doi.org/10.62683/SINARG2025.018

Research paper

INTERNALIZATION OF ARCHITECTURAL SPACES AS A METHODOLOGICAL NOTE IN THE DEVELOPMENT OF THE DESIGN PROCESS

Milena Grbić[1], Olivera Dulić[2]

Abstract

This paper presents the principles and outcomes of a specific methodology conceived as a teaching tool at the Faculty of Civil Engineering in Subotica. The methodology is designed to support students in developing a deeper understanding of spatial relations, applicable across all phases of architectural design education. The methodological framework is grounded in an expanded interpretation of the term internalization, defined as the assimilation of spatial relations experienced through direct perception into the individual's cognitive framework. This process aims to enrich students' personal systems of thought and behaviour, advancing their ability to apply these insights in architectural design practice.

The methodology unfolds through three key stages: 1) Perceptual Analysis as personal experience of the architectural space, documented through photographs capturing selected spatial relations; 2) Verbal Interpretation as an articulation of spatial experience through five keywords, composed into a haiku poem; 3) Visual interpretation of spatial relations as their abstract transposition into a representative pictogram transcending stylistic conventions.

The study included 20 students from the second and fourth year of undergraduate studies. Selected for the research were buildings in the architectural styles of Secession (second year) and Neoclassicism (fourth year) in Subotica. Each student independently chose a distinct building from the works of renowned architects of the period, ensuring equal research conditions within the same architectural language.

The results reveal that the methodology successfully fostered intuitive engagement and multilayered spatial understanding, expressed through a synthesis of perceptual, verbal, and visual forms. The presented works showcase the students' developing subjective perspectives, which are a key objective of the process. Future academic practice will explore how this approach guides students in generating new values within the architectural discipline.

Key words: *Architectural education, Architectural space, Critical thinking, Art Nouveau, Neoclassicism*

[1] Ph.D., Grad.Arch.Eng., Associate Professor, University of Novi Sad, Faculty of Civil Engineering Subotica, Serbia, mgrbic@gf.uns.ac.rs, orcid.org/0000-0001-6485-1478

[2] Ph.D., M.Arch., Assistant Professor, University of Novi Sad, Faculty of Civil Engineering Subotica, Serbia, olivera@gf.uns.ac.rs, orcid.org/0000-0002-9463-8659

1. INTRODUCTION

Who is the one who speaks, who is the one who thinks instead of me?

Teaching architectural design represents a complex pedagogical task due to the multilayered nature of the discipline itself, which encompasses technical, aesthetic, functional, as well as psychological and sociocultural aspects. Students are simultaneously confronted with the challenge of mastering practical design skills while also developing the ability for abstract and critical thinking. In this context, there arises a continuous need for the development and implementation of contemporary and experimental teaching methods that can enhance the learning process and enable a deeper understanding of the design procedure. Experimental approaches are particularly significant, as they reflect the very nature of the creative process, in which experimentation plays a key role in generating architectural solutions.

Architectural design requires continuous balancing between structured knowledge and creative improvisation, which enables students to explore, experiment, and develop their authorial expression. This complexity makes the search for effective pedagogical strategies a particular challenge for educators. An additional layer of complexity in the teaching process stems from the fact that design skills are acquired through direct experience, reflection, and constructive critique. This implies the necessity of constantly adapting teaching approaches to the individual cognitive styles, interests, and abilities of students.

Learning architectural design does not entail the illustration of preformulated abstract ideas through the work of a single generation of students; rather, it begins with the premise that ideas are constructed based on their intuitive insights and reflections, through dialogue and collective exploration. The fundamental intention of this methodology is to encourage and affirm interaction—within the academic curriculum—between students and architecture as a meaningfully open and dynamic structure, in the formation and interpretation of which students participate as equal contributors. Although the primary goal of this pedagogical practice is not the realization of an architectural project as a final product, the methodology does not renounce the design apparatus; instead, it employs it as a tool for reflection and discovery.

The implementation of the methodological framework was carried out within the regular coursework of the subjects *Design of Public Buildings* (second year) and *Development of Architecture* (fourth year) at the Faculty of Civil Engineering in Subotica, Architectural Engineering module, during the 2024/2025 academic year. A total of twenty students participated in the research, each selecting one building for analysis. Second-year students analysed buildings in the Art Nouveau style, while fourth-year students worked on Neoclassical buildings. Within the given stylistic frameworks, students independently selected their buildings, with no repetition of chosen examples. The selection of stylistic periods was motivated by the fact that the chosen buildings were works of relevant authors of the time and possessed pronounced spatial qualities suitable for investigation. At the same time, working within a unified stylistic context provided students with equal conditions for analysis and for recognizing spatial and experiential relationships that particularly inspired them.

It is important to note that the choice of styles had no influence on the outcome of the methodology, nor was such an outcome anticipated. In the context of interpreting architectural meaning and history, the primary stylistic functions gradually lose their

expressive effectiveness over time. Contemporary observers—i.e., recipients of meaning, in this case, the students—are often unfamiliar with the specific symbolic-stylistic language of the given epoch and therefore unable to spontaneously recognize or interpret it. Architecture as a discipline is indeed a history of forms, but at the same time, it remains open to new interpretations, regardless of the original content or the author's intent. The methodological approach employed in this study demonstrates that meaning-making processes do not end at the moment an architectural work is created; rather, the conditions under which meaning disappears simultaneously represent the conditions for its reconstruction, reinterpretation, and transformation.

2. THEORETICAL BACKGROUND

"Isn't art, as Duchamp once said, "a game among all men of all eras?"
Postproduction is the contemporary form of this game," states Nicolas Bourriaud

The theoretical foundation of the proposed methodology relies on a synthesis of the views of Henri Focillon and Nicolas Bourriaud, thereby establishing a framework for understanding architectural form as a polysemic phenomenon. In this context, architectural form is considered a central element with its internal logic and vitality, open to various interpretations and reinterpretations. Simultaneously, form is also understood as a dynamic process whose meaning is not predetermined but rather constituted through active interaction with the observer. Within this framework, architectural form becomes a space of social interaction, collective engagement, and mutual communication.[3]

Starting from an inversion of Nicolas Bourriaud's thesis that "the museum, like the city, is a catalogue of forms" [1], this paper proposes the opposite perspective—the city, like the museum, can be viewed as a catalogue of forms. In this sense, the city is defined as a collective asset available to all—and in this case, to students—not to be submitted to, but rather to be used as a tool for exploring contemporary spatial, cultural, and social phenomena. At the boundary between the use and production of space, a certain stasis emerges—one that transcends the domain of architecture and becomes evident within the broader cultural context. Students' intuitive engagement with architectural objects goes beyond the traditional framework of appropriation and approaches a culture of use and consumption of forms—a culture of the constant activity of signs. In analogy with the principles of ready-made art, in which artists find material for artistic creation in objects already present in the marketplace, the architectural work assumes a value similar to that of a scenario—it becomes a scene(scenario), not merely as an end in itself, but as a means of definition: an act through which space becomes communicative and enduringly memorable.

The actual space being observed is reflected through the collision of images, opening a pathway to perceiving the real through fiction. Although an architectural object possesses

[3] Henri Focillon focused on the concept of form as a central element of art, arguing that forms possess a life of their own, which does not necessarily depend on specific historical circumstances. Focillon emphasized that form in art is not static but dynamic, and is in a constant process of transformation. The nature of form, according to Focillon, is something that grows and changes—something open to various interpretations over time.
Nicolas Bourriaud, on the other hand, concentrates on the interaction between art and its audience, asserting that art in contemporary society should not be something passively observed, but rather a dynamic process that involves the audience in the creation of meaning. According to his definition, relational aesthetics is art that relies on social interaction and creates a space for collective action and mutual communication.

values capable of communicating within the realm of designed architectural conditions and the broader cultural context, the methodology considers only the pure object of observation to be relevant. By drawing on the French philosophical lineage between Focillon and Bourriaud, it becomes possible to read the nature of form as being simultaneously prepared to be form and to be experienced as part of one's own contemporaneity. Thus, in its ultimate methodological outcome, determinism is transformed into technique—that is, into a design tool. In attempting to define the relationship between the method and the object under investigation, it becomes necessary to abandon the secure ground of established determinacy found in architectural modes of expression and to allow for the ambiguity of its appearance to be felt [2].

The past can be seen within the context of idealized theoretical constructs, the future as a breakthrough toward other ways of living, while the present stretches between change and stability, across a range of its own necessities and freedoms. It is the present that becomes the focus—because it holds the capacity to create a perceptual field within existing circumstances. It allows for internalization—to create a personal reality that exists within one's own perception and understanding of the world. Space and time become reality within the selected frame in which they are no longer separated, or in which that separation is no longer visible.

Within the proposed methodology, let us attempt to adopt the perspective of the student as an active subject in the research process. As part of the assignment, students are placed within a predetermined—or independently selected—spatial context and are tasked with identifying a specific spatial relationship (or spatial phenomenon), guided by their own subjectively strongest perceptual impression. The contextual distinction—whether it involves an enclosed architectural object or an urban setting—is not decisive in this model, as the research is directed toward the universality of the spatial relationship, regardless of its physical location. While inhabiting the space, students analyse and become aware of the elements of that spatial relationship that initially triggered their interest, as well as the emotions that the spatial relationship evokes in them (e.g., colonnade, arcade, niche, towers…). From that moment on, such a spatial relationship—whether encountered again in real life or an image—will always be associated with the experience they had in that particular space. Through direct experience, that space has been shaped within them as an idea of that space—serving as a mnemonic association that enables them to experience a similar sensation in comparable spatial relationships [3].

Over time, the concrete experience of a real spatial relationship becomes abstracted and transformed into a general idea of that type of relationship. Such an abstract matrix functions as an internal tool for recognizing similar phenomena across different contexts. In doing so, students develop the ability to read space in a polysemic way, identifying variations of the same underlying spatial logic. The abstract model formed in this process is not conditioned by collective norms but rather represents an individual construction of meaning—one that is simultaneously created, embraced, and affirmed within the domain of personal perceptual and mental experience. In this way, the spatial relationship generates an internalized code—which constitutes the primary objective of the methodological approach—that must, whether consciously or unconsciously, be validated through the process of articulation and presentation, to be permanently remembered and potentially become a subject of communicative exchange within a broader educational and professional context.

The articulation and presentation of an abstract idea—both to the authors themselves and to others—represents an exceptionally complex task, given its polysemic nature and elusiveness within everyday forms of communication. However, it is possible to establish a strategy of visual-verbal representation that involves the creation of a personalized ideogram – a visual sign that is not generic but is individually connected to the semantic layer of the idea – as well as the selection of a set of key words that most precisely illuminate that abstract thought.

This method is theoretically grounded in Allan Paivio's cognitive theory of dual coding, which posits that the memorization process is significantly more effective when visual representations are combined with verbal information [4]. Paivio distinguishes between two cognitive systems: one that encodes images and visual data, and another that processes verbal information. By linking these two systems, parallel neural pathways are formed, thereby substantially increasing the likelihood of long-term consolidation of information in memory. In this context, the use of ideograms and carefully selected words acquires a clear methodological function. Furthermore, the decision to articulate key words in the form of haiku poetry is based on the so-called Hedwig von Restorff effect, which suggests that information that deviates from a familiar pattern—whether through form, tone, content, or expressive uniqueness—is more likely to be remembered precisely because of its distinctiveness and cognitive salience [5].

2.1. Ideogram

Within architectural education, the ideogram is recognized not merely as a graphic representation but as a cognitive and conceptual tool that condenses spatial experiences, relationships, and meanings into a single, synthetic form. As Jacek Krenz [6] emphasizes, ideograms serve as visual catalysts in the process of architectural conception, enabling the simultaneous activation of analytical and intuitive thinking by merging formal abstraction with the communication of complex, often intangible spatial ideas. Unlike sketches, which primarily depict the appearance of an object, ideograms integrate a semantic layer, functioning as symbolic condensations of essential spatial qualities. By reducing complex architectural notions into clear and evocative visual structures, ideograms allow students to preserve the coherence of architectural ideas while facilitating their reinterpretation and further development throughout the design process.

In this methodology, the ideogram also serves as a cognitive frame that supports students in constructing individualized systems of meaning. Building on Ivo Vrouwe's [7] insights, ideograms are understood as visual structures that enable students to synthesize perceptual impressions, conceptual reflections, and material intuitions within a coherent language of representation. Through this mediating role, ideograms bridge sensory perception and conceptual abstraction, fostering deeper internalization and encouraging students to develop autonomous and reflective design thinking that transcends mere technical representation.

The theoretical foundation that supports the use of ideograms in this methodology is rooted in the conceptual role of the diagram in architecture. The diagram transcends its function as a technical drawing and is affirmed as a cognitive and conceptual model capable of structuring complex spatial relationships. Shaped by contributions from philosophers, semioticians, and architects throughout the twentieth century, the diagram—as Charles Sanders Peirce defined—represents "intelligible relations in the constitution of an object," not through depiction, but through structural substitution [8–9]. In architectural practice, the

diagram becomes a means of reduction, abstraction, and synthesis—a tool for both thought and design. Fraser and Henmi [10] characterize it as a selective representation enabling interpretation; Knoespel [11] highlights its potential to both order and destabilize structures; and Bijlsma [12] positions it as a model for analysis and creative generation. Through this layered capacity, the diagram functions as an epistemological bridge between perception, reflection, and design, integrating visual and conceptual knowledge [13].

Building upon this conceptual framework, the present methodology extends the diagram's epistemological role into the realm of intuitive spatial articulation through ideograms. While the diagram structures and abstracts spatial relationships analytically, the ideogram captures their emotional and experiential dimensions, offering students a complementary means for internalizing and expressing architectural space.

Alongside the haiku-formulated key words, the ideogram thus becomes part of a broader communicative system, enabling students not only to reflect on their spatial insights but also to position them within a shared academic discourse. Through this practice, students are empowered to construct personal architectural languages rooted in perceptual authenticity, bridging immediate spatial experience with its research-oriented articulation.

3. METHODOLOGICAL FRAMEWORK

The methodological structure is situated at the intersection of theoretical reflection and pedagogical experimentation, transforming the theoretical foundation into a concrete design tool through which students become active subjects of spatial exploration. The method relies on subjective perceptual experience, mnemonic coding, and cognitive anchoring as key resources for the development of authentic perceptual mechanisms and the construction of an individual system of meaning, which can subsequently serve as a foundation for future spatial articulation in design practice.

The methodological framework, implemented within the courses *Design of Public Buildings* and *Development of Architecture* at the Faculty of Civil Engineering in Subotica during the winter semester of the 2024/2025 academic year, comprised several key methodological components:

1) Contextual Immersion: Students are placed within a concrete spatial context and encouraged to engage in intuitive perception—observing, listening, and feeling. The goal is for each student to independently identify a spatial relationship that evokes a strong personal impression. The nature of the spatial environment (interior or exterior) is not of primary importance compared to the intensity of the perceptual reaction. Each individual perceives forms, light, textures, and the arrangement of elements differently, directly influencing the understanding and interpretation of spatial relations. The same space is revisited at different times of the day to capture, through photography, the moment that most accurately reflects the experienced impression.

2) Analytical Reflection: Students deconstruct the identified spatial relationship, analysing both its formal elements (e.g., colonnades, arcades, niches, towers) and the emotional resonance they evoke. This dual analysis, formal and affective, forms the basis for constructing an internalized, abstract representation of the spatial relationship.

3) Visual-Semantic Representation: The combined use of visual and verbal expression makes the memory process more effective. The internalized spatial perception is externalized

through the creation of an ideogram and the selection of five key words, serving as a visual-semantic tool that condenses the essence of the experienced space.

4) Visual Representation: The ideogram is considered a conceptual tool and a cognitive model that enables students to structure their spatial impressions and transform them into transferable, stable forms. In this way, the ideogram becomes a cognitive bridge between immediate experience and its academic articulation.

5) Verbal Representation: In parallel with the visual component, the activation of the verbal system is required. Students are asked to identify five key words that best describe the spatial relationship they perceived as significant. These words do not necessarily represent final concepts but rather result from an initial cognitive mapping intended to articulate the intuitive impression through language. The synthesis of the five key words into the form of a haiku poem represents a deliberate methodological choice to deviate from expected patterns (in form, tone, or expressiveness), thereby increasing the likelihood of long-term memorization through cognitive salience.

Beyond the concrete methodological outputs—photography, ideogram, and haiku—the broader objective of the methodology is to develop students' individual spatial literacy and their ability to recognize and articulate polysemic spatial logics across various contexts. The abstract spatial relationships formed through this process function as mental matrices, enabling students to identify (and apply) variations of the same conceptual framework in future spatial experiences.

4. RESULTS AND DISCUSSION

The results of the methodological procedure were expressed through three interrelated and communicative representations, which enabled students to articulate, visualize, and reflect upon personally experienced spatial relationships: 1) *Perceptual analysis of space*, documented by a photograph that most strongly reflects the student's subjective impression of the selected spatial relationship; 2) *Verbal interpretation*, conveyed through five carefully chosen key words structured in the form of haiku poetry, thereby achieving a condensed and symbolic expression of meaning; 3) *Visual abstraction*, realized through an ideogram, which represents the transposition of the experienced spatial relationship into an abstract cognitive model.

Through the analysis of the obtained results (Figure 1, Figure 2), several key educational and methodological effects were identified, which are considered particularly significant for the development of architectural awareness among students. First, the concrete examples confirmed the thesis that the meaning of architectural elements is neither static nor universal but is formed through a complex interaction between the physical characteristics of space and their variable interpretations. In this way, the illusion of architecture's constancy was deconstructed, and it was understood as being subject to rapid obsolescence and the continual transformation of meaning.

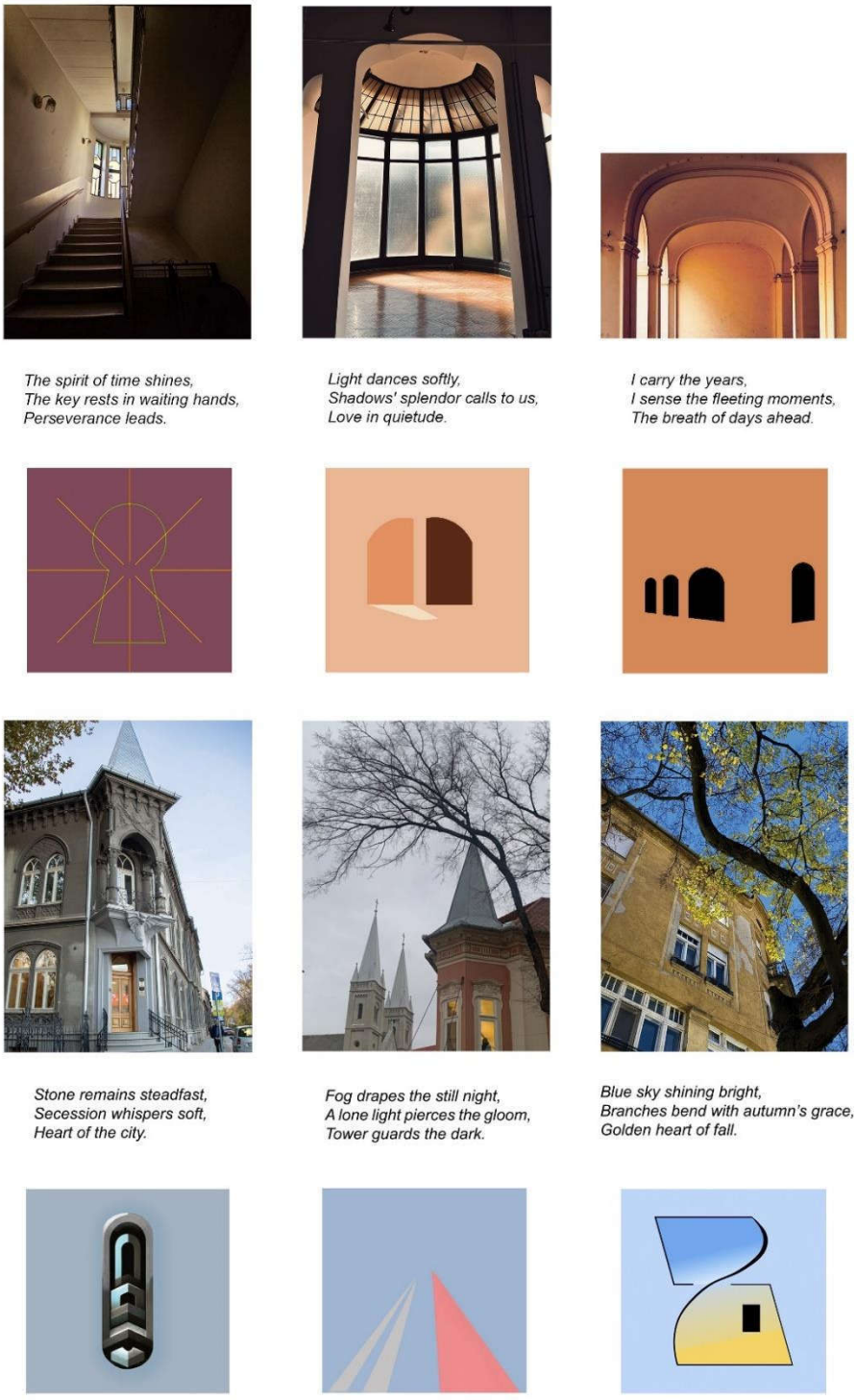
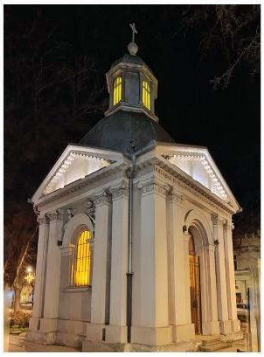


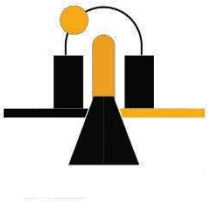
Figure 1. Overview of selected student works aligned with the applied methodological framework (second-year students)

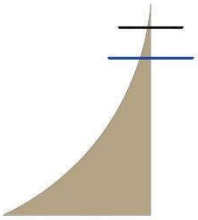
Cornerstone lies still
calmness found within the storm
peace within the soul



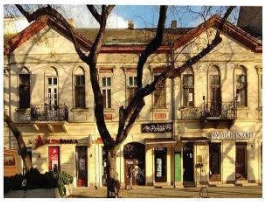
Window facing you
golden glow upon the glass
the soul travels far

Old tower shines bright
beneath the blue sky's great vault
a prayer endures



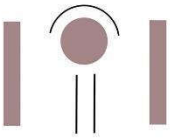


Night kisses the door
a pillar bears the great vault
silence radiates



Shadows of the trees
an old building tells its tales
holding quiet truths

Golden facade glows
Silent past begins to speak
The sky is witness



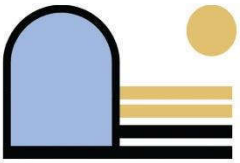


Figure 2. Overview of selected student works aligned with the applied methodological framework (fourth-year students)

From a semiological perspective, grounded in the theoretical frameworks of Ferdinand de Saussure and Roland Barthes, a second benefit emerged: the analysed spatial relationships were recognized as signs consisting of two levels of meaning: 1) *The denotative level* (signifier) – the physical dimension of the spatial relationship, which can be identified, named, and documented independently of any interpretive layer (in this case, the photograph as the primary form of evidence); 2) *The connotative level* – the semantic dimension of the spatial relationship, formed through the personal, cultural, and social experiences of the observer (articulated through haiku and pictogram/ideogram).

As a third positive outcome, the insights gained through the application of this methodology indicate the potential for students to develop the ability for conscious and critical use of these spatial relationships in their own design practice. This process evolves within a dialectic between two conceptual extremes: a) a maximum of responsibility, in which form is perceived as strictly determined by programmatic requirements, regulations, or cultural expectations. That is, through the creation of personal associative nuances related to a given spatial relationship, a path has been opened toward its fully conscious application in future architectural practices; b) a maximum of voluntariness, in which form is understood as flexible and open to subjective use and interpretation. This raised awareness of the fact that every (designed) spatial relationship is subject to interpretation—one that will depend on the culture, experience, and context of the individual (e.g., the future user).

As a comprehensive contribution to a deeper understanding of architecture, the key idea conveyed to students is that architecture, while persuasive, simultaneously remains open to interpretation. It is precisely this ambiguity that enriches its openness, creating space for avoiding typological, formal, and rhetorical rigidity. Within the framework of such a methodology, the constitutive elements of architectural form gain the right to be articulated outside of predetermined schemas, thus restoring to architecture the freedom of creation and interpretation as equal components of meaning.

Simultaneously, this methodology affirms the student as an active participant who, through experience and reflection, shapes authentic design positions beyond the confines of reproducing existing models. The educational process thereby becomes a space for creation and interpretation, rather than the reproduction of predetermined templates.

5. CONCLUSION

As indicated at the very beginning of this paper, within architectural education there are no predefined or universally applicable solutions that could serve as rigid methodological guidelines. The search for such a form of “timelessness” is not only methodologically unfounded, but also fundamentally opposed to the nature of the architectural discipline, which continuously evolves through contextual, social, and individual changes. Accordingly, contemporary methodologies of design education should strive to balance between experimentation and ephemerality, remaining open to constant questioning and transformation.

Arising from the observed discrepancy between students’ initial expectations and the complexity of cognitive processes required by architectural design, the developed methodology emerged as a spontaneous yet systematically articulated didactic unit within the teaching framework at the University of Novi Sad – Faculty of Civil Engineering in

Subotica. The aim was to make students' initial encounter with architectural thinking more immediate, intuitive, and meaningful.

First and foremost, students had the opportunity to engage in direct interaction with real space, to experience and perceive it on a personal level—an approach that remains underrepresented within the curricula of design courses. This type of engagement, still insufficiently present in standard curricula, proved to be essential for activating sensitivity and critical thinking within the learning process. Tête-à-tête discussions with students further enabled a deeper analysis of individual perceptual responses and laid the foundation for the development of personalized architectural codes.

The abstracted spatial elements, acquired through direct experience, do not remain confined to the domain of individual reflection but are reactivated in the design process, where they become connected to new contexts and scales. In doing so, students develop operative creative mechanisms that guide them toward the formation of concepts articulated through a contemporary, universal architectural language. This advancement in the understanding of spatial relationships has a positive impact on the development of critical thinking, the outcome of design projects, and, consequently, contributes to shaping future designers.

ACKNOWLEDGMENTS

The authors would like to express their gratitude to the second-and fourth-year students of the Architectural Engineering module at the Faculty of Civil Engineering in Subotica, University of Novi Sad, whose participation in the courses Design of Public Buildings (Kristina Miličić, Milica Gršić, Dragana Butorac, Boris Radak, Nikolina Stančić, Evelin Rosza) and Development of Architecture (Amina Bero, Brigita Skenderović, Aleksandar Toškov, Katarina Nikolić, Adela Mujčić, Milica Krasulja) was essential to the realization and development of the methodological framework presented in this paper. Their dedication, thoughtfulness, and willingness to explore have greatly contributed to the quality of this work.

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