



Theory of the architecturally defined space of professor ahmet hadrovica: From “Amoeba” to architectural realizations in specific environments

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Abstract

This paper deals with the foundation of the theory of Architecturally Defined Space (ADS), its testing through a series of published books and scientific papers, and, finally, its subjection to testing by 'artificial intelligence'. It was a long and exciting journey of the author, which started from the Balkans (where he tested his theory on the example of the town house of the Oriental team), the analysis of a large number of examples of vernacular architecture (primarily in the area of Bosnia and Herzegovina), the analysis of individual architectural realizations in the area Balkans, Mediterranean, Central and Western Europe and some examples from the Middle East, Turkey and Malaysia, studies of architecture (as a framework for life) in extreme climatic environments on Earth, studies of architecture and urbanism along the Silk Road, and studies of architecture on other Space Bodies.

Keywords: Architecturally Defined Space (ADS), Artificial Intelligence

1. Introduction

Along with the terms „being“, „time“, „knowledge“, the term „space“ has that breadth of meaning that gives it the epithet 'eternal', both in philosophy and in specialized disciplines. At the base of the human essence is an elementary question: What is man and what is his place in space? The entire development of man so far took place in parallel and intertwined on two tracks: getting to know nature, that is, objectively given reality 'in itself', and 2. getting to know man, that is, what he is, and what he can be. Without going into the details of the philosophy and practice of certain historical periods, we can state the general view that man has so far solved the complex issues of the relationship between man and space with two fundamentally opposite concepts:

1. There is a man, and the rest of the world is an image that is created as a result of the action of certain external influences on the highly organized mass of the human brain. In other words - there is nothing outside of man, outside of his consciousness. THE pinnacle of this teaching is the dialectical idealism philosophy system of Georg Wilhelm Friedrich Hegel (1770-1831).
2. There is nature, a predetermined reality with established relationships in which the share of man is as important as the share of any other living being. This type of learning is largely represented in Eastern philosophies (India, China, Japan, Indochina) ^[1].

As never before, the 'question of space' is explicitly put under the scrutiny of human interest; a number of disciplines, both from the world of natural sciences and from the world of social sciences, appear in the role of domiciles for this issue ^[1]. As for architecture, until now it was understood that it deals with space, that it is the 'science of space', that it is the 'artistic design of space', for example. It is obvious that architecture manifests itself spatially, but the same can be said for physics, chemistry, geography, astronomy, mathematics, psychology, sociology, for example. This is how we arrived at the basic questions that this work poses: What is space? What is architectural space (architecture)?

It was a long and exciting journey of the author, which started from the Balkans (where he tested his theory on the example of the town house of the Oriental team),

the analysis of a large number of examples of vernacular architecture (primarily in the area of Bosnia and Herzegovina), the analysis of individual architectural realizations in the area Balkans, Mediterranean, Central and Western Europe and some examples from the Middle East, Turkey and Malaysia, studies of architecture (as a framework for life) in extreme climatic environments on Earth, studies of architecture and urbanism along the Silk Road, and studies of architecture on other Space Bodies [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11].

2. Space

Man's interest in space is rooted in his existence. The basic dimension of human existence is the feeling of protection and safety. The first associations point to the mother's lap, to the hearth. In relation to them, the first man defined all phenomena with terms: inside-outside, near-far, hot-cold, dangerous-safe, for example. In relation to himself, he determined things and phenomena with the concepts: up-down, front-behind, left-right, first with gestures, and with the development of speech and certain words. Individual objects and phenomena, whose mutual relations were refracted through man's consciousness, formed his idea of the world. The first attempts to define that world were paintings of a natural character in caves (15,000-40,000 years ago), and later corresponding symbols, abstract or natural (cuneiform in Mesopotamia, around 3400-3300 BC, and hieroglyphs in Egypt, around 3100 BC). The first direct attempts of civilized man to define the term 'space' take us to the 5th century BC in ancient Greece, with the philosophers of 'naive realism' [7]. In general, the idea of space has two basic definitions: concrete, physical space, and abstract-mathematical (cognitive) as a reflex of physical space in human

consciousness. None of these determinations, however, have the dimension of a person's affective life. Every human individual within the framework of an 'objective' environment (objects, phenomena, people and their mutual relations) will experience that environment in his own way, according to his age, knowledge, social status, intellectual capacity, experience, mood... In other words, "real reality" is certainly a conditional term [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23].

Thus, in addition to the two above-mentioned definitions, space is also given the definition of 'human', by which it is relativized and subjectivized. Human knowledge and ideas about space are mainly polarized into two concepts:

1. The existence of 'something' in 'empty', i.e., Euclidean understood space, through the physical continuum of Dechartes' system, to Einstein's unity of four dimensions,
2. The existence of space as a 'human image of the world'.

The first concept brings to the fore the physical aspect of space, with things and phenomena that exist 'by themselves', that is, in the philosophical sense – objective reality. Knowledge about this aspect of space is in the domain of natural sciences: astronomy, mathematics, physics, chemistry, biology, geography... The second concept is based on the psychology of perception, and in the philosophical sense it represents 'subjective reality'. Knowledge about this aspect of space is in the domain of the so-called social sciences: psychology, sociology, anthropology [7].

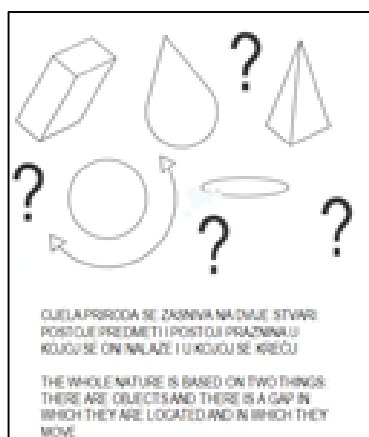
According to us, space is the most general concept that is characterized by: omnidimensionality, boundlessness, permanence. Space is everything that is, was and will be [1,7] (Figure 1).



1. Parmenides (5th century BC)



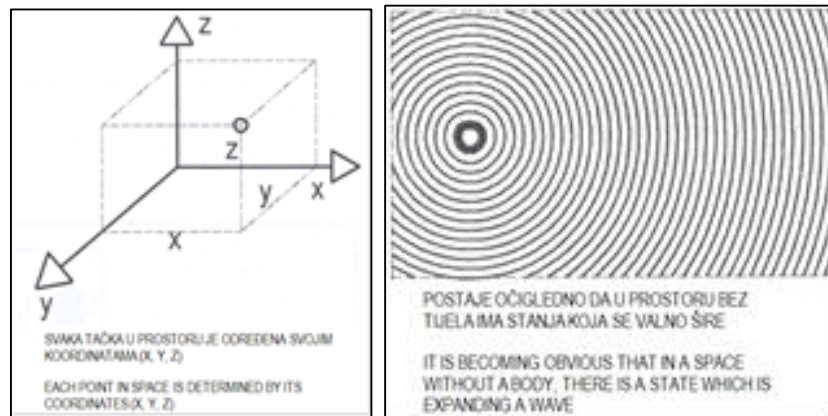
2. Aristotle (384-322 BC)



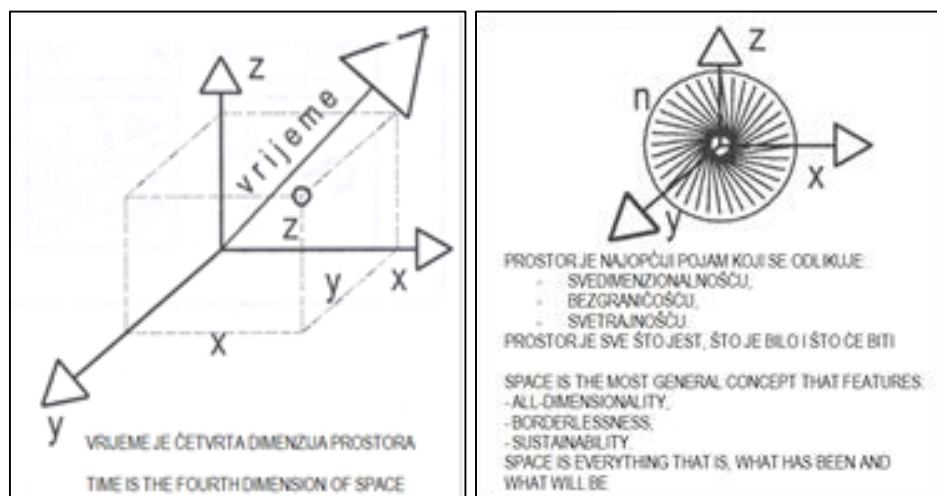
3. Euclid (4th century BC)



4. Immanuel Kant (1724-1804)



5. René Descartes (1596-1650)

6. Electromagnetic field theory (1831):
Michael Faraday FRS (1791- 1867) and James
Clerk Maxwell (1831-1879)7. Theory of Relativity: Albert Einstein (1879-1955)
Source: Author (1987)

8. Ahmet Hadrovic (1987)

Fig 1: Understanding Space through time

3. Architectural space

The moment when man erected a stone, marked his existence with it and permanently expressed his message - architecture is born. That was around 3500 BC (in Europe), and today we can only guess what meaning, to whom and what messages that tall, upright stone and its rows conveyed. A cave, man's first shelter, no matter how sumptuous spaces it has decorated with so-called cave jewelry, and despite the possibility of performing certain activities in its spaces (from primitive housing to, say, contemporary music concerts), we cannot say that it is architecture; it was created by nature, without any human influence. Similarly, the habitats of some animals, such as the nests of hummingbirds, for example, despite their obvious beauty and perfection of workmanship, cannot be said to be architecture.

When we talk about architecture, we mean man and his intention to convey a message using real, tangible things placed in a certain relationship. Architecture also exists when man, by his intervention in a certain environment and with certain means, does not create the possibility of manifesting some utilitarian life need (stay, rest, work, burial, etc.). An example of this is the already mentioned megalithic monuments (and similar examples can be found to this day). On the other hand, man, even when he created his first shelter (dungeon), did not reach what architecture implies. What,

then, is architecture?

Given that it is the work of man, that it is realistically perceptible for both experts and laymen, that it is concave in which man manifests himself as a biological, social and creative being, architecture was, above all, defined as a space, and a concrete one at that ^[24]. Obviously, there is a big gap between this 'concrete' and 'space in general' for architecture to be determined. It is precisely this question of the contact between architectural and 'space in general', the question of the context of architectural space, that is one of the most open questions of architecture ^[2]. In the book *Existence, Space and Architecture*, C. N. Schulz points out: „Architectural space can be defined as the 'concretization' of existential space“ ^[15]. At the same time, he defines existential space as... „a psychological concept that denotes the schemas that man creates and develops in contact with his environment, in order to be able to survive in a satisfactory way... In other words, architecture concretizes a certain image, which goes further from the already lending environment. It is always a reflection of man's desire to improve the conditions of his existence“ ^[15]. In short, architecture is the result of the two-way action of man and his environment.

An almost identical concept is presented by the architect Robert Venturi in the book „Complexity and Contradiction in Architecture“: „By projecting from the outside to the inside,

as well as from the inside to the outside, the necessary tension is created, which helps us in making architecture. And since 'inside' is different from outside, then the wall - that place of me - becomes an architectural event. Architecture takes place at the meeting of internal and external forces of use and space. These forces of the interior and the external environment are both general and special, they are both comprehensive but also dependent on given circumstances"^[16].

Walter Gropius in the book „Scope of Total Architecture“ says: „Good architecture is a projection of life itself, so it includes an intimate knowledge of biological, social, technical and artistic problems“^[17]. Below we will list some other points of view on architecture^[24]¹.

„Space as a part of the real world, its physical framework - the subject of architecture is never reduced only to the value of its technical and technological sense, but simultaneously expresses its concept in relation to nature, the cosmos (physical space), in relation to the development of logic (mental space) and in relation to society (social space); at the same time, none of the fields closes its action within itself, but they are free, mobile and dynamic, often contradicting each other“^[18]. The following common features can be drawn from all these positions:

1. Architecture is objective, technically and technologically rational,
2. architecture is personal (as a result of human creation, on the one hand, and its experience by man, on the other

hand),

3. architecture is social, as a reflection of a certain time,
4. architecture is a reflection of man's need for beauty.

Therefore, architecture far more than any other human activity touches space, so ...“it is a very complex phenomenon that people who diligently maintain their ignorance could approach it“^[16]. Suzanne Langer goes so far as to say that architecture is „the overall environment that can be seen“^[14].

3. Our concept of Architecturally Defined Space (ADS)

All attempts to explicitly define architecture, no matter how extensive or concise, always remain incomplete. From the general definition: 'architecture is the concretization of space', to the more specific one: 'architecture is the art of building', there are as many doubts as individual knowledge and experiences. Hence, we believe that it is necessary to determine the basic elements that every architectural work must have, and then analyze these elements analytically and precisely, to the extent that each specific architectural program requires. Given that architecture is the work of man, that it is determined by 'something' and 'somewhere', then its basic elements are (Figures 2,3):

1. Environment
2. Man and

¹ 1. Architecture is definitely a political act. (Peter Eisenman in Haaretz).
 2. It's very tough: Architecture is unnecessarily difficult, it's very difficult. (Zaha Hadid in The Guardian).
 3. Architecture is merciless: it is what it is, it works or doesn't, and you can clearly see the difference. (Jacques Herzog in a lecture at Columbia University).
 4. Architecture is always related to power and related to large interests, whether financial or political. (Bernard Tschumi in The New York Times).
 5. Architecture is too complex for just one person to do it, and I love collaboration. (Richard Rogers in The Guardian).
 6. Architecture is an artificial fact. (Mario Botta in Perspecta).
 7. Architecture is the work of nations... (John Ruskin in Stones of Venice).
 8. Architecture is always dream and function, expression of a utopia and instrument of a convenience. (Roland Barthes in Semiology and Urbanism).
 9. Architecture is an expression of values – the way we build is a reflection of the way we live. (Norman Foster in The European).
 10. Architecture is the real battleground of the spirit. (Ludwig Mies van der Rohe in the ID Merger Speech).
 11. Architecture is not a question of the purely theoretical if you're interested in building buildings. It's the art of what is possible. (Paul Rudolph in the Chicago Architects Oral History Project).
 12. Architecture is geometry. (Álvaro Siza in Imaginar a Evidência).
 13. Architecture is a very complex effort everywhere. It's very rare that all the forces that need to coincide to actually make a project proceed are happening at the same time. (Rem Koolhaas in Co.Design).
 14. Architecture is intended to transcend the simple need for shelter and security by becoming an expression of artistry. (Jay A. Pritzker in his 1985 Pritzker Ceremony speech).
 15. Architecture is the petrification of a cultural moment. (Jean Nouvel in Newsweek).
 16. Architecture is characterized by endurance and longevity: a long education, long training, long hours and long lives. (Catherine Slessor in The Architectural Review).
 17. Architecture is such a conspicuous immensely physical object in space its presence is bound to influence everyone. (Gautam Bhatia in India International Center Quarterly).
 18. Architecture is not just about building. It's a means of improving people's quality of life. (Diébédo Francis Kéré in the Washington Post).
 19. Architecture is a physical experience — it needs to be seen and touched to be wholly understood. (Nicolai Ouroussoff in the Los Angeles Times).
 20. Architecture is really difficult. I realized that only very recently. It's like music. You can enjoy it but — to know it — it's a different story. (Diana Agrest in nprEd).

21. Architecture is not just a matter of technology and aesthetics but the frame for a way of life – and, with luck, an intelligent way of life. (Bernard Rudofsky).
 22. Architecture is supposed to be about a higher purpose. (Stanley Tigerman in Newsweek).
 23. Architecture is a form-maker, problem-solver and environment-creator, and the international exposition is its laboratory. (Ada Louise Huxtable in the New York Times).
 24. Architecture is supposed to complete nature. Great architecture makes nature more beautiful—it gives it power. (Claudio Silvestrin in Elle Decor).
 25. Architecture is a small piece of this human equation, but for those of us who practice it, we believe in its potential to make a difference, to enlighten and to enrich the human experience, to penetrate the barriers of misunderstanding and provide a beautiful context for life's drama. (Frank Gehry's speech at the awarding of his Pritzker Prize, 1989).
 26. Architecture is vital and enduring because it contains us; it describes space, space we move through, exit in and use. (Richard Meier's speech at the awarding of his Pritzker Prize, 1984).
 27. Architecture is a mystery that must be preserved. (Jean Nouvel in the Huffington Post).
 28. Architecture is a translation process. (Fernando Romero in Metropolis).
 29. Architecture is quite a narrow, obsessive business. (Nicholas Grimshaw in The Guardian).
 30. Architecture is where imagination meets life. (Kazuyo Sejima & Ryue Nishizawa at their Pritzker Prize Ceremony Speech (2010)).
 31. Architecture is an incredible ego trip. You get things done, you build them, you look at them. That's why I enjoy life and don't have an ulcer. (Stanley Tigerman in the Chicago Tribune).
 32. Architecture is a very dangerous job. If a writer makes a bad book, eh, people don't read it. But if you make bad architecture, you impose ugliness on a place for a hundred years. (Renzo Piano in Time).
 33. Architecture is interesting, but by itself it means nothing. (Massimiliano Fuksas in the New York Times).
 34. Architecture is invention. (Oscar Niemeyer in Newsweek).
 35. Architecture is always political. (Richard Rogers in the Financial Times).
 36. Architecture is used by political leaders to seduce, to impress, and to intimidate. (Deyan Sudjic in The Washington Post).
 37. Architecture is about giving form to the places where people live. It is not more complicated than that but also not simpler than that. (Alejandro Aravena's speech at the awarding of his Pritzker Prize, 2016).
 38. Architecture is always a temporary modification of the space, of the city, of the landscape. We think that it's permanent. But we never know. (Jean Nouvel in The New York Times)^[24].

3. Boundaries

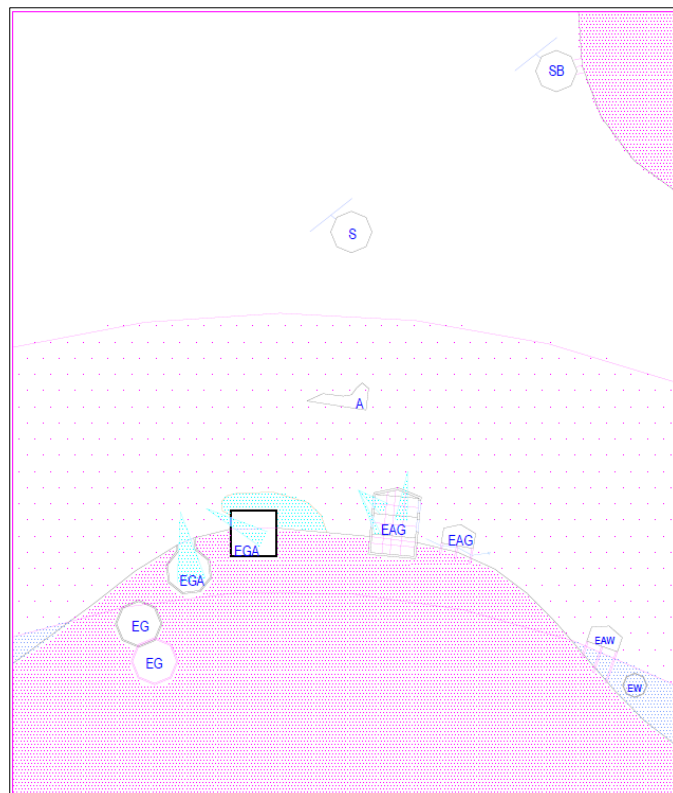
To these elements we could add the 4th Perspective, as that

dynamic relationship that connects now - future, existing - possible, achieved - desired ^[1,19].



Source: Author (1987)

Fig 2: Architecturally Defined Space (ADS) concept: 1. Environment, 2. Man, 3. Boundaries, 4. Perspectives



Source: Author (2011.)

Fig 3: Absolute typology of architecture

3.1. Environment

We consider the environment to be every potential possibility in the space in which a person can realize his existence ^[1]. In the first beginnings of civilization, man chose those areas on Earth that provided him with a secure existence without much effort. As a rule, these were river valleys with fertile soil and a very favorable climate (Ancient Egypt, Mesopotamia, China, India, Indochina, for example). With the increase in the number of inhabitants, people also occupied the less suitable areas. At the same time, he got to know new environments, adapted to them, but also 'subjugated' them and changed them according to his needs and capabilities. Today, practically, there is no part of the Earth that is not inhabited. At all levels of the Earth as a planet, man has enabled himself to exist: on land, in water, in the air; we are contemporaries of man's landing on the moon, his stay in the 'weightless' state of the cosmos, and the sending of special spacecraft to other planets. All these environments possess (or do not possess) substances and conditions that are necessary for man (sun radiation, sources of food, for example), and those that threaten him: extremely high (low) temperatures, pronounced radiation, various physical conditions (gravity, pressure, for example). When we talk about the environment, we don't mean only those givens 'in themselves' provided by nature; here we also mean all the results of human work and presence in a certain place: built settlements, cultivated terrains, infrastructure, and cultural traditions, socio-economic relations, forms of consciousness, for example. Different environments place different demands on man's architecturally defined space, which results in a practically unlimited number of aspects in which he can appear ^[1].

3.2 Man

Space acquires meaning only if it stands in some relation to man ^[25,26,27,28,29,30,31,32]. This relationship ranges from the relations of the already known dimensions of space, through those that can be sensed, to those that are currently beyond the reach of human imagination. In other words, man is a being on the way, a being who continuously learns, a being of open possibilities ^[1]. We must keep this starting point in mind when we talk about architecture; this is especially true for those individuals who practice architecture as their profession ^[16,26]. Man, a being of possibility, has his origin which is determined by his biological nature; according to this definition, man does not differ significantly from other living beings: as a part of nature, he is born, develops, reproduces, dies, and thus is included in the general flow of matter and energy in nature ^[6,27,28]. What separates man from the world of other living beings is his consciousness; only he has the knowledge of his place in nature and the ability to perceive the dependence between bodies and phenomena in nature. In this way, man created 'his own nature' - society, as a community with other people in which specific relationships rule, which he arranged and which he can

change. In addition to the ability to reveal space, and thus open up new possibilities, man, only he, has the ability to create a special world - art. It is a world that sometimes borders on natural reality, sometimes it is a distorted image of it, sometimes it is just a glimpse of its possibility ^[1,29]. Beauty is always at its core - human *sui generis* ^[20,17,21]. What is the relationship between man and architecture? With architecture, man creates shelter for himself, that elementary assumption of securing his existence ^[1,22,23]. But, unlike other living beings, he does it rationally and with the pursuit of beauty, aware that it is a reflection of all his possibilities: economic, mental, hedonistic, for example. However, he often does so with a visibly lost measure for these relationships, either because he truly lacks this measure, or because it was imposed on him ^[1]. With architecture, man also reflects those subconscious, undefined states, fears, desires and expectations - building temples to deities, for example. Through architecture, he shows whether he understands nature, whether he respects his neighbors, whether he knows his own and other people's cultural heritage. In short, man reveals himself through architecture ^[1]. Thus, architecture, unlike some other arts, becomes more or less human and general social possibilities, weaknesses, skills, desires, for example. An architect should examine individual cases like a doctor, he should determine and determine needs, find and remove biological deficiencies, act against pathology. It is certain that an architect cannot know as much as a specialized psychologist, philosopher, musician, for example, and at the same time be engineering rational and artistically inventive. However, he must know how to ask questions, and places where he can find possible answers to these questions ^[1].

3.3. Boundaries

Boundaries are those places in the environment where the situations encountered are controlled according to very specific human needs. Conditions are all those discovered and undiscovered phenomena in space that have a stimulating or degrading effect on humans. Borders, therefore, have the task of enabling the selection of influences ^[1]. In an architectural sense, they enclose, but also include a person in the conditions of a certain environment. When it comes to architecture, previous experiences always point us to 'foundations', 'walls' and 'roofs', that is, physical dams that have been placed in accordance with the conditions of influence in the experience of life on earth. The boundaries of an igloo (house of ice, among the Inuit) are certainly different in nature from the boundaries of a tent (among the Bedouin), or the reed hut of a tropical man, although they basically have the same task ^[1]. If we imagine human life in water (submarines, caissons, aquariums, for example), then the boundary becomes a unique mantle that has different properties than 'foundation', 'wall', 'roof', but still the same task: to ensure a comfortable residence ^[1]. Existence in the weightless state of the cosmos erases the up-down, left-right

relationships, but (for now) strongly emphasizes the inside-outside relationship, and requires almost complete autonomy from the architecturally defined space (the only connection with the environment is the solar cells that power the spaceship, the satellite, ADS in the broadest sense, related to the environment). An inseparable question from the nature of borders is also the question of their reach. A border can encompass a more or less complex set of human needs; this set of needs can be multiplied multiple times and, as such, has its own new limit ^[1,30]. Borders, thus, can pass from their very concrete physical determination into an immaterial suggestion. The boundaries of a certain architecturally defined space, even if they are not physically determined, can be subjectively suggested and perceptible (from a fixed human position), and vice versa: physically consistent boundaries do not have to be perceptible (from a fixed human position). So, the boundaries of an architecturally defined space necessarily exist, and what kind of nature they will be depends on the tension that reigns between what constitutes a concrete system of human needs on the one hand, and the environment in which that space is formed, on the other.

3.4. Perspectives

In the previously presented concept of an architecturally defined space, we determined its components; in order to be able to judge the architecture of the past, forecast (advocate) its future, we must have in mind a certain concept that would affirm those dimensions from all three components (Environment, Man, Boundaries) that will ensure the confirmation and enrichment of the human element ^[1,17,27,31]. As for the Environment, we talked about its two basic layers: natural and social. From the great industrial revolution at the end of the 19th century until today, the natural environment has been attacked by the destructive side of man, with serious threats of disruption of the basic laws and 'order' that reign in it; today we know that the disappearance of a number of animal species, huge expanses of forest cover is not the price for the progress that man has achieved to date, but is the result of a pragmatic (moreover selfish) attitude of the narrow community of people, i.e. civilizations, to 'enrich' and impose on others.

The basic principle of man's relationship with nature is (that is, it should be): what is taken from nature, should be returned to it in the appropriate form and measure ^[1, 11]. Man should be aware that he is a part of nature and that only with understanding and respect for the stated attitude can he secure for himself the place that suits him in nature. Along with a number of partial scientific disciplines (botany, zoology, geography, for example), ecology also deals with the question of the natural environment. An architect must cooperate with experts from these fields when faced with solving a specific architectural task. At the same time, not a single requirement of the future architectural program can be higher than the requirement of coexistence with the natural environment ^[1, 3].

The social environment encompasses a wide range of interpersonal relationships, the main issue of which is the relationship to the means of production. The entire history so far is marked by the polarity of two superimposed forces in society. The geographical space of this (direct) antagonism was constantly expanding, from the slave-owning city - polis, through the feudal estate - fiefdom, the capitalist state to, today, the global relationship developed - underdeveloped (the modern language of the administration called it the relationship 'north-south', 'new world order'). The level of development of production forces can already today provide enough material comfort for all the inhabitants of the Earth. We expect that the polarity in society, in terms of the relationship between rich and poor, will continue to exist, with the difference that in addition to the economic dimension of this relationship, the human-creative dimension will also have its place. We also think that the idea of an 'international style' in any art has no real basis, and that the future of the general cultural heritage is richness and diversity, appropriate to the different cultural heritages, people and climates ^[1]. Earlier we said that things and phenomena in space acquire their meaning only if they are placed in some relation to man; since the essential dimension of man is his generic nature, only changes can be expected in the future ^[32]. In the history so far, there have been leaps in development, stagnation, compilations of previous achievements, going back; people of different climates, genetic bases and different cultural heritages, in conditions of more intensive communication, can only enrich their existing cultural heritage ^[1, 3, 5].

The boundaries of the architecturally defined space should be a faithful reflection of the first two components; due to the fact that the border sublimates the component 'Environment' and the component 'Man', that is, unites them into material-real things and relationships, until now it was understood that only that part (of an architecturally defined space) is called architecture ^[1].

3.5. Architecture generated by "artificial intelligence"

After promoting the theory of Architecturally Defined Space (ADS) ^[1], the author presented architecture with an extremely simplified image – "amoeba" (Figures 2, 3). Through a large number of published books and scientific papers ^[7, 8], the author developed 'amoeba' through a series of architectural programs of vernacular and author's architecture. With the book ^[8] and several scientific papers ^[7, 8], the author tried to present architecture in its 'totality', horizontally (over the entire Earth) and vertically (through history). With the progress of digital technologies, rich databases are being edited, about natural and social order, about man - everything where man participates. The author is working with experts from the IT sector on a 'software scenario' that could generate architecture at any point on Earth (on the Moon and Mars, too). However, due to scarce 'databases', this 'scenario' is still in the initial stage of development ^[33, 39].

For the presentation of the idea “Professor ahmet hadrovica's theory of architecturally defined space: from “amoeba” to architectural realizations in a concrete environment” the author used the program “Midjourney, Inc” (freely available on the Internet, from July 2022) to generate architecture in

various areas of the Earth. The task was: a family house (which consists of a living room, three rooms with their own bathrooms, kitchen, dining room, pantry, toilet). The mentioned program generated the solutions shown in Figures 4,5,6,7^[33, 39].



Source: Midjourney, Inc (July 10, 2023)

Fig 4: Left: House in Greenland. Right: A house in the Swiss Alps



Source: Midjourney, Inc (July 10, 2023)

Fig 5: Left: House in the Amazon Rainforest. Right: A house on the Mekong River



Source: Midjourney, Inc (July 10, 2023)

Fig 6: Left: House on the Nile River. Right: A house in the Sahara desert



Source: Midjourney, Inc (July 18, 2023)

Fig 7: Left: House on the Moon. Right: House on Mars

By looking at the generated renderings (Figures 4,5,6,7), one can only get an idea of certain 'natural environments', and the renderings of houses on the Moon and Mars (Figure 7) show the environments of the Moon and Mars not at all convincingly. It is obvious that the persuasiveness of the solution of houses in certain 'natural environments' depends on the wealth (completeness) of the database. There is no doubt that the persuasiveness of the solution will increase over time as the databases for Environment (Natural and Social), Man and Borders are enriched.

4. Conclusion

No matter how impressive the effects of artificial intelligence look, due to the rapid generation of a large number of solutions (both in the field of architecture and for any type of 'query'), it should be known that artificial intelligence can never offer 'original solutions' that have not already been seen, since it generates its solutions from a database of already known data. In the future, new solutions will only be able to be offered by a 'living man' [33, 39]².

² The famous world chess champion (from 1985 to 2000), Gari Kasparov, is also known for several matches he played against computers, that is, against computer programs. He played the most famous duels against the IBM computer Deep Blue. In the first six games of 1996, he lost the first, then won three games and drew twice. Then in May 1997, the improved version of the Deep Blue computer won the last game against the world champion, with a score of 1-1, with three draws, after his blunder in the opening.

Namely, computer programs calculate variants up to a hundred million times faster than humans, but they are able to lose in those moves, that is, positions where a long-range strategy is needed, that is, where human intuition prevails. Deep Blue was a special computer made up of 50 PCs connected as a whole, constructed just for that purpose. With the great progress of technology in recent decades, and the increase in power, top chess is now played by programs that can work on almost any home or laptop computer.

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