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ARCHITECTURE IN THE CITY OF TOMORROW

O ARCHITEKTURZE W MIEŚCIE PRZYSZŁOŚCI

Abstract

The dynamic spatial and technological development of cities often raises the question of the meaning and role of architecture in contemporary and future urban structures, which is the subject and purpose of research. The observation of activities that take place mainly in large cities raises the concern of an attempt to redefine the concept of architecture, unfortunately in the direction of flattening its meaning and losing its value. The research methods are mainly literature on the subject, analysis of available material on the examples studied, and the comparative and individual case method. The result of the paperwork is mainly to find the main characteristics of the cities of tomorrow and to define their impact on architecture as well as on people.

Keywords: architecture, city of tomorrow

Streszczenie

Dynamiczny rozwój przestrzenny i technologiczny miast często wywołuje pytanieo sens i rolę architektury we współczesnych i przyszłych strukturach miejskich, co stanowi temat i cel badań. Obserwacja działań zachodzących przede wszystkimw dużych miastach rodzi obawę o próbę przedefiniowania pojęcia architektury, niestety w kierunku spłaszczenia jej znaczenia i zatracenia wartości. Metody badawcze wykorzystane w pracy to głównie analiza literatury przedmiotu, analiza dostępnych materiałów dotyczących badanych przykładów oraz porównanie i metoda indywidualnego przypadku. Rezultatem artykułu jest przede wszystkim odnalezienie głównych cech charakteryzujących miasta przyszłości i zdefiniowanie ich wpływu na architekturę, a także na człowieka.

Słowa kluczowe: architektura, miasto przyszłości

1. INTRODUCTION

More and more studies and projects are being produced on the form and principles of the cities of tomorrow, mainly linked to major social, technological or communication developments. Even the term "city of tomorrow" has become part of everyday language. The dynamic spatial and technological development of cities often raises the question of the meaning and role of architecture in contemporary and future urban structures, which is the subject and purpose of research. Observation of the activities taking place, especially in large cities, raises the concern of an attempt to redefine the concept of architecture, unfortunately in the direction of flattening its meaning and losing its value. Things that do not have the characteristics of architecture are trying to be called architecture. Are unlimited technological possibilities that have a surprising effect, the unusual scale of buildings, the so-called iconicity of buildings or perhaps the popularity of objects the new characteristics of architecture?

Undoubtedly, they constitute the uniqueness of a building, but very often this uniqueness is mistakenly called architecture. After all, architecture is neither a building nor a function…

Architecture in the city of tomorrow is a subject of interest to architects as well as to the inhabitants and other visitors. The problems of defining the word architecture are not the subject of this paperwork, but the purpose of the work requires a general outline of the framework of this definition in order to present the plane on which we will move. This is also due to the fact that the word architecture is increasingly used in meanings that have nothing to do with architecture. Firstly, in the context of construction, architecture is often used to describe the appearance of something built, which is not true, as architecture is not simply a building. It is also used in situations that have nothing to do with buildings, such as the architecture of a computer system or a website. As a result, architecture is less and less talked about in colloquial terms. Even in professional circles, discussions about architecture often focus on modern technological solutions or renewable energy sources, which are of course very important, but only in the context of architecture.

This text refers to some extent to the article "The next avant-garde of architecture", written as part of last year's academic conference. The article considered the possibilities and scale of change and development of buildings and urban spaces that could constitute the next avant-garde of architecture.[1]

An analysis of the design and realisation of the cities of tomorrow leads to the prediction that architecture will become less and less relevant to the general public, particularly at the scale of large cities, where the focus will be primarily on technology, systems or communication. In all likelihood, the development of artificial intelligence will influence the appearance, character, scale and communication of the cities of tomorrow, with direct implications for architecture.

According to Vasily Kandinsky, "the idea of any research is: 1. careful analysis of individual phenomena – isolation, 2. study of the interaction of phenomena with each other – confrontation, 3. drawing general conclusions from these two approaches"[2]. This approach to the subject always leads to great accuracy, but it requires a wide range of research. This paperwork is a definition of the problem and a preliminary identification of its characteristics and possible solutions, which can serve as a basis for further research on the subject.

2. CITY OF TOMMOROW

The starting point for the discussion of the topic that is the subject of this article should be an elaboration on the concept of the *city of tomorrow.* When we read or see information on the subject, we notice a rather general use of the term. Most often it refers to modern urban structures built from scratch. The most innovative project currently underway is a city under construction in Saudi Arabia called *The Line*, designed by Morphosis, which will be part of the emerging *Neom* megastructure. The term also refers to visions of existing cities in the future. In principle, the term should be considered on two general, interrelated levels.

[1] M. Głuchowski, *The next avant-garde of architecture* [in:] T. Kozłowski (ed.), *Defining the architectural space – avant-garde architecture*, vol. 3, Oficyna Wydawnicza ATUT – Wrocławskie Wydawnictwo Oświatowe, Wrocław 2022, pp. 47–54.

[2] W. Kandyński, *Punkt i linia a płaszczyzna*, Officyna, Łódź 2022, p. 20.

The first is land use, including all the structures in a city, which is the main focus of this paperwork; the second is the other values that make up a city, such as sociology, economics, statistics or politics. For a long time, society has been analysing the possibilities of urban development or working on a vision of structures that are emerging from scratch. Such activities are a natural desire for spatial and social development. New visions of the future emerge all the time, but they quickly become outdated. Artificial intelligence will be a particularly important factor leading to large-scale change. The extent to which it will influence the shape and form of cities, as well as everyday use, will be very significant, especially in cities that are being built from scratch. The aforementioned The Line can be cited again here, where an unusually high degree of artificial intelligence in the facilities in question and their use was already taken into account in the design of the city. We see a desire to control as many aspects of life as possible. Artificial intelligence in the cities of tomorrow is a topic that has already begun and, according to many researchers, the great unknown is in which direction it will develop. Taking into account the spatial aspects, i.e. the closed form of the city in a single building volume and the great impact of artificial intelligence on human life, the question can be raised whether the project under construction will actually be a real city, since one of the characteristics of a city should be openness to its surroundings?

The above example of the city of tomorrow, which is already under construction, shows another important innovation – the perception of urban space at different heights. At present, the perception of the city and its architecture takes place at the level of general communication above ground, and it is also possible to observe the surroundings from buildings. The Line project presents the possibility of moving around the city at different levels by means of several terraces and pedestrian bridges suspended at different heights. The cities of tomorrow will also see a major revolution in public transport – flying taxis. According to the announcement, this form of transport will be introduced in South Korea as early as 2025. The foreseeable revolution will also influence the future of building design and architecture in terms of multi-level accessibility to buildings. The application of this transport technology will certainly affect not only modern cities being built from scratch, but also existing cities, whether large metropolises or medium or small towns. The availability of flying taxis at a price affordable to the average citizen could lead to significant changes on a global scale. The new mode of transport will strongly influence the way public urban spaces are designed, as well as new buildings that are likely to be adapted to this type of public transport.

The city of The Line, presented above, is the most prominent example of today's city of tomorrow. It stands out not only for its cutting-edge technologies, but also for its innovative way of designing urban space, enclosed in a single block 170 km long. Another form of urban design currently being developed is the floating city of tomorrow. The first such project is being planned by OCEANIX at sea near the city of Busan in South Korea. Architectural studios BIG (Bjarke Ingels Group) and Samoo have designed floating interconnected platforms that are the equivalent of typical neighbourhoods. The idea of a floating city is an attempt to respond to the problem of rising water levels on the planet. Other future cities are being designed and built, but not on such a spectacular scale of innovation. One notable example is Masdar City, an energy self-sufficient city in the Emirate of Abu Dhabi in the United Arab Emirates, which has been under construction for 17 years and will be powered entirely by renewable energy. Designed by Foster and Partners, the city is notable for its use of innovative technologies and ecological solutions. The above examples from Saudi Arabia and South Korea are cities that not only offer cutting-edge technological solutions, including

the use of renewable energy sources to achieve energy self-sufficiency, but are also prototypes of modern urban design solutions.

The cities of tomorrow are not only about big and innovative spatial assumptions, they are also about working on the development of existing cities, both large and small. In addition to the idea of flying taxis, which has a great chance of becoming a reality and thus changing the way certain spatial aspects of cities are designed, the digitalisation of everyday life is already having a very strong impact on the direction of urban space development, thus shaping the cities of tomorrow. The process of computerisation of so many aspects of life offers a great opportunity for the development of smaller cities as well. Of course, the development of digitalisation is not without side effects on people's physical and mental health, but with the right efforts these problems can be brought under control. Digitalisation is a very positive development that can also be the basis for improving urban spaces in the future, for example by significantly reducing traffic and making it possible to work and live from different locations, thereby relieving congested parts of cities.

3. ARCHITECTURE IN THE CITY OF TOMORROW

Technology, innovation, renewable energies, communication… how much room is there for architecture? These aspects of urban development are, of course, extremely important and need to be introduced or improved, but it is difficult to speak of architecture in the case of buildings whose form or façade results solely from new technological conditions and functional requirements.

When considering architecture in the city of the future, it is important to begin by outlining a framework for defining the term. Of course, there is no single definition of architecture, and it is not the purpose of this paperwork to summarise and systematise the professional and academic work on the subject. However, it is important to define how to think about the problem which needs to be addressed. Let us begin, perversely, by stating what architecture certainly is not – the appearance of a built thing, a function in a building, nor an element or set of technological elements. Let us also say what it does not depend on – the scale of a building, the popularity of a place or the iconicity of a building. The definition of architecture varies according to the period to which it refers. Let us recall two very important concepts about architecture. The words of Vitruvius: "In building, the following should be taken into account: durability, practicality and beauty"[3] and Le Corbusier: "Architecture is a thoughtful, flawless, magnificent play of solids in light"[4]. Both statements have to do with the uniqueness and refinement of a thing in order for it to be called architecture. The focus should be on the essence of the work and not just a superficial treatment of its surfaces, as Le Corbusier goes on to write: "…the task of the architect is to animate the surfaces that cover these solids in such a way that these surfaces do not become parasites and absorb the solids for their own benefit: and this is the sad story of modernity"[5]. It goes without saying that considering architecture is a conversation about art, so there is no single way to achieve it. One aspect

[3] Witruwiusz, *O architekturze ksiąg dziesięć*, Państwowe Wydawnictwo Naukowe, Warszawa 1956, p. 16.
[4] Le Corbusier, *W stronę architektury*, Fundacja Centrum Architektury, Warszawa 2012, p. 80.
[5] *Ibidem*.

that the words of the masters quoted above speak to is the importance of ideas in shaping architecture. Decorating structures with additional elements leads to a chaotic perception of purity of form, which makes it difficult to have contemporary architecture. This raises the question of whether there is still a place for architecture in the cities of tomorrow, where the emphasis is on innovative, technological and communicative elements. The large number of technological elements in the cities of tomorrow, whether installed on buildings, street furniture or traffic routes, can give the user the impression of being in a large technological machine. The problem of this perception of space is particularly acute in densely built-up areas, where this impression can be magnified. In the case of *The Line* project, the realisation of a city within a building volume is an original and pioneering idea for the design of urban space. In addition to the problem described above, here we have the problem of enclosing the city in a large volume. The design obviously includes green areas, including a large number of trees, but the whole space is bounded by external walls, so there are no view openings to the outside. This type of urban character is reminiscent of living indoors all the time, without direct contact with the outside world, which is unlikely to be conducive to a healthy lifestyle.

In addition, the fast pace of design and implementation of such large spatial assumptions is not conducive to fine-tuning these elements. Designers act very quickly, often without lengthy analysis; the pace of work is very important. Looking at the published designs for future cities and the projects that are already underway, we can also see that in some cases the design model does not consist of developing a master plan and buildings in stages, as in standard urban design. Instead, the urban and architectural assumptions are designed and realised simultaneously and over a large spatial area, as in the *The Line* project discussed above. Of course, architecture should be designed as holistically as possible by the author or team of authors, following the principle from the general to the detailed. There is then a good chance of achieving coherence in the design and thus a space of better architectural quality. However, when designing such large urban and architectural projects from scratch, there is a high risk of making unfavourable design assumptions at the start of the design phase, which are either impossible or very difficult to change later. It is therefore not difficult to make mistakes in such a situation, which are difficult to react to later in terms of design, because the whole city or a significant part of it is designed and realised from start to finish in a single project. The design of cities should therefore take into account the aspect of the city as a living organism, leaving the possibility to react to changing conditions that may have an impact on future stages of development. Otherwise, the comprehensive design and implementation of the whole city or a significant part of it is very difficult to achieve.

Architecture is about form, composition, proportion and light, brought together in mutual harmony. Geometry is also an extremely important element. "Geometry is the touchstone of reliability for two reasons: it is not only an expression of modern technology, but also a manifestation of the timeless laws of art, justified by the past rather than the present."[6] The characteristics presented in this paperwork, which characterise the various developments of the cities of tomorrow, point to a number of aspects that lead to a reduction in the importance of architecture in the space of these cities. Of course, this is not a rule that will always hold true and apply to all contemporary developments of this scale, but a prediction based on the designs and realisations currently available. The technological development associated with

[6] R. Banham, *Rewolucja w architekturze. Teoria i projektowanie w „pierwszym wieku maszyny"*, Wydawnictwa Artystyczne i Filmowe, Warszawa 1979, p. 252.

the use of renewable energy sources is extremely important, but it can certainly be carried out with attention to architectural aspects. The separation of energy generating equipment, such as photovoltaic panels, into separate zones, as seen in some developments, can be an advantage. In this way, the form of the building remains free from additional elements that can, to some extent, interfere with the architectural intent. An analysis of the available design materials also shows another problem with architecture in the cities of the future – the repetitive nature of building elements used on a very large scale. Uniformity, toning down or consistency are obviously very good qualities of architecture. However, in the context of buildings of such large volumes implemented as part of a single project, this can have a negative impact on the achievement of architecture, as well as being a problem of users not identifying with their place of residence. The communal space then becomes alien to people and less predictable in its use.

4. CONCLUSION

The research carried out provides the basis for drawing some important conclusions about architecture in the city of tomorrow. First and foremost, it will become less popular in the near future, but no less important. The importance of architecture, like the other arts, has always been very high. What is changing is its popularity, i.e. the desire to use, build or own objects that are architecture. The lack of knowledge about architecture and the use of the term in a different sense is also a problem. The popularisation of a word that is defined by misconceptions creates confusion and blurs its contemporary and historical value. One might think that this is partly a side effect of the great technological progress, the availability of a huge number of products, the excessive use of social media, or the extremely fast pace of change and modernisation.

The cities of tomorrow, designed and built from start to finish, will not allow, or will severely restrict, a natural way of development, i.e. one that results from changes in the functioning of society over time. The city can react to such changes by correcting the direction of development or the assumed scale of the project, but in the cases discussed, it will already be very difficult to provide space for such reactions.

Newly built cities will compete with existing cities, over the years it will be up to the individual to decide what kind of city they want to live in, whether the cities of tomorrow with The Line structure will have a chance to survive. We see today's abandoned cities where no one wants to live, confirming that it is the user who has a significant influence on the success of the application of innovative urban solutions.

We should not be afraid of drastically changing the world by realising visions described in the media as cities of tomorrow. We then fall into the usual trap of exaggerating the information provided by the media. Realistically, the number of the so-called 'cities of tomorrow' that are being built on a large scale is small compared to the number of existing large cities. There are even more medium-sized and small cities. So the percentage of the so-called 'cities of tomorrow' being built from scratch is marginal. Therefore, the percentage of people who will live in these cities in the near future will also be small. It is worth looking at it objectively, a person will not want to live in cities that will have a negative impact on him psychologically and sociologically. There may be a situation where at first there will be joy and pride in living in such a unique place, while in time such complexes may be abandoned

by the inhabitants. In addition, the construction of entire cities from scratch, which has begun or is about to begin, can be thought of as a gradual process due to the size of the projects being planned. As such, they may never be fully realised, and when the first parts of them start to function and have a negative impact on people's mental health, some residents will certainly not want to live there.

However, using artificial intelligence in the wrong way and to the wrong extent in the cities of tomorrow seems to be a major problem. According to many analyses and statements by scientists, such a tool, if used inappropriately, could become a major problem for humanity in the long term. There is likely to be a common mistake, namely the ambition to speed up development, reduce costs and make the world a better place to live, which initially is achieved very quickly and carelessly, ends up creating other major problems. Then, more than once, developers will look at the balance of gains and losses and ask whether it was worth it. Unfortunately, it sometimes turns out that there are also irreversible or almost irreversible consequences, both in the built fabric of the city and in the psychological consequences for people. In such situations, it is worth starting the design work with detailed research and analysis, drawing on the successes and failures of other architects or investors. In the design process, constantly confront current assumptions with existing conditions that are constantly changing. Anticipate changes that may occur in the coming years and incorporate these predictions into the design of the architecture.

While we might think that architecture stands out from its surroundings because of its expressiveness, in the city of tomorrow this situation could be reversed. In particular, the use of a large number of technological devices in urban spaces, on buildings or in traffic routes, will mean that architecture will no longer contrast with its surroundings. It will become increasingly difficult to see architecture because of the amount and variety of information resulting from the technological nature of new cities.

When we look at cities of tomorrow today, there are a few cases of cities being built from scratch and cities being developed and modernised with major investment. These are universal assumptions of a global nature that are likely to be followed by more cities of tomorrow. It is also conceivable that, in the short term, additional influences on the shape and nature of new developments will arise from other aspects, such as the diversity of cultures, geographical or political considerations. It is therefore not certain that there will be a single path of development in this respect. To sum up the research and reflection on the cities of tomorrow, it can be said that the future of the ideas presented is still uncertain in terms of the sustainability of their formation. What is certain, however, is the gradual redefinition of the meaning of architecture towards flattening its value. The meaning and the role of architecture as an art remain unchanged, which is why the path should also be sought in the assumptions realised on such a large spatial scale.

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