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VISUALS AND DEFINITIONS IN ARCHITECTURE: THE POSTMODERN PLAY OF MEANING DRIVEN BY ADVANCES IN GENERATIVE AI

WIZUALNE REPREZENTACJE I DEFINICJE W ARCHITEKTURZE: PONOWOCZESNA GRA ZNACZEŃ NAPĘDZANA POSTĘPEM W GENERATYWNEJ SZTUCZNEJ INTELIGENCJI

Abstract

In the face of the pluralism of forms and meanings, traditional divisions between word and image, theory and design, are becoming blurred. Undoubtedly, contemporary architectural practice requires a conscious selection of the language of communication, both verbal and visual, as an indispensable element of creative expression and the transmission of ideas. This article attempts to analyse the evolving relationship between architectural description and its visual representation in the context of transformations in postmodern culture and the development of generative artificial intelligence. Questions about cultural identity and the semantics of images are currently becoming extremely multi-layered. Yet, the search for radical novelty often draws on means of expression rooted in tradition, both in the description and depiction of architecture.

Keywords: visual technology, definition of architecture, artificial intelligence

Streszczenie

W obliczu pluralizmu form i znaczeń tradycyjne podziały między słowem a obrazem, teorią a projektem, ulegają zatarciu. A niewątpliwie współczesna praktyka architektoniczna wymaga świadomego doboru języka komunikacji, zarówno werbalnego, jak i wizualnego, jako nieodzownego elementu twórczej ekspresji i przekazu idei. Artykuł stanowi próbę analizy ewoluującej relacji między opisem architektonicznym a jego wizualną reprezentacją w kontekście przemian kultury ponowoczesnej oraz rozwoju generatywnej sztucznej inteligencji. Pytania o tożsamość kulturową, semantykę obrazów stają się aktualnie niezwykle wielowarstwowe. A przecież poszukiwania radykalnej nowości często odwołują się do środków wyrazu zakorzenionych w tradycji zarówno w opisie, jak i obrazowaniu architektury.

Słowa kluczowe: technologia wizualna, definicja architektury, sztuczna inteligencja

1. INTRODUCTION

The semantics of visual messages refers to the assignment of meaning and categorising concepts related to various ways of interpreting an image. Drawings, photographs, and other forms of visual media have played a crucial role in architecture, inspiring creative

thinking, allowing for the presentation of design concepts, and facilitating communication between creator and viewer. However, the degree of abstraction of these messages can vary, making the clarity of the message and the potential ways it can be interpreted more complex and multi-faceted. Semantic analyses aim to understand how users perceive and interpret a given illustration. An example that perfectly illustrates this relationship is architectural competitions, where viewers, by analysing the visual representation of a design, discover the ideas and concepts encoded within. In such situations, textual descriptions are often just a supplement to the competition entry, while the image itself serves as the primary medium. It is also worth emphasising that we currently live in a world dominated by images. Every day, we are bombarded with a vast number of visual messages due to social media, modern technologies, and the easiness of creating realistic images. The development of generative artificial intelligence algorithms has reached such a level that it is increasingly difficult to distinguish real photographs from computer-generated ones. This situation presents architects and viewers with new challenges related to recognising authenticity and interpreting visual messages.

In this postmodern interplay of meanings, the most important factor is the awareness of users who can responsibly utilise the potential of current visual technologies while maintaining a critical distance from the generated images and their meanings. Images in postmodern culture no longer contain only an informational side, but they also become active participants in the communication process, shaping the perception and interpretation of reality¹. Moreover, according to the theories of semiotics, the meaning of an image is always contextual and depends on the interaction between the sign, its interpreter, and the object, which further complicates the process of reading visual messages².

This article attempts to analyse the evolving relationship between architectural description and its visual representation, set against the backdrop of transformations in postmodern culture and the dynamic development of generative artificial intelligence. Despite the search for radical novelty, the means of expression used in both architectural description and visual representations are often based on tradition, creating a fascinating space for dialogue between the past and the future.

2. THE ROLE OF DESCRIPTION IN ARCHITECTURE

Every day, we communicate through words. We speak, we write, we describe what we see and what we plan. We also describe our ideas and our thoughts. It is a remarkable process in which we describe abstract concepts through definitions. Descriptions serve as a kind of conceptual framework, outlining the theoretical foundations of a project and explaining the rationale behind key architectural decisions. Furthermore, by creating compelling stories around a project, architects establish deeper emotional and contextual connections between the built environment and its users. In this way, textual descriptions enrich architectural discourse, ensuring that spaces are understood not just as physical structures but as meaningful, well-formed experiences.

The primary use of words in architecture relates to architectural theory. Through descriptions, architects can discuss design philosophies, spatial strategies, and planned user

¹ W.J.T. Mitchell, *Picture theory. Essays on verbal and visual representation*, University of Chicago Press, Chicago 1994.

² C.S. Peirce, *Collected papers of Charles Sanders Peirce*, Harvard University Press, Cambridge 1932.

experiences, building a strong intellectual foundation for their work. However, words have a rather broad semantic scope. The very terms *beautiful* or *harmonious architectural structure* evoke various associations in the minds of the viewers. These words themselves have an extremely wide range of interpretations. In architectural theory, descriptions constitute an exceptionally rich source of knowledge and development opportunities. The quest to define the essence of architecture demonstrates the need to establish design principles, situating them within a coherent theoretical framework that is communicable and widely accepted.

Despite the passage of time, some theses remain valid to this day. Vitruvius' theory, formulated in the 1st century BCE, is outlined in his work in his work *Ten Books on Architecture*. For example, the famous triad: *firmitas* (durability), *utilitas* (usefulness), and *venustas* (beauty)³. These principles retain their timeless character and continue to constitute an important element of reflection on the essence of architecture, regardless of changing styles and technologies⁴. These are cited by researchers and compared to the spaces being created today. The timelessness of Vitruvius's theory stems from its reference to universal values. Even in the era of postmodernity and digital technologies such as generative artificial intelligence, durability, utility, and beauty remain key criteria for evaluating architectural designs. Defining through words plays a fundamental role in Vitruvius's architectural theory, serving not only as a communication tool but above all as the basis for creating and transmitting theoretical knowledge about architecture. His work served as both a technical manual and a philosophical manifesto, in which words define the essence of architecture. Words, as a tool for creation, allow for the capture of abstract concepts such as the harmonies of proportions and symmetry, which Vitruvius associated with the perfection of the human body and the natural order. Furthermore, defining architecture through words enabled the establishment of a universal language of architectural discourse, which has endured for centuries and become the foundation for subsequent generations of theorists. In this way, the word becomes a theoretical tool that connects practice with philosophy, enabling reflection on architecture as a cultural, aesthetic, and functional phenomenon.

Defining through words enables not only the transfer of theoretical knowledge but also the creation of a coherent design narrative that combines functionality with aesthetics and cultural context. Textual descriptions play an important role in architecture as functional specifications, detailing the use of materials or spatial configurations. They often serve as technical descriptions attached to project drawings. Furthermore, words act as mediators between the various participants in the design process—architects, engineers, investors, and end users. Precisely defining assumptions and requirements helps to avoid misunderstandings and ensures the project's implementation is consistent with its concept.

To sum up, words also enable reflection on architecture's place in a broader social and cultural context. Through theoretical and critical texts, architecture is interpreted, evaluated, and embedded in cultural discourse, allowing for the development of new paradigms and stylistic trends. The language of architectural description is not limited to form and function but carries meanings that shape the identity of a place and the user's experience⁵. Finally, defining with words opens up space for innovation and experimentation. By describing new

³ Vitruvius, *O architekturze ksiąg dziesięć*, Prószyński i S-ka, Warszawa 2004.

⁴ P. Bigaj, *Ponadczasowość teorii Witruwiusza w kontekście współczesnej architektury*, "Czasopismo Techniczne. Architektura" 2009, no. 1-A, pp. 173–178.

⁵ C. Norberg-Schulz, *Genius loci. Towards a phenomenology of architecture*, Academy Editions, London 1980.

ideas and concepts, language allows for critical discussion and adaptation, which is essential in the dynamically changing world of architecture. In the age of digitalisation and the development of technologies such as generative artificial intelligence, the role of words as a tool takes on a new dimension, integrating traditional values with modern design methods.

3. THE ROLE OF VISUAL REPRESENTATIONS IN ARCHITECTURE

Visual representations play a fundamental role in architectural practice, serving as an essential tool for design exploration, communication, and conceptual clarity. By transforming ideas into images, architects can refine their concepts and more effectively evaluate spatial relationships. Through visualisations, sketches, and models, architects can capture atmosphere and spatial relationships before a project is physically built. Beyond design development, visual representations serve as a universal language of communication⁶. They function as a medium for architects, clients, and stakeholders. The goal defined as visual communication remains the same. Visual representations in architecture can be considered a medium that mediates between the world of ideas and reality⁷. Architectural images are not only faithful reflections of reality but also semiotic constructions that generate meanings and interpretations depending on the cultural and perceptual context of the recipient⁸. In this sense, architectural images are elements of the communication process. They provide data on the designed spatial relationships and the chosen aesthetic. This allows the viewer to effectively assess how individual design elements interact with each other. Visual representations, diagrams, plans, and sections also enable early detection of potential structural or functional issues, significantly impacting the quality and efficiency of the design process. Moreover, visual representations constitute a universal language between the architect, the investor, the contractor, and users. Presenting a project in the form of images, models, or animations allows people without specialized technical knowledge to understand design assumptions. This, in turn, facilitates decision-making, negotiations, and coordination of activities at various stages of project implementation. From a theoretical perspective, visual representations are not only a technical tool but also a medium that shapes the way we think about architecture. Visual representations influence the perception of space and form, as well as the aspects of the design that are displayed and interpreted. In this way, they become an integral part of the design process, combining practical and conceptual aspects.

The evolution of visualisation tools, especially in recent decades, has transformed architectural teaching and practice. The introduction of digital technologies has enabled the creation of more precise and interactive representations. This allows architects to experiment with form and function in a more dynamic and multidimensional manner. In the future, the role of conceptual representation in architecture will continually evolve, influenced by further technological innovations that increasingly blur the lines between reality and vision.

⁶ M.J. Żychowska, *Classroom-based and distance teaching of freehand drawing: a comparative analysis*, “World Transactions on Engineering and Technology Education” 2021, no. 3, pp. 276–280.

⁷ B. Makowska, *Contemporary challenges in freehand drawing education at the faculties of architecture*, “World Transactions on Engineering and Technology Education” 2023, no. 1, pp. 6–11.

⁸ N. Goodman, *Languages of art. An approach to a theory of symbols*, Hackett Publishing, Indianapolis 1976.



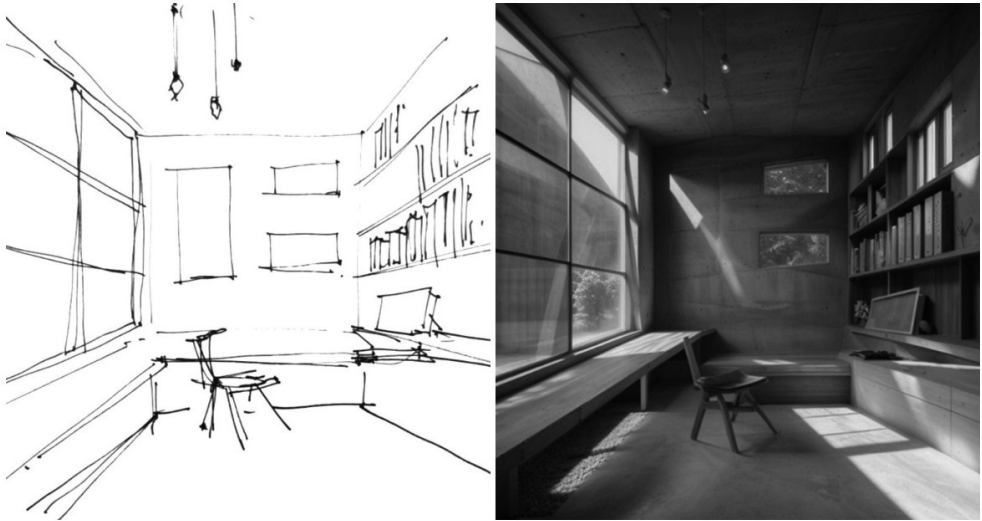
III. 1. Description and image in architecture. Images created by the words: *hyperrealistic interior, concrete, modern, wood, sunny day, strong light and shadow, window*, Stable Diffusion program (graphics: G. Schnotale)

4. THE POSTMODERN PLAY OF MEANING

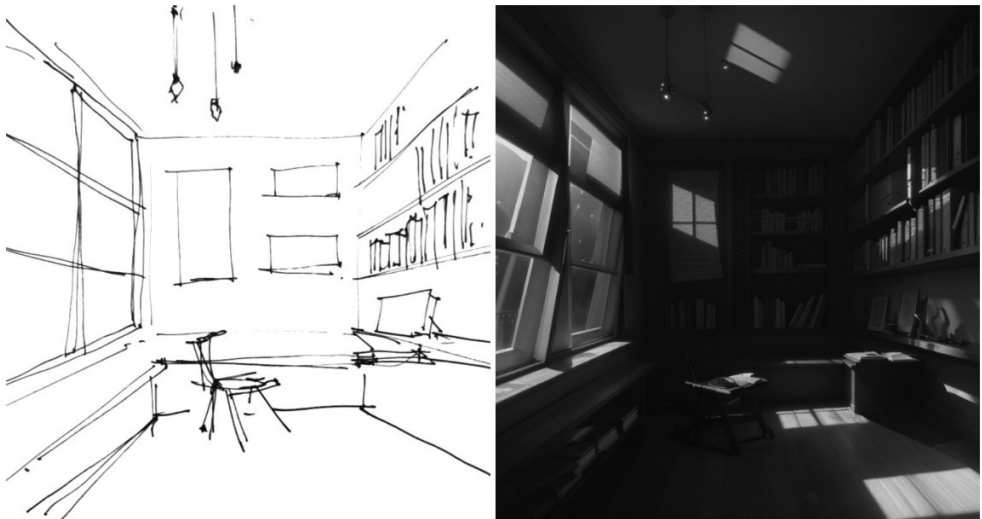
Contemporary architecture is no longer clearly defined by coherent styles or uniform narratives, but operates in a space of constant interplay of meanings, where diversity and variability are the norm. In this context, the relationship between word and image takes on a new dimension, and the emergence of generative artificial intelligence (AI) introduces even more challenges. Data are always the foundation of AI's algorithmic processing capabilities. AI, especially in the form of generative models, is becoming a new tool for visual and textual creation, capable of generating images and descriptions based on vast databases and machine learning algorithms. However, despite its many capabilities, AI cannot fully replace human context, intuition, or cultural awareness, which are crucial for creating meaning in architecture. Moreover, AI introduces a new dimension to this interplay through automation and generativity. This can either expand the scope of creativity or lead to the homogenisation of forms and ideas if not used critically and appropriately. In the era of postmodernity, the human role as interpreter, selector, and creator of meaning remains irreplaceable. It is the architect, while using available tools, who must maintain an awareness of historical contexts, traditions, and social responsibility to avoid thoughtless repetition of patterns. In this way, the postmodern interplay of meanings in architecture becomes a space for dialogue between tradition and innovation, between the human and technology, between words and images. Artificial intelligence, although it changes the way we create and communicate, does not eliminate the need for critical thinking and conscious shaping of meanings. In the postmodern world, words gain new power thanks to current technologies, as AI can generate realistic images. Today, simply through entering appropriate keywords or short descriptions (so-called prompts) it is possible to obtain a realistic visualisation that, until recently, would have required considerable work on the part of the designer (Ill. 1). However, this process has its limitations. In the early stages of design, it is often difficult to precisely describe one's idea using only words. A lack of appropriate language or a vague concept means that the effects generated by AI may not reflect the intended vision. Words, therefore, become not only a tool but also a barrier; their accuracy and precision determine how closely the final image will meet our expectations. Modern tools open up new possibilities for architecture and art in creating visualisations, but at the same time, they emphasise the importance of language in the creative process. Therefore, in the postmodern interplay of meanings, the ability to formulate thoughts precisely is a crucial skill. However, it is always important to remember that words have a very wide range of interpretations. Therefore, despite realistic results, images generated solely from words can deceive our senses.

Adding a sketch to the AI image-generation process significantly improves the quality and accuracy of the results. The sketch serves as a visual guide, complementing the verbal description and clarifying the creator's intentions. This provides the AI with not only textual instructions but also specific references regarding composition, proportions, and spatial layout. In architectural practice, a sketch plays a crucial role, allowing for the refinement of form and eliminating ambiguities that can arise with a purely verbal description. Even a simple drawing visualises key design elements, such as the arrangement of masses, spatial relationships, and the construction of details, giving the designer greater control over the final result. Thanks to the sketch, the AI image-generation process is faster and more efficient, as the algorithm receives precise guidance regarding composition and structure (Ill. 2, 3). This, in turn, shortens iteration times and allows for faster achievement of results consistent with the creator's intentions. Furthermore, the combination of words

and images facilitates the communication of ideas not only with the algorithm but also with other participants in the design process, fostering better understanding and collaboration. Consequently, when a sketch is added to a text prompt, the resulting images are much closer to the original concept and allow for a fuller utilisation of the potential of artificial intelligence in architecture.



Ill. 2. Image created from a sketch and words: *hyper realistic interior, concrete, modern, wood, sunny day, strong light and shadow, window, books*; Stable Diffusion and ControlNet software (graphics: G. Schnotale)



Ill. 3. Image created from a sketch and words: *hyper realistic interior, late afternoon, atmosphere, cozy lights, strong light and shadows, books, window*; Stable Diffusion and ControlNet software (graphics: G. Schnotale)

In the postmodern interplay of meanings, word and image are no longer separate, hierarchically ordered media, but coexisting and interdependent elements that interpenetrate and shape each other. Artificial intelligence algorithms rely on vast datasets, which, after all, contain the entire visual heritage of architecture. This means that the images and ideas they generate are, in a sense, a repetition and transformation of what already exists. In this way, the entire AI creation process is enclosed within a circle of known forms and meanings, creating a kind of semantic circulation—new visualisations are based on the past, not on entirely original, independent concepts. An important direction of development remains the dialogue between tradition and modernity, which together shape the identity of space and architecture as a medium of communication. Architecture should not be merely a visual or technological spectacle, but a profession serving to create lasting social and environmental values. In this context, architectural education and design practice must integrate ethical, humanistic, and technological considerations, developing competencies that allow for the responsible use of new opportunities. It is a constant, creative interplay of meanings, in which words and images coexist as partners in the construction of a multidimensional architectural discourse open to interpretation. Only in this way can architecture respond to the challenges of modernity and remain a space that inspires, connects, and serves people's needs. At the same time, we must not forget the need for a critical approach to the use of AI in the design process; consciously recognising its limitations is crucial to maintaining creative authenticity and avoiding pointless repetition. The dialogue between tradition and innovation, between words and visual representations, is a dynamic space in which architecture constantly redefines its meanings.

5. CONCLUSIONS

The interplay of meanings between words and images has always played a key role in the history of architecture, although this relationship has undergone significant transformations over the centuries. Classically, illustrations served a documentary function, while language allowed for the complementation of conveyed design ideas. Then a shift gradually occurred: images began to gain a new autonomy and to become a tool for experimentation and a manifestation of vision. Textual descriptions of architecture often gave way to the visual power of form and space, reflecting the pursuit of purity, functionality, and universality in architectural expression. Postmodernity brought a fundamental redefinition of the relationship between these two media. In an increasingly complex and pluralistic world, where the growing volume of information and the diversity of meanings require a multi-layered approach, words and images have become interdependent, coexisting, and interpenetrating. This *interplay of meanings* has taken on the character of dialogue, negotiation, and deconstruction, in which neither form of communication is superior. Both serve to create new interpretations, often ambiguous and open to diverse cases.

The creation of a representation of ideas in architecture is an inscrutable process, which in the postmodern reality takes on particular significance as an interplay between words and visual representations. Both description and images of architectural space constitute irreplaceable media, yet their interrelationships are getting increasingly complex and multi-layered. Contemporary tools influence this interplay of meanings, creating new layers of communication. However, historically and in the postmodern context, the human being and social responsibility

for the architectural work remain at the centre of the design process. Illusory, hyper realistic images generated through AI at the beginning of the process can lead to misconceptions and false expectations. In the context of this postmodernity interplay of meanings, the relationship between words and images becomes a dynamic field of negotiation of meaning. An image is no longer merely an illustration of a description, nor is a description a simple translation of an image. Both media intertwine, creating a multi-threaded interpretive space. Modern technologies require a critical approach to both their limitations and their potential to redefine architectural semantics. The experimental use of generative AI tools allows us to experience this postmodern ambiguity and draw our own conclusions about the role and limits of contemporary tools. What is crucial here is not only mastering the technology but also the ability to use it appropriately and ethically, while maintaining an awareness that each medium—whether text or image—carries its own interplay of meanings and the risk of interpretive shifts.

The history and future of architecture are not only about the development of tools, but above all about conscious participation in the interplay of meanings, in which image and word complement each other, provoking critical reflection on what architecture is and what it can be in an era of constant change.

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Research and teaching assistant professor at the Faculty of Architecture, Cracow University of Technology. He is the author of scientific publications focusing on the visual aspects of architecture and architectural design. He specialises in illustrating ideas, especially in the early design phase, in the visual hierarchy of ideas and in the use of modern technologies in shaping visual design aspects. He is the creator of the idea and the head of the postgraduate studies User Experience and User Interface Design at the Cracow University of Technology. A member of the Małopolska Chamber of Architects, he holds professional building qualifications in the architectural specialty to design and manage construction works without restrictions.

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