Disprogramming the Syllabus: Embracing Non-Utility in Architectural Design

Disprogramiranje nastavnog plana: Prihvatanje neutilitarnosti u arhitektonskom projektovanju

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Abstract This paper traces the challenges and outcomes in rethinking the pedagogy of a course in Architectural Technologies at the Department of Architecture and Urban Planning in Novi Sad, Serbia, which evolved from earlier iterations of Architectural Constructions. Traditionally, the course was dedicated to learning the logic of construction through generic building structures, often without creative input from students, resulting in limited functional knowledge in subsequent years of study. The syllabus was thus reframed to focus on exploring the relationships between the design process, spatial organisation, and ambience on one side, and morphology, materialisation, and structural elements on the other. By bridging the gap between technical knowledge and design thinking, this shift allowed students to engage critically with the interplay between design intentions and technical realities, fostering a deeper understanding of the design process itself. The analysis focuses on two consecutive academic years, during which students participated in international design competitions: The Home of Shadows in 2024 and The Architect's Stair in 2025. In both cases, the tasks encouraged a departure from conventional, utilitarian functions of architecture. Focusing on the students' results, the paper explores the potential of this intentional embrace of non-utility: the qualities it generates in understanding the design process and possible architectural outcomes. In particular, the paper examines how such an approach can disprogramme the conventions of a syllabus dedicated to building structures, moving beyond purely technical concerns towards a more creative and critical understanding of the roles and functions of structures within their physical and social contexts.

Keywords architectural technologies; design process; non-utility; disprogramming; teaching process.

Saž**etak** Ovaj rad prati izazove i rezultate preispitivanja pedagogije predmeta Arhitektonske tehnologije na Departmanu za arhitekturu i urbanizam u Novom Sadu, Srbija, koji je nastao iz ranijih verzija predmeta Arhitektonske konstrukcije. Tradicionalno, predmet je bio posvećen učenju logike građenja kroz generičke građevinske strukture, često bez kreativnog doprinosa studenata, što je u kasnijim godinama studija rezultiralo ograničenim funkcionalnim znanjem. Zbog toga je nastavni plan preoblikovan tako da se usredsredi na istraživanje odnosa između procesa projektovanja, prostorne organizacije i ambijenta s jedne strane, te morfologije, materijalizacije i konstruktivnih elemenata s druge. Premošćavanjem jaza između tehničkog znanja i projektantskog mišljenja, ova promena omogućila je studentima da kritički sagledaju međusobno delovanje projektantskih namera i tehničkih realnosti, podstičući dublje razumevanje samog procesa projektovanja. Analiza se fokusira na dve uzastopne akademske godine, tokom kojih su studenti učestvovali na međunarodnim arhitektonskim konkursima: The Home of Shadows 2024. godine i The Architect's Stair 2025. godine. U oba slučaja, zadaci su podsticali otklon od konvencionalnih, utilitarnih funkcija arhitekture. Polazeći od studentskih rezultata, rad istražuje potencijal ovog namernog prihvatanja neutilitarnosti: kvalitete koje ono generiše u razumevanju procesa projektovanja i mogućih arhitektonskih ishoda. Posebna pažnja posvećena je ispitivanju načina na koji ovakav pristup može da disprogramira konvencije nastavnog plana posvećenog građevinskim konstrukcijama, pomerajući fokus sa isključivo tehničkih pitanja ka kreativnijem i kritičkijem razumevanju uloga i funkcija konstrukcija u njihovim fizičkim i društvenim kontekstima.

Ključne riječi arhitektonske tehnologije; proces projektovanja; neutilitarnost; disprogramiranje; nastavni proces.

1 Introduction

Architectural education has long struggled with balancing technical knowledge and creative design. Students are often taught structural systems, materials, and construction methods in isolation, as discrete bodies of knowledge separate from the conceptual and programmatic aspects of design. While this approach ensures technical competence, it can inadvertently constrain creativity, limiting students' ability to exploit the full potential of structural elements in shaping spatial experience, atmosphere, and meaning.

This study investigates how the teaching of construction systems can be reimagined to foster both technical rigour and creative exploration. It examines the design and implementation of a new syllabus for the course Architectural Technologies – Design Process, which situates structural thinking directly within the design process. The main research question guiding this study concerns how to bridge the gap between teaching the technical knowledge of building structures and fostering an understanding of their functional and programmatic potentials—knowledge that can be applied seamlessly in subsequent years of architectural studies. How can learning about the constraints and logic of structural systems be made more creative? How can the principles of construction be taught in a way that is fully integrated into the design process, rather than treated as a separate, technical layer? And how can students be guided to explore both the limits and potentials of structural systems while simultaneously developing architectural concepts and programmes?

In the following sections, we first examine the challenges inherent in traditional teaching of structural systems and the methodologies adopted to overcome them. We then analyse selected student projects that exemplify the integration of structural logic with conceptual and programmatic exploration, highlighting the emergence of secondary functions and the pedagogical potentials of non-utility. Finally, we discuss the implications of these findings for architectural education, showing how the deliberate integration of construction thinking within the design process can foster both creativity and technical rigour.

2 Challenges

Historically, the course Architectural Technologies – Design Process evolved from the course Architectural Constructions,[1] which, since its introduction into the study programme, had been delivered in the 4th semester to second-year architecture students. The course focused on the materialisation and construction of high-rise building structures employing reinforced-concrete frame systems (both cast in situ and prefabricated), as well as timber, steel, and load-bearing masonry structural systems. One of its central objectives has always been to apply the acquired knowledge to the understanding and further advancement of students' competencies in other specialised courses (such as Architectural Design). The course topics were traditionally explored through a series of practical tasks—drawings dedicated to each specific theme. The examples of buildings and structures used to introduce students to the rules and limitations of individual structural systems were most often idealised, generic floor plans that represented the most optimal configuration for each system type. Although this course has long been considered one of the most complex and demanding within the programme, even after completing all practical assignments and the final examination, students often encountered difficulties in the third year, when the Architectural Design course on public buildings required them to apply the knowledge previously acquired.

Drawing on many years of experience working with third-year students in the Architectural Design course, we identified two principal approaches in which the inadequate application of construction technologies became most evident:

Approach 1a: "Anything goes" in reinforced concrete: Within this approach, students would often devote substantial time to developing the building's functional organisation first, working extensively on the floor plan while neglecting considerations of three-dimensional space and the optimisation of the structural system. Once the functional layout was resolved, they would begin to consider the structure: materials, structural logic, spans, elements, and so forth. This sequence frequently resulted in the inadequate application of reinforced-concrete structural systems, producing compromises on two levels: the functioning of the designed spaces and the suboptimal use of the frame structure, due to the absence of its logic in the early stages of the process. In this approach, construction elements are perceived as a layer in the design process that, unfortunately, "must be applied" later on in the process.

Approach 1b: "Anything goes" in steel: Similar to the first variation, the design process begins with a strong emphasis on developing the floor plan and its functional processes. The steel structure is introduced subsequently, spanning the entire building, particularly when the floor plan is complex and lacks a clear rhythm that could otherwise inform a column grid. In such cases, relying on the fact that steel structures can achieve larger spans, columns are often placed at the outer edges of the plan, while load-bearing steel trusses are introduced as the structural solution. Although this approach can lead to structures that are physically feasible, they are often insufficiently considered, structurally non-optimal, and rarely cost-effective in relation to the programme.

In both variations of the "anything goes" approach, structure is developed as an afterthought, and the projects typically lack an inherent consideration of the potentials and constraints of construction during the conceptual phase of the design process.

1 In 2013, the course was renamed Architectural Technologies, and since 2020, it has been transformed into an elective course with two possibilities. Students can choose whether to learn construction logic through practical, generic applications or pursue a course that connects theoretical knowledge to the actual design process.

Approach 2: Hyper-constraining rules: The generic approach to teaching construction rules and constraints often focuses on ideal and optimal geometries and spans, for example, those used in reinforced-concrete frame systems. When applying these rules in later years of study, students tend to interpret such idealised scenarios as the only possible solutions, thereby constraining their own creative thinking about structural systems. In the design process, this manifests as an early and rigid decision regarding the construction system and its maximum spans (e.g., the familiar 6 × 6 metre grid), into which the functional scheme is subsequently forced. This frequently leads to spatial problems, as the imposed grid may not be appropriate for organising the programme or supporting its inherent logic.

In all of these cases (1a, 1b, and 2)—although they represent opposite extremes in approaching construction systems—one issue remains consistent: construction is rarely considered simultaneously with the exploration of the programme, spatial organisation, or conceptual framework of the design. This highlights a broader challenge within architectural education, particularly during the early stages of study: the difficulty students experience in establishing functional connections between courses.

One of the main goals of the new syllabus was to bridge the gap between learning the constraints, rules, and logic of different construction systems and creatively engaging with them during the design process, particularly by emphasising the integration of conceptual development with structural thinking. The central aim was to design a course that would help students understand the role of structural thinking within the design process; namely, that these aspects must be developed concurrently and are mutually dependent.

The second goal was to reframe how students perceive necessary constraints: rather than viewing them as limitations on creativity, the course encouraged them to explore the multiple potentials and roles of construction elements beyond their primary load-bearing function. To support this, we introduced the concept of construction systems' multiple functions, linking it directly to the Theory of Functions in Architecture.

3 Influences from Architectural Theories

As part of a teaching team with long-standing involvement in the third-year Architectural Design course, we have continuously explored and developed the Theory of Functions in Architecture, which occupies a particularly prominent place within our school of architecture.[2] The theory treats function as a plural phenomenon, actively explored across multiple courses and study levels (Dinulović, 2012; Zeković et al., 2018). It examines the diverse functions that architecture and space can realise within their physical and social contexts, emphasising that the utilitarian function is only one among many and not necessarily the most prominent. Although initially there were no explicit links to Umberto Eco, the theory aligns with his notion of secondary functions in architecture,[3] marking them as an open and changeable system (Eco, 1997). In this sense, the Theory of Functions in Architecture treats the list of potential functions as ever-expanding, asserting that all functions exist simultaneously—as dominant, latent, or emerging—regardless of our awareness of them or our ability to mobilise them in the design process. Thus, the theory can be understood as a specific lens through which to approach design, offering a compelling methodological framework: the design process becomes a process of articulating a hierarchy of functions for each project or design task. This hierarchy emerges from a complex system of intentions articulated through the building's programme. Accordingly, a space may be designed with the utilitarian function as the most prominent; however, this dominant position may also be assumed by the ideological function (Dinulović, 2012), the ethical function (Harries, 2000), the symbolic function (e.g., what kind of symbolism architectural form reflects), the urban function (e.g., its capacity to generate new public spaces), the textual function (e.g., how the building embeds or reflects particular narratives), or the scenic function (e.g., the ways in which it constitutes scenes within its context or contributes to the urban landscape)—to name only a few. Thus, the theory reframes architectural design as an act of negotiating and staging multiple, simultaneously operative functions, each embedded within a broader cultural, spatial, and programmatic system.

Being aware of the possibilities that this mode of thinking about architectural space can open (especially as a pedagogical tool) in the new syllabus for Architectural Technologies – Design Process, we sought to apply the logic of the Theory of Functions in Architecture to rethinking the roles of construction systems. In particular, throughout the semester, we focus on two additional functions of construction elements (beyond their load-bearing role and the inherent constraints and logic of each structural system):

1. Exploring the ambient function: What roles can construction systems play in generating specific ambiences within architecture? What is the relationship between spatial atmosphere, character, and the load-bearing elements employed? How can the components of a primary structural system simultaneously define the ambience and shape the character of a space?

2. Exploring the conceptual function: What relationship exists between the conceptual idea underlying a design project and its structural system? How can a load-bearing element become a materialisation of complex conceptual intentions? What is the role of construction systems in generating different conceptual frameworks for a design problem?

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3 Umberto Eco marks the utilitarian function as primary, and all the other functions as secondary. Since this distinction can be easily misunderstood as functions that are more and less important, the terms 'primary' and 'secondary' are not applied within the theory developed at the Department of Architecture and Urban Planning (Novi Sad), even though the essence of Eco's theory is of key importance in understanding the idea of multiple functions of architecture.

With these two functions, our main aim was to expand the ways in which students consider structural elements within the design process. However, over several years of implementing this methodology, particularly while introducing students to the typology of public buildings, we realised that even the simplest programmes could overwhelm students and distract them from considering the functions of space beyond the purely utilitarian. This led us to more consciously implement a shift from a strictly utilitarian perspective towards broader considerations of architectural structures, maintaining utility as secondary within the hierarchy of functions.

This approach opened the possibility of introducing students to the concept of non-utility: not as dysfunctional space or purely formalist architecture, but as architecture that achieves utility on a more complex, subtle, or abstract level, beyond its immediate functional use. While a building's primary function may still be present, its position within the hierarchy of functions is not dominant. Writing about the Eiffel Tower, Roland Barthes addresses this phenomenon and its significance. In this case, "the utilitarian excuses, however ennobled they may be by the myth of Science, are nothing in comparison to the great imaginary function" (Barthes, 1997, p. 166); the tower emerged "from a great human dream in which movable and infinite meanings are mingled: it has reconquered the basic uselessness which makes it live in men's imagination" (Barthes, 1997, p. 167).

By treating basic utility as secondary, or even non-existent, students are able to examine other architectural functions in greater depth. Architecture that consciously embraces non-utility is thus simultaneously multi-functional. This perspective resonates with ideas of architecture as meaningful when non-instrumental (Hollier, 1992), autonomous over temporary utility (Rosi, n.d.), intentionally useless to be critical (Aureli, 2011), or deliberately indeterminate (Tschumi, 1994). These concepts underpin our approach to rethinking the course.

4 New Methodologies – The Structure of the Syllabus

In the 2020/21 academic year, the first edition of the course Architectural Technologies – Design Process was launched. The programme of the course is dedicated to expanding previously acquired knowledge on architectural structures, with a particular focus on understanding the relationships between the programmatic and physical structure of designed spaces. On the one hand, the course addresses the interdependence between the design process, spatial and functional organisation, and the ambience and character of architecture, and on the other, its morphology, materialisation, spatial compositions, and structural elements. These topics are explored through several assignments carried out during the semester. The exercises are organised into two methodological units: one predominantly analytical, and the other dedicated to the implementation of construction technologies within individual design tasks.

The first exercise focuses on analysing examples of existing, built, iconic architecture in order to understand the interdependence of their programmatic and physical structures. The case studies are selected from mid-scale public buildings, either for their visible and expressive structural elements or for their particularly compelling conceptual frameworks. The main objective of this exercise is to conduct a thorough case-study analysis of all aspects of these buildings: from understanding their programme, physical structure, and the conceptual logic of construction and load-bearing systems, to examining their specific ambiences, conceptual ideas, and the dynamic interrelations among these components.

The subsequent exercises are design-oriented and focus on the application of different structural systems, including load-bearing masonry and frame structures in reinforced concrete or steel. These design tasks emphasise applying each system while accounting for its inherent limitations and potentials, with the goal of producing well-considered architectural projects. At the programmatic level, the exercises are oriented towards less complex public-building typologies. While the primary focus of the course is not on the programmatic complexities of architectural design, it was intentionally designed to provide an introduction to public-building typologies, thereby facilitating a smoother transition into the third-year Architectural Design course.

Building on this foundation, the final exercise of the semester, unlike the previous design-based tasks, is structured as a team-based project. It allows students to apply any construction technology to a problem set in a small-scale architectural competition, encouraging creative exploration while reinforcing the skills and knowledge acquired throughout the course.

This study is based on three consecutive academic years of implementation of the revised syllabus, with case studies drawn from the 2023/24 and 2024/25 academic years. The selected projects were those that achieved the highest level of recognition in international competitions (shortlisted or awarded entries), and were also considered exemplary within the pedagogical framework of the course. The course is elective, with students choosing between this module and an alternative Architectural Technologies course that follows a more traditional, technically oriented syllabus. Enrolment varies annually, with approximately 117 students in 2022/23, 24 students in 2023/24, and around 100 students in 2024/25. Teams for the final assignment typically consist of three to four students.

The analysed projects are evaluated through the theoretical framework of the Theory of Functions in Architecture, with a specific focus on the expanded roles of structural elements. Methodologically, the research is framed as pedagogical action research informed by a comparative case-study approach.

Comparable tendencies in contemporary European architectural education can be identified in several pedagogical models that seek to integrate structural thinking with the design process. Design-build studios, such as those at the Vienna University of Technology or the CoCoon – Contextual Construction research

studio at the Technical University of Berlin, emphasise the continuity between design development and physical realisation.

Experimental structural studios, including programmes such as the Design and Make initiative at the Architectural Association in London or Studio in the Woods, combine digital fabrication, material experimentation, and structural investigation, positioning material behaviour as a generative design driver.

Interdisciplinary and competition-based pedagogies, on the other hand, integrate external briefs, real or speculative competitions, and collaborative formats involving stakeholders beyond academia. These approaches often prioritise intensive workshop structures and external engagement as a means of situating architectural education within broader socio-cultural contexts.

The methodology of the course Architectural Technologies – Design Process does not rely solely on competition-based learning, but rather on the integration of structural technologies, the Theory of Functions in Architecture, and the concept of non-utility as a methodological device within an elective technical course. In this sense, it positions "disprogramming" not as an external pedagogical format, but as an internal transformation of the structural technology curriculum itself.

5 The Final Task – – The International Competition

The final task of the semester allows students to select the structural systems that best suit the concepts and purposes of their individual designs, enabling the free selection and implementation of previously acquired knowledge. To achieve this, the semester concludes each year with students participating in an international architectural competition, not as an extracurricular activity, but an integral part of their tasks within the semester. Each competition is carefully chosen to align with the time constraints of the academic year and semester, as well as with the level of complexity appropriate for second-year architecture students.

Since the competition brief is integrated into the syllabus of the course on architectural technologies, and the submitted projects serve both as competition entries and as the final exercises of the course, the tasks are often adapted to reflect the pedagogical objectives of the syllabus. In this context, regardless of the focus of the competition brief, an additional requirement is imposed: students must implement construction elements that not only support the conceptual idea of the design but also actively shape the atmosphere of the spaces created. Furthermore, students are encouraged to combine different materials in conceiving the structural system, provided that these choices align with the conceptual framework and overall intentions of the project.

In the following chapters, we will analyse the outcomes of two consecutive academic years and the final projects submitted to the respective architectural competitions.

5.1 The Home of Shadows #2

In the 2023/24 academic year, the final task of the semester was based on the competition The Home of Shadows #2. The competition was organised by Buildner, a portal with a long-standing tradition of hosting architecture competitions for students and young architects. The second edition of The Home of Shadows took place in 2024 with the brief: "to design a home for a hypothetical couple with just one rule—there can be no artificial light within the home." (Architecture Competitions, n.d.-b) Despite its simplicity, this restriction posed a significant challenge, as the competition was specifically focused on exploring the atmosphere of residential spaces. As stated in the brief: "shadow plays as much a role in influencing the feel of a space as light. The harmony between light and shadow allows architects and designers to create spaces with depth and texture, generating different moods for different purposes." (Architecture Competitions, n.d.-b) This focus was particularly relevant for the context of the course within which the competition was introduced, exploring how various structural elements in architecture can play a decisive role in shaping spatial atmosphere, particularly in dialogue with light and shadow.

5.1.1 Analysis: Shamash - The Shade of the Sun

The team of students[4] behind the project Shamash - The Shade of the Sun chose a location in the territory of the former Mesopotamia, which served as the primary inspiration for their conception of the home of shadows. In their official project description, the students explain:

"In the center of the Sun's path, everything begins. In a manner of concentric circles living is formed so that constant synchronization between the Sun movement and the flow of life, bared by the inhabitants of the house, is obtained - in a way the position of the Sun now dictates, like a clockwork, the rhythm of life. A somewhat temple-like ambient flourishes, carefully placing pierced openings in the membrane walls of each room enabling the filtered presence of the Sun." (Đorić, et al., 2024)

The form of the house draws inspiration from the maze-like structures characteristic of Mesopotamian architecture, while the logic of the structure is expressed through a circular floor plan that develops via the carefully considered overlap of radial and concentric directions (Figure 1d). This plan is materialised as a load-bearing masonry system, creatively employing the principle of "pauses". Pauses are introduced at the intersections of different geometries at the floor plan level, but they also play a crucial role in allowing sunlight to enter the spaces, generating varying shadows throughout the house (Figure 1a). This effect is achieved through the strategic placement of gaps between structural elements, openings in both vertical and horizontal planes, and pauses between conflicting geometries of the floor plan. These gaps function as specific highlights within the atmosphere or as functional and directional cues for the organisation of utilitarian zones within the house.

4 The authors of the Shamash - The Shade of the Sun project: Mladenka Đorić, Miroslav Lukić, Kristina Pajić and Aleksandar Tešić, second-year architecture students. The project won the 3rd prize at the competition The Home of Shadows #2, 2024.

Figure 1 (a) Shamash - The Shade of the Sun: visual of an interior, which shows the principle of the pause and the effect of light on a textured wall. (b) and (c) Shamash - The Shade of the Sun: interior spaces and ambiences: the strategic use of gaps, openings and pauses between structural elements of the house, in order to create specific interplay between light, shadow, and architecture. (d) Shamash - The Shade of the Sun: floor plan. Source: Mladenka Đorić, Miroslav Lukić, Kristina Pajić and Aleksandar Tešić, 2024.

Following the movement of the Sun, the spaces of the house are arranged in circular layers, allowing light to interact with varying depths, textures, and materials throughout the day, creating unique spatial experiences. In this way, the masonry wall system functions not merely as a structural framework but as an active device that supports and enables the materialisation of the spatial concept, co-creating the distinctive atmosphere of the spaces through its interplay with light and shadow (Figure 1b, 1c).

5.1.2 Analysis: Garden Retreat

The second project developed in response to the Home of Shadows competition is titled Garden Retreat.[5] Its concept focuses on the symbiosis between humans and nature by blurring the boundary between inside and outside. The authors of Garden Retreat explain the spatial logic of the project:

"Like desert rocks, the cubes of the structure provide shade and coolness to its user, without intervening in the natural relationship of climate and temperature, thereby creating a space that will always adapt to the climate" (...) "Sunlight cast across rooms used for daily activities creates a "spotlight" effect, directing the observer's gaze to the center of activity. In contrast, shadows are reserved for private areas, creating a non-physical barrier between what should and should not be seen.

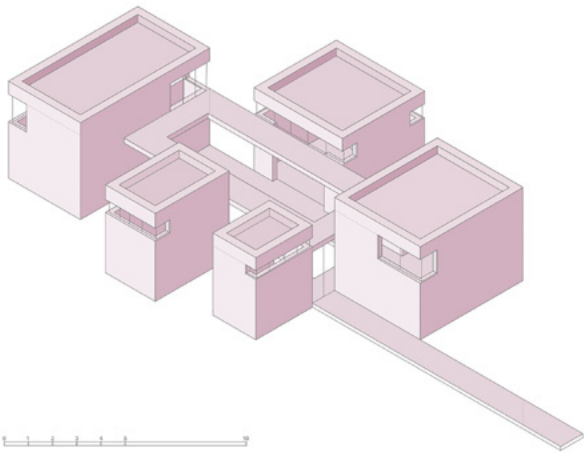

Figure 2 Garden Retreat—axonometric projection that shows the spatial assembly of the group form of the house. Source: Nikolina Paldrmić, Aleksa Čuljak, Aleksa Marinkov, Dragana Kitanović, 2024.

Figure 3 (a) and (b) Garden Retreat—interior spaces and their ambiences, achieved by the interplay between inner and outer spaces, through their overlapping and layering in depth, with strategically placed openings for letting light in. Source: Nikolina Paldrmić, Aleksa Čuljak, Aleksa Marinkov, Dragana Kitanović, 2024.

5 Authors of the Garden Retreat project: Nikolina Paldrmić, Aleksa Čuljak, Aleksa Marinkov, Dragana Kitanović, second-year architecture students. The project was shortlisted at the competition Home of Shadows #2, 2024.

In this way, shadows simultaneously awaken a sense of curiosity, drawing us deeper into the shaded areas of the space." (Paldrmić, et al., 2024)

The structure is conceived as a group of interconnected forms. Five individual cubical structures, each varying in proportion, are arranged around a central connecting space—the inner garden (Figure 2). This garden serves as the nucleus of the house, resulting in a primarily introverted layout: all interior spaces are oriented towards this central courtyard, while the exterior façades open strategically towards the light, through high horizontal strips of windows. Serving as the main visual feature of each cube, these windows vary in size, proportion, and position, with their dimensions and orientation carefully tailored to the primary function of each space.

The extensive openings oriented towards the inner garden enable a visual layering of spaces in depth: the eye moves from interior areas, through the openings, across the garden, and into adjacent cubes or the exterior environment, creating a distinctive ambient quality within the house (Figure 3). This arrangement realises the conceptual idea of dual spaces, in which interior and exterior realms overlap and merge without clear boundaries. The clear zoning of residential sub-functions is established through the use of load-bearing reinforced concrete walls, while the visual, functional, and perceptual layering of spaces is achieved through the careful placement, orientation, and sizing of the openings within the cubes.

5.2 The Architect's Stair #2

In the 2024/25 academic year, the final task of the semester focused on another competition organised by Buildner, titled The Architect's Stair #2. The competition brief centred on a singular architectural element—a staircase—as inspiration for a wide range of spatial explorations, from concrete, constructible designs to utopian and highly conceptual proposals. The brief emphasised the dramaturgical and experiential potential of the staircase as an architectural element:

"It is a structure in motion—a connector of levels, a sculptural form, a spatial sequence, and a symbol of ascent, descent, and transition. It guides the body and engages the mind. It is at once practical and poetic. (...) It punctuates the rhythm of space, dictates circulation, and often becomes a central visual and emotional anchor in architectural composition. It holds narrative power—inviting pause, procession, and perception." (Architecture Competitions, n.d.-a)

The competition explicitly invited participants to reflect on the various qualities of the staircase: "its symbolism, geometry, movement, and potential—free from constraints of program, material, or scale", to explore the element as a pure expression of architectural language and design philosophy. Participants were encouraged to consider questions such as: "How can a stair tell a story? How can it embody spatial ideas, emotions, ideologies, or atmospheres? How can it become a metaphor, a movement, a manifesto?" (Architecture Competitions, n.d.-a)

Integrating such a free and conceptual brief into a course dedicated to architectural technologies required an additional specification to meet the pedagogical objectives. One non-negotiable requirement was that the final structure must be precisely defined in terms of materiality, the logic of construction elements, and the implementation of structural systems with clear intention. At the same time, the initial freedom of the competition brief was preserved by embracing the lack of a predefined programme for the structure. In fact, the task was intentionally framed around this absence of utilitarian function. Instead, students were guided by the Theory of Functions in Architecture as the main methodological approach for designing the stair. The absence of a strictly utilitarian function did not imply that the structure would remain devoid of multiple potential functions. The main task was to explore two obligatory functions of the space: the dramaturgical function of the stair, as an element that invites movement and experience, and the ambient function of the structure, to examine how the structural elements simultaneously define and enhance the spatial atmosphere. In addition to these two functions, students were invited to select a third function of their choice, while still operating without a clearly defined utilitarian programme.

5.2.1 Analysis: The Observer

The summer semester of 2025 occurred amidst ongoing political and social unrest in Serbia, triggered by the collapse of the Railway Station canopy in November 2024.[6] It was therefore inevitable that some students would seek to engage with this context through their responses to the competition brief.

One such project, titled The Observer, was situated in front of the Primary Court in Novi Sad, a focal point of intense protests and public gatherings during the summer of 2025. Responding to the polarised societal climate and the frustration generated by the presence of so-called "politically neutral" individuals, the students identified a common pathway taken by such individuals: a route that bypasses the focal point of the protests. This very route became the location of their architectural intervention.

The structure was designed as a linear pathway, with a clearly defined beginning and end (Figure 4). The starting point was chosen to align with the usual bypassing route, while the culmination directed users straight towards the main entrance of the Court. Through multiple changes in level and direction, the structure acquired a distinctly subversive quality: what initially appears as a shortcut or a step away from social turbulence ultimately becomes the most direct confrontation with it. The student authors[7] describe the project as follows:

"The installation, placed opposite the court, exposes the thin line between neutrality and duty. It appears as an exit—an underground corridor, a tempting refuge

6 The tragedy led to the loss of 16 lives and severe injury to one person. This triggered the biggest student-led protests in the history of Serbia, which transformed into a general movement asking for a corruption-free society and fair institutions.

7 Authors of the project The Observer: Barbara Vegše, Đurđina Kukolj, Isidora Labus, second-year architecture students. The project was shortlisted in the The Architect's Stair #2 competition in 2025.

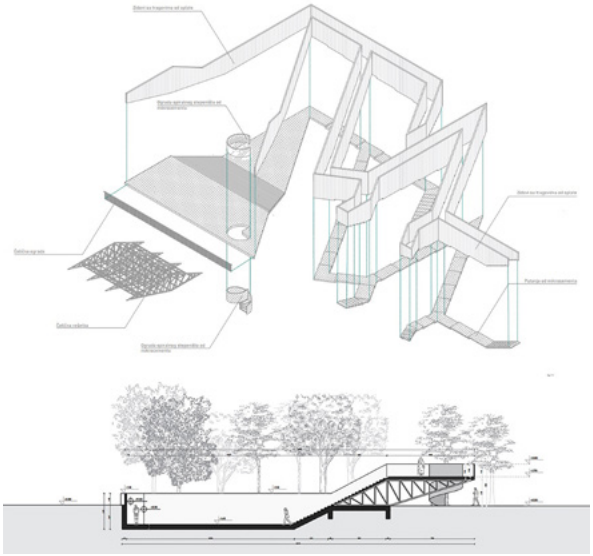

Figure 4 The Observer—the structural axonometric drawing of the paths and platforms that build the dramaturgy of the movement, from the initial idea of bypassing the protests, to inevitable confrontation with the situation (top), and the section through the platform at the end of the path (bottom). Source: Barbara Vegše, Đurđina Kukolj, Isidora Labus, 2025.

from protests. Yet the passage deceives: blind turns and dead ends trap visitors in the illusion of choice. The more one tries to escape, the more meaningless the attempt becomes." (...) "the path does not lead to liberation but to revelation: a raised steel platform aligned with the court façade forces the observer to face the protests. The message is clear—there is no neutrality, no refuge, no freedom in silence." (Vegše, et al., 2025)

The structure integrates with the surrounding greenery, avoiding the destruction of existing trees (Figure 5a), and functions almost as urban furniture from the ground level (Figure 5b). The "interior" of the installation forms a sunken space, painted in a striking teal, comprising a network of ascents, descents, and pathways that guide the user to the end of the route (Figure 5c). The materialisation combines reinforced concrete for the semi-underground passageways with lighter steel trusses forming the elevated platform from which the observer confronts the Court.

This project responds to a highly sensitive social and political context in a subversive, and at times, even humorous manner, while simultaneously achieving a powerful effect in confronting so-called 'neutral' individuals with a situation of profound societal urgency. All of this is accomplished through the design of the architectural elements themselves, embracing the lack of utilitarian function in the very concept of the structure: "This staircase was not designed for use, but for confrontation." (Vegše, et al., 2025)

5.3 The Synthesis

The analysis of projects developed over two consecutive school years within the course Architectural Technologies – Design Process reveals both the spatial qualities achieved and the expanded roles of

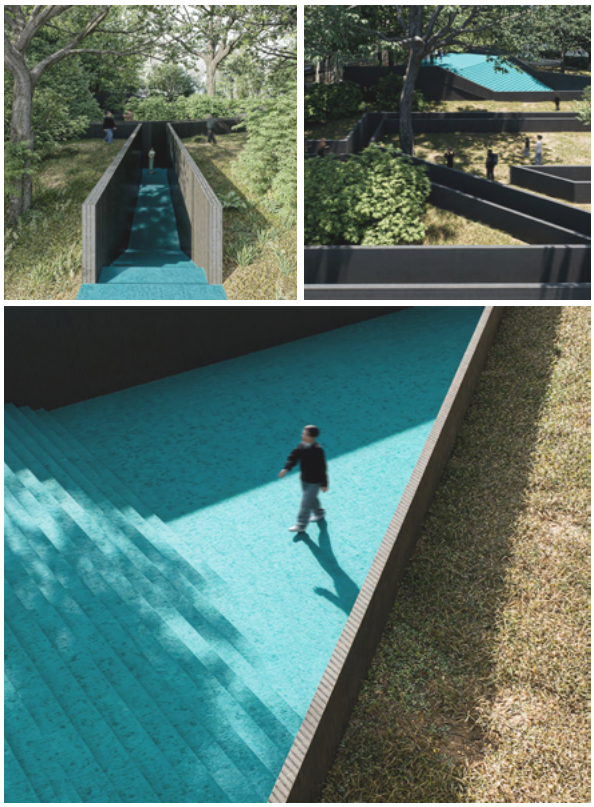

Figure 5 The structure of The Observer (a) the starting point of the path, (b) the view of the structure within its context, (c) the final ascent towards the platform that aligns the user with the main entrance to the Primal Court. Source: Barbara Vegše, Đurđina Kukolj, Isidora Labus, 2025.

construction elements. By focusing on the additional functions that structural elements can assume within the designed spaces, the case studies demonstrate the emergence of the following functions:

1. The ambient function of construction elements—particularly evident in Shamash, where the deliberate placement of gaps and pauses between structural elements produces distinct articulations of texture, light, and shadow. The ambient function relates to the notion of atmosphere and, in the analysed projects, examines how architectural elements in general, and structural elements in particular, contribute to the formation of specific spatial ambiences.

2. The scenic function of construction elements—highlighted in Garden Retreat, achieved through the interplay between open and enclosed spaces, inside and outside, and the visual layering of spaces through the depth of the inhabitant's gaze. The scenic function relates to capacity of architecture to constitute a scene—a specific point of interest and a composed visual condition that can be perceived from a defined viewpoint. In the Garden Retreat project, this is achieved in particular through the deliberate use of framing as a tool: carefully designed openings in the walls create architectural frames that transform spatial relationships into perceptible compositions.

3. The dramaturgical function of construction elements—present in all three projects, but most prominently explored in The Observer. This function describes how spatial sequences articulated through

structural elements guide movement, direct perception, and shape user engagement. It foregrounds action, describing the ways in which architecture generates and modulates gestures, trajectories, and forms of occupation. It therefore presupposes movement and an active bodily condition, in which users are immersed within space.

4. The subversive function of spaces and their construction elements—particularly pronounced in The Observer, illustrating the capacity of architecture and its structural elements to embody the intentions of the designer and challenge problematic social systems, using the very tools of those systems against them.

5. The textual function (narrative and/or performative)—highlighting how architecture and its structural elements can serve as explicit political statements or generate multiple meanings and narratives, ranging from residential contexts and the textuality of dwelling within specific constraints to broader political and social commentary. The textual, narrative, and performative functions are closely interrelated yet conceptually distinct: textual refers to the inherent textuality of any built form and operates as an overarching function, while narrative and performative emerge as its subcategories, demonstrating architecture's capacity to reflect meanings and to actively produce them. In the analysed examples, architectural textuality is approached through varying modalities, from relatively passive symbolic reflection to the active production of meanings and effects in relation to users.

As a counterpoint to these case studies, it is useful to consider the typical outcome of the traditional syllabus prior to its transformation. One of the key exercises aimed to connect students' previously developed single-family house designs with the Architectural Technologies course through the application of a load-bearing masonry system and its associated constraints. In practice, this meant that designs completed in an earlier semester were retroactively adapted to meet structural requirements.

This process revealed several limitations. Since the original designs were not developed with structural constraints in mind, the subsequent application of a load-bearing system, often combined with the requirement of pitched wooden roofs, meant that significant modifications were needed. As a result, the design process and the development of construction logic remained sequential rather than integrated. While the exercise often achieved technical correctness, it frequently led to compromised architectural quality, as students were required to substantially alter their initial concepts. Consequently, the intended integration between courses was not fully realised.

For a clearer overview of the analysed examples, their construction systems, and associated functions, alongside a comparison with a typical representative of the traditional syllabus, a comparative table is presented below.

The comparison illustrates a fundamental difference between the two pedagogical approaches. In the traditional syllabus, the emphasis on predefined technical constraints often resulted in forced adaptations of the design, sometimes at the expense of its conceptual and spatial coherence. Although these projects demonstrated a degree of technical competence, they rarely engaged with the broader functional potentials of structural systems, such as ambient, scenic, or narrative roles. Moreover, students frequently struggled to preserve the integrity of their initial design intentions.

In contrast, the revised syllabus promotes the simultaneous development of structural, conceptual, and spatial thinking. Rather than treating construction as a subsequent layer, it positions structural systems as active generators of architectural meaning. This shift enables a broader functional plurality, in which technical knowledge is not only applied correctly but also mobilised creatively within the design process.

Table 1 Comparative view of functions achieved by structural systems in the analysed projects and their relation to specific task constraints, including a comparison with a typical representative of the traditional syllabus. Source: The authors, 2025.

	Shamash	Garden Retreat	The Observer	A typical representative of the traditional syllabus
Structural system	Load-bearing masonry walls	Load-bearing masonry walls	Combination of reinforced concrete and steel	Load-bearing masonry walls
Programme	Residential	Residential	None/Confrontation	Residential
Specific restrictions	No artificial light	No artificial light	The lack of programmatic determination of the structure, in terms of utilitarian function	Standard technical constraints
Functions of the structural elements	Ambient function; Demarcation; Dramaturgical function; Load bearing.	Scenic function (framing of views, layering of spaces); Defining spatial zones within the floor plan; Ambient function; Load bearing.	Subversive function; Dramaturgical function; Scenic function; Performative function; Load bearing.	Load-bearing; Demarcation

6 The Unexpected Result – Potentials of Non-Utility

Although the course did not initially aim to explore the potentials of non-utility in architectural design, after several years of implementation and reflection on the most successful student projects, it became evident that the most creative and diverse outcomes emerged when tasks incorporated conditions of reduced or suspended utility. In the case of the Home of Shadows, the restriction on artificial light, while not directly negating the functional logic of domestic space, introduced an extreme condition within the context of contemporary residential architecture. In conventional terms, such a constraint can be understood as potentially undermining standard notions of habitability.

Similarly, The Architect's Stair, with its focus on narrative and experiential qualities, inspired a more explicit exploration of functions of space beyond the purely utilitarian. This observation can be seen as a validation of theoretical claims that secondary functions in architecture become particularly prominent when the primary (utilitarian) function is either questioned or absent (Barthes, 1997, p. 166).

Within this framework, non-utility emerges as a productive pedagogical instrument for foregrounding the multiplicity of architectural functions and the expanded role of structural elements. Rather than being understood as the absence of function, non-utility operates as a temporary methodological condition that shifts attention away from immediate programmatic resolution towards latent, secondary, and emergent functions of architecture.

In pedagogical terms, this shift has two main implications. First, the reduction of complex utilitarian constraints enables greater freedom in structural and spatial experimentation, particularly in the early stages of architectural education. Second, it enhances students' awareness of secondary functions as integral components of architectural production, making their intentional deployment more explicit and legible within the design process.

When articulated with clear intention, these functional layers contribute to a more complex understanding of architectural programmes as systems of interrelated spatial, conceptual, and structural operations. In this context, students are able to integrate structural thinking more consistently across different stages of design development.

While the findings presented here are grounded in several years of teaching practice and reflect the perspective of the teaching team, they also indicate directions for further research, particularly regarding the long-term influence of this methodology on students' subsequent design approaches in later stages of their studies.

Within this research, non-utility functions as a methodological device applied selectively within specific design exercises to reveal latent architectural potentials. Its aim is not to negate or replace utilitarian concerns, but rather to complement them by strengthening students' capacity to engage with complex, multi-layered design problems in later, functionally driven contexts.

7 Conclusion

The introduction of theoretical models for thinking about architectural design, specifically, the Theory of Functions in Architecture, combined with the intentional embrace of non-utility as an extreme condition that encourages more creative responses, constitutes a form of "disprogramming" within a course dedicated to structural systems and their logic. This approach aligns with Bernard Tschumi's concepts of cross-programming, trans-programming, and disprogramming (Tschumi, 1994), in which unexpected events or functions are introduced into spaces not originally intended to accomodate them, allowing new qualities and intensities of space to emerge.

Applied to a curriculum design, this disprogramming operates through the integration of themes not typically associated with courses on structural systems—such as secondary functions, dramaturgical or ambiental roles of architecture—into the study of structural logic itself. This method allows for the specific qualities and potentials of construction elements to emerge, revealing a deliberate intentionality behind their implementation. Ultimately, the principal aim of the course was to cultivate an understanding of structural systems not only as technical frameworks, but also as active contributors to architectural experience, conceptual development, and spatial expression.

This paper presents, analyses, and evaluates a replicable pedagogical model for integrating structural technologies, conceptual design, and secondary architectural functions through syllabus disprogramming. Based on several consecutive years of implementation, it positions non-utility as both a pedagogical device and an extension of the Theory of Functions in Architecture within technical education. The findings suggest that non-utility can serve as a productive methodological condition for bridging structural thinking and design processes in architectural education.

Potential drawbacks of this approach lie primarily in the risk of overemphasising conceptual experimentation at the expense of technical rigour. However, the curriculum was deliberately structured to maintain a balance between technically rigorous assignments and conceptually driven tasks, particularly through competition-based exercises. The pedagogical issue initially identified by the teaching team—the insufficient integration of structural knowledge into the design process during third-year studies—was addressed on two levels. First, the syllabus transformation itself was conceived as the active integration of structural, conceptual, and programmatic thinking within a single curriculum, rather than assuming such integration would occur naturally across separate courses. Second, the application of previously acquired knowledge was explicitly examined through the semester's final exercise: participation in an international architectural competition.

Although the teaching team no longer directly supervises third-year design studios and therefore could not measure the long-term effects on subsequent student performance, the final exercise served as an evaluative framework for assessing transferability. As

an open-ended brief allowing the use of any structural system or combination thereof, it tested students' ability to synthesise structural knowledge with design thinking. Through comparative observation across cohorts, students demonstrated increased capacity for structural integration, with projects exhibiting stronger structural intentionality and expanded functional awareness. Compared with earlier approaches characterised by generic or hyper-constrained applications of structural systems, these outcomes suggest improved preparedness for more complex design tasks.

While the long-term impact on third-year studio performance remains an open question for future research, the results presented here do not claim to constitute a complete pedagogical solution. Rather, the paper proposes and preliminarily validates a transferable pedagogical model for addressing similar challenges in architectural education, particularly in contexts where structural and design-based knowledge remain insufficiently integrated.

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