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Developing Pedagogical Thematic Structures in Architectural Design Studios: The Topiagram Series in Atelier Z

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Abstract

This study develops the Topiagram as a pedagogical thematic structure within architectural design studios, enabling experimental hyper-local design inquiry into the geographical, ecological, historical, cultural, and socio-material dimensions of spatial formation. Topiagram structures an experimental pedagogical field that enables the discovery of the relational and generative potentials of terroir, translating hyper-local spatial conditions into architectural knowledge and practice across diverse channels of production, representation, and dissemination. Building upon this framework, the study comparatively examines three architectural design studios that differ in their context formation, media configuration, and studio organization. The comparative analysis is organized around two complementary analytical dimensions: the constructive frames shaping the situational, material, and relational dimensions of the studio, and the pedagogical operations of contextual grounding, conceptual derivation, and spatial structuring. The findings show that these operations maintain consistent relationships with the constructive frames while assuming different modes as studio configurations change, demonstrating the adaptability of Topiagram across different pedagogical conditions. Its pedagogical value lies in organizing architectural inquiry and production while maintaining operative openness for multiple trajectories of experimentation and spatial production, including critically situated and empathically grounded spatial formations. The study thus reveals how a pedagogical thematic structure can organize architectural inquiry and production while adapting to different studio configurations. Grounded in three architectural design studios conducted within Gazi University's architectural design education, the study demonstrates how a century-long pedagogical tradition can be continually reinterpreted through experimental thematic structures, offering a perspective on the future development of architectural design education.

1. INTRODUCTION

Architectural design studios have long been recognized as distinctive pedagogical environments in which architectural knowledge is constructed through iterative interactions among inquiry, reflection, representation, and spatial production rather than through the transmission of predetermined knowledge [1, 2, 3, 4, 5, 6, 7] This pedagogical understanding is grounded in experiential and reflective conceptions of learning, whereby knowledge emerges through the act of designing itself [1, 8, 9]. Building upon this perspective, architectural design studios are increasingly understood as environments in which designing functions simultaneously as a mode of inquiry, a situated form of action, and a means of generating architectural knowledge through reflective and research-oriented practice [3, 10, 11, 12]. Recent discussions in architectural design pedagogy further conceptualize design studios as collaborative pedagogical environments that cultivate situated forms of design inquiry through iterative processes of experimentation, making, testing, reflection, and revision [13, 14]. Consequently, increasing attention has shifted from what is designed within the studio towards how studio learning is pedagogically organized through continuous engagement with contexts, ideas, materials, and collective practices. Accordingly, the educational significance of the design studio resides not only in the architectural propositions it produces,

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but also in the pedagogical structures that organize design inquiry, mediate learning processes, and shape the reciprocal relationships among contextual inquiry, conceptual development, and spatial production.

In architectural design pedagogy discussions, experimentation is increasingly conceptualized as a pedagogical condition through which architectural knowledge, experience, and spatial understanding are continuously cultivated. Experimental studios are therefore understood less as environments for formal innovation than as pedagogical settings that reorganize the reciprocal relationships between researching, thinking, and making through alternative studio organizations and thematic inquiries [1, 3, 4, 5, 6, 15, 16]. This understanding resonates with the Aristotelian integration of theoria, praxis, and poiesis, where knowledge emerges through the continuous interplay among inquiry, reflection, and production rather than through their separation [17]. In contemporary architectural design pedagogy, this unity is reinterpreted through the reciprocal integration of researching, thinking, and doing/making, making experimentation an educational condition rather than merely a methodological choice [16].

Within this perspective, thematic structures increasingly function as more than studio themes, project briefs, or conceptual prompts. They organize the conditions through which design inquiry unfolds, guide conceptual exploration, coordinate collective learning, and shape architectural production throughout the design process. Despite their growing pedagogical significance, thematic structures have largely been discussed in relation to studio content, educational outcomes, or project themes, rather than as operative pedagogical systems that organize the educational logic of the design studio [4, 6, 7]. Comparatively little attention has been devoted to understanding how a pedagogical thematic structure operates as an internal pedagogical system capable of reorganizing the educational logic of the design studio across different pedagogical configurations. Consequently, little is known about how such structures cultivate, sustain, and diversify experimentation as a pedagogical condition within architectural design studios.

To address this gap, the present study develops the Topiagram as a pedagogical thematic structure formed by synthesizing topia and gram. Topia refers to imagined and constructed spatial configurations that emerge through interpreting and reconfiguring the terroir across its geographical, ecological, historical, cultural, and socio-material dimensions. Gram denotes the representational and investigative practices through which these spatial configurations are explored, articulated, and transformed within the design studio. Through this synthesis, the Topiagram structures an experimental pedagogical field that enables the discovery of the relational and generative potentials of terroir to inform architectural inquiry while cultivating hyper-local spatial practices and intelligences across diverse channels of production, representation, and dissemination. Building upon this conceptual framework, the study examines Topiagram across three architectural design studios organized through different context formations, media configurations, and studio organizations. Through a comparative analysis, it explores how the pedagogical operations of contextual grounding, conceptual derivation, and spatial structuring unfold across the situational, material, and relational frames of the design studio. It further examines how the modes of these operations vary across different studio configurations, providing a basis for understanding Topiagram's adaptability and potential transferability.

Accordingly, the study addresses three interrelated questions: (1) How can Topiagram be conceptualized as a pedagogical thematic structure, and through which pedagogical operations does it function within the architectural design studio? (2) How does it diversify across different studio configurations, and what pedagogical possibilities emerge through different context formations, media configurations, and studio organizations? (3) How can it be developed as a pedagogical thematic structure with the potential for transferability, enabling architectural experimentation through hyper-local spatial practices and intelligences across diverse channels of production, representation, and dissemination? By addressing these questions, the study advances an operative understanding of pedagogical thematic structures by examining them through the pedagogical operations they enable and the studio conditions through which these operations are enacted, thereby organizing architectural inquiry, experimentation, and spatial production across diverse studio contexts. It further demonstrates how the Topiagram reconfigures the architectural design studio as an experimental pedagogical environment by integrating researching, thinking, and making within a coherent pedagogical framework.

2. ACTIVATING THE SPATIAL POTENTIALS OF TERROIR THROUGH THE TOPIAGRAM

The Topiagram is more than the combination of topia and gram; it constitutes the conceptual–operative coupling through which the relational and generative potentials of terroir become productive for architectural inquiry, experimentation, and spatial production. This proposition first requires reconsidering terroir beyond its conventional understanding as a contextual attribute to be represented, and instead as a source of relational and generative potentials that architectural design can activate. On this basis, topia and gram are brought together as the complementary conceptual and operative components of the Topiagram.

Derived from the Latin terra and the French terre, meaning earth, land, or ground, the term terroir is historically associated with agricultural and viticultural practices. Initially used to describe the distinctive qualities of a particular territory, the concept foregrounds the material and environmental conditions of place, with soil, land, climate, and geography constituting its foundational elements. Within architectural discourse, terroir is commonly associated with the reflection and embodiment of the distinctive cultural, environmental, and material characteristics of place [18, 19]. Its adoption in architecture marks a shift from viewing the site as a neutral, abstract plane to understanding it as a complex, living system shaped by situated conditions and histories [18]. In this sense, terroir provides a framework for resisting the homogenizing effects of globalization by foregrounding local identities, cultural heritage, place-based knowledge, and traditional practices. Beyond its representational role, terroir has also been discussed as a source of creative potential when engagements with place are approached through deeper processes of integration, interpretation, and expression. From this perspective, the originality of architectural production emerges not from the direct reproduction of local characteristics, but from the capacity to transform and rearticulate them through design [20]

However, despite these contributions, terroir is often treated as a contextual condition to be reflected in architectural outcomes, rather than as an active, generative force in the design process [19]. Such interpretations tend to position terroir as a source of meaning to be reflected in architectural outcomes, often privileging representation, identity, and contextual expression. As a result, less attention is given to the capacity of terroir to stimulate new questions, open alternative modes of inquiry, and support experimental forms of spatial thinking and production. To address this limitation, this study reconceptualizes terroir not as a contextual condition to be represented but as a relational, generative field of potential capable of producing architectural inquiry. Such a shift requires understanding place not as a fixed context but as an ongoing process of formation. In this regard, imaginative and projective practices are particularly important, as they enable new spatial possibilities to emerge from existing conditions rather than merely reproducing established meanings [21]. Likewise, relational understandings of place emphasize its continual constitution through interactions, encounters, and trajectories, positioning places as open and dynamic configurations rather than bounded entities [22]. From this perspective, environments are understood as living fields of correspondence shaped through ongoing processes of making and becoming rather than as passive contexts awaiting interpretation [23]. If terroir is understood not as a fixed contextual condition but as a field of spatial potentials, architectural inquiry cannot remain limited to representing existing conditions. Rather, it requires a mode of inquiry through which these potentials can be imaginatively interpreted, spatially reconfigured, and experimentally developed. However, reconceptualizing terroir in this way requires a new conceptual framework capable of engaging with these relational and generative processes. It is in this context that the notion of topia becomes relevant.

While terroir is grounded in the situated character of a territory, topia, deriving from the Greek topos (place), opens a field through which territory is reinterpreted as place and engaged through processes of spatial imagination and transformation. Accordingly, the notion of topia provides a conceptual bridge through which the geographical and cultural conditions associated with terroir may be transformed into spatial imaginaries. Within architectural discourse, the concept of topia extends beyond the Greek notions of ou-topos (no place) and eu-topos (good place) to engage directly with the physical, cultural, and political production of space [24, 25]. From this perspective, contemporary interpretations no longer regard utopia as an idealized “other” detached from reality, but rather as a critical mode of inquiry

emerging through the reinterpretation and transformation of existing conditions. Rather than projecting a distant ideal, utopia is increasingly understood as a historically and contextually grounded critical response that interrogates existing realities and reveals alternative possibilities embedded within the present. In this sense, it functions as a speculative instrument and experimental field through which spatial potentials can be explored, tested, and reimagined [26, 27]. In this sense, the field established by topia is not separate from terroir but provides the conceptual means through which its relational and generative potentials become architecturally operative.

While topia establishes the conceptual field through which the situated conditions of terroir are reinterpreted as a basis for architectural inquiry, gram introduces the mediating system through which this inquiry is investigated, articulated, communicated, and transformed. Derived from the Greek gramma, meaning writing, inscription, or recorded marks, the suffix gram has been understood not merely as a form of representation but as a system through which meaning is constituted and mediated [28]. Within architectural discourse, this understanding resonates with interpretations of diagrams as operative devices that organize spatial relations and design thinking rather than simply representing form [29, 30]. More recent discussions further extend this operative understanding by conceptualizing diagrammatic and cartographic practices as mediating systems that organize architectural inquiry, production, and communication across multiple representational and material media [31, 32, 33, 34]. Accordingly, the gram is understood in this study not as a representational suffix but as a mediating system encompassing the interconnected modes through which architectural inquiry is generated, communicated, and transformed, including drawing, writing, mapping, modeling, making, recording, installation, and other channels of production, representation, and dissemination.

Conceived through the synthesis of topia and gram, the Topiagram activates the relational and generative potentials of terroir by bringing together a conceptual field of spatial imagination with an operative system through which the practices of researching, thinking, and making are brought into productive relation. Beyond prescribing a fixed design method or representational medium, it establishes an experimental pedagogical field through which terroir can be continuously investigated, interpreted, negotiated, and spatially transformed. This understanding provides the conceptual basis for the comparative studio analysis that follows, which examines how Topiagram operates under different studio configurations and how its pedagogical operations generate diverse forms of experimentation, learning, and architectural production.

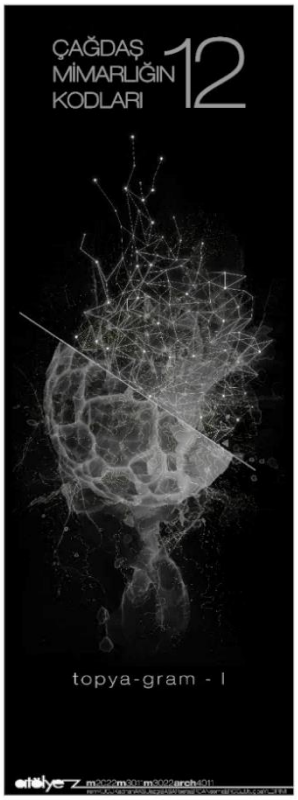
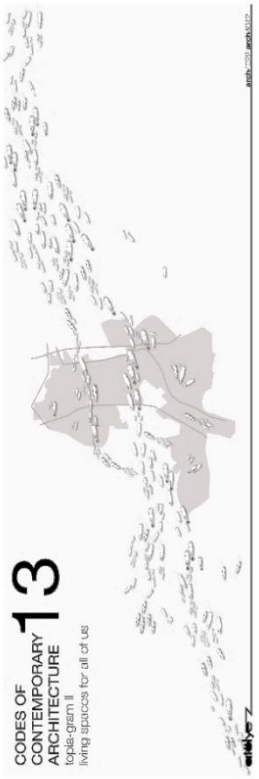
3. TOPIAGRAM IN ARCHITECTURAL DESIGN STUDIO PRACTICE

3.1. Understanding Topiagram in Practice

Grounded in architecturological perspectives that conceptualize designing as an operative system constituted through interacting design operations rather than solely through its final architectural artifacts [35, 36], the study focuses on the operative processes of designing. From this perspective, it adopts a comparative studio-based pedagogical inquiry to examine how Topiagram functions as a pedagogical thematic structure across three architectural design studios conducted in Atelier Z. Rather than comparing individual design outcomes or student performance, the study focuses on how a shared thematic structure operates under different pedagogical configurations. Accordingly, the study draws on pedagogical records from the three studio implementations, including studio briefs and course documents, documented organization of design groups and studio processes, and visual documentation of studio activities. These materials are examined to reconstruct and compare how each studio was pedagogically configured and how the shared thematic structure operated under different studio conditions. Student works included in the manuscript are not treated as independent units of analysis or evaluated in terms of design quality or learning achievement; rather, they are selected for their capacity to exemplify the distinctive pedagogical configuration of each studio and to make visible how the design process developed within that configuration. The three studios are analytically comparable because they were developed through the same overarching pedagogical thematic structure, Topiagram, while being deliberately differentiated in terms of context formation, media configuration, and studio organization (Table 1). Across all three implementations, the conceptual–operative logic of Topiagram remained constant: architectural inquiry

was organized through the interrelated operations of contextual grounding, conceptual derivation, and spatial structuring. What varied were the studio conditions through which these operations were enacted, including the contextual scope of inquiry, the media through which it was explored and developed, and the organizational relations among design groups. This combination of a shared operative structure and deliberately varied studio configurations establishes analytical comparability by providing a common basis for identifying recurring patterns and variations in the operation of Topiagram across the three cases.

Table 1. *Comparative Studio Configurations of Topiagram*

Comparative Studio Configurations			
Pedagogical Structures	**Studios**		
	Topiagram I	**Topiagram II**	**Topiagram III**
			
Context Formation	distributed local contexts	shared territorial context	clustered global contexts
Media Configuration	assemblages evolving with architectural projects |	collages and animal modelings genereting	installations framing architectural projects
Studio Organization	independent design groups (17 groups, 3–4 students each)	fully connected design groups (1 group comprising 12 groups, 2–3 students each)	interconnected design groups (15 groups organised into five clusters, 2–3 students each)
			

The comparative analysis is organized around two complementary analytical dimensions (Table 2). The first comprises three constructive frames within which Topiagram becomes pedagogically operative: situational, material, and relational. The situational frame concerns how architectural inquiry is positioned in relation to contextual conditions and is examined through context formation; the material frame concerns the media, representational means, and modes of making through which architectural inquiry is explored and developed and is examined through media configuration; and the relational frame concerns how architectural inquiry is organized through relations among participants and is examined through studio organization. These three frames build on an understanding of designing as constituted through the interrelation of the conditions in which design takes place, the material and representational means through which it is developed, and the subjects and relations through which it is enacted. Rather than treating these as independent variables, the framework treats them as mutually constitutive dimensions of design activity, consistent with relational accounts of design knowledge emerging through intertwined contextual, material, and social conditions [12]. Together, the situational, material, and relational frames explain where the pedagogical thematic structure operates within the design studio by identifying the contextual, material, and relational conditions through which its pedagogical operations take effect (Table 2).

Table 2. *Operative Framework of Topiagram as a Pedagogical Thematic Structure*

Operative Framework of Topiagram as a Pedagogical Thematic Structure

Constructive Frames (Where Topiagram Operates)		**Pedagogical Operations** (How Topiagram Operates)
Situational Structure	operated through	Contextual Grounding
Material Structure		Conceptual Derivation
Relational Structure		Spatial Structuring

Table 3. *Analytical Framework for Examining Topiagram's Pedagogical Operations*

Analytical Framework for Examining Topiagram's Pedagogical Operations

Pedagogical Operations	**Constructive Frames**		
	Situational Frame	Material Frame	Relational Frame
Contextual Grounding	How did contextual grounding operate within the situational field?	How did contextual grounding operate within the material field?	How did contextual grounding operate within the relational field?
Conceptual Derivation	How did conceptual derivation operate within the situational field?	How did conceptual derivation operate within the material field?	How did conceptual derivation operate within the relational field?
Spatial Structuring	How did spatial structuring operate within the situational field?	How did spatial structuring operate within the material field?	How did spatial structuring operate within the relational field?

The second examines three pedagogical operations, contextual grounding, conceptual derivation, and spatial structuring, to explain how Topiagram operates within each constructive frame of the studio. Contextual grounding refers to the operation through which a field of inquiry is established by situating architectural exploration in relation to its contextual conditions; conceptual derivation refers to the operation through which contextual inquiry is explored, experimented with, and developed into architectural concepts; and spatial structuring refers to the operation through which these conceptual trajectories are articulated, materialised, and developed into spatial propositions. These three operations derive from the conceptual–operative structure of Topiagram explained previously. Contextual grounding addresses the engagement with terroir as a relational and generative field rather than a predefined context; conceptual derivation articulates the projective capacity of topia to reinterpret situated conditions and open alternative spatial possibilities; and spatial structuring activates the operative capacity of gram by mediating the articulation and transformation of these possibilities through multiple modes of spatial production. The three operations therefore translate the conceptual coupling of topia and gram into an

analytical structure through which its pedagogical logic can be examined across different studio configurations. Within this understanding, these operations are not sequential stages of the design process, but interrelated modes through which researching, thinking, and making are brought into continuous interaction within the studio. This understanding builds on traditions of experiential and reflective inquiry in which knowledge is generated through the reciprocal interaction of inquiry, reflection, and action rather than through their separation into discrete stages (Dewey, 1938; Schön, 1983, 1987). Within this study, contextual grounding, conceptual derivation, and spatial structuring translate this relational understanding into architectural design pedagogy by examining how contextual inquiry, conceptual development, and spatial production continuously inform one another. Accordingly, the comparative examination investigates how each of these pedagogical operations unfolds within the situational, material, and relational constructive frames of the design studio, forming the analytical matrix through which the three Topiagram configurations are comparatively examined (Table 3). On this basis, the following section applies this analytical matrix to the three studio implementations to examine how the shared pedagogical operations were differently configured across their situational, material, and relational conditions.

3.2. Comparing Topiagram across Three Studio Configurations

The comparative analysis examines three successive implementations of Topiagram conducted in Atelier Z during the 2024 and 2025 academic years, constituting the twelfth, thirteenth, and fourteenth iterations of the long-term studio agenda Codes of Contemporary Architecture. Building on the analytical framework established in Section 3.1, these implementations are examined as differently configured enactments of the same pedagogical thematic structure.

In Topiagram I, students investigated distributed local contexts across Türkiye through independent design groups. Rather than being assigned predefined sites, each group identified its own local context through its conceptual interpretation of topia. Assemblages evolved alongside architectural projects, allowing contextual inquiry and spatial production to develop simultaneously through multiple locally situated explorations.

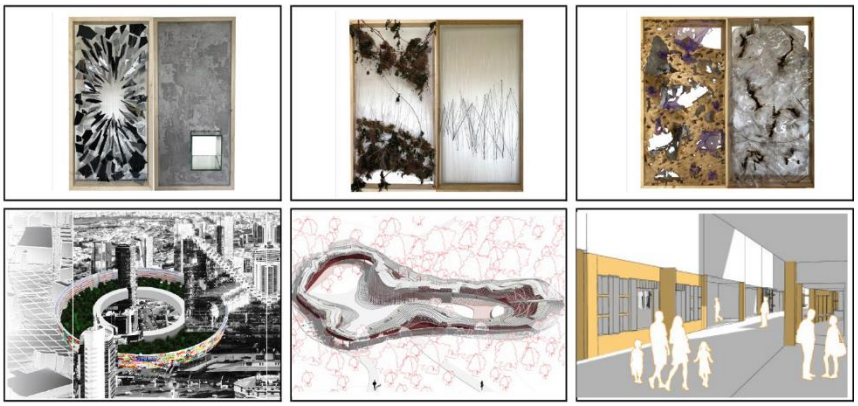
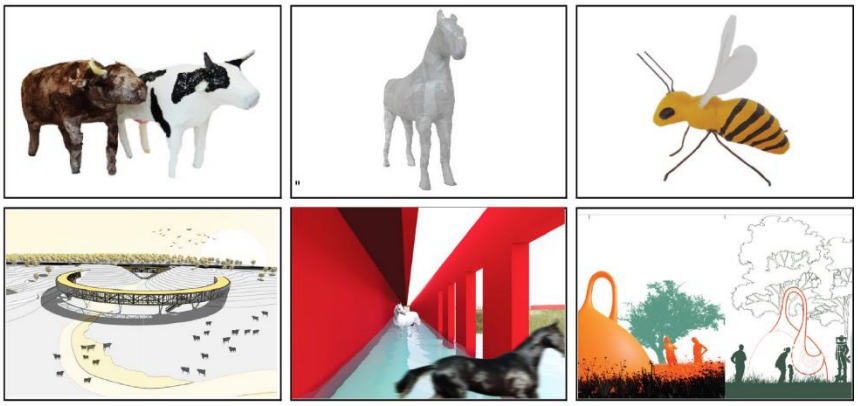
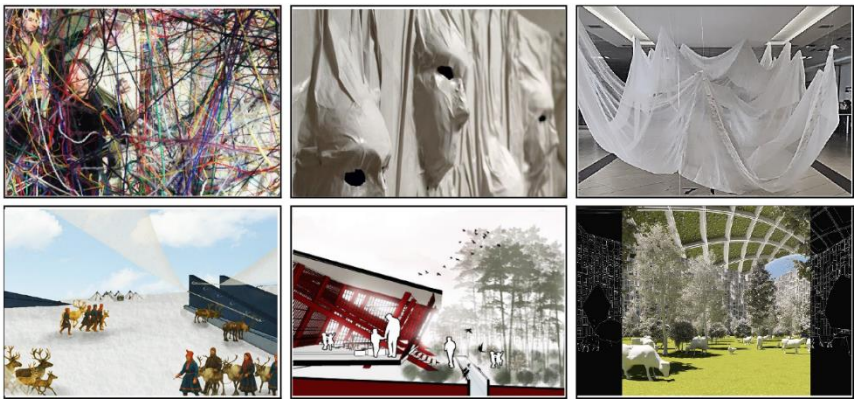
In Topiagram II, titled “Living Spaces for All”, the pedagogical emphasis shifted to a shared territorial context centered on Atatürk Forest Farm (AOÇ) in Ankara. Organized into fully connected design groups, the studio reimagined the site as an animal habitat, where collages and animal models served as generative media for initiating architectural projects and collectively developing conceptual propositions.

In Topiagram III, titled “Challenging Geographies, Extraordinary Cultures”, the inquiry expanded to clustered global contexts. The studio organized two or three design groups around a shared continental context, encouraging collaborative contextual inquiry while allowing each group to develop a distinct architectural proposition. Installations functioned as the primary generative medium, framing subsequent architectural projects and extending the pedagogical thematic structure towards globally distributed yet relationally interconnected spatial investigations.

Selected design processes and works make visible how architectural inquiry developed across the three studio configurations (Table 4). Examined through the analytical matrix explained in the previous section, the three studio implementations reveal distinct operative patterns across contextual grounding, conceptual derivation, and spatial structuring. These patterns are traced comparatively across the situational, material, and relational frames.

Table 4. *Selected Design Processes and Works Across the Three Topiagram Studios*

Selected Design Processes and Works Across the Three Topiagram Studios

Studios	Design Works
 Topiagram I	
 Topiagram II	
 Topiagram III	

Modes of Contextual Grounding

In terms of contextual grounding (Table 5), the comparative reading identifies three corresponding modes of operation across the constructive frames: positioning describes how design inquiry is oriented within particular situations in the situational frame; situating describes how this inquiry is grounded and developed through particular media and modes of making in the material frame; and contextualizing describes how relations among situated inquiries construct and differentiate particular contextual configurations within the relational frame.

In Topiagram I, contextual grounding operated through diversifying positioning within the situational frame, as each independent design group identified and approached a different local context across Türkiye. Within the material frame, these locally situated inquiries were developed through assemblages that evolved alongside the architectural projects, allowing each group to establish its own mode of

engagement with its context. Within the relational frame, contextual grounding operated through disconnected contextualizing, as each inquiry constructed its contextual ground without being organised through relations with the other groups.

In Topiagram II, contextual grounding shifted towards collaborative positioning within the situational frame, as all design groups engaged with the same territorial condition of Atatürk Forest Farm. Within the material frame, the shared context was differently situated through collages and animal modelings, through which groups explored and interpreted the territorial condition from different perspectives. Within the relational frame, contextual grounding operated through interconnected contextualizing, as individual inquiries were developed in relation to a collectively constructed territorial ground.

In Topiagram III, contextual grounding operated through particularized positioning within the situational frame, as design groups engaged with unfamiliar global contexts organized around shared continental clusters. Within the material frame, these contextual inquiries were situated through installations that enabled each group to interpret and articulate the particular conditions of its selected geography and culture. Within the relational frame, the clustering of design groups enabled partially connected contextualizing, as individual contextual inquiries developed in relation to other inquiries within the same continental field while remaining distinct from those developed across other clusters.

Modes of Conceptual Derivation

In terms of conceptual derivation (Table 6), the comparative reading identifies three corresponding modes of operation across the constructive frames: exploring describes how contextual conditions are opened to different lines of inquiry within the situational frame; experimenting describes how these emerging inquiries are tested and developed through different media and modes of making within the material frame; and conceptualizing describes how the resulting conceptual trajectories are formed and differentiated through relations among design groups within the relational frame.

In Topiagram I, conceptual derivation operated through distributed exploring within the situational frame, as independent design groups pursued different lines of inquiry emerging from their respective local contexts. Within the material frame, this distribution supported autonomous experimenting, with each group developing its inquiry through assemblages that evolved independently alongside its architectural project. Within the relational frame, conceptual derivation operated through independently conceptualizing, as conceptual trajectories were developed within individual groups without being shaped through systematic interaction with other groups' inquiries.

In Topiagram II, conceptual derivation operated through integrated exploring within the situational frame, as the different lines of inquiry emerged from and remained connected to the shared territorial condition of Atatürk Forest Farm. Within the material frame, this supported shared experimenting, as collages and animal modelings provided a common field through which different groups explored and developed their inquiries in relation to one another. Within the relational frame, conceptual derivation operated through interdependently conceptualizing, as individual groups developed their conceptual trajectories through ongoing relations with a collectively constructed territorial inquiry.

In Topiagram III, conceptual derivation operated through clustered exploring within the situational frame, as design groups explored different lines of inquiry within shared continental clusters. Within the material frame, this led to differentiated experimenting: installation provided a common mode of exploration, while each group used it to develop its own interpretation of the shared context. Within the relational frame, this resulted in selectively interdependent conceptualizing, as each group maintained its own conceptual trajectory while developing it through selected relations with parallel inquiries within the same cluster.

Modes of Spatial Structuring

In terms of spatial structuring (Table 7), the comparative reading identifies three corresponding modes of operation across the constructive frames: structuring describes how emerging architectural propositions are organized and developed within the situational frame; building describes how these propositions are materially and representationally developed through processes of making within the material frame; and practicing describes how spatial production unfolds through the relations established among design processes within the relational frame.

In Topiagram I, spatial structuring operated through conjunctive structuring within the situational frame, as distinct topias developed across different local contexts and collectively produced a plural understanding of topia through juxtaposition rather than integration. Within the material frame, this supported iterative building, as assemblage and architectural project were repeatedly reworked through one another, with each transformation opening a different spatial construction in the other. At the relational level, multi-modal practicing emerged through varied relations among subjects, through which spatial production unfolded across multiple and parallel modes of engagement and making.

In Topiagram II, spatial structuring developed through consecutive structuring within the situational frame, as initially independent architectural propositions became spatially related through the establishment of a shared masterplan. Rather than fixing their subsequent development, this common structure provided a spatial ground from which the individual projects could continue to evolve. At the material level, cumulative building emerged as the masterplan and individual projects were developed in parallel, with changes in each progressively reshaping the other. At the relational level, spatial structuring operated through reciprocal practicing, as the shared structure and individual propositions remained distinct yet continuously informed and transformed one another.

In Topiagram III, spatial structuring operated through recursive structuring within the situational frame, as architectural propositions repeatedly returned to and reinterpreted the spatial ideas explored through the installations. At the material level, this enabled transformative building, as spatial relations constructed through the installations were reworked into different scales, forms, and spatial configurations rather than directly translated into architectural propositions. At the relational level, open-ended practicing emerged as the collectively developed installations opened different trajectories for individual projects, allowing shared spatial ideas to be interpreted and transformed in multiple ways without prescribing a common or predetermined outcome.

Taken together, the comparative analysis shows how the three pedagogical operations enabled by Topiagram unfold across the situational, material, and relational constructive frames. Across all three studio configurations, contextual grounding operates through positioning in the situational frame, situating in the material frame, and contextualizing in the relational frame. Conceptual derivation similarly operates through exploring, experimenting, and conceptualizing, while spatial structuring operates through structuring, building, and practicing across the corresponding frames. Across the three Topiagram studios, the same pedagogical operations function within the same constructive frames, but they take different modes as the studio configurations change. The analysis therefore reveals both continuity and variation within the pedagogical structure: the relationship between pedagogical operations and constructive frames remains consistent, while their modes of operation change with the studio configuration. This capacity for variation is pedagogically significant because it enables the same thematic structure to support different ways of engaging with context, developing conceptual trajectories, and producing spatial propositions. The comparison thus identifies adaptability as a pedagogical capacity of Topiagram to support different forms of studio experimentation. The findings concern the organization and operation of this pedagogical structure and do not assess educational effectiveness or particular student learning outcomes.

4. DISCUSSION: DEVELOPING PEDAGOGICAL THEMATIC STRUCTURES THROUGH STUDIO EXPERIMENTATION

The findings suggest that a pedagogical thematic structure can be understood through the operations it enables within the configuration of the design studio. In Topiagram, the continuity of these operations across differently configured constructive frames shifts attention from what a thematic structure contains towards how it operates pedagogically. This extends Boudon's operative understanding of designing, which shifts attention from architectural artifacts towards the operations through which design is constituted [35, 36], to the examination of studio pedagogy. From this perspective, the contribution of Topiagram lies not in proposing a universal set of pedagogical operations, but in demonstrating how a particular thematic structure can be examined through the operations it enables and the conditions through which they are enacted. While these operations are specific to Topiagram, the findings suggest more broadly that pedagogical thematic structures can be examined not only through their thematic content, but also through the forms of pedagogical operation they make possible within the design studio.

***Table 5**. Operation of the Contextual Grounding within Constructive Frames*

Operation of the Contextual Grounding within Constructive Frames			
Studios	**Constructive Frames**		
	Situational Frame	Material Frame	Relational Frame
Topiagram I	diversifying positioning	situating within familiar local contexts	disconnected contextualizing
Topiagram II	collaborative positioning	situating within a shared singular context	interconnected contextualizing
Topiagram III	particularized positioning	situating within unfamiliar global contexts	partially connected contextualizing

***Table 6.** Operation of the Conceptual Derivation within Constructive Frames*

Operation of the Conceptual Derivation within Constructive Frames			
Studios	**Constructive Frames**		
	Situational Frame	Material Frame	Relational Frame
Topiagram I	distributed exploring	autonomous experimenting	independently conceptualizing
Topiagram II	integrated exploring	shared experimenting	interdependently conceptualizing
Topiagram III	clustered exploring	differentiated experimenting	selectively interdependent conceptualizing

***Table 7.** Operation of the Spatial Structuring within Constructive Frames*

Operation of the Conceptual Derivation within Constructive Frames			
Studios	**Constructive Frames**		
	Situational Frame	Material Frame	Relational Frame
Topiagram I	distributed exploring	autonomous experimenting	independently conceptualizing
Topiagram II	integrated exploring	shared experimenting	interdependently conceptualizing
Topiagram III	clustered exploring	differentiated experimenting	selectively interdependent conceptualizing

This perspective also extends existing understandings of experimentation in studio pedagogy. Architectural design studios have been discussed as environments of iterative inquiry, reflection, making, collaboration, and situated knowledge production [1, 3, 4, 5, 6, 12], with recent studies further emphasising experimental relations among inquiry, material practices, and collaborative processes [13, 14]. The Topiagram cases show that experimentation can be embedded in the configuration of the pedagogical structure itself. Changes in context formation, media configuration, and studio organization generated different conditions for architectural inquiry and production within the shared thematic structure of Topiagram. This structure provided pedagogical continuity while allowing inquiry and production to develop through multiple, intertwined, and evolving processes. This capacity can be understood as operative openness, through which complex design processes are organized without prescribing their development. As the modes of pedagogical operation vary with changing studio conditions, the relations among researching, thinking, and making can be continually reconfigured. Operative openness therefore describes the capacity of the pedagogical structure to maintain coherence while allowing architectural inquiry to develop through differentiated contextual, conceptual, and spatial trajectories. In Topiagram, this openness is particularly significant because it enables the relational and generative potentials of terroir to be explored through multiple modes of inquiry and production rather than translated into predetermined architectural responses.

The same findings clarify the adaptability of Topiagram and provide a basis for considering its potential transferability. Across the three implementations, its pedagogical logic was maintained while its contexts, media, and forms of studio organization changed substantially. This distinction between continuity at the level of pedagogical structure and variation at the level of its enactment suggests that potential transferability lies in reconfiguration rather than replication. The conceptual structure and pedagogical operations of Topiagram may therefore be interpreted through other situational, material, and relational conditions by other educators. The present cases demonstrate this adaptability within a single pedagogical and institutional setting; whether the same operative logic can be meaningfully reconfigured across different studio cultures and institutions remains a question for further research.

5. CONCLUSION

This study examined Topiagram as a pedagogical thematic structure and investigated how it operates across different architectural design studio configurations. The comparative analysis shows that Topiagram can be understood through the pedagogical operations it enables within the situational, material, and relational constructive frames of the studio. While the relationship between these frames and operations remained consistent across the three implementations, their modes of operation varied as context formation, media configuration, and studio organization changed. The study therefore demonstrates how a shared thematic structure can maintain pedagogical continuity while accommodating different forms of architectural inquiry and production.

These findings point to the broader pedagogical value of developing thematic structures in architectural design studios. Design inquiry involves complex, intertwined relations among researching, thinking, and making that cannot be fully predetermined through a project brief or fixed pedagogical procedure. Pedagogical thematic structures can provide a coherent framework for organizing these relations while maintaining the operative openness through which they can interact, evolve, and be reconfigured. Their pedagogical value therefore lies in establishing structured yet open conditions for experimentation, enabling different trajectories of inquiry and production to emerge as the contextual, material, and relational conditions of the studio change. In this sense, developing pedagogical thematic structures can expand the possibilities of studio practice by organizing complex design processes while keeping them open to interaction, differentiation, and transformation. Within Topiagram, this operative openness further enables architectural experimentation through critically situated and empathically grounded spatial formations as the relational and generative potentials of terroir are explored through different modes of inquiry and production.

The three implementations also indicate the adaptability of Topiagram and provide a basis for considering its transferability. Its continuity did not depend on reproducing a particular context, medium, studio

organization, or design outcome, but on maintaining its conceptual structure and pedagogical operations while allowing their modes to vary. This suggests that Topiagram has the potential to be adapted by other educators through different situational, material, and relational configurations. Its potential transferability is therefore understood as a capacity for reinterpretation and reconfiguration, not as the replication of a predetermined studio model. Such adaptability may allow pedagogical thematic structures to respond to different studio cultures and educational contexts while retaining a coherent basis for experimentation. Grounded in three architectural design studios conducted within Gazi University's architectural design education, Topiagram also illustrates how a century-long pedagogical tradition can be continually reinterpreted through experimental thematic structures, offering a perspective on the future development of architectural design education.

The study is limited to three consecutive implementations developed within a single pedagogical and institutional setting and does not directly evaluate student learning outcomes. Its findings therefore provide an analytical account of how Topiagram is organized and operates within these pedagogical conditions. Future research should examine the framework across different institutions, studio cultures, educational levels, and teaching practices to understand how its pedagogical logic can be interpreted and reconfigured by other educators. More broadly, further studies are needed to investigate why and under what conditions pedagogical thematic structures are valuable for architectural design education, particularly how they can create openness for experimentation, support interaction among different modes of inquiry and production, and enable diverse spatial trajectories to emerge within the design studio. Such research would contribute to understanding both the potential transferability of Topiagram and the broader potential of pedagogical thematic structures for developing more open, adaptable, and experimental forms of architectural design studio practice. Ultimately, developing pedagogical thematic structures invites us to consider the design studio as a pedagogical environment that can itself be continually redesigned: not only as a setting for architectural inquiry and production, but as a structure through which new ways of researching, thinking, and making architecture can emerge. In this sense, the future of architectural design education may depend not only on what we ask students to design, but also on how creatively we design the pedagogical grounds from which architectural inquiry can emerge.

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