Design Thinking and the Reframing of Spatial Strategies: An Analysis of Contemporary Japanese Architecture through Ryue Nishizawa and SANAA

Abstract

Contemporary Japanese architecture has gained international recognition through its ability to reinterpret spatial principles within innovative forms. Among its leading figures, Kazuyo Sejima and Ryue Nishizawa—independently and through their collaborative practice SANAA—have developed a distinctive approach integrating environmental responsiveness and spatial continuity. While Japanese architecture has been extensively studied globally, scholarly attention in Iran remains limited, with architectural discourse largely dominated by Eurocentric perspectives. Nishizawa's 2025 Tehran lecture, *Architecture and Environment*, provides a primary source for examining his reflections on design and, where relevant, the projects undertaken through SANAA, within the Iranian context. Addressing this gap, this study investigates eight projects by Nishizawa and SANAA through a theoretical framework based on design thinking and the formation of space in relation to environment. The research employs directed qualitative content analysis based primarily on Nishizawa's 2025 lecture, supplemented by exhibition materials, project documentation, and secondary literature. Three analytical criteria were developed: Problem-Setting Logic, Conceptual Framing Strategy, and Design Response and Material Resolution. The findings identify a recurring three-stage design logic in which site-driven constraints generate project-specific conceptual frames, consistently privileging spatial continuity over enclosure across institutional, community, and residential scales alike. Rather than reproducing established forms, Nishizawa and SANAA translate spatial principles—continuity, boundary ambiguity, integration with environment—into contemporary strategies. The study concludes that the selected projects provide a valuable model for contemporary design and offers a potential transferable methodological framework for reframing spatial strategies in response to present environmental and urban challenges, with particular relevance for Iranian architectural discourse and design education.

Key words: Design thinking, spatial continuity, problem-setting, Ryue Nishizawa, conceptual framing

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1. Introduction

1.1.Background: Japanese Architecture in Global Discourse

Contemporary Japanese architecture has established a distinctive position within global architectural discourse over recent decades. This prominence stems from its capacity to sustain a dynamic synthesis between indigenous spatial traditions, natural environments, and structural innovation. By reinterpreting foundational concepts such as spatial continuity, transparency, flexibility, and the dialectical relationship between interior and exterior, Japanese architects have developed a contemporary language that remains deeply rooted in cultural and historical precedents while simultaneously addressing the pressing questions of modern architectural practice (Hasegawa, 2006; Steele, 2017).

The international recognition of Japanese architecture is reflected in the country's sustained presence among recipients of the Pritzker Architecture Prize, one of the most prominent international awards in architecture. Japan has produced nine laureates across eight award cycles since the prize was established in 1979 (Pritzker Architecture Prize, 1987, 1993, 1995, 2010, 2013, 2014, 2019, 2024). Kenzo Tange (1987), the first Japanese laureate, played a major role in the development of postwar Japanese modernism and influenced a subsequent generation of architects, notably through projects such as the Yoyogi National Gymnasium. Fumihiko Maki (1993) continued this modernist trajectory through civic and cultural projects including the Spiral Building and the Hillside Terrace complex in Tokyo. Tadao Ando (1995), known for his extensive use of exposed concrete, has developed an international body of work encompassing museums, religious buildings, and civic projects across Asia, Europe, and North America. Kazuyo Sejima and Ryue Nishizawa, jointly awarded the prize in 2010 as SANAA, were recognized for projects including the New Museum in New York and the Rolex Learning Center in Switzerland, particularly for their treatment of space, light, and transparency. Toyo Ito (2013) was recognized for projects such as the Sendai Mediatheque, which brought together structural and spatial experimentation, while Shigeru Ban (2014) was distinguished for his innovative use of materials and humanitarian work. Arata Isozaki (2019) was recognized for an international career

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characterized by continuous experimentation and resistance to a fixed architectural style, and Riken Yamamoto (2024), the most recent Japanese laureate, was recognized for civic and residential projects that reconsider the relationship between public and private space. Although all nine architects have achieved international recognition, their visibility has not been uniform. Ando and SANAA, in particular, have maintained a strong international presence through continuing commissions, publications, exhibitions, and academic discussion, while the international profile of earlier figures such as Tange and Maki is more closely associated with their historical influence. Within this broader context, a critical examination of leading Japanese architects' works—particularly their modes of engagement with natural and cultural environments, as well as their strategies for spatial and structural organization—offers deeper insight into the underlying logic of this architectural tradition and its relationship to global movements (Ostende & Ciorra, 2017; Hasegawa, 2006).

1.2.Research problem

Despite this level of international recognition, contemporary Japanese architecture has received comparatively limited attention in Iranian architectural scholarship, where architectural discourse continues to rely heavily on Euro-American references. The recent visit of Ryue Nishizawa to Iran, culminating in his keynote lecture, *Architecture and Environment*, at the closing ceremony of the exhibition *Art and the Space In-Between, Iran-Japan* (Miyake et al., 2025; Nishizawa, 2025), provided an unusual opportunity to engage directly with the architect and his understanding of the selected works. This encounter also provided the immediate context for the present study.

The research corpus comprises eight cases drawn from the projects discussed by Ryue Nishizawa in his 2025 Tehran lecture. The projects are examined through a monographic narration of Nishizawa's architectural work, focusing on the intentions, spatial conditions, environmental relationships, and design considerations articulated across his projects.

The significance of focusing on the selected practices of Nishizawa and SANAA, however, extends beyond the circumstances of his visit to Iran. The practices of SANAA and the Office of Ryue Nishizawa occupy a distinctive position within contemporary Japanese architecture. Whereas Ando's architecture is strongly associated with exposed concrete, geometric order, and the controlled treatment of light, and Isozaki's work is marked by a more eclectic engagement with historical references and formal experimentation, the selected works of SANAA and the Office of

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Ryue Nishizawa repeatedly question conventional distinctions between structure and envelope, interior and exterior, and building and site. These works articulate complex relationships among architecture, natural environment, and cultural context (Wilke, 2019).

1.3. Theoretical Lens: Design Thinking and Architectural Spatial Qualities

This study adopts design thinking as a theoretical lens for analyzing the practices of Nishizawa and SANAA. The framework draws on several complementary accounts of design thinking. Schön describes design practice as a process of reflection-in-action in which the designer engages in a reflective conversation with the situation (Schön, 1983). Dorst emphasizes framing and frame creation as central to design reasoning and innovation (Dorst, 2011, 2015). Cross characterizes design as a distinct form of knowing, emphasizing the particular ways in which designers construct and develop knowledge through design activity (Cross, 2011). The co-evolution of problem and solution spaces, further developed by Dorst and Cross, describes design as an adaptive process in which the understanding of a problem and the development of a solution evolve in relation to one another (Dorst & Cross, 2001). More recently, Rowe and Chung (2024) describe design thinking in architecture as a fundamentally different way of knowing the world, linking it to processes of inquiry, storytelling, and conceptualization.

In this study, the design thinking framework is used to examine both the design process and its spatial outcomes. The analysis considers the relationship between the stated intentions concerning the selected projects and their spatial qualities, with particular attention to the site-derived and conceptual conditions identified in the architect's explanations of these works (Nishizawa, 2025). Two terms recur throughout this study and are worth distinguishing at the outset. The term spatial strategies is used as the broader umbrella term for the specific design tactics—structural, material, and organizational—through which Nishizawa and SANAA translate a project's conceptual frame into built form. Spatial continuity, by contrast, names one recurring spatial *quality* that many — though not all — of these strategies produce: the dissolution of conventional boundaries between floor and ceiling, interior and exterior, or one room and the next, in favor of a single, unbroken spatial experience. In this sense, spatial continuity is not itself a design tactic but an outcome that different, project-specific spatial strategies converge on across the corpus. The relationship between the two terms is therefore one of means and outcome: spatial strategies are the means,

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developed anew for each site and program, while spatial continuity is the spatial quality that recurs as their most consistent effect.

1.4.Research Aims and Questions

Accordingly, this study aims to analyze the design logic of Nishizawa and SANAA and its role in reinterpreting spatial principles commonly associated with Japanese architectural traditions within contemporary and global contexts. This study aims to investigate the design logic evident across the selected corpus through the lens of design thinking, focusing on how site-derived constraints and programmatic demands are translated into coherent spatial strategies across diverse project types.

This study is guided by the following research questions:

RQ1: How do Ryue Nishizawa and SANAA formulate local constraints as generative design problems across the selected projects?

RQ2: What conceptual framing strategies characterize the selected projects of Nishizawa and SANAA, and how are these frameworks translated into spatial, structural, material, and environmental design responses?

1.5.Research Methodology

This research adopts a qualitative approach utilizing directed content analysis (Hsieh & Shannon, 2005) to investigate the design logics evident across Ryue Nishizawa's independent practice and his collaborative work with Kazuyo Sejima under SANAA. The research process was conducted in five sequential stages:

Stage 1: The architect's first-hand account of the projects, delivered in the 2025 Tehran lecture (Nishizawa, 2025), was used as a monographic source for the analysis.

Stage 2: Development of the Initial Analytical Framework. Three analytical criteria were derived from the theoretical framework to serve as the primary lens for examining the selected corpus.

Stage 3: Deepening the Framework with Design Process Theory. To further refine the analytical framework, concepts from design process studies were integrated to operationalize the criteria more precisely, specifically from Schön (1983), Cross (2011), and Dorst (2011, 2015).

Stage 4: Multi-Level Data Collection. Data were gathered from multiple sources to ensure analytical richness and triangulation. These included: library and archival sources, documents from

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the 2025 exhibition Art and Space In-Between, Iran-Japan, Nishizawa's keynote lecture (Nishizawa, 2025), and field observations.

Stage 5: Integrative Analytical Process. The final analysis followed a three-step integrative process: descriptive coding of each project based on three analytical criteria, interpretive analysis to identify the conceptual framing evident in each project, and cross-case synthesis to identify consistent patterns across the eight cases examined.

Beyond the Iranian context, this study contributes to design thinking scholarship by examining how conceptual framing in architecture operates as a site-derived, tectonic process, and by proposing a potential transferable methodological framework for architectural practice and education.

It must be noted that the selected corpus comprises eight projects: four designed by SANAA and four by Ryue Nishizawa's independent practice. This distinction is maintained throughout the analysis because SANAA and Nishizawa's independent practice are treated as distinct authorship contexts rather than interchangeable bodies of work.

2. Literature Review

2.1. Iranian Scholarship on Japanese Architecture

In Iran, scholarly attention to Japanese architecture has been accompanied by translations of significant works across diverse domains, including historical studies (Nishi & Hozumi, 1393/2014), introductions to contemporary architects (Mehta & MacDonald, 1395/2016), conceptual foundations of space and time (Nute, 1395/2016), architectural theory (Isozaki, 1404/2025), and residential design (Matsumura, 1404/2025). The culmination of this engagement was the exhibition *Art and Space In-Between, Iran-Japan* (2025), curated by Riichi Miyake, Elham Andaroodi, and Mami Kataoka (Miyake et al., 2025). However, despite this growing cultural interest, few analytical papers are available that critically examine contemporary Japanese architectural methodology and design thinking, leaving a notable gap in the scholarly discourse on how Japanese architects approach new design challenges and spatial experience.

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2.2.International Scholarship on Ryue Nishizawa and SANAA

Globally, the work of Ryue Nishizawa and SANAA has been examined in numerous publications addressing their architectural production, spatial strategies, material expression, and relationship to Japanese cultural and environmental contexts. For the purposes of this study, the existing literature can be provisionally grouped into three overlapping strands. The first comprises comprehensive monographs and project-based studies, including Hasegawa (2006) and Wilke (2019), which document built works through drawings, photographs, project descriptions, and, in Wilke's case, materials related to the development of individual projects. Although these publications provide important insights into the architectural production of Nishizawa and SANAA, their primary emphasis is on documenting and interpreting projects rather than developing a systematic account of how design decisions about particular site conditions are generated and transformed through the design process. The second strand situates Nishizawa and SANAA within broader cultural and historical discussions of contemporary Japanese architecture, including Steele (2017) and Ostende and Ciorra (2017). These works examine contemporary Japanese architecture in relation to longer cultural trajectories and changing forms of domestic space, providing an important context for understanding Nishizawa's architectural position. However, such discussions generally address tradition and cultural continuity at the level of architectural history, spatial concepts, or typological development rather than examining how these references are translated into site-specific design reasoning. The third strand focuses on particular technical, material, or aesthetic dimensions of SANAA's architecture. For example, Yang (2019) examines materiality in SANAA's work through the relationship between transparency, whiteness, Japanese aesthetics, and perceptual experience.

2.3.Research Gap

While substantial scholarship has examined the formal and spatial characteristics of the practices of Nishizawa and SANAA (Hasegawa, 2006; Steele, 2017; Wilke, 2019; Ostende & Ciorra, 2017), a significant gap remains in the literature concerning the processual logic and design cognition that underlie the works. This research examines how Nishizawa and SANAA frame design problems and develop conceptual responses to context-dependent challenges. This gap is particularly consequential for the field of design thinking, where understanding the spatial and methodological dimensions of design practice is central (Cross, 2011; Dorst, 2015; Rowe & Chung, 2024).

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While Japanese architecture and culture have been studied extensively worldwide, there is limited awareness and knowledge of these practices within Iran. This gap limits opportunities for intellectual exchange between Iranian and Japanese architectural traditions, particularly concerning design thinking and spatial experience. A deeper cross-cultural dialogue between Japan and Iran could enrich both contexts and offer alternative non-Western models for new architectural design.

3. Theoretical framework

3.1. Design Thinking: Problem-Setting and Conceptual Framing

This study draws on design-thinking scholarship to examine how designers construct and reframe problems, generate concepts, and develop design responses through adaptive and interpretive processes. Within this body of literature, problem setting and framing are particularly important because design problems are not necessarily given in advance but are constructed through engagement with problematic situations. Schön's theory of reflective practice provides an important precursor to this perspective. In *The Reflective Practitioner*, Schön conceptualized professional designing as a process of reflection-in-action in which practitioners engage in a reflective conversation with the situation and actively frame problematic situations rather than treating problems as fixed givens (Schön, 1983). His discussion of problem setting emphasizes the selection of relevant features, the establishment of boundaries of attention, and the construction of coherence within a problematic situation.

Building on this broader tradition, Dorst developed an explicit design-thinking account of framing and frame creation, identifying framing as a core design practice and examining how new frames can enable alternative approaches to complex problems (Dorst, 2011, 2015). Dorst and Cross further conceptualized creative designing as a process involving the co-evolution of problem and solution spaces, demonstrating how problem formulation and solution development interact throughout the design process (Dorst & Cross, 2001). Cross subsequently characterized design thinking in terms of distinctive forms of design cognition and designerly ways of knowing (Cross, 2011). For architectural design specifically, Rowe and Chung (2024) describe design thinking as a particular way of knowing and addressing creative problems and emphasize inquiry, storytelling, conceptualization, prototyping, and testing as elements of architectural design thinking.

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3.2. Analytical Criteria: Operationalizing the Framework

To translate the theoretical framework into an analytical procedure applicable to the selected projects, three criteria were established. The criteria were derived from the concepts of problem setting, conceptual framing, and design response discussed above. They are used to examine how Nishizawa and SANAA formulate design problems, develop organizing concepts, and translate these concepts into spatial, structural, material, and environmental responses.

Criterion 1: Problem-Setting Logic – How do the selected practices identify, define, and creatively transform site-derived constraints into coherent design problems? (Schön, 1983)

Criterion 2: Conceptual Framing Strategy – What central generative idea, metaphor, or "frame" organizes the design process and integrates decisions into a unified spatial concept? (Dorst, 2011, 2015; Cross, 2011; Rowe & Chung, 2024)

Criterion 3 addresses the architectural realization of C1 and C2, corresponding to what Rowe and Chung (2024) describe as the prototyping and testing phase of design thinking, in which a conceptual idea is resolved through concrete material and structural decisions.

Criterion 3: Design Response and Material Resolution – How are the conceptual frameworks identified in the selected projects translated into spatial, structural, material, and environmental responses? (Rowe & Chung, 2024)

4. Monographic Description of the Selected Projects

This study employs a monographic approach, drawing primarily on Ryue Nishizawa's first-hand account of a series of works in his 2025 Tehran lecture, *Architecture and Environment* (Nishizawa, 2025), complemented by writings and project documentation published by SANAA and the Office of Ryue Nishizawa. Eight selected projects were analyzed, spanning a wide range of types and contexts. Institutional and cultural projects include the Rolex Learning Center (Switzerland, 2010) by SANAA, which creates a continuous, undulating terrain integrating library and social spaces; the Louvre-Lens Museum (France, 2012) by SANAA, which responds to its industrial-historical site through a fragmented, timeline-based gallery arrangement; the Sydney Modern / Art Gallery of NSW (Australia, 2022) by SANAA, organized across multiple levels with rotated gallery volumes and a subterranean gallery in a former WWII-era fuel storage tank (SANAA, n.d.); and the Jining Art Museum (China, 2019) by the Office of Ryue Nishizawa, featuring floating organic

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roof forms with dark brick volumes arranged beneath (Office of Ryue Nishizawa, 2020). Community-oriented projects include Grace Farms (USA, 2015) by SANAA, a multipurpose community center with flowing spaces adapting to a sloped forest site (SANAA, 2015); and the Shanghai Steel Factory Redevelopment (China, 2024) by the Office of Ryue Nishizawa, which transforms an industrial structure into a cultural venue through strategic openings and transparent partitions. Residential projects include the Weekend House (Chile, 2019) by the Office of Ryue Nishizawa, shaped by a series of load-bearing arches responding to the harsh coastal climate; and Garden & House (Tokyo, 2011) by the Office of Ryue Nishizawa, a four-story urban dwelling with vertical gardens extending through floor openings (Nishizawa, 2011). Table 1 summarizes the selected projects. The descriptions are based primarily on Nishizawa's 2025 lecture and supplemented, where necessary, by project documentation and other published sources.

Table 1. Source-Based Descriptions of the Eight Selected Projects

Project Name/ Key Specifications	**Project Name/ Key Specifications**
Rolex Learning Center (Switzerland, 2010), SANAA. Photo Ref: ArchDaily. Sits between the EPFL campus and the adjacent lake, addressing a 1950s campus that lacked a central gathering point; a continuous ~100×120m library volume with gently undulating floor/ceiling forming its own interior topography rather than a flat plan; a central open plaza distributes circulation in multiple directions; some areas open onto wide lake views 	**Louvre-Lens Museum** (France, 2012), SANAA. Photo Ref: ArchDaily. Fragmented into smaller volumes (rather than one large mass) to preserve the site's brick industrial buildings and archaeological remains; artworks arranged in a chronological "timeline" sequence rather than separate rooms as at the Louvre Paris; floor gently slopes to follow existing topography; skylights bring in daylight; sequence ends in a glazed pavilion overlooking the surrounding landscape 
Jining Art Museum (China, 2019), Office of Ryue Nishizawa. Photo Ref: Arquitectura Viva. Set in a public park (roughly 3–4 hours from Shanghai) that is itself part of the project — about half the site is park; cube-shaped galleries, each a different height, arranged beneath one continuous, freely-shaped cantilevered roof; dark brick masonry for walls and floor extends under the cantilever for material continuity; circulation is unstructured, described as moving among the trees "like a floating cloud"	**Sydney Modern / Art Gallery of NSW** (Australia, 2022), SANAA. Photo Ref: ArchDaily. Built on an engineered harbor headland with the Sydney Opera House visible in the background; four galleries at different levels organized between two large retaining walls; angled, non-orthogonal gallery volumes; skylights bring daylight to the lower galleries and central atrium; fourth gallery housed in a former underground oil tank; sequence ends in a botanical garden blurring the museum/landscape boundary

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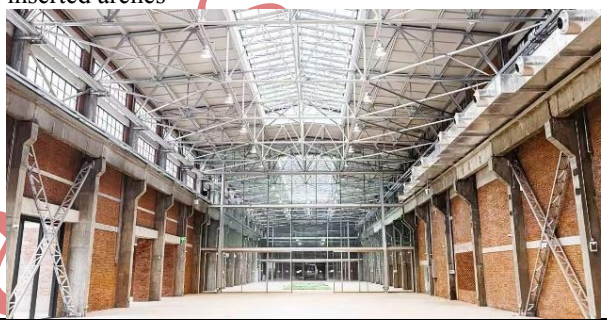


Grace Farms (USA, 2015), SANAA. Photo Ref: ArchDaily. Multi-purpose community center (library, dining, gymnasium) on a forested, sloped site; different programs placed at different ground levels; half-steel, half-timber structure balancing warmth with structural efficiency; library and gymnasium set deep into the ground to avoid disturbing existing nature; free-form colonnaded paths follow the natural slope and link the activities

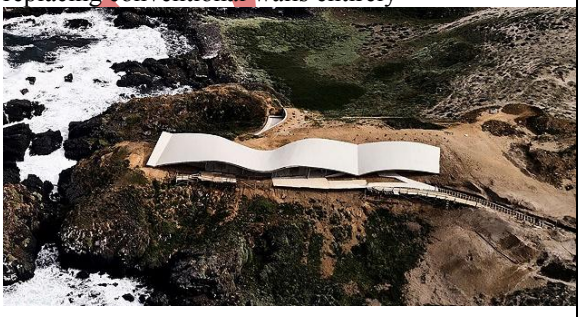




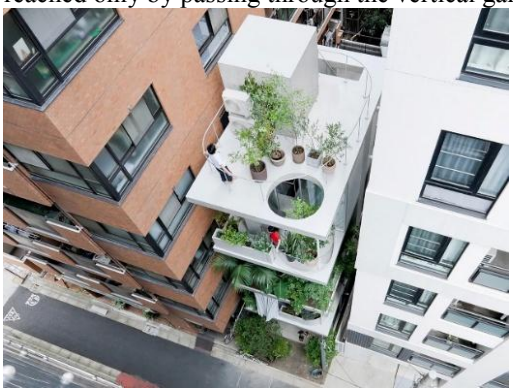
Shanghai Steel Factory Redevelopment (China, 2024), Office of Ryue Nishizawa. Photo Ref: Shanghai Government. Adaptive reuse of an old steel factory into a cultural center; former skylights closed, new roof skylights added; large new windows and facade openings; transparent partition walls define interior zones; a freestanding, arch-shelled café volume inserted inside the factory frames views of the historic structure; the site's irregular, non-rectangular footprint shapes the relationship among the inserted arches



Weekend House / House in Los Vilos (Chile, 2019), Office of Ryue Nishizawa. Photo Ref: Dezeen. Sited on a promontory behind a solid rock formation on Chile's Pacific coast, exposed to desert climate and strong winds; a series of load-bearing arches provides structural resistance and unifies the building with its site; main opening runs east–west; north-facing arches are fully open for unobstructed views; roof extends to ground level in places, replacing conventional walls entirely



Garden & House (Tokyo, Japan, 2011), Office of Ryue Nishizawa. Photo Ref: Arquitectura Viva. Sited in central Tokyo between three much taller buildings (neighbors ~30m vs. the house's 11m); four floors, each pairing rooms with a small garden connected vertically through floor openings, with plant selection varying by floor light exposure; movable curtains provide privacy; interior stairs and mezzanine-like sightlines link the floors; bathroom is reached only by passing through the vertical garden



5. Integrative Analytical Process

Building on the monographic descriptions presented in Section 4, the research's analysis followed a three-step integrative process.

First, descriptive coding was applied to the eight projects using three deductive criteria: Problem-Setting Logic, Conceptual Framing Strategy, and Design Response and Material Resolution. Relevant passages from Nishizawa's 2025 lecture, project documentation, and exhibition materials were systematically coded based on the theoretical framework (Hsieh & Shannon, 2005).

Second, interpretive analysis synthesized the codes within each project to identify its central generative idea and examine how it informed structural, environmental, and programmatic decisions.

Third, cross-case synthesis compared the eight projects to identify recurring design logics and significant variations. Recurring patterns across the cases were identified, while notable exceptions were also considered.

Throughout this process, the author remained aware that the monographic character of the study—grounding the analysis primarily in Nishizawa's own accounts—does not eliminate interpretive choice. The identification of conceptual frames and the selection of cross-case patterns involved researcher judgment. These interpretations were checked against multiple sources, including exhibition materials, project documentation, and secondary literature, to mitigate subjective bias.

5.1.Institutional and Cultural Projects

5.1.1. Rolex Learning Center, Switzerland (2010)

Problem-Setting Logic: The design problem was defined as creating a central gathering space on a campus that had existed since the 1950s but lacked a focal point for student and faculty interaction. The challenge was to integrate library, study spaces, and social interaction into a single continuous environment rather than separate zones.

Conceptual Framing Strategy: The central frame was "artificial terrain"—a continuous undulating floor and ceiling system where the ground plane becomes the organizing element. The building is conceived as a single habitable surface rather than a multi-story structure.

Design Response and Material Resolution: Two concrete shells serve simultaneously as floor and ceiling. Post-tensioned cables stabilize large spans. Slender irregularly placed columns support

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the structure without interrupting spatial continuity. The structural system is a direct response to the desire for uninterrupted floor surfaces (Nishizawa, 2025).

5.1.2. Louvre-Lens Museum, France (2012)

Problem-Setting Logic: The design problem was to create a museum that respects the industrial-historical context of Lens—with its preserved brick buildings and archaeological remains—while establishing harmony with the region's nature and history. The solution fragmented the building into smaller sections to match human scale and site scattered remains.

Conceptual Framing Strategy: The central frame was "timeline narrative"—artworks are arranged chronologically in a continuous sequence, creating a visual history of art where each work gains meaning through its relationship to preceding and following works. A glass pavilion at the end connects the Louvre's history to the city of Lens (Nishizawa, 2025).

Design Response and Material Resolution: A lightweight roof system, flexible structural grid, and transparent materials define the building. The design preserves historical site paths. The integration of existing industrial fabric with new architectural language demonstrates adaptation to site conditions (Nishizawa, 2025).

5.1.3. Sydney Modern / Art Gallery of NSW, Australia (2022)

Problem-Setting Logic: The design problem was to create a museum on a heavily engineered artificial site—a harbor headland organized with numerous retaining walls, with the Sydney Opera House in the background.

Conceptual Framing Strategy: The central frame was "rotated cubes"—four gallery volumes at different levels, organized between two large retaining walls. The volumes do not follow a regular grid; each gallery is slightly rotated relative to the others.

Design Response and Material Resolution: The design adapts to the artificial site conditions. Two large retaining walls organize the upper and lower levels. The subterranean WWII-era fuel storage tank gallery represents adaptive reuse of existing infrastructure. The varied heights and rotations of galleries demonstrate adaptive response to site constraints (Nishizawa, 2025).

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5.1.4. Jining Art Museum, China (2019)

Problem-Setting Logic: The design problem was to create a museum integrated within a city park, surrounded by trees, while making the space fully accessible to the public. The museum's design includes the surrounding park as part of the overall project.

Conceptual Framing Strategy: The central frame was "floating canopy"—a free, organic roof that hovers over gallery cubes arranged beneath. The overall form is fluid and free, with circulation paths organized unpredictably like a floating cloud.

Design Response and Material Resolution: The cantilevered roof extends outward without visible support. Dark brick masonry on floors creates visual continuity. Transparent shells integrate interior and exterior. The integration of museum and park design demonstrates holistic site thinking (Nishizawa, 2025).

5.2.Community-Oriented Projects

5.2.1. Grace Farms, USA (2015)

Problem-Setting Logic: The design problem was to create a multi-purpose community center—including library, dining, gymnasium, and amphitheater—on a steep, densely forested site in New Canaan, Connecticut. The challenge was to accommodate large, populated programmatic spaces while preserving the natural landscape and minimizing visual impact on the site. The solution placed different activities at different ground levels so nature becomes part of daily spatial experience rather than background scenery.

Conceptual Framing Strategy: The central frame was "wavy canopy with dispersed volumes"—a continuous undulating roof plane that follows the site's slope, with the canopy swelling at both ends to accommodate the two large-span, high-occupancy spaces: the amphitheater and the sports hall. The remaining programmatic spaces—library, dining areas, and smaller gathering spaces—are organized as free-form oval plan pavilions scattered beneath the wavy canopy, connected by the flowing roof form. The geometry is not uniform but responds directly to programmatic density: the roof expands where more space and volume are required, and contracts where smaller, more intimate functions are located.

Design Response and Material Resolution: The design demonstrates adaptive response to site conditions—following the steep slope rather than leveling it, embedding large spaces to minimize

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visual impact, and adapting the roof form to accommodate programmatic density at the ends. The combination of steel and wood structures was selected to balance structural efficiency with warm interior quality. The building's curved lines extend continuously to exterior spaces, demonstrating careful integration of architecture and landscape (Nishizawa, 2025).

5.2.2. Shanghai Steel Factory Redevelopment, China (2024)

Problem-Setting Logic: The design problem was to transform an old steel factory into a cultural center. The process involved extensive structural changes—old skylights were closed but new roof skylights were added, and large windows and openings were created in the facade.

Conceptual Framing Strategy: The central frame was "inserted arch"—a three-dimensional vaulted café volume placed inside the existing factory shell. The arch invites views of the historic building into the interior space.

Design Response and Material Resolution: Selective demolition and addition of new openings demonstrate adaptive reuse. New skylights and windows were added while respecting existing structure. The inserted café volume is structurally independent within the shell. Clear partitions allow visual connection while defining programmatic zones (Nishizawa, 2025).

5.3.Residential Projects

5.3.1. Weekend House, Chile (2019)

Problem-Setting Logic: The design problem was to create a building resistant to harsh coastal conditions—dry climate, strong winds—on a promontory behind a solid rock formation. The goal was to create a shelter that could withstand extreme environmental conditions.

Conceptual Framing Strategy: The central frame was "vaulted terrain"—a series of load-bearing arches that provide structural stability while harmonizing with the natural form of the environment. The building appears to be formed only by ground and roof, without walls.

Design Response and Material Resolution: A series of independent load-bearing arches provides structural stability. The roof extends to ground level in some areas, eliminating conventional wall construction. The structural system responds directly to coastal conditions, with the arches providing wind resistance (Nishizawa, 2025).

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5.3.2. Garden & House, Tokyo (2011)

Problem-Setting Logic: The design problem was to create a dwelling in dense central Tokyo—surrounded by 30-meter-high buildings—with only eleven meters of height available. The challenge was to integrate nature into this highly constrained urban site.

Conceptual Framing Strategy: The central frame was "vertical garden"—four levels, each with rooms placed alongside small gardens. Trees extend through floor openings between levels, creating a vertical garden experience.

Design Response and Material Resolution: The lightweight structure supports multi-level gardens. Flexible openings and moveable curtains allow privacy adjustment. The vertical garden concept responds to urban density constraints. The design accommodates different plant types across levels based on light conditions (Nishizawa, 2025).

Table 2 summarizes how different building types align design problems, conceptual frames, material systems, and spatial strategies.

Table 2. Different building types align design problems, conceptual frames, material systems, and spatial strategies of the selected projects of Ryue Nishizawa and SANAA

Project (Category)	Problem-Setting Logic	Conceptual Framing Strategy	Design Response and Material Resolution
Rolex Learning Center (2010) [Institutional/Cultural]	Unify fragmented campus functions into one social hub	"Undulating terrain" continuous topography	Engineered concrete shell; dissolved floor-ceiling boundary
Louvre-Lens Museum (2012) [Institutional/Cultural]	Respect industrial-historical context	"Timeline narrative" chronological sequence	Lightweight roof; flexible grid
Jining Art Museum (2019) [Institutional/Cultural]	Museum integrated within city park	"Floating canopy" organic roof	Holistic museum-park integration
Sydney Modern (2022) [Institutional/Cultural]	Museum on engineered artificial site	"Rotated cubes" at different levels	Adaptive reuse; varied rotations
Grace Farms (2015) [Community-Oriented]	Preserve forest; accommodate large programs	"Wavy canopy with dispersed volumes"	Follows slope; embeds large spaces
Shanghai Steel Factory (2024) [Community-Oriented]	Transform old steel factory	"Inserted arch" café volume	Selective demolition; adaptive reuse
Garden & House (2011) [Residential]	Integrate nature in dense Tokyo	"Vertical garden" across four levels	Lightweight structure; flexible privacy
Weekend House (2019) [Residential]	Resist harsh coastal conditions	"Vaulted terrain" load-bearing arches	Independent arches; coastal resilience

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6. Findings of Cross-Case Synthesis

6.1.Site-Derived Conceptual Framing

Across the eight cases examined, the three analytical criteria converge on a three-stage design process: problem-setting, in which a specific site constraint becomes the generative starting point; conceptual framing, in which that constraint is resolved into a single organizing idea; and design response and material resolution, in which the frame is translated into structure, material, and spatial organization. At the level of individual projects, Problem-Setting Logic starts from a specific, often constraining, site condition—a fragmented 1950s campus at the Rolex Learning Center, an industrial-historical fabric at Louvre-Lens, an engineered artificial headland at Sydney Modern, a steep forested slope at Grace Farms, or the constraints imposed by Tokyo's dense urban fabric, including the presence of surrounding buildings rising to approximately 40 metres in height for Garden& House. In each case, this constraint is treated as the generative starting point rather than an obstacle to be resolved separately from the concept. This pattern suggests that, in the selected projects, the practices of Nishizawa and SANAA do not primarily begin with a formal idea subsequently adapted to context; rather, their conceptual framing strategies are closely derived from the specific demands of each site.

6.2.Spatial Continuity as a Recurring Spatial Quality

Formally, despite differences in program and scale, the eight projects share a recurring spatial quality: continuity and gradation rather than enclosure and division. This is expressed through the undulating floor of the Rolex Learning Center, the unfolding sequence of galleries at Louvre-Lens, the cloud-like circulation beneath the canopy at Jining Art Museum, and the ground-hugging pavilions at Grace Farms. A similar principle appears in the residential works: Garden & House connects rooms and gardens through a continuous vertical sequence, while the Weekend House uses arches to create a single, uninterrupted spatial volume. Across institutional, community, and residential projects, these examples suggest that continuity functions as a persistent spatial and experiential value within the diverse architectural production represented by Nishizawa's independent practice and SANAA.

Spatial continuity in the work of Nishizawa and SANAA varies according to program and scale, ranging from the dissolution of physical boundaries in projects such as the Rolex Learning Center

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and Weekend House to programmatic and spatial sequencing in Louvre-Lens and Sydney Modern. Rather than a fixed formal strategy, boundary dissolution therefore emerges as a recurring tendency adapted to specific spatial and programmatic conditions. This interpretation is consistent with scholarship identifying the questioning of conventional boundaries between interior and exterior, private and public space, and architecture and environment. Martín and De Esteban (2018), for example, relate Nishizawa's approach in Moriyama House to a dissolution of conventional spatial limits, while Lambiasi (2021) describes the work of Sejima, Nishizawa, and SANAA as blurring distinctions between building and landscape and emphasizing their integration with the surrounding environment.

6.3.Design Response and Material Resolution in Structure

Beyond the spatial outcomes described above, the eight projects also reveal how Design Response and Material Resolution operates at the level of structure. Across the cases, the structural system can be understood not simply as a means of construction but also as a mechanism through which the Conceptual Framing Strategy is materially resolved in relation to the constraints identified in the Problem-Setting Logic. At the Rolex Learning Center, the need to unify a fragmented 1950s campus into one continuous space required post-tensioned cables and slender, irregularly placed columns that allowed two concrete shells to span large distances without interrupting walls or beams, materially sustaining the artificial terrain concept. At the Weekend House, the demands of Chile’s coastal winds are addressed through independent load-bearing arches that provide wind resistance while eliminating conventional walls, making structural necessity and conceptual framing inseparable. Grace Farms demonstrates a similar calibration through material choice: its hybrid steel-and-timber structure balances the efficiency required to span a sloped, forested site with the warm, tactile quality demanded by its community-oriented program. At the Shanghai Steel Factory Redevelopment, the café volume is structurally separated from the historic shell, allowing adaptive reuse to proceed without compromising the existing fabric; and the existing structure is surgically opened at selected points to introduce light into the old steel framework.

In this sense, Design Response and Material Resolution becomes most legible where structural performance and experiential intention converge, consistent with scholarship emphasizing Nishizawa and SANAA’s use of lightweight structural systems and carefully selected materials to reconcile visual delicacy with structural performance (Hasegawa, 2006; Wilke, 2019).

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7. Discussion

7.1. Extending Design Thinking through Tectonic Framing

This study provides qualitative evidence that extends the architectural application of Dorst's (2015) concept of frame innovation by grounding it in the physical realities of construction and materiality. The conceptual frames identified across the selected Nishizawa and SANAA projects—such as 'floating canopy,' 'vaulted terrain,' and, in the Rolex Learning Center, 'undulating terrain' that dissolves the distinction between floor and roof—are not merely poetic metaphors; they function as *generative instruments* that simultaneously resolve structural loads, environmental modulation, programmatic distribution, and spatial experience. The findings can be interpreted in relation to Schön's (1983) account of reflection-in-action, insofar as conceptual intentions and material constraints appear closely interrelated in the resulting design responses. The Rolex Learning Center is instructive here: its continuous concrete topography is not a formal gesture but the direct outcome of a single generative idea absorbing radically different demands—daylighting, structural spanning, and the informal collision of library, study, and social program—into one coherent surface. The frames work precisely because their inherent ambiguity allows them to absorb heterogeneous contextual data—topography, urban density, historical memory, and climatic extremes—without losing internal coherence. Whereas some accounts of design thinking emphasize its cognitive and processual dimensions, the present analysis highlights the material and tectonic specificity of architectural production. It therefore suggests that framing in architecture is inherently tectonic: it must withstand gravity, channel light, and accommodate the human body.

7.2. Transferability and the Iranian Architectural Context

The methodological framework developed here offers a diagnostic tool for architectural contexts beyond Japan—particularly Iran, where Eurocentric paradigms remain dominant in architectural discourse and design thinking is more often taught as an imported methodology than developed from local design problems. For Iranian architectural theory and practice, the most significant implication is methodological rather than typological. The selected practices of Nishizawa and SANAA demonstrate that design thinking can operate as a diagnostic tool for reframing site-specific constraints—climate, density, historical context—into generative design problems, rather

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than treating such constraints as obstacles to be minimized or as cues for reproducing familiar historical forms. Iranian architects and design educators could adopt this same problem-setting and conceptual-framing logic: identifying a single organizing idea capable of addressing structural, environmental, and programmatic demands simultaneously, while evaluating how that idea is resolved under specific project conditions. This shift moves architectural discourse past the binary of "authentic tradition" versus "uncritical modernity," offering instead a potential transferable design process—one concerned with how problems are framed and how concepts are developed and evaluated—that Iranian designers could apply to their own environmental and urban challenges, independent of any specific formal or historical vocabulary.

However, this transferability is not without critical limitations. The transfer of this methodology presupposes a highly refined construction industry, skilled craftsmanship, and a client culture comfortable with spatial ambiguity and minimal detailing—conditions evident even in a non-Japanese context like the Rolex Learning Center, whose realization depended on specialized European contractors and an unusually risk-tolerant client. Future research must empirically test the adaptation of this framework within Iranian design studios to identify local resistances and recalibrate its criteria. Ultimately, this study positions Japanese architectural methodology as an epistemological case study—demonstrating that design continuity is achieved not by looking backward, but by designing forward through a disciplined process of problem-setting, conceptual framing, and adaptive adjustments.

8. Conclusion

This study examined the architectural practice of Ryue Nishizawa and SANAA through design thinking, with particular attention to the relationship between problem formulation, conceptual development, and spatial experience. The study is grounded in Nishizawa's 2025 Tehran lecture *Architecture and Environment*, which presents his reflections on architecture and the environment through a selection of works. The lecture provided the main source for identifying how Nishizawa describes design problems, intentions, and architectural responses, while project documentation, exhibition materials, and publications by SANAA and the Office of Ryue Nishizawa were used to complement and examine the eight selected projects. Based on these sources, three related aspects of the design process—Problem-Setting Logic, Conceptual Framing Strategy, and Design Response and Material Resolution—were identified and examined across the cases.

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Regarding RQ1, the analysis indicates that site-specific constraints function not merely as limitations but as generative conditions from which design problems are formulated. Regarding RQ2, the findings show that these problems are translated into project-specific conceptual frames, which are subsequently resolved through spatial, structural, material, and environmental responses.

The analysis shows that the emphasis placed on these three criteria differs according to project type, although the underlying design logic recurs across the cases (see Table 3). The four institutional and cultural projects—Louvre-Lens Museum, Sydney Modern, Jining Art Museum, and the Rolex Learning Center—are primarily associated with Conceptual Framing (C2), with Problem-Setting (C1) as the secondary emphasis. By contrast, the community-oriented projects, Grace Farms and Shanghai Steel Factory, and the residential projects, Weekend House and Garden & House, are primarily associated with Problem-Setting (C1), with Design Response and Material Resolution (C3) as the secondary emphasis. As summarized in Table 3, this pattern indicates that the institutional and cultural projects tend to organize complex programs and public experiences around a strong conceptual idea, whereas the community-oriented and residential projects place greater emphasis on responding to particular site and programmatic conditions.

Table 3. Primary and Secondary Analytical Emphasis Across the Practices of Nishizawa and SANAA (8 Projects)

Project (Category)	Primary Criterion	Secondary Criterion	Rationale
Rolex Learning Center (2010) [Institutional/Cultural]	Conceptual Framing (C2)	Problem-Setting (C1)	"Undulating terrain" is the defining concept, developed to unify fragmented campus functions into one hub
Louvre-Lens Museum (2012) [Institutional/Cultural]	Conceptual Framing (C2)	Problem-Setting (C1)	Chronological "timeline narrative" organizes the museum, built on a strong response to the disperse industrial-historical site
Jining Art Museum (2019) [Institutional/Cultural]	Conceptual Framing (C2)	Problem-Setting (C1)	"Floating canopy" is the generative idea, framed by integration with the surrounding park
Sydney Modern (2022) [Institutional/Cultural]	Conceptual Framing (C2)	Problem-Setting (C1)	"Rotated cubes" concept governs the design, layered onto an engineered artificial site
Grace Farms (2015) [Community-Oriented]	Problem-Setting (C1)	Design Response and Material Resolution (C3)	Forest preservation and large-program accommodation drive the design, resolved through massing adapted to the slope
Shanghai Steel Factory (2024) [Community-Oriented]	Problem-Setting (C1)	Design Response and Material Resolution (C3)	Adaptive transformation of the existing factory is primary, achieved through selective demolition and reuse

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Weekend House (2019) [Residential]	Problem-Setting (C1)	Design Response and Material Resolution (C3)	Resisting harsh coastal conditions is primary, resolved through the use of independent arches
Garden & House (2011) [Residential]	Problem-Setting (C1)	Design Response and Material Resolution (C3)	Integrating nature into a dense Tokyo site is primary, achieved through a lightweight structural system and vertically connected gardens

Note: The primary and secondary criteria in Table 3 represent the author's interpretive assessment of the criterion most prominently evidenced in the available project accounts.

Two characteristics recur across the eight projects. First, the conceptual ideas are closely related to the conditions from which the projects begin. Fragmented campus structures, industrial remnants, sloping terrain, coastal climate, and restricted urban sites are not treated merely as limitations; they become part of the problems through which the architectural concept is developed. Second, the projects consistently favor continuity and gradation over strict separation and enclosure. This is expressed through physical relationships between floors, ceilings, circulation, and structure, as well as through spatial sequences connecting rooms, gardens, galleries, and landscape.

For the Iranian architectural context, the significance of this finding suggests an alternative to understanding contemporary architecture and cultural heritage through the opposition between formal replication of tradition and the uncritical adoption of contemporary forms. Instead, climate, density, historical context, material conditions, and cultural meaning can be approached as design problems from which architectural responses are developed. Although the applicability of this approach to other contexts requires further investigation, it offers a basis for considering heritage-responsive design as a process of interpretation and transformation rather than stylistic imitation.

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References

ArchDaily. (2010, March 22). *Rolex Learning Center / SANAA*. https://www.archdaily.com/53536/rolex-learning-center-sanaa-by-iwan-baan

ArchDaily. (2012, December 29). *Louvre Lens / SANAA*. https://www.archdaily.com/312978/louvre-lens-sanaa

ArchDaily. (2015, October 14). *Grace Farms / SANAA*. https://www.archdaily.com/775319/grace-farms-sanaa

ArchDaily. (2023, January 23). *Sydney Modern Museum / SANAA*. https://www.archdaily.com/995295/sydney-modern-sanaa

Arquitectura Viva. (n.d.). *Jardín y casa*. Retrieved September 8, 2026, from https://arquitecturaviva.com/works/jardin-y-casa-10

Arquitectura Viva. (n.d.). *Museo de arte de Jining*. Retrieved September 8, 2026, from https://arquitecturaviva.com/works/museo-de-arte-de-jining-

Cross, N. (2011). *Design thinking: Understanding how designers think and work*. Berg.

Dezeen. (2020, July 13). *House in Los Vilos, Chile / Ryue Nishizawa*. https://www.dezeen.com/2020/07/13/house-in-los-vilos-chile-ryue-nishizawa

Dorst, K. (2011). The core of "design thinking" and its application. *Design Studies, 32*(6), 521–532. https://doi.org/10.1016/j.destud.2011.07.006

Dorst, K. (2015). *Frame innovation: Create new thinking by design*. MIT Press.

Dorst, K., & Cross, N. (2001). Creativity in the design process: Co-evolution of problem–solution. *Design Studies, 22*(5), 425–437. https://doi.org/10.1016/S0142-694X(01)00009-6

Hasegawa, Y. (2006). *Kazuyo Sejima + Ryue Nishizawa: SANAA*. Electaarchitecture.

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

JDT Manuscript

Isozaki, A. (2025). *Japaneseness in architecture* (E. Andaroodi, Trans.). University of Art Press. (Original work published 2006)

Lambiasi, J. (2021). The Architecture of Kazuyo Sejima and Ryue Nishizawa / SANAA: Challenging Boundaries between Building and Context. *Artscape Japan*.

Martín, G., & De Esteban, J. (2018). Home-city interactions in suburban Tokyo: Moriyama House by Ryue Nishizawa. *Revista de Arquitectura, 23*(34), 45–53.

Matsumura, S. (2025). *Modern theories of housing construction with an emphasis on Japanese experiences* (M. Masoumi, Trans.). Shargh Daily Publishing.

Mehta, G., & MacDonald, D. (2016). *New Japanese architecture: Contemporary works of leading global architects* (E. Andaroodi, Trans.). Jihad Daneshgahi Press. (Original work published 2011)

Miyake, R., Ando, R., Matsubara, K., Kataoka, M., Tatehata, A., Isozaki, A., & Andaroodi, E. (2025). *Art and the space in-between, Iran–Japan*. Ma Exhibition Executive Committee; Persian Seismic and Retrofitting Institute; University of Tehran, College of Fine Arts, Faculty of Architecture.

Nishi, K., & Hozumi, K. (2014). *Japanese architecture from the beginning to the Meiji period* (E. Andaroodi, Trans.). University of Tehran Press. (Original Japanese work published 1983; English translation by H. M. Horton published 1985)

Nishizawa, R. (2011). Garden & House. In Y. Futagawa (Ed.), *GA Architect: Kazuyo Sejima, Ryue Nishizawa 2006–2011* (p. 114). A.D.A. Edita.

Nishizawa, R. (2025, February 7). *Architecture and environment* [Keynote address]. Closing Ceremony of the Exhibition Art and Space In-Between, Iran-Japan, Aseman Cultural & Artistic Complex, Tehran, Iran.

Nute, K. (2016). *Place, time, and being in Japanese architecture* (A. Eshraghi, Trans.). Academy of Arts Press. (Original work published 2004)

Office of Ryue Nishizawa. (2020). Jining Art Museum. *Arquitectura Viva*, (224), 20–27.

Ostende, F., & Ciorra, P. (Eds.). (2017). *The Japanese house: Architecture and life after 1945*. Marsilio Editori.

Pritzker Architecture Prize. (1987). *Kenzo Tange*. **https://www.pritzkerprize.com/laureates/1987**

Pritzker Architecture Prize. (1993). *Fumihiko Maki*. **https://www.pritzkerprize.com/laureates/1993**

JDT Manuscript

Pritzker Architecture Prize. (1995). *Tadao Ando*. https://www.pritzkerprize.com/laureates/1995

Pritzker Architecture Prize. (2010). *Kazuyo Sejima and Ryue Nishizawa*. https://www.pritzkerprize.com/laureates/2010

Pritzker Architecture Prize. (2013). *Toyo Ito*. https://www.pritzkerprize.com/laureates/2013

Pritzker Architecture Prize. (2014). *Shigeru Ban*. https://www.pritzkerprize.com/laureates/2014

Pritzker Architecture Prize. (2019). *Arata Isozaki*. https://www.pritzkerprize.com/laureates/arata-isozaki

Pritzker Architecture Prize. (2024). *Riken Yamamoto*. https://www.pritzkerprize.com/laureates/riken-yamamoto

Rowe, P. G., & Chung, Y. (2024). *Design thinking and storytelling in architecture*. Birkhäuser. https://doi.org/10.1515/9783035628128

SANAA. (2015). Grace Farms, New Canaan, Connecticut, USA. *Domus*, (997), 49–63.

SANAA. (n.d.). *Sydney Modern Project: Architectural design report*. Art Gallery of New South Wales / Infrastructure NSW.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Shanghai Municipal People's Government. (2024, November 22). *Revitalized steel factory ignites art, culture scenes in Changning*. https://english.shanghai.gov.cn/en-CityTour/20241122/a56e7a652e1049c4ae08cde38c7dc753.html

Steele, J. (2017). *Contemporary Japanese architecture: Tracing the next generation*. Routledge. https://doi.org/10.4324/9781315673813

Wilke, B. (Ed.). (2019). *Ryue Nishizawa / SANAA*. Applied Research & Design.

Yang, J. (2019). A sense of Japanese aesthetics: The role of materiality in the work of SANAA. *KnE Social Sciences, 3*(27), 26–39. https://doi.org/10.18502/kss.v3i27.5512

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