Such a scenario turned out, as a rule, practically unsuccessful, as in the case of pseudogothic, or gave short-term “effect”, as it happened with such directions of futurism, as surrealist architecture (1925-1930), space age (1960-1969), Memphis (1981-1988) [7]. However, as A.G. Rappaport notes, “if such attempts were successful <...> we encountered a phenomenon of a more complex nature - a combination of ideological foundations and practical experiments, and the patterns themselves turned out to be created by chance...” [8]. Based on this thought, we can assume that the architectural styles formulated as a result of the evolution of visual art, really accepted by the public and recognized by the professional community, and taking a stable position in the world arena of architecture, are the result of performance, in which the artist, preserving the ideology of the style, integrates extrospective art elements, corresponding to the trends of the architecture of a particular era.

Indirect proof of this hypothesis is the fact that the concept of futurism, remaining relevant and visible to this day, is translated by artists through the practice of synthesis with other architectural styles (kinetic, digital, adaptive, destructive, etc.) or trends (video mapping, stream wave, etc.). From the position of synergetic scientists, this effect can be explained by the fact that “the future selects those elements of the present that are congruent, similar to the emerging future. The future is the cause of today, for it shapes today, sees in it the fragments of the future that

require synthesis" [9]. Thus, in the synergetic understanding, today's style interpretations of futurism, formulated from individual works of practical and theoretical architectural activity, act as fragments of the future, expressing the idea of "ideal space for life". Proceeding from this, it is possible to attempt to prove the above hypothesis through "sketching" the image of contemporary futurism by studying the current trends in architecture of the 21st century, identifying their main features and formulating on their basis the parameters of order, which will define the nature of the new steady state of the architectural system, expressed in a futuristic performance as a procedural form of architectural art.

2. Literature Review

Futurism is the first internationally recognized modern art movement to emerge from a united Italy [10]. That is why Italian authors represent the broadest research base devoted to futurism. Thus, U. Apollonio, C. Bozzola, M. Verdone, L. Caramel, S. Corollo, R. Longi, A. Masoyero, C. Salaris, C. Tindal and others in their works address a variety of manifestations of futurism, from manifestos and books to theatre productions and cinematography, as well as painting, literature and, of course, architecture. Regarding the latter, of particular interest are works by A. Villari, P. T. Hamilton, M. Gazzoti, R. L. Goldberg, D. De Maria, C. J. De Michelis, J. M. Nash, H. Pierre, E. Sellin, M. Shapiro and others, devoted to the history of futurism and the study of its links and interconnections with other avant-garde movements, trends and positions in the artistic environment, not only in Italy but in Western Europe. Particular attention to futuristic architecture as an element of the visual arts ecosystem was paid in the works of R. Bem, Z. Gidion, E. Godoli, E. Crispolti, already mentioned by J. Liszt, A. Muntoni, L. Pattet, N. Pevzner and others. Russian authors include V.S. Goryunov, A.V. Ikonnikov, R.A. Kantselson, L.I. Rempel, and V.V. Sedov. The study of the various directions of futurism in architecture was engaged in K. Frampton and Y. Futagawa (Art Deco), D. Bogunovich, V. Markus, A. Montgomery, A. Román, E. Saarinen, C. Wagner et al. (Neo-futurism), L. Chora, J. Derrida, P. Eisenman et al. (Deconstructivism).

It is worth noting that many of the named authors emphasized that at each stage of industrialization (the beginning of another scientific and technological revolution), understanding the world changes the picture, and this understanding for each person is exclusively subjective. In the concept of futurism, it was no longer perceived as a static subject: in place of the past, the idea of him as a function assumed a constant social interaction. The awareness of the individual as a function and the social idea of the future was reflected in the concepts of social utopia (B.P. Anfanten, S.-A. Bazar, L. Blanc, F. Boucheuse, J. Gray, W. Consideran, P. Leroux, C. Pecker, P.J. Prudence, W. Thompson and others), broadcasting the

image of an ideal model of the future. As the Russian historian and architectural theorist A.V. Ikonnikov notes, "the structure and content of images-utopias, both social and specialized, are based on subjective volitional subordination to the main semantic content; elements of reality that do not fit into the ideal model or do not work for its objective construction are ignored" [11]. The notion of material and the notion of the form of things and architecture became the objects of future visualization. Such an idea of depicting social utopia first appeared in the Higher School of Construction and Constructing, Bauhaus; its members adhered specifically to sociological ideology. They worked, creating new modern buildings to change society's face, to free it from the need to follow the rather complex applied style of the imperial era. As noted in the works, their central idea was to build a social utopia or to fulfil the visualization of their utopian idea - to build the future city. It is worth noting that some researchers distinguish the architecture of Bauhaus as a separate trend of futurism, the ancestor of which is considered the German architect Walter Gropius. Later, due to the Nazi influence in Germany, the pioneers of Bauhaus like Gropius, Mies van der Rohe and others moved to the U.S. Since then, the American style of Bauhaus has been accepted as the International Bauhaus movement [12].

Of course, we cannot ignore that a large block of scientific literature is devoted directly to architects who "created" futurism in architecture, sculpture, and the fine arts. Thus, the study of the work of A. Sant'Elia, in different years, were engaged by E. Gardini, P. Goldberg, A. Lonatti, L. Caramel, L. Mariani, H. Mallgrave, Meyer E. De Costa, N. McGarrigle, R. Rosati et al.; of Russian authors, we can name E. A. Golzamt, A. V. Ikonnikov, R. A. Katznelson and M. P. Tubli. The work of M. Chiatone was studied by G. Bernasconi, and G. Veronesi; the work of V. Marca is considered in the works of A. D'Amico, S. Danesi, E. Crispolti and others. In turn, the attention of such authors as B. Dziewi, D.R. Durden, T. Kirk, C. Lamberti, C. De Seth, F. Dal Falco, C. Frampton, etc. is turned to searching for subtle, nuanced differences between the work of artists and architects within the Futurist movement, and to analyzing futurism in the context of foreign architecture. Unfortunately, existing sources do not give us a complete picture of the points of contact between different characters in the architecture of Futurism in Italy and other countries where it penetrated during the 20th century. Italian historiography is based more on descriptions than on theoretical generalizations. Therefore, there are still many unexplored questions in studying the heritage of the Italian avant-garde of the 1910s and 1930s. Moreover, even considering the diversity of interpretations of the concept of futurism, the authors rarely address the problem of urbanism and form. It is probably why the topic of interpenetration and, consequently, the emergence of new stylistic solutions for architecture is poorly developed. In this case, however, we should mention the Russian author S. S. Zhuykov who not

only raised this question in his dissertation research but also put forward the hypothesis that four meta-directions can characterize contemporary architecture: “Art-architecture”, “Nature-architecture”, “Flexie-architecture” and “Extreme-Architecture” [13].

“Artarchitecture”, according to the author, is designed primarily to meet cognitive and aesthetic needs. Such architectural objects as the Blur building (Switzerland, Yverdon, by Diller Scofidio + Renfro), Selfridges department store (UK, Birmingham, by Future Systems), Crooked House (Poland, Sopot, by Szotincze and ZaleskiArchitekcy), and the office of the centre of the “Art-architecture”. The National 9/11 Memorial & Museum (USA, New York, by Michael Arad), etc., Art-architecture is perceived as an artistic gesture, as a performance, as a socio-cultural phenomenon and monument, as advertising and P.R. of something or someone, as a manifestation of the extravagance of the architect or client. “Art-architecture” occupies an intermediate place between artistic and material culture. However, the balance is still towards the former, i.e. this is where architecture has more opportunities to express itself as art or as a “space” for translating socio-cultural phenomena. “Nature-architecture”, in the author’s opinion, appears as one of the dominant trends in contemporary architecture, which communicates to nature and tries to find harmonious links between the tectosphere and the biosphere. Examples are the Eden Project (United Kingdom, Cornwall, St. Austell, by Nicholas Grimshaw), the Tower Flower House (France, Paris, by Edouard François), and the TOD’S Omotesando Building (Japan, Tokyo, by Toyo Koichi). Tokyo, by Toyo Ito), Mapungubwe Interpretation Centre (South Africa, Limpopo Province, Mapungubwe National Park), Florida Polytechnic University Science, Innovation and Technology Campus (by Santiago Calatrava Architects & Engineers), etc. “Nature-architecture” thus encompasses a wide range of contemporary approaches, design methods, and creative and philosophical attitudes that manifest in various qualities of their affinity with untouched nature: natural symbols and patterns, “sustainable architecture”, energy efficiency, nostalgia and the emotional-spiritual aspect. “Flexie-architecture”, notes the author, should be considered as a generalizing category describing the totality of contemporary architectural and architectural-artistic objects capable of all kinds of natural or illusory reversible dynamic adaptation i.e. adaptation to the changing states of the external and internal environment, operating conditions and consumer demands. Such projects as Institut du monde Arabe (France, Paris, by Ateliers Jean Nouvel), The Milwaukee Art Museum (USA, Wisconsin, Milwaukee, by Santiago Calatrava Architects & Engineers), Wings of Iidabashi subway station (Japan, Tokyo, Iidabashi subway station, by Makoto sei Watanabe), Hotel Dasparkhotel (Austria, Linz, Austria). The author Andreas Strauss), a multimedia performance for the 100th anniversary of the Museum of Biology “Jena Illuminated”

(Germany, Jena, Robert Seidel) and others explain the conditioning of “Flexie-architecture” by external factors for the architectural system (science and technology), which affect not even the aesthetics, but functionality and constructability. In turn, “Extreme-Architecture” from the author’s point of view, is associated with the natural development of highly uncomfortable or dangerous spaces and environments and with the preparation for emergencies of natural and artificial nature by architectural and engineering means. Such projects as Dano Secondary School (Dano, Burkina Faso, by Diébédo Francis Kéré), Undersea Restaurant “Ithaa” (Maldives, Rangali Island, Conrad Maldives Rangali Hotel, by M. J. Murphy Limited), Alvernia Studios (Poland, near Krakow, by StanisławTyczyński), National Space Centre (U.K., Leicester, by Grimshaw Architects) and others are more “scientific”, i.e. technical and natural sciences are responsible for shaping and, at the same time, natural and humanitarian sciences are responsible for psychological comfort.

From our point of view, the concept of performance is seen in all meta-directions of modern architecture formulated by S. Zhuikov, as well as most of the examples of architectural objects presented in the author’s work reflecting the concept of futurism to some extent, with the only difference that in each case the extrospective art elements complementing its ideology have a different message and give different and/or mixed cultural characteristics - artistic and (or) material and (or) spiritual. Performance is a shift of semantic emphasis, both in culture and in art [14; 15; 16; 17; 18].

The category of “performance” was formulated in the mid-twentieth century in linguistics but later spread quite rapidly to other fields of science, culture, and art [19;16]. However, characterizing it as an interdisciplinary phenomenon and considering its constant development and transformation, it is generally possible to understand why performance is still beyond the scope of a single scientific knowledge to this day. Thus, in works on the philosophy of art, cultural studies, and art criticism, researchers note several essential characteristics of performance as a phenomenon of the creative and social life of society [20; 21; 22; 23; 24]. For example, A. Pérez-Gómez, considering performance as an autonomous type of contemporary art, emphasizes its processuality. The action realized by the performer (organizer) at a particular time and place takes place according to the idea, the scenario of the performer with the passive or active participation of the spectator(s) [25]. The audience involvement in the performance (participation [16], during which there is communication between the participants and the objects of the performance, is seen as a technique of intensification and exacerbation of the resulting psychological effects and aesthetic experiences, i.e. perceptual practices in general, which increases the value of the performance [26; 27], while in order to aggravate the effects of interactive communication different channels of perception are involved - visual,

auditory, kinesthetic [28]. Also, A. Pérez-Gómez addresses another side of performance - its temporal properties; unfolding in real time, performance is open to the influence of many factors, which undoubtedly predetermines the uniqueness of each event, initiating certain perceptual practices [29; 30, 31]. The time frame of performances is quite broad, ranging from minutes to years [32; 33]. For each specific event, they may not be set at all by the author of the performance. The participants determine them in the course of the action. Thus, using standard forms of human communication (public events, city festivals, flash mobs, etc.), performance art blurs the boundaries between art and life, artistic and utilitarian things and phenomena, which allows us to talk about this phenomenon as a flexie-phenomenon. As E. Fischer-Lichte notes, performance is “an event or action that is always marked by an aesthetic quality. It requires mastery, and its important properties - expressiveness and signification or symbolism - make it almost always a fact of art” [34]. Accordingly, it is also appropriate to categorize performance as “art” in terms of its artistic functionality.

A very narrow range of authors considers the performance phenomenon in architecture at the present stage (H.H. Alzoubi, A.H. Al-Zoubi, T.V. Karakova, B. Kolarevic, D. Leatherbarrow, A. Pérez-Gómez, M.R. Nevlyutov, J. Navarro and others). Mostly, they focus on two types of architectural performative - technical vs productive and contextual vs projective (which allows us to confirm the performativity thesis regarding nature-architecture and extreme architecture). The first is connected with movement (kinetic architecture), and the second represents the living process of creation and life of the building in a specific spatial and temporal context. The second type of performativity interprets performativity as the existence of architecture in time; attention to the process of existence of the architectural object explains the value and uniqueness of changes (traces of time), largely due to the context and carrying new meanings. T.V. Karakova, D. Chi, D.M. Rangel, J. Navarro et al., studying perforation as an instrument of performance in environmental design and architecture, note the role of the designer as the organizer of performative action: the artist’s conceived play of light in the perforated elements of architecture transforms the original meaning of the form, endows it with a new image (extrospective art elements), forms new relationships with the viewer [35; 36]. E.YU. Vitiuk, U. Poerschke, D. Rim, Gen Pei, H. Mirhosseini et al., considering installations as spectacles, emphasize the active role of architectural objects, often acting as the “actor” of the event [37; 38]. Also, the authors note the procedural nature of the action with the audience’s active participation.

These provisions, in our opinion, show both the relevance and prospects for studying manifestations of performance in futuristic architecture, giving the possibility of applying performative analysis to architectural objects.

3. Methods

The peculiarities study of the translation and retranslation of the Futurism concept in the design-architectural solutions of the XXI century in the interdisciplinary aspect has determined the need to use a systematic approach, the main ideas of which are presented in the works of famous Russian and foreign scientists. The following main methods are justified for their consistent implementation: method of retrospective analysis, which allowed clarifying the moment of starting the practice of synthesizing “pure” futurism with elements of other styles and directions of architecture, the method of comparative analysis, which allowed us to look from different angles at how the concept of futurism is manifested in concrete examples of the product of architectural art, the method of synthesis, which connects the interpreted and reconstructed material on a new level, the method of structural and functional analysis, which allowed us to approach the understanding of the phenomenon of futuristic performance in modern architectural solutions, as well as the method of content analysis of publications in modern scientific sources and the media, covering the contemporary. Also important is the informational approach, which implements the method of scientific cognition of objects, processes and phenomena of nature and society, aspects that determine their functional development. Among the classical techniques were such as induction, deduction, traduction, idealization, the ascent from the abstract to the concrete, and so on.

4. Results

Futuristic architecture emerged at the beginning of the last century; then begin to appear such projects of urban planning, which implemented utopian ideas, such as the “garden city” (E. Howard), “flying city of futurism” (G.T. Krutikov), “city-line” (I.I. Leonidov), “New City” (A. Sant’Elia), etc. A.V. Ikonnikov notes: “Specialized utopias, including architectural utopias, which were also tested for feasibility, like the new social paradigm, emerged not in the system of an established (albeit unstable and shaken) reality, but in a situation where disparate fragments of a destructive system were remade and bound together by new elements and new links of a utopian model” [11]. Utopian thinking in the architecture of the time, as the spirit of the era of modernism, was universally reflected in different styles of architecture, which, to some extent, turned architecture into a pure function, a pure ideology, significantly changing its symbolic knowledge. Thus, A. Sant’Elia is still recognized as a variant of absolute futurism. His scheme has the character of graphics, i.e., the city is depicted in a generalized, energetic and fantastic way. The author’s convincing fantasy, Chuan Dai notes, “gives expressiveness to the generalized form of his drawings, exposing the contracts of the sloping terraced

volumes of buildings and vertical elevators, the massiveness of buildings and the lightness of bridges and passages. Flat roofs crown the buildings—the roof over the central city station was also supposed to serve as an airfield” [39]. In general, this is where the technocratic idea of machine form and other elements of futurism are embedded. “It was implied that in the New Town, they would be removed by technology development, which both in the text and in the drawings of A. Sant’Elia are interpreted not rationally, but romantically”, writes A.V. Ikonnikov (p. 216).

It is worth saying that E. Howard’s idea of the “garden city” emerged as early as the late 17th century as a response to the unsolvable housing problems of the capitalist era, caused primarily by the high cost of urban land. Thus, the central idea of the “garden city” was not a “scenic plan” or a project to create a “green place with flowers” but an urban policy, the housing issue. The reason was that “they were cheaper to build and operate than high-rise and apartment buildings. Fundamental to such a self-governing, self-developing, self-sufficient settlement was not the number of trees or shrubs. However, the destruction of human exploitation by man and housing need” [40]. Again, it is evident that the imperative idea of the “garden city” is an urbanist one; it is worth saying that at the time it was popular in Europe and Russia as well. The Howard project illustrates an example of architecture with elements of utopia, or, in modern parlance, sustainable development architecture, where “form is the organization of space and the material structures of an object (a building, structure, group of buildings) that provides the necessary physical qualities of the environment and the purposeful ordering of a given set of processes of life, while symbolically expressing the information about these processes and the meanings associated with them” [11]. In other words, the architectural form, correlated with the function of the architectural object as a way of its implementation, should express this function, not necessarily in the physical parameters of its spatial articulation. The kinetic architecture of the 1930s later adopted this ideology; one of the first examples is the Villa Girasole project, a house rotating around its axis (near Verona). The first building in motion (40 m high), is a mix of the then popular Art Deco and futuristic trends expressed in the choice of reinforced concrete as a building material. The exterior design was also very avant-garde - cladding with aluminium slabs to create an “aviation” effect. The villa, designed by the Genoese engineer Angelo Invernizzi, makes a complete revolution in 9 hours and 20 minutes (4 mm/s). The building consists of two parts: the “base”, equipped with rails, and the residential two-story housing, topped with a tower - with 15 wheels, which rotates the engine power of three horsepower. It is controlled by remote control and moves in any direction. It is interesting to note that the engineer’s idea completely correlated with Le Corbusier’s concept of a “living car”. The house has retained its external appearance and rich

“internal content”. However, it now houses a museum. Moreover, in March 2018, architect Roberto Rossi built a house on the outskirts of Rimini, a homage to Villa Girasole, by his admission. Located on a central pillar, the octagonal structure can rotate 360 degrees in both directions.

It is worth noting that Art Deco was rarely used in the practice of private construction, mainly because “the clean lines and minimal decoration of this style were associated with entertainment and glamour. Indeed, it was also characterized by a wealth of colour, bold geometric shapes, strict regularity, and ethnic geometric patterns. Art Deco was first used for public and commercial buildings in the 1920s. One of the most profound examples of Art Deco is the Chrysler Building by Architect William Van Allen and the American Radiator building by Raymond Hood in New York City [41]. Architects of Washington DC were the first to adopt the style in apartment buildings. Most of the Art Deco buildings of New York and Washington DC have now earned the status of Heritage Buildings due to their rich artistic features [42]. In France, Art Deco is associated with the architect Albert Laprada. In 1931, the International Colonial Exhibition opened in Paris, dedicated to the culture and traditions of France’s colonial possessions. It lasted for six months and essentially became a global forum for discussion of colonialism. One of the main venues for events to coincide with the exhibition was the Colonial Museum, whose architect was A. Laprad. He had already experimented with Art Deco at the International Exhibition of Modern Decorative and Industrial Arts in 1925; we should say that it is considered the first milestone in developing the new style. To house the Colonial Museum, A. Laprad built the Port-Dore Palace with a strict symmetrical facade decorated with a relief composition by the sculptor Alfred Jannio. The building depicts landscapes and life scenes in the French colonies, symbolizing their importance to French culture—the frescoes on the walls of the halls echo this motif. Today, the palace houses the Museum of Immigration and the Tropical Aquarium [44]. In the USSR, Art Deco architectural projects in their pure form, i.e., were not particularly widespread, as they were associated with capitalist excesses (of the few examples, we can name a Square and a Cube: The Frunze Military Academy. Frunze, by R. Rudnev; the Electric Substation of the Moscow Metro, by D. Friedman; the First House of the Lensovet, by I. Fomin, E. Levinson; the Palace of Soviets, by B. M. Iofan, V. A. Schuko and V. Gelfreich). For a long time, Soviet pre-war architecture remained in the shadow of, on the one hand, the promising projects of the avant-garde era and, on the other hand, the large-scale construction of the 1940s-1950s [45]. Art Deco was not widely used in Russia until the 1990s, and it is still in high demand.

The so-called GOO ghee architecture succeeded the Bauhaus era, which provoked, to W. Friedlander, “car culture, jets, the Space Age, and the Atomic Age” [43]. This trend of futurism is characterized by curved shapes,

vertical roofs, plenty of steel, neon, nickel, glass, and symbols such as flying saucers, boomerangs, parabolas, and atoms that emphasize swiftness and speed. It is worth noting that “GOO-ghee” was the name of the first coffee shop designed by John Lautner (a student of Frank Lloyd Wright) in 1949 in West Hollywood; the term entered the architectural vocabulary thanks to the famous 1950s critic Douglas Haskell. The famous critic Douglas Haskell introduced the term into the architectural vocabulary. He would later write a scathing article in *HouseandHome* magazine about exaggeration and the use of dramatic angles with materials like steel and plastic coupled with the fascination with neon [46]. To which Haskell himself argues, “You underestimate the seriousness of Googie. Think of it! - Googie is produced by architects, not by ambitious mechanics, and some of these architects starve for it. After all, they are working in Hollywood, and Hollywood has let them know what it expects of them” [47]. The GOO-ghee style mainly was used to build coffee houses, motels, and gas stations. The best-known examples illustrating it are McDonald’s restaurant in California, Johnie’s Coffee Shop in Los Angeles, Theme Building at Los Angeles Airport, Harvey’s Broiler restaurant in Downey, the main terminal of Washington Dulles Airport, and Space Needle Tower in Seattle. GOO-ghee-architecture, in addition to J. Lautner, also traditionally includes Wayne McAllister, Douglas Honnold, Louis Armet, and Eldon Davis. This trend was popular until the mid-1960s; architects rarely turned to it, considering it too vernacular and garish. By the 1970s, GOO-ghee had all but disappeared; it was not until the turn of the century that South African architects returned to it. Metropole Architects built the Albizia house on the grounds of the Simbithi Eco Estate. An unusual style combined with natural building materials made the cottage a quality modern residential architecture model.

In the mid-1960s, GOO-ghee architecture is replaced by neo-futurism, promoted by the scientific and technological revolution and the related new philosophical trends in art and architecture. In the late 1960’s - early 1970’s, American architects John Calvin Portman Jr. and Buckminster Fuller laid the foundations of a new style. The further development of neo-futurist took place thanks to the work of authors of various directions of visual art: thought leader, critic and art historian Hol Foster; Finnish-American architect and industrial designer Eero Saarinen; the English architectural group Archigram (Peter Cook, Warren Chock, Ron Herron, Dennis Crompton, Michael Webb and David Green), based at the Architectural Association in London; the American avant-garde architectural group ArchiGO, based at the Illinois Institute of Technology Danish architect Henning Larsen; Czech architect Jan Kaplický; Swedish artist Simon Stalenhag; Italian light sculptor Marco Ladole; American conceptual artist Sid Mead (author of concepts for *Alien* and *Tron*); American theatre screenwriter Greg Allen and Russian poet Andrei Voznesensky [48]. The ideological basis of these artists

was modelling a utopian future state of urban settlement systems, objects of architecture, urban planning and design using the achievements and predictions of science and technology. For example, the Fun Palace, designed in 1961 by the British architect Cedric Price but never realized, which, in the author’s own words, was conceived as a “giant neo-futuristic machine”, influenced other representatives of the architectural avant-garde, such as Richard Rogers and Renzo Piano. Many of Price’s ideas were further developed in this creative duo’s design of the Pompidou Center in Paris. Neo-futurism was greatly influenced by the conquest of outer space, scientific discoveries and new technologies and materials. However, architecture is still relevant to mobility, dynamism, contrast and maximum technologization.

Neo-futurism entered the visual arts with new force at the end of the first decade of the 21st century, after the publication of “The Neo-Futuristic City Manifesto”, included in the candidature presented to the Bureau International des Expositions (BIE) and written by innovation designer Vito Di Bari (a former executive director at UNESCO), to outline his vision for the city of Milan at the time of the Universal Expo 2015. Di Bari defined his neo-futuristic vision as the “cross-pollination of art, cutting edge technologies and ethical values combined to create a pervasively higher quality of life”; he referenced the Fourth Pillar of Sustainable Development Theory and reported that the name had been inspired by the United Nations report *Our Common Future* [49]. Indeed, many of his contemporaries-urbanists, architects, designers, artists-believed in cities that unleash emotion, driven by eco-ethical values of integrating new materials and technologies to maximize public comfort [50]. From our point of view, it was the revived neo-futurism that became the starting point for the performance of architecture, as evidenced by the launch of the mechanism of shifting the conceptual component of futurism from material to artistic, complementing the ideological message through both introspective (digitalization) and extrospective art elements (flexization).

The proof of our position is the emergence in the 1980s of a new direction of futurism - deconstructivism. However, as F. Asim and V. Shree, neo-futurism and deconstructivism are linked, making it difficult to determine where to draw the line between their different aspects (Asim & Shree, 2018). Although, deconstructivism relies on Computer-aided design (CAD) to visualize various forms and tendencies of the material and design elements. It opposes the established periphery of modernism and post-modernism regarding rationality [51]. One of the most famous representatives of deconstructivism is considered to be Frank Owen Henry, the leading American architect of the postmodern era and winner of the Pritzker Prize. His notable associates include Zaha Hadid, Daniel Libeskind, Rem Koolhaas, Bernard Tschumi and Peter Eisenman. The most famous buildings in the deconstructivist style are the Dancing House in

Prague, the Guggenheim Museum in Bilbao and the Pop Culture Museum in Seattle, designed by Frank Gehry; the Porta Fira Hotel in Barcelona, designed by Toyo Ito; the Seattle Public Library, designed by Rem Koolhaas; the UFA-Palast Film Center in Dresden, designed by the Austrian architectural firm Coop Himmelb (l)au. As J. Dolan pointed out, in the mechanics of deconstructivism, we see a new utopia whose symbolic model is dominated by the author's idea of performance [52].

At the same time, in our view, the understanding of performativity in the context of futuristic architecture as a transformation of an object in time and space makes the dynamics of performance temporally almost infinite; the action becomes indistinguishable, and the category of time itself becomes unreadable. This "effect", to a certain extent, separates the considered kind of performativity of futuristic architecture from the formative signs of performance developed in other kinds of visual art, among which the category of time - the "magic of readable action" - is one of the priority aspects that shape feelings, emotions of the viewer and perceptual practices in general, which is the goal and, at the same time, the result of performance. Such a context allows us to identify the corresponding to its vector manifestations in futuristic architecture, where it acts as an active participant in events in which the category of time, as well as the category of space, is rhythmically consonant to the actions and experiences of man. Accordingly, it is advisable to focus on the following two forms of participation of futuristic architecture in performances: as their object and subject.

In the first case, from our point of view, it is relevant to talk about architecture in general, which through specific actions acquires a futuristic image. So, as an example, we can take 3D mapping. This digital technology at the present stage is one of the most popular forms of performance, as evidenced by the trend of light shows. So in the pre-Christmas period, light projections on city buildings are used in England (Oxford Street, London), the United States (Rockefeller Center, New York, Farolito Walk on Canyon Road, Santa Fe, New Mexico), Italy (Festival of Lights Luci d'Artista, Salerno, Italy), the Netherlands (Festival of Lights in Amsterdam), Denmark (Tivoli Park, Copenhagen) and so on. Various colourful, dynamic images, both related and not related to the visual characteristics of the building, are displayed on the facades of buildings. Events that use 3D mapping are usually of an advertising and entertainment or entertainment and educational nature and are held with a large audience. One of the essential objectives of video mapping actions is to elicit emotional and psychological reactions from the audience and to involve them in active participation in the show. Viewers experience the most potent emotions when a static structure begins to collapse or fall on them virtually. The emotional atmosphere of darkness intensifies the experience, the theatricality and performativity of the event. In video mapping shows organized according to an intended scenario and with specific goals, there is an

artistically meaningful action to generate an emotional and psychological reaction in the audience, engaging them in the process. As a result, no artefact is produced, only emotional experiences and cultural experiences. These aspects allow us to classify such shows as performances in which architecture acts as an essential object. Many video mapping performances are projected onto well-known and recognizable architecturally expressive buildings that have deep cultural meanings in people's minds. Interactive images instantly transform a well-known building, endowing it with new meanings, and constructing a new virtual image.

In this context, we should also refer to flexible architectural objects whose performative context has a different temporal context. So, for example, the MegaFaces pavilion in Sochi, Russia (arch. Asif Khan, "iart") "sketches" the image of modern futurism with the help of an interactive kinetic system, which consists of eleven thousand telescopic pistons with LEDs mounted in them. Inside the building, are cameras for three-dimensional scanning of people's faces, whose images are broadcast on the facade, creating giant bas-reliefs of all the guests of the XXII Olympic Winter Games Pavilion. In another Russian city, Yekaterinburg, in 2015, the Yeltsin Center, the Presidential Center of Boris Yeltsin (authors - Sergey Aleynikov, Vladimir Gromada, Boris Bernaskoni - facades) was planned to be located in a regular city mall. However, due to the visual inconsistency with the essential cultural status of the project, the building decided to "futurize" and make it modern and "dynamic" by using perforated metal Gradac tapes with embedded LED panels. The result was spectacular: a colourful large-scale media facade has become a permanent active art project, strengthening the city's positive image.

Another type of performance arises from this one - destruction as a translation of the building's "life" outside time and space. As the Russian scholar M.R. Nevlyutov notes, "Architecture is a living essence that struggles with external conditions, but which eventually lead to its disappearance. The destruction process of a structure is as inevitable as the emergence, and the completion of the life of architecture is no less significant than the creation" [14]. However, this option can be considered from two sides. So, on the one hand, dismantling several structures unique in their spatial and structural characteristics is carried out as a performative action. For example, the explosion of the unfinished television tower in Ekaterinburg was a notable event in the socio-political and media life of the city. As a past performance, this spectacle attracted a large audience by watching the event live and documenting it in photos and video. As a result of this performance, the audience received an experience related to the memory of the historical trace of the demolished structure in the life and image of the city. The performative event (explosion) is the main spectacular content, in which the architectural structure is the primary object involved in the performance.

On the other hand, the performative effect is prolonged when it comes to the restoration of historical buildings, respectively collapsing ones, the visual resonance of the result of which is evoked due to the synthesis of classical and futuristic architecture. A famous example of this architectural performance is the reconstruction of the Dresden Arsenal building. The main arsenal of the city garrison was inaugurated in 1877 and existed until the end of the First World War. Then the arsenal was closed because it was no longer needed, and the buildings were rented for warehouses and exhibitions. In 1914 the house was occupied by the Royal Museum of the Saxon Army (later the Museum of the Ground Forces), which was open till 1945. After the defeat of Germany in the Second World War, all war museums in the country were closed. Fairs and exhibitions of paintings began to be organized in the building. In 1972 the Museum of the Armed Forces began to work here again. During the reconstruction, it was decided to combine the old building from 1877 with a futuristic part designed by architect Daniel Libeskind. It is a construction in the form of a wedge, which seems to pierce the museum. According to the author's idea, the project symbolizes the contrasts of the country's military history. However, this example is somewhat unprecedented, as the extrospective art element, which complements the military-historical ideology, conveys both an artistic and material and spiritual message.

Turning to the second form of participation of futuristic architecture in performance art, it should be emphasized that the expanding variety of performances of the late 20th and early 21st centuries allowed researchers to distinguish a form of delegated performance in which the author delegates the implementation of the action to other performers. At the same time, not only people but also "artefacts (things and inanimate matter), techno-facts and eco-facts (plants, insects, animals)" [16] are endowed with the capabilities of the acting subject. This aspect allows us to consider futuristic architecture as a possible active subject of performance, to which the architect delegates particular projected performative possibilities. A similar happens in the most obvious way in integrating the kinetic element in a specific architectural solution. D. Leatherbarrow notes that among the various purposes of using kinematics in architecture, the aesthetic spectacle realized as an event in time is one of the main ones [53]. In this regard, the moving elements and the transformation scenario are designed by the architect from the perspective of creating a visually spectacular show. This show is a performance piece that produces an architectural structure, organizing the audience around it and delivering an aesthetic experience. Works such as the Quadracci Pavilion at the Art Museum in Milwaukee (USA) make an impression primarily through the performative work of kinetic elements. V.N. Babich and A.G. Kremlev, focusing on these examples, specify that the dynamics in architecture (dynamism of architectural form, architectural dynamics) can be expressed both by creating buildings and

structures capable of natural movement (transformation of structures) and by artistic imitation. For the latter, continue the authors, the very concept of dynamics is based on the visual perception of the architectural object, when the illusion of movement of the object, which remains physically immobile, is created. Such visualization, the authors continue, proceeds from specific external characteristics (properties) of the perceived architectural and artistic form secured by specific compositional techniques [54]. Thus, we can again speak of the binary nature of performance expressed in the objects of futuristic architecture.

As an example of actual kinetics, we can take transformer houses. For example, British architects David Ben Grunberg and Daniel Wolfson have designed a "multifunctional" house that, depending on the weather conditions and time of day, can "try on" eight different configurations, which is made possible by rails on which the segments are rolled out so that the interior partitions turn into exterior walls. The concept grew out of mathematics: the designers used Henry Ernest Didney's formula: a square transforms into an equilateral triangle, then decomposes into four modules which are reassembled into a triangle. The house project was the thesis work of D. Grünberg for implementation in the extreme weather conditions of Lapland. According to his project, the house is "rolled up" in cold weather into an airtight cube that retains heat. In the warmth, on the contrary, it opens its "petals", letting in maximum light and air. Of course, speaking of kinetics, it is impossible not to mention such futuristic formations as dynamic facades. One of the most ambitious adaptive solutions to date remains the "glass envelope" of the 25-story El Bahr towers by Aedas Architects (Abu Dhabi, 2012). This unique screen consists of 2,098 fibreglass elements, similar to origami umbrellas. With sunrise, they close on the eastern side of the structure and open on the western side. With the last ray, respectively, the function is the opposite. Windswept Installation on the facade of the San Francisco interactive Randall Museum dedicated to science, nature and art (Charles Sowers Studios, 2011) is a screen installation (6 m high and 10 m wide) with 612 arrows that rotate in different directions, thus visualizing the movement of air.

As an example of artistic kinetics, one of the first spiral-shaped high-rises is Turning Torso from Malmö. The project was designed by Spanish architect Santiago Calatrava and completed in 2005. The tower is 190 m high and has 54 floors. The building has 147 apartments, a spa and a wine cellar. Turning Torso is the tallest skyscraper in Sweden. Upon completion, it became the tallest residential building in Scandinavia and the second tallest in Europe, after the 264-meter skyscraper "Triumph Palace" in Moscow. The residential building is constructed of nine segments of pentagonal five-storied buildings, which repeat the spiral shape as the building rises. The uppermost segment is rotated 90 degrees concerning the first floor. It is also interesting to give an example of Absolute World;

these are paired residential skyscrapers in Mississauga, Ontario. One of the towers is 179 m high, and the second is 161 m. The author's main goal was a good view from any point of the high-rises. In this regard, from the base to the top of the buildings, tapering to the centre, rotating 209 degrees, on the same principle as the Turning Torso. The skyscrapers have been nicknamed the "Marilyn Monroe Towers" for their curved outline [55].

Speaking of illusion and artistic dynamics, it is essential to understand that many art elements can act as extrospective. For example, we can talk about moving water (streams, jets, drops); including water in a futuristic architectural object is one of the techniques of creating a performative show with a substantial impact on man's emotional world. Different types of fountains and water streams are popular in solving exteriors, interiors of buildings and landscaping of the urban environment. It is a well-known fact that many fountains act according to predetermined scenarios, involving the audience in a performative action. The architecture engages visual, auditory and tactile channels of perception to heighten the aesthetic and emotional perception in contact with water components. The best-known example is the Crown Fountain in Millennium Park (Chicago, USA, by Jaume Plensa), a double-sided fountain 15 meters high with two glass-block towers with LEDs embedded to display a digital video on their inner sides facing each other. The object stands 70 meters long on black granite. Each day Crown Fountain entertains passersby by broadcasting about 1,000 videos of Chicagoans from various communities and age groups. Each portrait is shown for about 5 minutes; as soon as the person on the screen presses his or her lips together, water begins to run off his or her face. Each portrait is randomly generated, and the fountain turns black as it transitions between faces; at night, it glows in different colours.

Moreover, the facades of modern futuristic buildings become a field of creativity for artists who create 3D graffiti paintings, visually forming a new illusory volumetric-spatial composition of the building. Such "renovation" of the appearance in the paradigm of performative life of the architectural object can be interpreted as a continuation of its design and creation, i.e. a prolongation of its futuristic effect. To feel the emotional power of illusion, one has to go around the building and look at it from different angles to feel the details of 3D effects and their interrelation with architecture. So the building unfolds its illusory performance for each viewer. Many artists work in this direction of futuristic performance; however, not all of them reflect this direction's primary (generic) ideology. From our point of view, one of the conceptually correct examples is the graffiti in the streets of Valparaiso, Chile. Initially, a form of protest during the dictatorship, graffiti became a cultural trend, gaining popularity. After assessing the situation, the authorities concluded that it would be better to legalize street art so it could be controlled and kept within aesthetic

norms. The tradition, of course, with time, went beyond Valparaiso and "came" to large cities such as Santiago, where graffiti reflects, in our opinion, the modern interpretation of the concept of GOO-ghee-architecture.

One of the ways to visually "dissolve" a building in space is using mirror facades, reflecting the environment and effectively merging with it. This dissolution of the boundary between the real and virtual worlds is a characteristic technique in the art of architectural performance. Mirror building intrigues and encourages to walk around it from different sides, catching the visual effects of dematerialization, thus organizing performative actions and formulating memorable perceptive experiences. It is how the facades of the Boijmans van Beuningen Museum in Rotterdam (Netherlands) are designed, lined with mirrored panels (by MVRDV). The futuristic object organizes a performance in which the vibrant urban life is reflected in the facades and allows observers to follow it and themselves from the side as if on a giant monitor screen. Another technique of visual dematerialization is demonstrated by a church in Borglon (Belgium) (by Pieterjan Gijs, Arnout Van Vaerenbergh), made of metal strips stacked in horizontal rows with air layers to give the effect of building transparency. Walking around the building, seeing it from different angles, and going inside to maximize the impression is necessary. In this performance, the building altogether "dissolves" in space and becomes a massive monolith, causing many emotions in the observer.

5. Conclusions

Futurism was formulated initially as a style broadcasting the ideology of striving for the future, the "ideal space for life", which to a certain extent reflects only its material impolitic component, during the 20th century and the first two decades of the 21st century has transformed into a unique format of visual art, involving both artistic and spiritual components, without losing the original "thought" in the course of its evolution. The study of various movements of futurism, which replaced each other during the last century, dying and reviving, proves that every architect, every artist or designer was trying to reflect in his work not only the extrospective (material message, connected with social, political, economic or other problems) but also the introspective image of the environment (objective vision of problems, which solution can be expressed using artistic and spiritual message), in which the work is embedded. Thus, it is possible to conclude that futurism, from the moment it crossed the "material line", began to be realized in architecture as a result of author improvisation, which to a certain extent proves the hypothesis posed at the beginning of the article, that the architectural styles formulated as a result of the evolution of visual art, indeed accepted by the public and recognized by the professional community, and gained a

stable position on the world arena of architecture, are the result of performance, in the framework of which the artist, preserving the id We think that futuristic performance should be regarded as a processual kind of architectural art which extends and spreads to all the new stylistic solutions within it, thus becoming an interdisciplinary phenomenon, characterizing synthesis of architectural, visual (painting, graphics, sculpture) and digital (visual effects created by digital technology) arts, which allows us to discern the eclectic vectors of its development.

On the whole, it is possible to point out the following fragments of performance art in futuristic architecture, based on the characteristics of performance art identified in culturological and art history studies:

- participation of futuristic architecture in artistic processual action, in which it acts as an object (the instrument of performance) or, more valuable, as a subject (the organizer on the principles of delegated performance);
- a shift of emphasis in performative objects from architectural and artistic qualities of form to the depth and power of emotional and psychological reactions to the performative action of architecture
- involvement of visual, auditory, and tactile perception in the performances of futuristic architecture;
- the combination of artistic and utilitarian aspects in futuristic architecture corresponds to the ideas of performance that extend the creative principles and the artistic component to everyday life.

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