

Reframing Strategic Thinking in Urban Design through Urban Complex+: A Framework for Education and Practice

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Abstract

This study proposes Urban Complex+ as a strategic design-thinking framework for structuring how designers interpret and respond to the increasing complexity of contemporary urban problems. The framework reconfigured existing urban design elements into a process-oriented, designer-centered system organized around four strategic axes: +Density, +Mobility, +Publicness, and +Flexibility. To examine its applicability, eight design proposals from the 2021 KDAA International Workshop were analyzed using qualitative coding and a comparative evaluation approach. The analysis focused on how strategic axes are selected, combined, and translated into spatial configurations through a sequence of problem recognition, strategic selection, and spatial implementation. The findings suggest that the Urban Complex+ operates as a cognitive framework that mediates urban problem interpretation and spatial design outcomes. This was evidenced by the divergence of design strategies across the eight studios, where different combinations of strategic axes led to distinct spatial configurations despite the shared site context. This study also demonstrates its potential as a pedagogical model supporting strategy-driven design learning and collaborative reasoning. Moreover, Urban Complex+ offers a transferable framework for integrating strategic thinking into urban design practices and education, with potential implications for future research in planning and policy contexts.

1.0 INTRODUCTION

1.1 Background and Purpose

The problems facing contemporary cities are deeply intertwined and multi-layered, resisting resolution through singular solutions or disciplinary approaches (Andreani et al., 2019). Issues such as spatial shortages owing to increasing density (Brown et al., 2014), disconnect between publicness and functional systems (Ricart et al., 2022), infrastructure obsolescence in the face of climate crises (Tobey et al., 2019), and programmatic conflicts are not isolated phenomena. Rather, they emerge within complex and interdependent urban systems (Batty & Marshall, 2012). In this context, urban design can no longer rely on conventional form-making or function-based zoning. Instead, it requires a design framework that can structurally interpret urban complexity and be reorganized through the strategic judgment of the designer (Tobey et al., 2019).

Conventional urban design discourses have predominantly relied on normative models, such as the Compact City or Landscape Urbanism, which prioritize specific spatial values. However, in the face of increasingly volatile and complex urban challenges, these fixed paradigms often exhibit rigidity, constraining designers' capacity for context-specific responses (Haarstad et al., 2022). While these paradigms have contributed significantly to the field, they fall short of addressing the simultaneous interplay of multiple urban challenges, particularly in design environments where flexibility and strategic integration are critical (Haarstad et al., 2022; Zellner & Campbell, 2015).

Although efforts have been made to define or categorize urban design concepts, relatively few studies have developed strategic frameworks tested through both design education and practical experimentation. This study aims to address this gap by introducing the concept of the Urban Complex+, examining how it operates within real-world design environments, and proposing its potential as a strategic framework for urban design in terms of both educational applicability and institutional scalability.

1.2 Research Scope and Structure

This study introduces “Urban Complex+” as a strategic design thinking framework that shifts urban design from static planning models to a more process-oriented and strategy-driven approach. Rather than prescribing a singular solution, Urban Complex+ empowers designers to selectively synthesize four strategic axes based on contextual imperatives: +Density, +Mobility, +Publicness, and +Flexibility. This reframing positions the framework primarily as a structure for organizing strategic reasoning while also operating as a methodological guide and pedagogical tool in contemporary urban design.

Against this backdrop, this study addresses three core research questions:

- i. How does the concept of Urban Complex+ differ from existing urban design theories, and in what ways does it enable the strategic interpretation and structuralization of complex urban problems in urban architectural design?
- ii. In the design experiments, how did individual designers select and interpret Urban Complex+ strategies, and how were these translated into spatial design decisions? Furthermore, what implications did these strategies have for the spatial composition of their projects?
- iii. What are the prospects for Urban Complex+ as a transferable design thinking framework in urban design education and policy planning? How does it contrast with existing institutional or pedagogical approaches to urban design?

To address these questions, Chapter 2 reviews existing urban design theories and derives the conceptual framework of Urban Complex+. Subsequently, Chapter 3 analyzes empirical design cases from the KDAA workshop and compares how strategy structures were interpreted, combined, and spatialized. Chapter 4 discusses the conceptual implications of the Urban Complex+ framework, its distinction from existing paradigms, and its educational and policy potential. Finally, Chapter 5 summarizes the findings, highlights the contributions and limitations of this study and proposes directions for future research.

2.0 THEORETICAL REVIEW AND CONCEPTUALIZATION OF URBAN COMPLEX+

2.1 Evolution and Limitations of Urban Design Theory

Urban design has evolved by incorporating a wide range of socio-spatial discourses and strategic responses that have emerged with the acceleration of urbanization (Lang, 2020). In the modernist era, functionalist urban planning was dominant (Brown et al., 2014), but this approach was later criticized for its rigidity, giving way to a shift toward more human-centered methodologies (Andreani et al., 2019). Since the late 20th century, various paradigms have emerged to expand design discourse, including pluralistic models such as Collage City (Rowe & Koetter, 1978), sustainable urban density models such as the Compact City (Brown et al., 2014), and approaches that emphasize community and publicness, such as New Urbanism and Tactical Urbanism (Duany & Talen, 2013; Wohl, 2018). More recently, digital-based Smart Urbanism (Andreani et al., 2019) and ecological approaches, such as Landscape Urbanism (Duany & Talen, 2013) have further enriched the field.

However, each of these theories tends to focus on a particular value or strategy which often limits their capacity to address the interconnected and multi-layered nature of contemporary urban problems (Jabareen & Eizenberg, 2021). For instance, Compact City emphasizes high-density and mixed-use programs, but often fails to adequately account for infrastructure flexibility or user autonomy (Jabareen & Eizenberg, 2021; Kain et al., 2022). Landscape Urbanism excels in articulating ecological structures but tends to be less effective in managing the coordination of social programs (Duany & Talen, 2013), whereas Tactical Urbanism is well-suited to short-term interventions but frequently lacks integration with long-term structural planning (Wohl, 2018).

Today, urban challenges are too complex to be addressed through a single theoretical lens or disciplinary approach (Andreani et al., 2019). Therefore, a more integrated, cross-disciplinary approach is required. Consequently, urban design must move beyond fixed ideologies or idealized models. Instead, it should be framed as a strategic design thinking process wherein designers interpret conditions, diagnose problems, and combine multiple strategies in response (Chan, 2019).

While these theories provide valuable insights into specific urban dimensions, they tend to operate within relatively fixed conceptual frameworks, often emphasizing particular spatial or ideological priorities. Consequently, the ability to address multiple overlapping urban challenges in an integrated manner remains limited. In contrast, this study positions Urban Complex+ not as a competing paradigm, but as a complementary framework that focuses on structuring how diverse strategies can be selectively combined and operationalized through the design process.

2.2 The Need for Integrated Urban-Architectural Design Thinking

Traditionally, urban and architectural design have been treated as distinct fields of study. However, as urban phenomena become more complex and intertwined, the need for integrated urban architectural design thinking has become increasingly important (Bajçinovci & Jerliu, 2017). Urban issues, ranging from infrastructure and publicness to density and programs, demand not only spatial representation but also critical and strategic judgment (Tobey et al., 2019). Consequently, designers must be able to address both architectural detailing and the broader systemic relationships that shape urban space (Hensel & Sørensen, 2019; Seo et al., 2024; Baek & Kim, 2026).

In such a design environment, what matters most is not “form as solution” but rather “strategy as judgment” (Leblanc, 2021). A strategy-centered approach to integrated design empowers designers to recognize urban problems, disassemble them according to project-specific criteria, and reconstruct them into spatially viable systems. However, there is still a lack of robust frameworks that systematize this kind of strategic thinking (Tobey et al., 2019). Hence, there is a pressing need for open-ended design frameworks that allow designers to approach urban problems strategically and by recombining elements dynamically based on contextual judgment (Chan, 2019).

2.3 Conceptualizing Urban Complex+

In response to these critical insights, this study proposes the concept of Urban Complex+ as a new framework for urban-architectural design thinking. Rather than being based on a singular design ideology or fixed model, Urban Complex+ provides a flexible conceptual structure capable of organizing strategic design decision-making in response to complex, multidimensional urban problems. It serves as a complementary model to existing urban design theories, while also addressing structural limitations.

The Urban Complex+ framework is grounded in the following four principles:

- First, it does not interpret urban problems in terms of physical spatial types or functional categories. Instead, it decomposes them into interpretable strategic units. This is achieved through four strategic axes: +Density, +Mobility Infrastructure, +Publicness, and +Flexibility. While these axes are embedded in many existing urban theories, the originality of Urban Complex+ does not lie in introducing new variables, but in reconfiguring these elements into a process-oriented, designer-centered strategic framework. Unlike conventional paradigms that prioritize specific values, Urban Complex+ structures how multiple strategies are selectively combined and translated into spatial outcomes through a coherent decision-making process.
- Second, this concept allows for selective strategic composition. Designers can choose one or more of these strategic axes and combine them in order of priority. These strategies may remain independent or be integrated into cohesive interactions. Ultimately, distinct spatial configurations emerge depending on how each designer interprets the issues and determines which strategies to emphasize.
- Third, the design process unfolds through the following cognitive sequence: 1) problem recognition, 2) strategy selection, and 3) spatial implementation. Urban Complex+ visualizes this design process, helping designers locate the precise points at which strategies should be introduced and executed. This enhances their capacity to engage in systematic thinking regarding strategic integration.
- Fourth, Urban Complex+ explores the potential for integrating urban architecture. The framework can be applied continuously across scales, from the architectural to the urban levels. It enables not only the arrangement of functional programs, but also the reinterpretation of urban conditions and the strategic reorganization of spatial relationships.

Urban Complex+ transcends the fixed paradigms of conventional urban design theories. Focusing on the designer's capacity for strategic combination, it offers a flexible and operable framework that can be effectively applied in both experimental educational settings and real-world professional practices. This provides a structured platform for visualizing, simulating, and testing design strategies in response to evolving urban conditions.

Table 1. Comparison between Conventional Urban Design Theories and Urban Complex+

Category	Conventional Urban Design Theories	Urban Complex+
Application Method	Applies predefined theoretical frameworks to urban problems	Selectively and integratively applies strategies based on multidimensional problem recognition
Design Agency	Expert-centered	Collaborative structure involving experts, users, and students
Urban Perception	Seeks fixed spatial forms or idealized orders	Defines fluid structures that reflect contextual complexity
Design Tools	Traditional urban planning maps and drawings	Strategic matrices, system diagrams, and simulation-based tools
Temporal Logic	Outcome-focused (finished urban product)	Process-oriented (planning–design–adaptation–feedback cycle)
Scalability	Applies mainly to a fixed or single scale	Scalable from architecture to urban systems

3.0 CASE STUDY: 2021 KDAA INTERNATIONAL ARCHITECTURAL WORKSHOP

3.1 Research Method

To empirically validate the Urban Complex+ framework, this study employed a qualitative case study methodology, analyzing eight design proposals from the 2021 KDAA International Workshop. To ensure analytical rigor, the proposals were examined through a three-step coding and interpretation process: (1) Strategic Selection (prioritization of the four axes), (2) Spatial Translation (conversion of strategies into morphological elements), and (3) Urban Synergy (emergent values from strategic combinations). This systematic approach allows an in-depth investigation of how the framework structures a designer's decision-making process and facilitates diverse spatial solutions.

The analyses were conducted systematically. First, all studio outputs, including drawings, diagrams, and written narratives, were reviewed to identify dominant urban issues and strategic intentions. Second, each project was coded according to four Urban Complex+ axes (+Density, +Mobility, +Publicness, +Flexibility), and the relative intensity of each axis was evaluated using explicit spatial and programmatic indicators. Third, the results were cross-compared and validated through iterative discussions between studios to ensure consistency and reduce interpretive bias.

Unlike conventional top-down educational models, the KDAA international workshop was structured around collaborative feedback between professionals and students. Each studio engaged in a shared design process, from problem identification and strategic planning to the development of a spatially structured proposal (Baek & Lee, 2021). This collaborative structure allowed participants to co-construct strategic design thinking and validate conceptual frameworks through iterative feedback, thereby offering an alternative model for strategy-oriented urban design education.

Table 2. Comparison: University Studio vs. KDAA International Workshop

Category	Conventional University Studio	KDAA International Workshop
Duration & Format	One academic semester (regular course)	Short-term, intensive design workshop
Relationship Model	Instructor-led, one-directional	Collaborative design: professionals ↔ students
Problem Definition	Instructor-defined	Negotiated within each team
Feedback Mechanism	One-way critiques	Reciprocal and iterative feedback
Role Distinction	Professor–student dichotomy	Co-design partnership model
Output	High-fidelity final drawings and models	Experimental Work-in-progress or visionary concepts

3.2 Case Overview

Held in August 2021 under the theme “Urban Complex+: A New Vision for Daejeon,” the KDAA International Architectural Workshop served as an experimental educational platform, bringing together architecture and urban design professionals and students from both domestic and international institutions. The project site was a large urban block centered on Daejeon Station, encompassing both rail infrastructure and its surrounding districts, a complex and multi-layered urban context characterized by overlapping spatial, infrastructural, and socioeconomic challenges.

The workshop comprised eight studios (Studios A–H), each led by two professional mentors (licensed architects or professors) and composed of four senior undergraduate architecture students (3rd and 4th year). Over an intensive two-week period, each team collaboratively defined urban problems based on their own contextual interpretations, developed appropriate strategic structures, and produced final design proposals. The design programs varied across teams, but generally addressed themes such as rail-based infrastructural development, expansion of public space, revitalization of local economies, increased residential and

programmatic density, and reconfiguration of urban structures. All teams were encouraged to use the Urban Complex+ framework as a tool for strategic design thinking. The 2021 KDAA International Workshop was structured around a four-phase design process.

Table 3. Design Process of KDAA International Workshop

Phase	Description	Photo
Phase 1	Problem Recognition and Strategic Framework Training - Site visit and interviews to identify urban issues - Lecture on Urban Complex+ and its strategic axes - Reframing the site's conditions through the lens of Urban Complex+	
Phase 2	Strategy Development and Conceptual Sketching - Each studio selects one or more strategic axes - Development of preliminary spatial concepts based on the chosen strategies	
Phase 3	Design Development and Visualization - Masterplans, models, and visualizations created based on strategic combinations - Complete spatial proposals developed within a set timeframe	
Phase 4	Presentation and Feedback Exchange - Final presentations and exhibitions to communicate strategic reasoning and spatial logic - Peer critique sessions with external jurors and other studios	

3.3 Case Analysis

The analysis of workshop outcomes was conducted through three interconnected steps that correspond to the theoretical structure of Urban Complex+ as a process linking problem recognition, strategic selection, and spatial translation.

First, we examined how each studio defined and interpreted urban problems. This involved analyzing project titles, design overviews, conceptual diagrams, and written narratives. These materials were used to extract the underlying urban issues that each team prioritized and how they framed their design challenges.

Second, we analyzed the selection and composition of strategic axes based on the Urban Complex+ framework. Specifically, we assessed which of the four core strategies, +Density, +Mobility, +Publicness, and +Flexibility, were adopted and how they were combined. Emphasis was placed on the intensity of each strategy, the nature of their interactions, and the sequencing or layering mechanisms employed in the proposals.

Third, we evaluated the spatialization process, focusing on how strategic thinking was translated into a physical urban form. This included interpreting masterplans, diagrams, visual perspectives, and spatial sequences. Special attention was paid to tracing the flow of design reasoning from strategy formulation to spatial realization.

Through this threefold analysis, we identified both differences and commonalities in strategic design thinking across the studios. The findings revealed that while some teams combined multiple strategies, others emphasized a single dominant axis. Urban Complex+ functioned not as a rigid methodology, but as a flexible cognitive tool enabling diverse approaches to urban-architectural design. The following sections present a studio-by-studio analysis, outlining how each team framed the urban problem and reconstructed the city using a unique configuration of strategies.

3.3.1 Studio A: Vertical Integration of Urban and Infrastructural Systems

Studio A identified the disconnect between the city's infrastructure systems, particularly the railway and the surrounding urban fabric, as the central urban issue. Their proposal overlaid multifunctional programs on existing rail infrastructure, thereby establishing a vertically integrated system of urban space and services.

The core of their strategy was +Mobility, reflected in the integration of railways, elevated roads, and pedestrian flows. The proposed method links the ground-level, underground, and elevated domains into a seamless vertical circulation structure. Simultaneously, +Publicness is embedded through the multi-level arrangement of public spaces, enabling layered interactions across different urban strata.

The design illustrates a complex yet coherent spatial system in which mobility infrastructure serves as the framework for urban activation, and publicness is not limited to the ground level but extends vertically through the design. This approach exemplifies how Urban Complex+ can support multi-scalar integration and hybridization of programs. Moreover, it demonstrates how selecting +Mobility as a dominant strategy structures the interpretation of the urban problem and guides the spatial configuration, illustrating the role of Urban Complex+ as a mediating framework between problem recognition and design outcomes.



Figure 1. Final Drawings of Studio A

3.3.2 Studio B: Connectivity-Driven Hybrid Clustering

Studio B focused on enhancing the site's connectivity with the surrounding urban fabric by introducing a hybrid clustering strategy. Rather than isolating individual programmatic elements, the design integrates multiple functions into organically connected spatial arrangements.

The strategy emphasized a balanced application of +Density and +Mobility, maintaining the existing urban block scale while introducing adaptable program clusters. Program elements were organized along key circulation flows, resulting in a dynamic variable structure responsive to movement and interaction.

By integrating urban circulation with mixed-use clusters, this proposal established a framework for relational density in which mobility patterns shape the spatial distribution. The design highlights the Urban Complex+ framework's ability to merge infrastructural logic with programmatic diversity through fluid spatial organization.

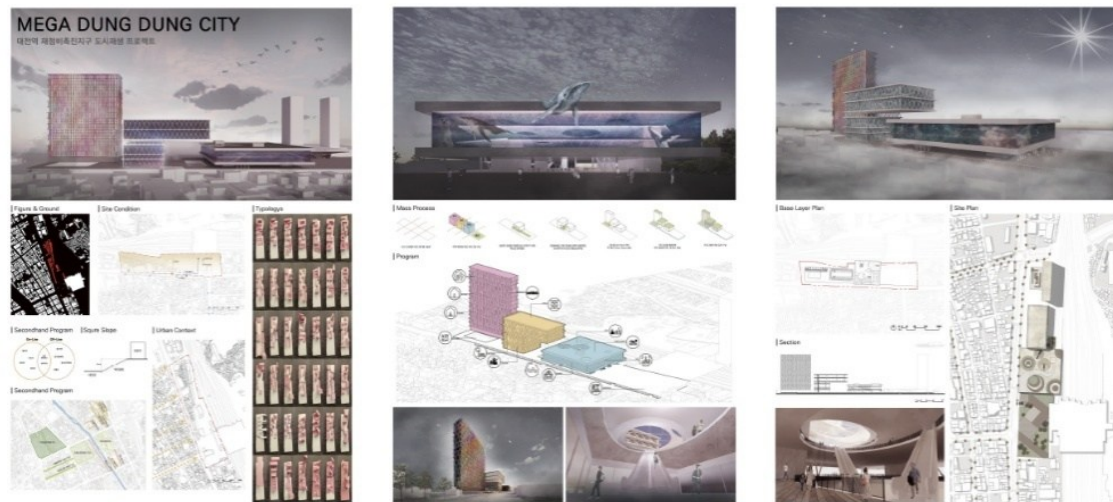


Figure 2. Final Drawings of Studio B

3.3.3 Studio C: Community-Centered Public Programming

Studio C identified the lack of publicness around Daejeon Station as the primary urban issue and responded with a proposal centered on community-oriented public programs designed to serve both residents and visitors.

The strategy was led by +Publicness, as exemplified by the placement of an open plaza and multifunctional community facility. These spaces are designed to encourage interaction across diverse user groups. Supporting this was +Flexibility, manifested in modular, small-scale units and mobile structures that could adapt to various uses over time.

This design creates a porous and inclusive environment in which shared spaces facilitate coexistence and transformation. Studio C's case demonstrates how +Publicness and +Flexibility structured both the identification of social needs and the formation of adaptive spatial systems, reinforcing the framework's role as a strategic mediator between problem framing and design resolution.

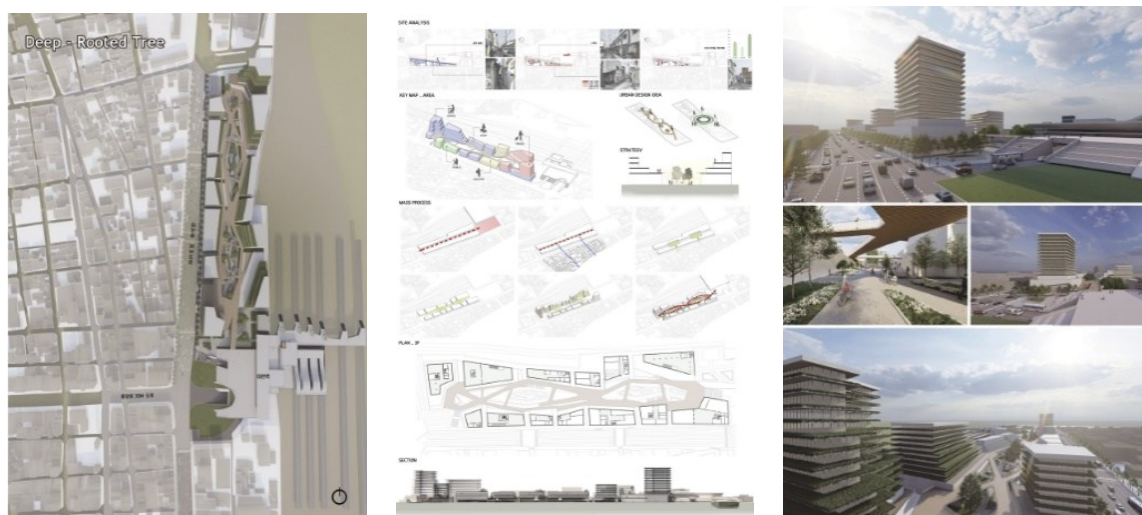


Figure 3. Final Drawings of Studio C

3.3.4 Studio D: Symbolic High-Density Urban Tower

Studio D proposed a symbolic vertical structure to reassert Daejeon Station's centrality in the urban hierarchy. The design concentrated multiple urban functions-residential, commercial, and public in a single high-rise system.

Driven by a dominant +Density strategy, the tower integrates vertical layers of activity while considering three-dimensional linkages to the surrounding infrastructure, particularly rail facilities. The spatial configuration emphasized vertical compactness and efficiency through cluster-based stacking.

By positioning the tower as a new landmark, the project frames density as not only a spatial solution but also a symbolic intervention. This proposal reflects Urban Complex+'s capacity to support strong formal gestures that simultaneously solve spatial challenges and communicate an urban identity. Here, the dominance of +Density informs both the perception of urban centrality and the vertical organization of functions, demonstrating how Urban Complex+ connects conceptual intention with spatial realization.



Figure 4. Final Drawings of Studio D

3.3.5 Studio E: Adaptive Urban Platform

Studio E approached urban complexity using a flexible platform system capable of accommodating future changes. Instead of prescribing fixed programs, the design enables ongoing transformation through modular and open-ended structures.

+Flexibility is the leading strategy, as is evident from the proposal's open-block layout, modular units, and changeable use zones. The project also incorporates +Publicness by embedding a shared infrastructure that supports diverse user appropriations and citizen-led activations.

This design positions the city as a platform for continuous evolution, illustrating how Urban Complex+ can facilitate adaptability at both spatial and programmatic levels. This represents an experimental model for future-proof design in rapidly changing urban environments.

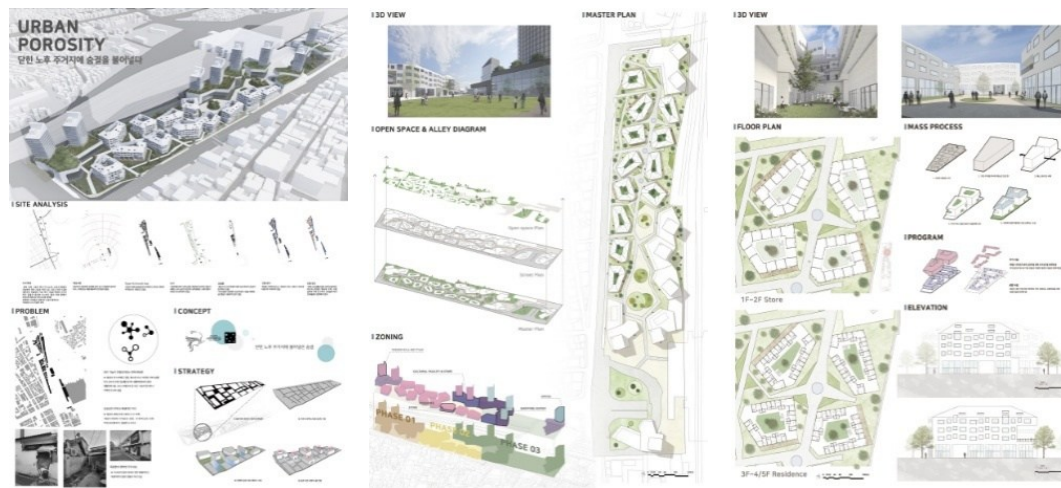


Figure 5. Final Drawings of Studio E

3.3.6 Studio F: Collage of Historic and Contemporary Flows

Studio F recognized the fragmentation between historic layers and contemporary urban programs as a key issue and responded with a collage-like design that weaves diverse temporal and functional elements.

The strategy merges +Mobility and +Publicness, using pedestrian flows and spatial layering to bridge the old railway infrastructure with new public functions. Open-ended programming and circulation-driven design establish fluid connections across time and space.

The result is a narrative-driven urban composition where historic continuity and adaptive reuse are central. Studio F exemplifies how Urban Complex+ can serve as a tool for spatial storytelling and integration in heterogeneous urban conditions.



Figure 6. Final Drawings of Studio F

3.3.7 Studio G: Infrastructure Reconfiguration for Urban Density

Studio G's proposal focused on the reinterpretation of the existing railway infrastructure and the densification of urban living. Their design restructured the city into compact residential clusters, anchored by shared infrastructure.

Dominated by +Density and supported by +Publicness, the design integrates high-density housing with connective pathways and collective amenities. It reorganizes the urban fabric around mixed-use modular units that transform the infrastructure into a new urban logic.

This approach demonstrates how Urban Complex+ can be employed to retrofit obsolete infrastructure into catalysts for housing and neighborhood regeneration, emphasizing structural reuse and spatial efficiency. Through the integration of +Density and +Publicness, the project reinterprets infrastructure as a collective living system, illustrating how Urban Complex+ transforms efficiency-driven strategies into socially embedded urban forms.

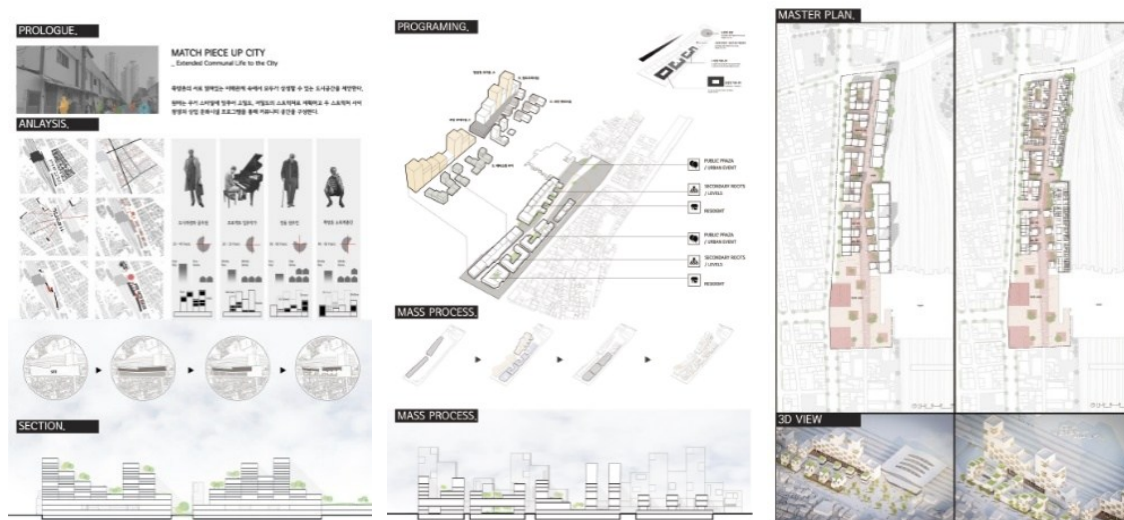


Figure 7. Final Drawings of Studio G

3.3.8 Studio H: Scenario-Based Adaptive Structure

Studio H implemented a scenario-planning approach, proposing a flexible urban system designed to adapt to future uncertainties such as climate change, technological shifts, and demographic fluctuations.

The primary strategy was +Flexibility, operationalized through transformable blocks, multifunctional units, and shared platforms that could be reorganized in response to specific scenarios. +Publicness and +Density were also integrated to support spatial resilience and hybrid usage.

This future-oriented proposal positioned the city as a responsive system, capable of evolving through strategic recombination. This demonstrates the potential of the Urban Complex+ to function as a design logic for speculative and adaptive urbanism.



Figure 8. Final Drawings of Studio H

3.4 Synthesis: Manifestation and Typology of Strategic Design Thinking

An analysis of the eight studio proposals confirmed that the Urban Complex+ framework effectively operates as a cognitive scaffold for interpreting and responding to urban complexity. The findings can be divided into three key categories:

3.4.1 Strategic Differentiation through Contextual Judgment

Despite working within the same project site, the Daejeon Station area, each studio prioritized and interpreted the strategic axes differently. This variation underscores Urban Complex+ not as a prescriptive formula, but as an open-ended framework that respects designers' contextual judgment. For instance, while Studio A prioritized infrastructural integration through vertical layering, Studio C emphasized community-oriented public programming, illustrating how different strategic selections produce fundamentally different spatial logics. The framework allowed each team to structure its own problem definitions and generate distinct design trajectories, thereby moving beyond the rigidity of conventional master planning approaches.

3.4.2 Synergetic Outcomes through Strategic Synthesis

The interplay of multiple strategies often leads to innovative spatial typologies that cannot be achieved through a single-purpose approach. For instance, Studio G's combination of +Publicness and +Density resulted in the concept of "Vertical Commons", a hybrid typology that embeds high-quality public spaces within dense, multifunctional structures. These emergent synergies highlight the potential of Urban Complex+ to mediate conflicting urban demands through integrated reasoning.

3.4.3 Typological Clustering and Cognitive Structuring

The eight proposals can be clustered into three typological categories, reflecting distinct strategic tendencies:

- **Infrastructure-Driven Studios (A, B, G):** Focused on enhancing urban connectivity and efficiency through spatial integration and infrastructural logic.
- **Socio-Community-Driven Studios (C, E, F):** Emphasized inclusivity, adaptive platforms, and user-centered urban regeneration.
- **Adaptive-Technology-Driven Studios (D, H):** Emphasized adaptive and future-oriented spatial responses through density, flexibility, and scenario-based design strategies.

This typological diversity illustrates how Urban Complex+ operates not simply as a set of strategies, but as a cognitive structuring device that operationalizes theoretical concepts such as multi-layered urban conditions and strategic decision-making in concrete design processes and spatial outcomes. This allows designers to develop context-specific interpretive logic within a structured strategic framework and engage with complex urban problems in strategic, situated, and creative ways.

Table 4. Comparative Matrix of Urban Complex+ Strategy Application by Studio.

Strategy	Studio A	Studio B	Studio C	Studio D	Studio E	Studio F	Studio G	Studio H
Primary Strategic Mix (Main Axes)	+Publicness +Mobility	+Density +Mobility	+Publicness +Flexibility	+Density	+Publicness +Flexibility	+Publicness +Flexibility	+Publicness & +Density	+Density +Mobility
Spatial Interpretation & Translation	Transit-oriented vertical hub; multi-layered pedestrian networks.	Hybrid mixed-use clusters organized along primary circulation flows.	Adaptive open spaces; modular street furniture; community-led zones.	High-intensity mixed-use redevelopment; compact vertical clusters.	Temporary urbanism; pop-up structures; seasonal spatial programs.	Green infrastructure corridors; pedestrian-friendly transit plazas.	Vertical commons; elevated public parks in high-rise complexes.	Automated mobility hubs; dynamic zoning for future transport technology.
Emerging Urban Value (Synergy)	Connectivity: Seamless integration of regional and local scales.	Relational Density: Density generated through connectivity.	Inclusivity: Social resilience through user-driven spatial occupation.	Efficiency: Maximizing land-use potential in transit-proximate areas.	Agility: Responsive urban fabric to socioeconomic fluctuations.	Livability: Ecological restoration intertwined with urban movement.	Solidarity: Reclaiming public space in private-led developments.	Technological Readiness: Future-proofing urban infrastructure.
Publicness	●	△	●	○	●	●	●	○
Density	○	●	△	●	○	△	●	●
Infrastructure	●	●	○	△	△	○	△	●
Flexibility	△	○	●	△	●	●	○	△

● = Strong Application, ○ = Moderate Consideration, △ = Weak Application

4.0 DISCUSSIONS

4.1 The Structural Logic of Urban Complex+

Urban Complex+ can be interpreted as an open-ended design thinking framework grounded in the observed design processes within the workshop; it encourages designers to structure urban problems into strategic units and develop spatial proposals through processes of judgment and selective strategic composition. While traditional urban design theories have often been grounded in specific spatial ideologies or normative principles, Urban Complex+ shifts the focus to the structure of design decision-making.

Rather than reducing urban complexity to a singular paradigm, this framework disaggregates urban issues into multiple strategic axes. These axes can then be selectively combined by designers based on contextual demands, thereby enabling the construction of unique judgment-based design logic.

In the 2021 workshop, the eight participating studios demonstrated distinctly different interpretations and spatial outcomes, despite working within the same urban context. Some focused on infrastructural integration and connectivity (+Mobility), while others emphasized publicness as a central spatial strategy (+Publicness). Certain studios proposed urban vitality through high-density mixed-use configurations (+Density), while others introduced non-linear interpretations centered on flexible spatial systems and user adaptability (+Flexibility).

These divergent strategies directly influence the spatial composition, program distribution, and urban form, revealing how design outcomes reflect each team's unique perception and interpretation of urban problems. This analysis suggests that Urban Complex+ is not merely a list of strategies but a cognitive structure that enables designers to link problem recognition, strategic decision-making, and spatial resolution in a coherent flow.

4.2 Distinction from Existing Urban Design Theories

Urban Complex+ departs from many existing urban design paradigms in that it does not prioritize a single spatial value, but structures how multiple strategies are selectively combined within a design process. For instance, models such as the Compact City and New Urbanism define urban space through idealized conditions and offer corresponding design principles realizing such visions. Landscape Urbanism prioritizes ecological flows as the organizing logic of space, whereas Tactical Urbanism advocates short-term interventions to provoke spatial change.

These theories typically revolve around a single strategy or value system, and do not easily accommodate overlapping urban issues or designer-driven interpretive reasoning. In contrast, Urban Complex+ provides a strategic interpretive framework rather than a fixed solution or an idealized end-state. The same strategy can be applied differently depending on the designer's goals, making the framework operative as structural logic rather than a conceptual doctrine.

While conventional theories are largely outcome-oriented, Urban Complex+ emphasizes a process-oriented approach, structuring how designers interpret, select, and recombine strategies in response to complex urban conditions. It explicitly links the stages of urban problem diagnosis, strategic selection, and spatial articulation, thereby structuring the design process as a sequential decision-making structure.

4.3 Potential as a Design Education Model

The workshop presented in this study was not merely a pedagogical exercise, but a collaborative design experiment in which professionals and students jointly defined urban problems and approached them through strategic thinking. Unlike traditional hierarchical feedback models, this process emphasizes collaboration, strategy sharing, and multi-perspective interpretation.

Urban Complex+ played a pivotal role in structuring urban issues into intelligible strategic units, allowing participants to recognize, articulate, and combine their strategies with clarity. This enabled the design teams to move beyond content delivery toward the sharing of design judgments. The findings suggest that a strategy-

centered design education approach can foster collaborative thinking and deepen understanding of urban complexities.

4.4 Potential for Policy Application

These findings suggest that Urban Complex+ transcends its role as a pedagogical tool, functioning as a decision-support model for navigating urban uncertainty. The fact that eight different studios derived distinct Strategic Mixes for the same site demonstrates the framework's capacity to mediate between designers' subjective insights and objective urban strategies. This adaptability aligns with contemporary policy shifts toward "Flexible Zoning" or "Adaptive Urbanism", providing a concrete methodological bridge between high-level policy and spatial design. Future research should investigate scalability as a strategic tool for consensus-building among diverse stakeholders and policymakers in real-world urban development processes.

5.0 CONCLUSIONS

This study proposes the concept of Urban Complex+ as a new framework for strategic design thinking to address the increasing complexity and interdependence of urban problems. Through an experimental design workshop, this study examined how this framework could be applied to foster integrated and strategic urban-architectural design approaches. As cities face challenges that require more than singular solutions, there is a demand for design methodologies that are flexible, multi-scalar, and strategically grounded (Seo & Baek, 2025).

Urban Complex+ offers a conceptual structure that disaggregates urban problems into strategic units, organized around four key axes: +Density, +Mobility, +Publicness, and +Flexibility. Its primary contribution lies not in introducing new urban variables, but in structuring how these variables are strategically interpreted, combined, and translated into spatial design outcomes. Unlike conventional urban design theories, which are often based on fixed solutions or idealized spatial models, Urban Complex+ focuses on the designer's decision-making process, enabling each designer to select, combine, and recompose strategies based on situational interpretations and value judgments.

A comparative analysis of eight studios from the 2021 KDAA International Workshop demonstrated the adaptability of the framework. Each team interpreted the urban context differently, leading to diverse strategic configurations and spatial outcomes. These findings confirm that Urban Complex+ does not function as a rigid model but rather as a cognitive structure for strategic decision-making, allowing a wide range of design pathways while maintaining conceptual coherence.

Moreover, this study highlights the potential of the framework as a tool for design education and collaborative practice. The workshop format, which emphasized mutual feedback between professionals and students, showed that Urban Complex+ supports the development of critical skills in problem recognition, strategy formulation, and collaborative interpretation. This suggests new directions for design education where the learning process centers on strategic thinking rather than simply producing formal outcomes. Urban Complex+ can be implemented as a structured pedagogical framework that guides students through the sequential stages of problem recognition, strategic selection, and spatial translation, enabling them to externalize and share their design reasoning within collaborative environments.

Urban Complex+ also has policy-level implications. If the strategic axes of the framework are formalized within urban planning and public project development, such as regeneration plans, mixed-use hubs, or infrastructure-based masterplans, they may serve as alternatives to traditional functional hierarchies. Urban Complex+ may help align stakeholder priorities, clarify investment strategies, and strengthen the links between planning and design. Institutionalizing such a strategy-driven planning model through design guidelines or planning matrices has the potential to inform discussions on improving the implementation capacity of urban policies.

Nevertheless, this study is limited by its reliance on a single educational case and qualitative analysis. It does not fully trace the cognitive structures underlying each designer's strategic choices or analyze the depth of interaction within the collaborative design process. Future research should explore a broader range of urban

contexts and project types to test the generalizability and adaptability of Urban Complex+. In parallel, methods such as interviews, design session transcripts, and real-time feedback analysis can deepen our understanding of how strategic design thinking is formed, shared, and implemented in practice.

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