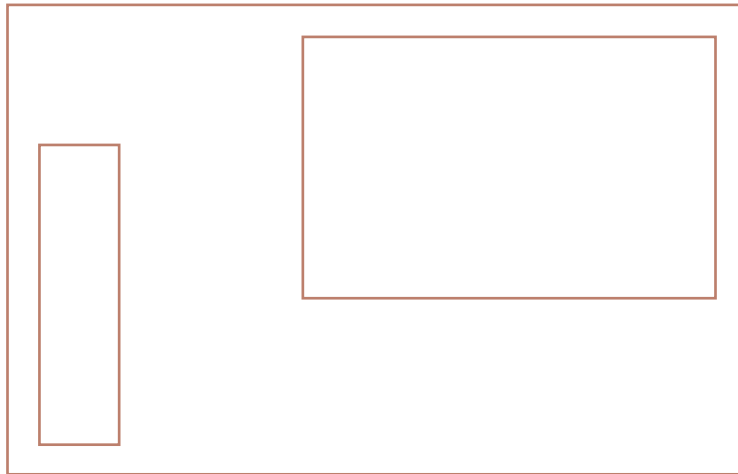


# Modern Vernacular:

## Internalizing the Doma in Contemporary Japan

Yoshiki Asai



Delft University of Technology  
Faculty of Architecture & the Built Environment  
Architectural History Thesis  
Supervisor: Vibeke Gieskes

# Abstract

The Japanese spatial concept of Ma is an experiential space-time interval mediating human consciousness and the environment that has historically structured the vernacular Kyomachiya (traditional townhouse) through the horizontal layering of intermediary thresholds. However, high-density urbanization and the loss of traditional exterior space have rendered the conventional Doma (earthen floor), especially in form of Toriniwa, a dark, linear, and passive earthen corridor, functionally and spatially obsolete in contemporary domestic architecture. Addressing a significant gap in the study of modern vernacular dwellings, this thesis investigates the morphological evolution of the Doma from a horizontal service threshold into an internalized, vertical volumetric void within small-scale Japanese residential architecture. Through a comparative architectural analysis, this study examines the historical baseline of the traditional Machiya, the transitional renovation methodologies of Shigenori Uoya and the complete internalization strategies in new constructions by Suppose Design Office and ALTS Design Office. Ultimately, this research concludes that while the geometric manifestation of the Doma has radically transformed from a two-dimensional plane into a three-dimensional vertical volume to accommodate the spatial constraints of the modern metropolis, its inherent phenomenological function which is to dynamically mediate the boundary between exterior and interior domains, has successfully remained intact



*Photo by author*

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# 1. Introduction

The Japanese spatial concept of Ma (間) is an intermediary interval of space and time that has functioned as a central design principle in traditional Japanese architecture for centuries. Visually derived from the kanji characters for gate (門) with the sun (日) shining through. Ma conceptually revolves around the intertwined notions of time, space, and spirit rather than representing a mere physical void or a measurable geometry (Zwijnenburg, 2024). Although an imaginative quality, it mediates between its environment, objects and human consciousness who exist in the space through dynamic experiential space and time interval (Nitschke, 2018). Eventually this flexible notion serves as a framework that depicts spatial dialogue.

## 1.1 Background and context

Historically, this spatial philosophy was most prominently seen in the Machiya, a vernacular residential townhouse typology. Origins trace back to the Heian Period (794–1185) and which flourished as the standard model for urban living during the Edo Period (1603–1867)(Oba, 2022). In these traditional houses, the concept of Ma was implemented at the periphery of the structure as part of the space sequence design which often layered horizontal transitional spaces. These horizontal Ma was primarily experienced through two essential architectural elements: the Engawa (縁側), exterior veranda, and the Doma (土間), earthen floor, in a form of Toriniwa (通り庭). The Engawa literally translates to the “relationship of the side,” functioning as a flexible space created by extending the interior floor of the house outward. It is a buffer zone that stands between interior and exterior spaces while maintaining strict neutrality (Harada, 1954; Zwijnenburg, 2024). Due to its nature of being open and having no harsh wall towards outside, the space becomes ambiguous as to whether one is situated indoors or outdoors. This ambiguity fosters a relationship with nature and encourages social interaction. Concurrently, the Toriniwa is a type of Doma where it served as a linear, dynamic buffer domain where human movement was actively engaged (Nitschke, 2018). Its earthen materiality, narrow and dark walkway functioned as a passive climatic filter as well as threshold that negotiated the dirty activities of the public street with the clean domestic interior spaces. Sometimes a kitchen was placed in Doma by the entrance which shows coexistence of essential service functions and social interactions without breaching the privacy of the home.

The aesthetic and spatial experience of these horizontal thresholds was heavily reliant on the interplay of light and shadow. As Jun'ichirō Tanizaki argued in his seminal essay *In Praise of Shadows*, the beauty of a traditional Japanese interior space depends entirely on a variation of shadows, heavy darkness against lighter, diffusing the dark shadows. To keep off driving wind and rain, traditional builders utilized heavy roofs and deep eaves which created dim rooms with no direct sunlight where they ultimately discovered a unique beauty in the resulting darkness (Okabe & Kojima, 2024).

## 1.2 The catalyst for change

However, the rapid modernization and high-density urbanization of contemporary Japanese cities have left no rooms for these traditional intermediary zones to be included. Evolution of housing typologies in the twentieth century is characterized by a gradual loss of roominess, decreased facade openings, and eventual spatial introversion (Tsukamoto, 2012). The traditional Doma has largely fallen into obsolescence, constrained by modern urban environments that suffer from highly restricted plot sizes, a lack of exterior garden space, and technological developments that have altered standard floor plans used in the Edo Period. Despite these physical limitations, the psychological and functional desire for an intermediate zone that draws line from the outside urban fabric remains prevalent. Humans inherently possess a fundamental need for an ambiguous in-between realm, a space that allows them to drift naturally toward the outside and transition from the public world to private domesticity (Fumihiko, n.d.-b). Not only does it define distinction of physical spaces but also facilitate psychological shift one goes through by entering the new space. Humans must first separate spaces in order to connect them. Spatial delimiters that establish these thresholds are critical in shaping the constructed environment and defining the atmosphere of the transition (Boettger, 2014).

## 1.3 Scope of the study

Contemporary architectural history frequently examines how globally recognized architects have theoretically reinvented these spaces through monumental and iconic designs. However, they often fail to address the pragmatic realities of everyday domestic life. For instance, Fujimoto's radical reinterpretations often treat the in-between as the main living space itself (Frearson, 2012). This creates highly conceptual environments that challenge traditional habitation and emerges new problem that did not exist before.

This thesis identifies a significant gap in the study of what can be termed "modern vernacular" design meaning the contemporary translation of traditional spatial logic for standard family dwellings. Consequently, the scope is limited to small-scale residential housing. The study aims to critically investigate how the traditional Doma has been adapted to facilitate everyday living within the constraints of the modern urban fabric

The case studies selected for this research are: the work of Shigenori Uoya, Suppose Design Office, and ALTS Design Office. They were chosen based on their specific methodologies for revitalizing traditional elements. Uoya's work represents the critical "bridge" of renovation, utilizing subtraction to adapt historical structures. Suppose Design Office and ALTS Design Office provide contemporary new-build examples that internalize the Doma as a central core. Together, these examples illustrate a range of adaptation from historical renovation to modern internalized volumes.

## 1.4 Research Question

By focusing on the architectural modifications required to revitalize historical spatial concepts into highly constrained contemporary city, this research addresses the following research question: To what extent and through what architectural mechanisms, can the traditional Doma be reinterpreted from a linear, horizontal service threshold into vertical, volumetric voids in modern Japanese housing?

In the renovations of historical Machiya in Kyoto, architect Shigenori Uoya utilizes a sophisticated subtraction method where he removes second-floor slabs situated above the traditional earthen corridor while retaining the historical timber frame (Uoya, 2024). This intervention appear to transform the flat, dark tunnel into a three-dimensional, vertical void. The architectural shift potentially turns a service passage into a space that introduces natural sunlight and ventilation into the living space. Furthermore, by glazing the traditional Toriniwa with transparent materials, Uoya internalizes the traditional edge. This suggests a potential evolution of the Doma from passive climatic buffer into an active volumetric core.

This spatial change is further observed in modern residential construction by architectural firms such as Suppose Design Office and KiKi ARCHi, who specialize in revitalizing traditional architectural elements within the modern urban context. In projects like the House in Takaya by Suppose Design Office, the earthen floor is designed to run directly beneath interior functional spaces. This effectively eliminates the traditional threshold and blur the distinction between the living room and the kitchen. This is great example of internalization of the garden and nature by deliberately reintroducing the Doma as an ambiguous, multi-purpose space situated at the very centre of the house (KiKi, 2021; Makoto, 2009).

To comprehensively answer the central research question, this study will be structured into three main sections:

1. Establishing the historical baseline through the Machiya
2. Analysing the vertical modification of architectural elements in historical housing
3. Examining the complete internalization of these architectural elements as central volumetric voids.

Ultimately, this thesis seeks to determine if the geometric shape of the Doma has fundamentally shifted from a flat, horizontal surface to a volume and to what extent its inherent architectural function to mediate between the outside and inside has successfully remained intact



*Photo by author*

## 2. The Historical Baseline

To establish a comprehensive framework for understanding the trajectory of modern Japanese residential architecture, it is imperative to first delineate the historical baseline of the Machiya (京町家), the traditional townhouse. This vernacular typology, traces its origins back to the Heian Period (794–1185) and became the standardized model for residential houses for inhabitants in the town during the Edo Period (1603–1867) (Oba, 2022). The spatial philosophies embedded within the typology provides us with essential context, for evaluating contemporary architectural adaptations since the central to the structural and phenomenological organization of the Machiya is the concept of Ma (間). Often inadequately translated as mere “void” or “space”, Ma is more accurately defined as an experiential space-time interval, that dynamically mediates the relationships between objects, environments, and human consciousness (Nitschke, 2018). Ma functions as a framework where human movement and psychological transitions are negotiated rather than existing as a static, measure of physical gap.

### 2.1 Traditional implementation of Ma

Historically, this spatial concept was implemented in residential buildings through sequential design and the horizontal layering of spaces at the periphery of the home. The traditional spatial experience of Ma was primarily flat and linear, relying on physical movement across a series of horizontal thresholds. This foundational principle of horizontal domain was elucidated in two architectural elements: the Engawa (縁側), verandas, and the Toriniwa (通り庭), a specific form of the Doma (土間), earthen floor.

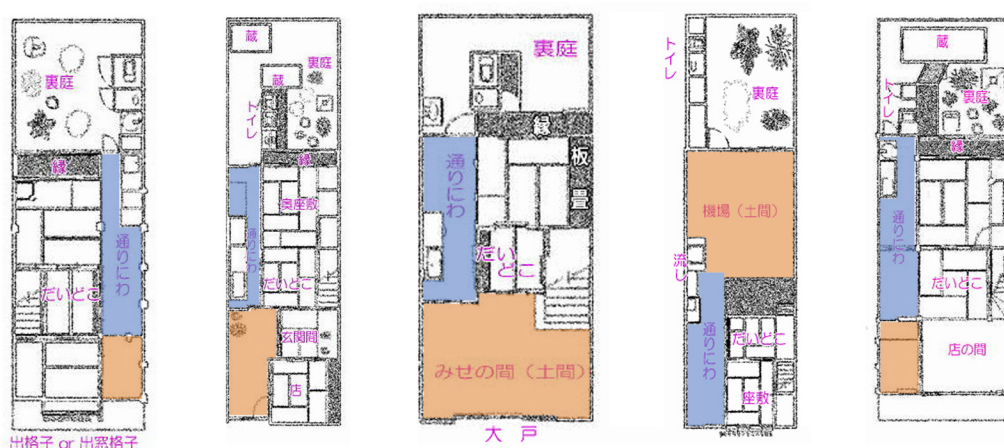


Figure 1: Floorplans of typical Machiya (Inoue, n.d.)

To comprehend the evolution of these spaces, one must distinguish between their static and dynamic properties. The Engawa operated as a static interval of Ma,

functioning as a highly versatile space created by extending the interior floor of the house outward (Zwijnenburg, 2024). It mediated the gap between the external and internal environments and stood between the interior rooms and the exterior garden while maintaining a strict neutrality. Its characteristics as quiet and narrow corridor became the space for contemplation and repose, fostering a close relationship with nature while remaining indoors

## 2.2 Characteristics of the Traditional Doma and Toriniwa

In stark contrast to the static repose of the Engawa, the Toriniwa and Doma functioned as dynamic, horizontal buffers where the movement of people was not only accommodated but actively encouraged. The traditional Doma, specifically in its form as a Toriniwa, served as a linear buffer domain acting as a strict threshold between the public street and the private zones (Nitschke, 2018). It was defined by its earthen materiality, which created a shadowy walkway that functioned as a passive climatic filter. Historically, this narrow domain was entirely unheated and lacked sunlight often causing it to feel like a cold extension of the outdoor space. However, its primary architectural and social function was to act as a highly flexible threshold that blurs the “dirty” activities of the street and domestic activities with the “clean” environments of the raised interior spaces (Demachi & Oka, 2008). This space carried a deliberately ambiguous status to allow allowing vital service functions, such as cooking, and brief social interactions to occur simultaneously without requiring visitors to cross into the private, elevated core of the home.



Figure 2: Kitchen integrated Doma (Hooivers, 2022)

The spatial experience of this traditional, horizontal Ma was intrinsically tied to the manipulation of light and the embrace of darkness. As Jun'ichirō Tanizaki argued in his seminal essay *In Praise of Shadows*, the fundamental beauty of the traditional Japanese house relied heavily on the variation of shadows between heavy dark shadows and lighter diffused shadows (Tanizaki, 1933/1977). To protect the fragile paper and wood interiors from driving wind and rain, traditional carpenters utilized heavy roofs and deep eaves which severely restricted the amount of natural sunlight that could penetrate the interior, creating such dark corridor. Tanizaki suggests that these dark, horizontal layers of Ma became an essential cultural identity in Japanese architecture, standing in opposing to the brightly illuminated spaces of progressive Western typologies.

Consequently, the traditional Toriniwa was characterized by its dark, earthen floor materials and a distinct, tunnel-like structure that emphasized depth in a single, horizontal direction. This linear sequence served as the primary spatial logic of the home which are prevalent in urban Machiya. Because of this rigorous adherence to horizontality and the heavy, deep roof structures, the traditional Toriniwa severely lacked any vertical connection to the spaces above (Demachi & Oka, 2008). The spatial experience was entirely bound to the ground plane where it was experienced flatly, relying on the physical progression of the body moving deeper into the tunnel, rather than the eye being drawn upward through penetrating volumes of light.



*Figure 3: Toriniwa (Miyako, 2023)*

## 2.3 The Spatial Experience of Ma

Furthermore, the implementation of Ma in the historical baseline was dictated by the structural rules of movable planes, which further emphasized horizontal spatial negotiation. Unlike traditional Western architecture, which primarily attempts to join fixed independent rooms, the traditional Machiya floor plan was generated through the divisive method (Okabe & Kojima, 2024; Taki et al., 1983). The plan of the Machiya was essentially a large, rectangular space divided by straight lines. Each spatial unit resulting from this division had an transient life; it existed only as long as the sliding partitions walls, such as Shoji (障子), Fusuma (襖), and Amado (雨戸) were closed. When these movable planes were opened, the defined division would instantly return back into a singular continuous space lacking distinct physical boundary. The traditional house thus operated as a flexible container, where interior spaces could be continuously altered, expanded, or contracted to accommodate various domestic activities and needs.



*Figure 4: Traditional house with sliding diving planes(Kuramori, n.d.)*

This methodology of division and horizontal layering heavily informed how the Doma and Toriniwa were experienced. The spatial sequence starting from the public street, through the dark earthen corridor, and up onto the raised tatami-matted floors was modulated by these movable planes(Takahashi & Watanabe, 2014). A visitor traversing the Toriniwa would pass alongside layers of privacy and opacity, experiencing the

home as a sequence of lateral reveals rather than volumetric enclosures.

In summary, the historical baseline of the Machiya establishes a paradigm where architectural mediation is exclusively horizontal. The traditional Japanese house floorplan was defined by lateral sequence, where the dynamic Toriniwa and the static Engawa functioned as flat, shadowed thresholds regulating the transition from public to private. The earthen corridor was characterized by its linear progression, earthen materiality, and profound darkness which were driven by utilitarian and climatic necessity. It was a space designed to be passed through flatly, bounded by heavy roofs that prevented both vertical spatial connection and intrusion of daylight into the house. Understanding this baseline is critical, as it highlights exactly what is lost in rapid urbanization. The shrinking of urban spaces, and the demand for natural light render these dark tunnels obsolete in the contemporary era. This deeply ingrained spatial element sets the stage for the inevitable vertical transformation of the Doma.



*Photo by author*

# 3. The Bridge

The architectural evolution of Kyoto's cityscape is defined by a persistent tension between the preservation of historical value and the necessity of modern adaptation. At the centre of this discourse is the work of renovations of historical machiya by Shigenori Uoya. His works serve as a conceptual and physical bridge between traditional Japanese spatial concept and contemporary urban needs (TOTO, n.d.). Uoya's methodology prioritizes the "re-weaving" of urban fabrics, a process that avoids the stagnation of "living museums" in favour of a dynamic layering of time (TOTO, n.d.). By examining the transformation of the traditional horizontal Ma into vertical void, this chapter explores the "Bridge" as a design principle. Through an analysis of the Kyoto Moyashi House and the Container Machiya, this research demonstrates how the subtraction of floor plates and the glazing of traditional Toriniwa or Doma redefine the transitional nature of Japanese domesticity. In the end the value will be evaluated on how historic townhouses have evolved from a old antique into an active, three-dimensional participant in the modern city

## 3.1 The Decline of the Machiya and the Preservation of Urban Context

Historically Kyoto's machiya are traditional wooden townhouses combines commercial storefronts with residential and workshop areas in the rear. These houses were built along narrow, deep alleyways fostering a unique neighbourhood community where residents lives overflowed into the street and social interaction was present at all times (Fumihiko, n.d.-b). However, this high exposure to public realm has become a modern liability. As social environments and lifestyles changed, the Doma and Toriniwa became seen as cold, inefficient, and incompatible with modern living standards. Consequently, machiya are declining in contemporary society. High maintenance costs and the desire for comforts lead many owners to demolish these heritage buildings to replace them with standardized condominiums or parking lots (Oba, 2022). Uoya's intervention is an impassioned response to this erosion. He posits that the survival of Kyoto's urban context requires an architecture that is not merely a restoration of the past but an evolution (Uoya, 2024). His projects demonstrate that by manipulating the spatial volume of the machiya rather than its exterior appearance, one can preserve the city's historical footprint while meeting functional demands.

A critical element of Uoya's "Bridge" philosophy is the treatment of the building's structural components. He frequently reveals the original wooden frame, the "naked" objects of the house. This resonates with the theories of Kazuo Shinohara, who argued that architectural components like posts and beams should express no more than their functions, allowing the resulting space to convey no predetermined intent (Taki et al., 1983). In Uoya's renovations, this "nakedness" acts as a form of tools of production

of meaning. Upon entering a space like the Moyashi House, where the 120-year-old wood frame is exposed and illuminated by a new vertical void, the observer is free to read diverse meanings into the structure. This exposure of the skeleton honours the traditional craftsmanship of joinery while validating the modern intervention. Uoya reveals the “imperfectly aged beauty” of the structure by stripping down the plywood and plaster that covers earthen wall. A wabi-sabi aesthetic that remains relevant in a minimalist modern context. This functional honesty transforms the machiya from a fragile into a robust “zero-degree machine,” a term Shinohara used to describe an apparatus constructed without the intention of unified concept (Taki et al., 1983).

## 3.2 Theoretical Framework

To situate Shigenori Uoya’s interventions within the architectural theory, one must first deconstruct the concept of the intermediative space and how it exists in the Japanese context. The term transitional space, also referred to as intermediate area or third area, entails an environment of experience situated between the inner and outer worlds (Zwijnenburg, 2024). In Japanese architecture, this is epitomized by the Engawa, a flexible veranda that extends the interior floor outward, and the Doma multi-layered earthen corridor that blurs the threshold between enclosure and exposure. However, the philosophical foundation of all such spaces is the concept of Ma (間).

Uoya’s work marks a radical change from this horizontal restriction. While the horizontal Ma facilitated a sequence of private enclosures deeper into the narrow lot, a concept Fumihiko Maki identifies as Oku (奥), inner depth, it simultaneously created dark, unventilated zones (Fumihiko, n.d.-a). The “Bridge” proposed by Uoya involves a dimensional shift. By rotating the orientation of Ma from the horizontal to the vertical, he introduces natural light and air into the heart of the structure without the need of expansion of the building or alteration of historical structure (Aung, 2016). This modification serves as a “staged” transition, slowing the flow of movement from the public street and providing an arrival sequence that emphasizes verticality and light.

## 3.3 Case study 1: Kyoto Moyashi House

The Kyoto Moyashi House is located in the Shimogyo-ku district, Kyoto an area where the decline of machiya is prominent (Aung, 2016). Erected in 1893, just as a typical machiya, the house originally functioned both as residence and workspace for Mr. Ishii, who cultivated malt seed starter for the production of sake, miso, and soy sauce (Yijin, 2021). The name “Moyashi” refers to the industrial name for this mold starter, and to this day, the house retains 3 of its original chambers as a legacy of the past.

### 3.3.1 Architectural Intervention: Subtraction of Floor Plates

The primary challenge of the Moyashi House renovation was the remediation of its dark, tunnel-like interior. Traditional machiya layouts were dictated by two gardens, one at the rear and one at the central courtyard. However, in dense urban conditions, there were often insufficient space to create gardens large enough to serve as a lighting core (Frearson, 2016; Uoya, 2024). To resolve this issue in modern urban context, Uoya’s radical intervention involved the subtraction of floor plates, specifically removing sections of the second-floor ceiling and floor that were situated above the Toriniwa.



*Figure 5: Moyashi House Toriniwa (Uoya, 2024)*

This subtraction was not merely opening up the space, but it also restored the traditional hibukuro, smoke void, and repurposed it as a light-well (Uoya, 2024). Historically, these high ceiling areas were essential for venting smoke from the kitchen stoves, as kitchen was often located on Doma due to its “dirty” service function (Okabe & Kojima, 2024). However, they had been floored over in the mid-20th century to create extra storage or living space as Kyoto modernized. By challenging this trend, Uoya transformed flat, unidirectional service tunnel into a vertical void that introduces natural light from skylights directly into the ground-floor living area.

### 3.3.2 Effects on Spatial Perception and Experience

The verticalization of the Moyashi House creates a link between the traditional elements and the new functions by improving the interior atmosphere significantly. The entrance sequence is defined by a pronounced shift in light intensity and spatial volume.

- **Verticality and Orientation:** The vertical void serves as a visual reference, organizing the ground-floor spaces (kitchen, lounge, dining) around a three-dimensional core (Frearson, 2016). This helps mitigate the sense of claustrophobia often found in deep plan machiya.
- **Material Contrast:** Uoya retains the original earthen walls, finished with traditional sand-textured layers, and pairs them with polished concrete floors. The interaction of natural light with these surfaces emphasizes the transition between the building's earlier state and its current use.
- **Internalized Nature:** The central open-air garden is accessible from all ground-floor rooms via sliding glass doors. In warmer months, these are opened to extend the living space into the garden, turning it into a continuous passage (Uoya, 2024). The vertical void reinforces this condition by allowing the presence of the sky to remain perceptible even when the doors are closed.

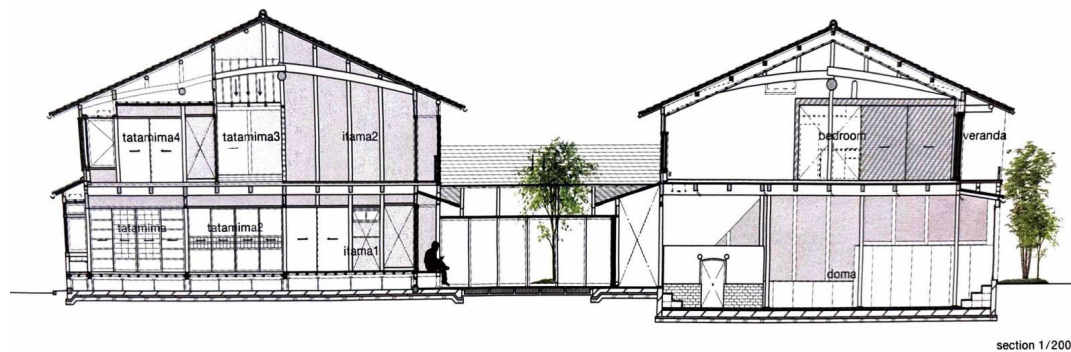


Figure 6: Moyashi House Section (Uoya, 2024)

## 3.4 Case study 2: Container Machiya

Uoya's 2019 project, Nagaya and Historical Alley with Containers, develops a more experimental interpretation of the "Bridge" concept. This intervention focuses on a 100-year-old nagaya located in a narrow alley at risk of disappearing. The project received the JIA Young Architect Award in 2020 for its approach to urban densification that avoids the loss of historical fabric.

### 3.4.1 Architectural Intervention: Glazing the Toriniwa and the Steel Cradle

The Toriniwa is a traditional earthen corridor that functions as the main circulation and service axis in a machiya or nagaya (Himeno, 2015). In the Container Machiya, Uoya's primary intervention was to enclose this corridor with transparent materials (Sugita, 2020). Rather than treating the Toriniwa as a secondary service space, it is repurposed as a visually porous intermediate zone that links the interior to the historic alleyway.



*Figure 7: Container Machiya (Sasakura, 2020)*

To accommodate contemporary lodging and workspace needs within the fragile wooden structure, Uoya introduced 19 reused shipping containers into a steel frame

“cradle” constructed around and above the row house (Uoya, 2024). These containers contain the kitchen and bathroom units, functions that demand substantial plumbing and structural support, allowing the original wooden spaces to remain available for flexible use.



*Figure 8: Container House Structures (Sasakura, 2020)*

### **3.4.2 Effects on Visual Porosity and the Evolution of the Doma**

The glazing of the Toriniwa fundamentally internalizes the traditional peripheral of the house.

- **Visual Integration:** The use of glass walls introduces visual permeability, allowing the historical alleyway to function as a backdrop to the interior. The boundary between private interior and public street is softened, shifting from a fixed separation to a more continuous spatial transition.
- **Three-Dimensional Source:** Traditionally, the Doma functioned as a passive climatic buffer, protecting the interior from the humidity and heat of the Kyoto summer (Zhang et al., 2025). In this project, it is reinterpreted as an active, three-dimensional source of light and ventilation. Openings between the inserted containers provide upward views to the sky, turning the space into a vertical extension of the alleyway.
- **Heritage as Material:** The project incorporates the structural frame

of a teahouse that was scheduled for demolition, relocating and integrating it into the design. This approach treats existing elements as reusable material, reinforcing the idea of the building as an evolving urban artifact rather than a fixed historical object

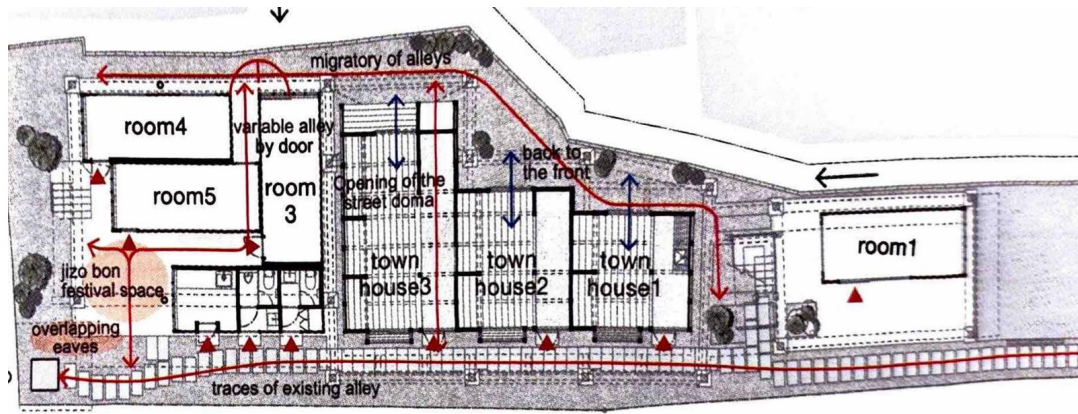


Figure 9: Container House Floorplan (Uoya, 2024)

### 3.5 Conclusion

Shigenori Uoya's work demonstrates that the spatial intensity of the machiyacan be maintained through processes of modernization. Rather than diminishing its traditional qualities, interventions such as the removal of floor plates and the glazing of circulation corridors can repurpose them. The traditional horizontal sequence of the machiya is reconfigured into a vertical spatial void that enhances orientation and awareness of space. Projects such as the Moyashi House and Container Machiya show that modifying spatial volume to introduce light can effectively adapt historic structures to contemporary needs. They also support the transformation of the Doma from a passive climatic buffer into an active spatial element and urban connectivity. Moreover, these works suggest that a sustained community engagement with the city's underlying structure provides a critical foundation for design that negotiates continuity and change. Through such interventions, Kyoto's urban fabric transforms from a static artifact to an evolving environment.



*Photo by author*

## 4. Modern Doma: Internalization of volumetric void

Uoya's work set a foundation to the internalization of the volumetric void and revitalizing traditional architecture elements in contemporary urban setting. While Uoya's work focussed on modification of machiya, avant-garde firms such as Suppose Design Office and ALTS Design Office tries explore the relationship between the intermediate domain and the dense urban fabric. By repurposing the doma as a volumetric Ma, these architects are redefining the boundaries of the modern home while preserving the cultural logic of traditional Japanese residential space.

Fumihiko Maki's exploration of Oku (奥) in 見えがくれする都市 (A city that gives you perspective ) identifies a distinct characteristic of Japanese urban and residential morphology. Unlike the Western reliance on monumental public squares or clear axial symbols of power, the Japanese center is often a deep-seated, hidden essence reached through a series of layers, miekakure (Fumihiko, n.d.-b). This inwardness manifests in the traditional house as the zashiki, located at the furthest point from the entrance, where one must go through Toriniwa or Engawa to reach. Modern internalization strategies seek to recreate this sense of Oku vertically or within compact footprints. When the site no longer allows for a linear progression from front to back, the architect uses a central void such as internal garden to establish a psychological and spatial core that remains intangible.

### 4.1 The Transformation of Necessity

The Doma is perhaps the most versatile and resilient element of the Japanese vernacular architecture. Traditionally a earth floor located between the entrance and the raised living quarters, it served as a utility hub for cooking, cleaning, and area of social interaction. Its evolution from a utilitarian "outside-inside" space to an internalized volumetric centrepiece is a primary indicator of the changing Japanese lifestyle (Okabe & Kojima, 2024).

The modernization of the Japanese house from the Taisho period (1912–1926) through the Showa era involved a sequential process of sealing and internalizing the Doma. Research into historical house ledgers reveals a shift toward the four-room plan, where the Doma was gradually reduced in scale or covered with wooden flooring as modern kitchen and water utilities were introduced (Ueda, 1996). This decline in functional necessity ironically allowed for the Doma to be reinterpreted as an architectural luxury. The space was no longer required for labor, the dirt floor became an element of creative and architectural expression by providing raw, unfinished surface in contrast to clean, artificial timber floor.

## 4.2 Case study 3: House in Takaya | Suppose Design Office

Suppose Design Office, founded by Makoto Tanijiri and Ai Yoshida, has been at the forefront of reinterpreting traditional spatial mechanisms by having the concept of returning to the essence at their core. Their residential projects often feature a direct conversation between opposing ideas: scarcity and abundance, the new and the old. The House in Takaya, located in a satellite city of Hiroshima, represents the ultimate internalization of the doma and the engawa's edge-relationship.



*Figure 10: House in Takaya | Suppose Design Office (grico, 2011)*

### 4.2.1 Architectural Intervention: The Internalized Doma and the Sunken Hearth

In the House in Takaya, the architects' primary intervention was the implementation of a continuous layer of sandy earth that extends from the entry yard into the structural core of the residence. To define the functional zones within this monochromatic rectangular box, the kitchen is designed as a recessed volume bounded by a low-profile, angled concrete retaining wall (Griffiths, 2018). These intervention prevents the migration of granules into the sterile preparation area while maintaining an uninterrupted visual plane across the central living space. The living room is raised from the level of Doma retaining the traditional composition of space elements from machiya. The use sliding glass doors is a adaptation of shoji with modern design to it. The concept of one singular continuum space divided by partition is carried over to achieve the same atmosphere and spatial experience.



Figure 11: Interior Doma

#### 4.2.2 Effects on Spatial Continuity and the Sensory Ground Plane

The integration of the earthen floor fundamentally erases the traditional hierarchy of the domestic program.

- Erasure of Thresholds: By allowing the Doma to run directly beneath the kitchen table, the project dissolves the boundary between the utility zone and the informal living area. The environment and the internal space are no longer treated as disparate entities but as a singular, sheltered environment.
- Predetermined Movement: Circulation is choreographed via stepping stones inset into the loose soil. This mechanism provides a tactile, sensory experience of the ground plane while functionally minimizing the displacement of the sandy earth throughout the house.
- Internalized Toriniwa: Traditionally, the Toriniwa is a peripheral space for interacting with the garden from the edge of the home. In this intervention, the “garden” is pulled into the center of the domestic program. The internalized earth thus functions as a lounge,

a hallway, and a site for casual communication, effectively turning the core of the house into an intermediate zone.

Selected our projects | House in Takaya



Figure 12: House in Takaya Floorplan & Section (grieco, 2011)

This project represents a formal rejection of the standard "outer wall" logic that creates a hard separation between a building and its context. By internalizing the Dooma, the House in Takaya treats the earth not as a landscape to be viewed, but as a primary material of the interior. This approach reinterprets the traditional Japanese dwelling as an evolving shell that enhances relationship between nature and interiors as traditional houses had imagined.

## 4.3 Case study 4: Kofunaki House | ALTS Design Office

ALTS Design Office shares a preoccupation with integrating natural elements into the domestic core, emphasizing comfortable and relaxing, open spaces that use nature to achieve a richer lifestyle. Positioned within an eco-village in shiga, japan, the Kofunaki House takes the concept of the internalized doma a step further by planting a literal forest in the heart of the home and evokes the essence of the outdoor environment. (grieco, 2012).

### 4.3.1 Architectural Intervention: The Gravel Matrix and the Vertical Forest

In Kofunaki House, ALTS Design Office's primary intervention was the selective removal of sections from the concrete ground floor, replacing them with a substrate of fine gravel. To accommodate a nature-filled interior within a constrained site, shrubs and trees were planted directly into these gravel pits. Rather than treating greenery as a peripheral or potted addition, the architects integrated the living natural elements into the primary structural and living volume, creating a porous domestic core that challenges the standard timber-clad enclosure (Johny, 2012). The earth material was replaced by raw concrete without timber cladding like the rest of the house and similar to the House in Takaya, ALTS designed foot steps on the gravel to mimic the traditional stepping stone in Doma. The sunken level and the materiality defines the space as intermediate domain without harsh threshold and double-height ceiling brings in natural light filling the space with warmth and sunlight.



Figure 13: Kofunaki House | ALTS Design Studio (gricco, 2011)

### 4.3.2 Effects on Circulation and the Domestic Landscape

The integration of the earthen floor fundamentally erases the traditional hierarchy of the domestic program.

- Integrated Pathfinding: Wooden boards are inset into the gravel patches as stepping stones, ensuring a secure foothold for residents

navigating between the kitchen, living area, and bedrooms. This mechanism provides a tactile, sensory experience of the ground plane while organizing movement through the loose material.

- Vertical Continuity: The idea of the stepping stone is extended into the upper levels via open-riser stairs. This design choice suggests a continuous vertical movement through a forest landscape, blurring the distinction between the horizontal floor and the vertical circulation axis.
- Tactile Permeability: The use of gravel and timber in the Doma space creates a soft boundary system. The interior is no longer a sterile box but a textured environment where the residents' movement is dictated by the placement of natural elements.

This project represents a transition from the barrier elements prevalent in modern urban housing, where land constraints often mandate a lack of external gardens. By replacing potted nurseries with integrated rock gardens, the house achieves the atmospheric quality of a traditional minka within a contemporary context.

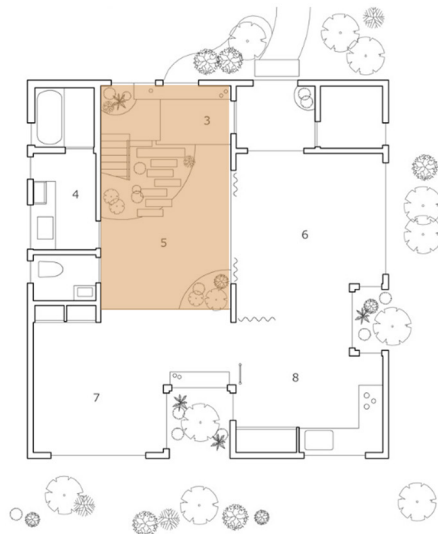


Figure 14: Kojunaki House Floor Plan (grieco, 2011)

## 5. Conclusion

The evolution of the Doma within contemporary Japanese residential architecture represents a profound morphological shift, fundamentally altering the spatial principle of Ma from a linear, horizontal buffer zone located at the periphery of the dwelling into a centralized, vertical, three-dimensional volume. Historically embedded within the machiya as a shadowed, earthen floor, the traditional Doma functioned as a utilitarian threshold. The primary function of Doma was to separate public realm of the street and the private, elevated quarters of the home through a strictly horizontal sequence (Zhang et al., 2025). Dictated by the structural rules of movable planes and heavy roofs that restricted natural light, this traditional iteration of Ma was a space designed to be passed through flatly, celebrated for its heavy shadows and dark, linear progression. However, the pressures of high-density urban environments, severely narrowed plot sizes, and a modern requirement for natural light and structural efficiency have rendered these dark, horizontal tunnels functionally obsolete in the contemporary era (Yamaji & Kiyama, n.d.). Through a architectural analysis spanning historical baselines to modern interventions, this thesis has demonstrated that the survival of these essential intermediary spaces has necessitated a radical reconfiguration of their geometric and spatial limits.

The crucial transitional phase, acting as a theoretical and physical bridge between heritage preservation and modernization, is articulated in the restoration works of architects such as Shigenori Uoya. In projects like the Kyoto Moyashi House and the Container Machiya, the traditional horizontal sequence of the Machiya is deliberately dismantled and reconfigured into a vertical spatial void (Uoya, 2024). The strategic subtraction of ceiling plates to re-establish the traditional smoke void as a contemporary light-well, alongside the transparent glazing of Doma proves that historical footprints can be retained while fundamentally altering the internal spatial volume. These interventions validate that modifying spatial volume to introduce light can effectively adapt historic structures to contemporary needs. Consequently, they support the transformation of the Doma from a passive, unheated climatic buffer into an active core that bridges past and future design principles.

Firms such as Suppose Design Office and ALTS Design Office have continued Uoya's transformation in their work and have contributed significantly in revitalizing obsolete traditional architectural elements. In contemporary iterations such as the House in Takaya and the Kofunaki House, the Toriniwa have broke through its historical marginalization at the edge of the home to become the primary living landscape, wrapping around independent room volumes to create a central, internalized cloister (grieco, 2012; Griffiths, 2018). The Toriniwa which was pushed to the peripheral of the house in traditional Japanese architecture have moved into the centre of the homes by removing the traditional threshold and its structural and functional limitation. As a result inhabitants are allowed to experience the shifting outdoor phenomena of light and air while remaining protected within the internalized architectural envelope.

Ultimately, this research confirms that while the geometric manifestation of the Doma has undeniably transformed from a flat, planar surface into a vertical, three-dimensional volume to satisfy the demands of dense modern cities, its inherent function has successfully remained intact. The fundamental architectural purpose of Ma, to dynamically mediate between the outside and the inside, and to seamlessly connect disparate spatial qualities, has not been lost. By mutating the traditional service threshold into a volumetric void, contemporary architects have preserved the indispensable psychological and spatial experience of transition. The modern Japanese house thus continues to operate as a relational framework, proving that the deeply ingrained cultural necessity for an ambiguous, in-between realm can survive, and indeed thrive, through deliberate volumetric adaptation.



*Figure 14: Kojunaki House Floor Plan (grieco, 2011)*

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