THINKING INSIDE THE BOX:
TRACING JAPAN’S TRADITIONAL DESIGN IN MODERN JAPANESE ARCHITECTURE

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Dedications

This dissertation is dedicated to my family for believing in me since day one. Through all the ups and downs, I cannot express in words how much it means to me for supporting me and being there when I needed help the most.

Mom, Dad and Timmy, this is for you.
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Abstract

With the world advancing at such a fast pace, often culture and identity are lost to the global trend. Through each pass of global iterations, a little more of the base culture is lost, resulting in a design that is more and more part of the global identity. This is occurring more often across the globe where countries are losing their own rich cultural identity and submitting to the global trend. Specifically looking at Japan and the modernist trend that swept the nation, I analyzed the elements of Japanese designs stood the test of time and global trends. By studying Japan during its modernist era, I could identify these elements due to the minimalist and pure nature of the trend.

What this resulted in were the bases of Japanese design that always maintains and thrives upon, creating their own architectural identity that will always be a part of whatever trend may affect the nation. Through this research methodology, I was able to grasp what the roots of Japanese design are and what ultimately goes into each iteration of design that goes through the nation. In turn, a similar methodology can be used when identifying other nations’ cultural base and seeing how another nation’s culture is preserved through each iteration of global design.
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0.0 Introduction

Is modernism confined to just a box? Through decades of interpretation and understanding Bauhaus principles, this has served as an origin point for modern architecture. Early on, Bauhaus architecture was defined by its pure geometries and creation to serve as functional design by combining both art and function. These ideals paved the way for modernism and were interpreted differently through the many architects that the Bauhaus educated. As time went on, modernism slowly faded and evolved into the different styles of today such as contemporary architecture. But is today just a recycled, reinterpreted version of modernism that has adapted to today’s design style?

Design today isn’t thinking outside the box, but still in fact is the box from which these ideas seemed to have originated. Modernism still holds its strength visibly in today’s design but has undergone its own adaptation; the box never left our designs. The box as an origin point of architecture serves as a pure form of design and function: a floor, walls, and a roof. Without these, design cannot occur.

In today’s contemporary architectural style, the box is in fact alive and well. In the past, the idea of the box to be pure was embellished by the fact that the form indeed was pure, a box with little to no excess of detail placed upon itself. Today, the box is still pure in its own sense. While the form of the box may be incomplete, instead we look at the reinterpretation of what composes the box: its floor, walls, and roof. By changing how these details are combined, the box is reinterpreted in today’s world and by doing so allows us to see what’s been done to the box, rather than seeing the box itself.
Contemporary architecture is a call out to what modernism is in today’s society, an adapted version of the pursuit of the box. Though the pursuit of this pure form differs visually, the principles stemming behind it are still the same, a call to form and function. Another example of a principle transcending both time periods is the idea of excess. In the past, eliminating excess meant trimming off the ‘decorations’ of a building where today’s contemporary idea of excess could even be the very elements that make up the box.

What contemporary architecture is today is a resurgence of modernist architecture’s pursuit of the form of the box. By looking at historical examples of what was defined as pure form, a derivative of these masses can be seen in today’s world. The same could be said for the opposite, where today’s box design can be ‘filled’ back up and represented as modernist design from the midcentury.

History is meant to repeat itself time and time again, and the contemporary style is a repeat of modernism adapted with today’s technology and design. Although each generation may stem from the same form of the box, through each generational interpretation, something new is created. Each time a new architect gets their hands on the box, something is learned and something is changed.

During this investigation, each individual section that is expanded upon is a base in which Japanese architecture stems from. This topic is meant to be a guideline investigation into the idea of what the pillars of Japanese architecture are and how through each iteration of new wave of architecture, Japanese design adapts to the trends and ultimately survives aesthetically as well as culturally. The three primary pillars of architecture in which I investigated during this process are space, nature, and materiality;
three key components in identifying and understanding the Japanese culture architecturally.

These three points of investigation are what held a consistent amount of strength, rigor and discipline through the modernist design paradigm shift. I feel as though the three points serve as a basis as well when a new design paradigm shift is introduced, thus can be taken into each iterative generation and investigate how Japanese design adapts to each trend.
1.0 Platonic Shapes and Origins

Modernism’s attraction to the boxed form can be traced back to geometric comprehension and understanding. Plato first thought of the platonic forms as means to understanding elements and how the world was composed. Each of the unique shapes that were understood as platonic solids represented an individual element of the world. Of these solids, the cube or the hexahedron gravitated towards the idea that the shape or ‘element’ was a representation of the earth due to its ‘stackable’ properties as a cube versus the other solids, the tetrahedron (fire), octahedron (air), icosahedron (water), and the dodecahedron (the universe/Aether). From the definition of the cube, the shape is created by putting 3 squares together, meeting at a single vertex, and adding three more in order to create a perfect solid with six faces.

By analyzing the different shapes that composed these solids breaks down the understanding of what these shapes do to us on a psychological level. By breaking down the cube, we are left with the square or the quadrilateral. This shape has been sought after due to the idea that the form itself is stable; “They’re familiar and trusted shapes and suggest honesty. They have right angles and represent order, mathematics, rationality, and formality. They are seen as earthbound. Rectangles are the most common geometric

Fig. 1 | Picture of assorted squares
shape encountered… Squares and rectangles suggest conformity, peacefulness, solidity, security, and equality.”¹

“Circles have free movement. They can roll. Shading and lines can enhance this sense of movement in circles. Circles are graceful and their curves are seen as feminine. They are warm, comforting and give a sense of sensuality and love. Their movement suggests energy and power. Their completeness suggests the infinite, unity, and harmony.

Circles protect, they endure, they restrict. They confine what’s within and keep things out. They offer safety and connection. Circles suggest community, integrity, and perfection.”²

Lastly, the triangle of the basic shapes suggests; “Triangles can be stable when sitting on their base or unstable when not. They represent dynamic tension, action, and aggression. Triangles have energy and power and their stable/unstable dynamic can suggest either conflict or steady strength. They are balanced and can be a symbol for law, science, and religion.

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Triangles can direct movement based which way they point. They can be used to suggest familiar themes like pyramids, arrows and, pennants. Spiritually they represent the religious trinity. They can suggest self-discovery and revelation.

The strength of triangles suggests masculinity… Triangles can be used to convey progression, direction, and purpose.”

The understanding of these basic shapes could be seen as the establishment of architecture globally. By looking at what a rectangle does in terms of plan and organization, it establishes a space and can create an optimal plan for the maximum space allocation. Through the many centuries of architecture and design, the rectangle/box has always served as the most efficient means of design and has stood the tests of time.

1.1 From Bauhaus to International Style

During the beginning of the Bauhaus architectural movement, a deeper investigation into why the box worked as a whole was explored. It was those educated through the Bauhaus ways that followed the term “form follows function” as a way to establish forms that were livable as well.

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Bauhaus architecture was meant to serve as a “rational” way of designing and being able to rapidly provide social housing for the workers. Corbusier’s design of the Dom-Ino House was a means to create a prototype to a form of mass production of housing.

![Villa Savoye by Le Corbusier](image)

By creating a mass production typology, this would create a design that could be more cost effective, easily fabricated, as well as easily mass produced. Though this design never was ultimately created, the ideas behind it propelled the international style forward and created a clean design approach that was also the most functional, combining both industry and minimalism where the box was seen as a pure form of design.

The international style can be identified by its adaptation of the box as its base form as well. During the time of the international style, the box became glorified for its purity and elegance as a form. Aside from the box, the international style was composed of some of the following details: i. Utilitarian materials such as concrete, steel and glass,

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ii. flat roof, flat, iii. smooth untextured surfaces; flat unornamental planes, iv. Glass curtain walls. Aside from these details, international style followed 5 points of design:

   i. Pilotis
   ii. Free plan
   iii. Ribbon/strip windows
   iv. Free façade
   v. Roof gardens

Fig. 6 | Dom-Ino Project by Le Corbusier

This international style that was born of the Bauhaus era principles signified a type of design that would influence the architectural world for many years. A visible manifestation of the box in the international style can be traced to both Phillip Johnson’s Glass House as well as Mies Van Der Rohe’s Farnsworth house. Both designs exhibited the details and purity of the box as a form as well as the principles of the international style. Compared back to Corbusier’s Dom-Ino House, the evidence of evolution of the box and adaptation is clear to see decades later.

Fig. 7 | Farnsworth House by Mies van der Rohe

During the era of the international style, this type of design was a way to more or less ‘eliminate’ style by losing and cutting off excess details the resulting architecture is a pure mass/form. By eliminating style and excess, the mass left over was often the pure form of a box, which is what would be replicated across the globe and adapted individually to each location.

1.2 Adaptation to Each Location; Modernism’s Birth

Each of these boxes that would become adapted across the globe gave birth to their own unique contribution to the international style. Dependent on the location, there were many different influences, whether it be climate, locally available materials, or cultural impact. Each of these original boxes becomes its own unique architectural identity, while still holding true to the form of the pure box.
As time progressed on and modernism took the world by storm, the design principles that shaped it closely resembled that of the international style. Such details included:

i. Form follows function

ii. Simplicity and Clarity of forms and elimination of unnecessary details

iii. Materials oriented 90 degrees to each other

iv. The celebration of materiality

v. Industrial produced materials; the adoption of the machine aesthetic

vi. A visual emphasis on horizontal and vertical lines

These ideas were very similar to what shaped the international style. The box was still seen as a pure form, though during this era the identity of the box was reinterpreted.

Through these different eras of architecture one thing stayed the same: the box. Though Robert Venturi coined the phrase opposite to Mies Van Der Rohe’s “less is more” and instead stated “less is a bore”\(^8\), I believe that the design principles followed through in the modernist era were a solid foundation to the definition of what the box represents, a pure, disciplined form. With the lack of ornamentation and simplified design, the principles of design that have stemmed from Bauhaus architecture are still

strong and visible in today’s design. Just as the box had adapted long ago, the box continues to adapt and transform today. This idea that the box has survived and transcended time and culture is what I believe some of contemporary design feeds into today as well.

Each unique design on the previous page is an example of how contemporary architecture has taken the box and reinterpreted though today’s standards. These boxes each convey unique materials and design standards adapted to multiple locations. The top image is from Architect Byoung Soo Cho and his reinterpretation of the box in the form of his Earth House. This box goes against the traditional norm of how a box should interact with the land and instead the box is placed underground. The next example is the Safe House by KWK Promes where the user can adapt the box on a regular basis dependent on how much privacy the occupant wishes for. Lastly is an example in Hyogo, Japan by Love the Life Studio architects where local materials were used to create a unique house.

Through each of these architectural eras, the box has remained as an originating point and manifested in its own unique way each time. In the past, the pure form of the box was originally used due to the industrialist era of the Bauhaus design maximizing the full spatial potential of each object. As time went on the International Style began to replicate the box all everywhere in the world with very little to no ornamentation. Modernism pushed the design of the international style further by embracing the box while still adapting to current trends.

Eventually, the modernist influence reached across the world and had its own unique impact upon these different locations. Looking into Asia specifically, the
modernist design principles were comprehended and then later reinterpreted and adapted to the local sites, thus creating a new style of architectural modernism unique to each place. But what ultimately justifies the differentiation between the East and the West? Is it something only skin deep such as the choice of materials or is it the designer alone that defines it as Eastern and Western Modernism? I believe that it instead goes deeper, down the root culture of each location that had its own profound influence upon each design.

Traditional American Modernism comes from the understanding and reinterpretation of the International Style, which comes from the Bauhaus Design Principles before itself. Each of these styles, though appealing in each of their own accord, come from a design environment where “form follows function” overruled every design aspect. The designs that are created from it are an industrialized, functional form with little to no ornamentation or excess on the buildings, are easily ‘replicated’ across the world, and leave little to no room for any external design influences; a blank slate is created.

1.3 Modernism in Asia

By taking the modernist design and putting it into Asia, a new understanding and adaptation of this design style occurred where a noticeably different modernist style began to take root. What began as Western Modernism was changed into its own unique interpretation of Eastern Modernism that was noticeably different than its predecessor. But what made it so different? I believe that it is due to the fact that Western Modernism

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comes from an architectural style that relies on the purity of the form to establish itself as an identity rather than cultural influence of its surroundings.

In Asia, the design principles of Western Modernism were understood and taken back to their respective countries where a reinterpretation of design could occur. Where Western Modernism had little to no culture influencing design, Eastern Modernism thrived from the combined cultural influences such as local design principles, historical relevance as well as unique material usages to create their own distinctive modernist design approach.

1.4 Japan, Land of the Rising Sun Born from Shadows

The purpose of this study is to attempt to identify Japanese influence using the seminal text, *In Praise of Shadows*. Analyzing and cataloguing the cultural changes and adaptations will break down further what components make up Eastern and Western Modernism. Though they may seem similar, the qualities that go into them differ greatly. The author Junichiro Tanizaki brought to attention the differences of influence of culture in 1933 in his novel, *In Praise of Shadows*. Throughout the reading, Tanizaki compares the differences between Eastern and Western design from simple aspects such as pens and brushes all the way to the quality of light. A defining statement through his novel:

"Paper, I understand, was invented by the Chinese; but Western paper is to us no more than something to be used, while the texture of Chinese paper and Japanese paper gives us a certain feeling of warmth, of calm and repose. Even the same white could as well be one color for Western paper and another for our own. Western paper turns away the light, while our paper seems to take it in, to envelop it gently, like the soft surface of a first
snowfall. It gives off no sound when it is crumpled or folded, it is quiet and pliant to the touch as the leaf of a tree.”

A simple comparison between the qualities of paper has brought such a deep level of thought and pondering upon how much different Eastern and Western design can be. Throughout the novel, Tanizaki sides with traditional Japanese aesthetic and how much more culturally rich it was versus Western design. I believe that my analysis will delve into how much different Eastern Modernist design is from Western Modernist design through culture.

Throughout the text, the running theme is the overall care that the Japanese put into their work creates a more refined product over the Western design. Even when comparing the different technologies, Tanizaki compares the idea that if technology had been paralleled through time in Eastern versus Western context, the overall outcome would’ve been different.

“When suppose for instance that we had developed our own physics and chemistry: would not the techniques and industries based on them have taken a different form, would not our myriads of everyday gadgets, our medicines, the products of our industrial art—would they not have suited our national temper better than they do?”

He discusses the designs that Japan was given from the West do not accomplish the same thing as Western design, but instead harm it by not properly adapting to Japanese design. He states that at an old Japanese restaurant in Kyoto, once praised for its


atmosphere had starkly changed when electric lamps and lights were used in place of candlelight. These lights that replaced candles were modeled in the design of classic Japanese lanterns, yet did not give off the same quality of light from them. Instead the classic elements of Japanese design such as the rich darkness of shadows, and the smoky patina on the lacquerware are lost in the harsh light.

“And I only realized then that only in dim half-light is the true beauty of lacquer ware revealed... The quality that we call beauty, however, must always grow from the realities of life, and our ancestors, forced to live in dark rooms, presently came to discover beauty in shadows, ultimately to guide shadows towards beauty’s ends.”

The analysis of the richness of the shadows shows the level of thought that went into designing in Japan. In Japan, the shadows were welcomed, made part of the whole form, taking in the little amounts of light to accentuate the fine details of wabi sabi design ranging from the patina in the lacquer ware to the natural stain of wood through time. Compared to Western design, the idea of shadows is pushed out from the design. Compared to Japan however, it is the shadows that show strength of design through classic Japanese architecture where darkness is welcomed rather than shunned.

“The quality that we call beauty, however, must always grow from the realities of life, and our ancestors, forced to live in dark rooms, presently came to discover beauty in shadows, ultimately to guide shadows towards beauty’s ends.”

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It is in the strange nature of the shadows that classic Japanese architecture thrives from and is yet another design element used in traditional Japanese architecture. Comparatively today, the difference between Eastern and Western modernist design is a reflection of this conflicting design philosophy of the past. Tanizaki insisted upon the fact that had design and tools be borrowed instead of given to Japan, so that these things could develop at their own rate to the culture that they were meant to embellish.

1.5 Iterations of Japan and Maintaining Identity

Western Modernism did this as well; by offering itself as a guideline to design, local architects of Japan were able to take the Western Modernism design paradigm and mold it into something of their own accord. What started originally as Western Modernism can still be traced in the designs, though with local cultural influence and other factors, it has become something new.

Contemporary architecture still remains true to the box, but once again was reinterpreted and adapted to today’s methodologies. The box has never left the design process but was instead reinterpreted each generation. Each generation of architects interpreted the box in their own way and created beautiful pieces that were able to exercise restraint and keep true to old design principles while still keeping it culturally relevant; the box has stood the test of time and has adapted to each generation of architectural interpretation.

By looking at the different interpretations of the box in Japan, I believe that a design analysis of the architecture can yield information as to how Japan took existing Western Modern design and infused its own unique cultural influences upon it. Japan
took original Western Modernist design principles and reinterpreted and adapted their own unique designs. Today’s architecture in Japan holds onto design philosophies by reflecting it through contemporary architecture. By studying the simple, yet complex box form of Japan, I can document the cultural reinterpretation of modernist design in today’s contemporary architecture.

Through my investigation, I have catalogued and documented the adaptation of the box through Eastern and Western modernism and created an outline of what entails in the details of the box; by doing so, I am able to show the evolution of the box and its corresponding adaptations by generation. Specifically, through cultural influence, by studying the box form, I have been able to see the unique adaptation from the original box to each generation-specific influence.

The box served as an icon to what international style was; an easily replicated, cheap to produce, global commodity that could be applied anywhere in the world. It was a design that could transcend through borders and establish itself wherever it saw fit, creating a familiar environment no matter the location where in today’s society, the international style of the past is more so a form of globalized style. This in turn is a resurgence of what the international style once was, an eraser or architectural identity.

However, today’s society is more culturally sensitive, adapting to trends while still maintaining cultural identity, something that is become a rarity in its own to a sense to the globalized identity melting pot, similar to the bitcoin as a form of currency, devoid of any singular nation that can in turn be used locally once it has been adapted. The box from the international style follows this same paradigm of the bitcoin, devoid of any one
nation. In turn, just as the bitcoin can change into a specific currency, so too can the box change and adapt into local culture; the box becomes localized rather than globalized.

By stripping down all the excess of the box form, I was able to understand each generational interpretation more clearly due to the simplicity of the box; though the box may be simple, it is the purity of what it is that makes it complex. This has allowed me to study the direction that architecture is going in today as well and create my own design synthesis of what the box represents in today’s architectural world and where it will go in the future.

1.6 Japanese Modernism Today

The designs of Japanese modernism can be looked at in a way that doesn’t shy away from tradition, yet does not fully embrace the new western trend. Instead, Japanese modernism walks a line in between the two realms where it does not forget the culture that it came from while understanding and interpreting the new ideas of the world. The international style that existed prior to the modernist era was a form of western thinking where the exclusion of any prior culturally relevant or sensitive design could not exist upon this design typology.

“To "modernize" a house in America after the Second World War meant banishing the banisters and moldings and erasing any traces of the traditional. But in postwar Japan, after the tsunami of Modernism swamped the country, the Japanese accepted the new without rejecting the old. Today a Japanese couple might wear Armani during the week but don traditional garb for a wedding. In the Japanese mind, which is comfortable with
ambiguity, the two realities coexist in parallel without conflict or contradiction: Being contemporary does not imply dismissing history.”

Tracing back the split between traditional Japanese architecture to the western Modernist design can be identified after World War II when more western influence came into play in the country of Japan. The architects and designers who led this era were often Western educated and brought back what they learned from their respective schools as well as some new Western design methodologies.

1.6.1 Tadao Ando

An inspiring architect that defined Japanese architecture, this self-taught architect has had a profound influence in Japan and the world. Ando’s western influence came into play when he visited works by Corbusier, Louie Kahn, Mies Van der Rohe, and Frank Lloyd Wright before returning to Osaka in 1968. Utilizing concrete as one of his main materials, Ando has created pieces of work that use the heavy material with such finesse, making timeless pieces of work that dance with light, nature and wind. A pioneer in the modernist movement, Ando’s unique designs are an example of Japan’s adaptation to Western ideas, while still maintaining its cultural identity through modern design. He established Tadao Ando Architects and Associates in 1968 in Osaka, where it still remains to this day.

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1.6.2 Shigeru Ban

Known for his designs using the unique material cardboard, Shigeru Ban has been able to create temporary structures from this new material never before used in architecture. Educated at The Southern California Institute of Architects from 1977-1980 and later Cooper Union, he went on to go work under Arata Isozaki for 2 years before opening his own firm. His designs using compressed cardboard have allowed for quick creation, little waste produced, and a unique design aesthetic achieved through a new material investigation. Winner of the Pritzker Prize in 2014, Ban has defined himself as a truly unique architect that combines cardboard with both Japanese and Western modernism.

1.6.3 Kengo Kuma

An architect that graduated from the University of Tokyo in 1979, he became a front-runner in leading Japan’s contemporary design scene. Kuma’s designs philosophy revolves around “the poetics expressing the emotional content of materials, connected with their intrinsic characteristics in construction and with the teachings of Japanese tradition.” Aside from being an architect, Kuma has also established himself as a professor at the Graduate School of Architecture of Tokyo University and also has been a visiting professor at the University of Illinois and Colombia University.

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1.6.4 Kenzo Tange

Educated through the University of Tokyo’s architecture department from 1942-45, Tange went on to create numerous iconic designs as well have his hand in leading the Metabolist movement. Drawing inspiration from Le Corbusier in high school, he brought modernism and western thinking into the Japanese architectural scene when he worked on the Hiroshima Peace Center. Aside from initial inspiration from Le Corbusier, Tange was inspired through the 8th CIAM (Congress Internationaux d’Architecture Moderne) conference when he attended in 1951. It was during this time that he was able to present his ideas of the Hiroshima reconstruction to these famous western architects and be further influenced with western ideas. Winner of the Pritzker prize in 1987, Tange has had a profound influence of modern architecture in Japan today.

People of different backgrounds came together and were educated under one typology that would be taken back to their countries and interpreted in unique ways of their own. In this sense, a person from the US who was educated at the same place as a person from Japan for architecture would have designs that were similar, yet completely different at the same time.

Paralleling back to Tanizaki’s quote about how if technology was developed independent of the Western industry, the design of Japanese Modernism follows such a path.

“In fact our conception of physics itself, and even the principles of chemistry, would probably differ from that of Westerners; and the facts we are now taught concerning the nature and function of light, electricity, and atoms might well have presented themselves
in different form. Had we devised independently at least the more practical sorts of inventions, this could not have had profound influence upon the conduct of our everyday lives, and even upon government, religion, art, and business. The Orient quite conceivably could have opened up a world of technology entirely its own.”

Modernist architecture in Japan follows such a design path utilizing different design elements versus western ideas, and while these ideas and materials vary, they ultimately create a completely different product that identifies itself independent from Western designs.

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16 Junichiro Tanizaki, In Praise of Shadows (New Haven, CT: Leete’s Island Books, 1977), 19
2.0 Space or “Ma”

“An empty space is marked off with plain wood and plain walls, so that the light drawn into its forms dim shadows within emptiness. There is nothing more. And yet, when we gaze into the darkness that gathers behind the crossbeam, around the flower vase, beneath the shelves, though we know perfectly well it is mere shadow, we are overcome with the feeling that in this small corner of the atmosphere there reigns complete and utter silence; that here in the darkness immutable tranquility holds sway.”

Throughout the centuries of Japanese design and architecture, space has served as a pinnacle basepoint from which design stems and originates from. According to Louis Kahn, “Architecture is the thoughtful making of space. The continual renewal of architecture comes from the changing concepts of space.” A space can be defined as a volume, yet until it has a function, it is not a space.

2.1 The Spatial Dimensions of Japanese Voids

When defined throughout architecture, space is what ultimately becomes the occupied volumes located throughout a design that create moments for users to experience. Japanese architecture is no stranger to space and instead has its own unique comprehension of how spatial organization and comprehension become an integral part of design. Japanese spatial understanding can be traced back centuries to the initial

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17 Junichiro Tanizaki, In Praise of Shadows (New Haven, CT: Leete's Island Books, 1977), 33

The concept of “ma”, which translates roughly to “gap”, “space”, or “pause”.¹⁹ Through the understanding of the break between the spaces, Japanese design created a spatial sequence and organization that still can be traced through today’s modern interpretations. Almost every aspect of space in Japanese architecture originates from the concept of “ma” and how the word is combined with other pieces to create deeper meanings that exemplify the different spaces used throughout Japanese design. Each of the following excerpts from the Kyoto Journal by Gunter Nitschke dictate a portion of the spatial composition that ultimately created and shaped Japanese design.

2.1.1 One-Dimensional Realm

- 梁間 (hari-ma) or Beam span

Here ma denotes a line in space, a measure of length or distance. From ancient times Japanese architecture was based on wooden post-and-beam construction. The distance between the centerlines of successive posts — the hashira-ma — evolved into the basic structural unit of the traditional Japanese wooden house. To signify this carpentry measure, the word is ken. Over time and in different regions of the country the ken varied in length from about 10 to 6 feet. By the 16th century, all column sizes and timber dimensions were expressed as fractions or multiples of ken. The

sizes of the rush mats which evolved into tatami were also originally derived from the *ken*.

### 2.1.2 Two-Dimensional Realm

- 六畳の間 (roku jo no ma) Six-tatami room

Ma combined with a number of tatami mats denotes area. For a Japanese, however, a reference to a room of a certain number of floor mats would also instantly call to mind a particular usage, interior makeup, decoration and height. Since the adopted of the tatami in Japanese residential architecture about 500 years ago, there have been two ways of expressing land area: the *tsubo*, an area one ken square measured from the centerlines of the columns; and *jo*, the area covered by one tatami. Neither is an exact measure. The tsubo does not respect the thickness of the walls, while tatami sizes vary from region to region. For modern construction, the square meter is always used.

### 2.1.3 Three-Dimensional Realm

- 空間 (ku-kan) Space (literally: empty place)

The first character in this word originally stood for a “hold in the ground,” and later took on its present meaning of a “hole in the universe” or “the

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sky.” Ono Susum suggests that the ancient Japanese divided space vertically into two parts. One was *sora*, which was understood as absence of content, emptiness. The other was *ame* or *ama*, which was the opposite of *kuni* and thus meant an earthly area of habitation and rule.

Today ku is used for “empty” in the simple physical sense, and for “void” in Buddhist metaphysics. The compound ku-kan and for “void” in Buddhist metaphysics. The compound ku-kun is of recent origin. It was coined to express the concept of three-dimensional objective space which was imported from the West, for which the Japanese language had no word of its own. (The Western concept was, and still is, inherently static and unchanging, without any dynamic sense of variation or human subjectivity. It is merely three-dimensional.)

Thus ku-kan compounds two characters which are charged with independent meanings by long Chinese and Japanese cultural traditions including Buddhism. These traditional meanings soon influenced the compound, yielding a meaning different from the original intent, and causing some obvious confusion in postwar architectural writing.

The structure of Japanese dictates a linguistic description of space different from that of European languages, as illustrated in the following combinations of ma with other characters.

- **土間** (do-ma) Work space (literally: earth place), especially in farmhouses with stamped-earth floors
- **間引く** (ma-biku) To thin out (literally: to draw or pull space), making room for plants to grow

- **貸間** (kashi-ma) Room to let

- **茶の間** (cha-no-ma) Tea room; because of the word “cha” (tea), this denotes space in the home where guests are entertained or the family gathers

- **床の間** (toko-no-ma) Display alcove in the traditional Japanese sitting or guest room for a scroll, flower arrangement or object d’art.

  The *toko-no-ma* is at once a spatial and an aesthetic concept, and furthermore as an important social connotation in Japanese life. Classically it constitutes the unifying focus between host and guest, through an act of creation on the part of the host and an act of appreciation on the part of the guest.

- **虎の間** (tora-no-ma) The Tiger Room (literally, place of tigers) is the name of a room in the abbot’s quarters at Nanzenji in Kyoto.

  The dominant decorative motif on the sliding doors becomes the qualifier of the entire space, a common custom in mansions, castles, temples and present-day hotel ballrooms. The naming of places, manmade or natural, is a universal means of giving meaning and identity to a lived or existential space.

- **鏡の間** (kagami-no-ma) Dressing room (literally: mirror room) separated from the noh stage by a curtain. This is the place
reserved for the magical transformation of the actor, via the
donning of the spiritually-charged noh mask, and the meditation or
inner-reflection involved in facing the full-length mirror.²²

2.1.4 Fourth-Dimensional Realm

- 時間 (ji-kan) Time (literally: time-place)

  This is abstract time, with no indication of length, beginning or end.
The ji character, which incorporates the radical for “sun,” is said to have
denoted “forward movement of the sun” in ancient China. In Japanese the
character is also pronounced toki, perhaps from the very old Japanese
verb toku, to melt or dissolve. Thus “time” is expressed in Japanese as
“space in flow,” making time a dimension of space. Indeed, time is
essential to human experience of place.

  - 瞬間 (shun-kan) A moment (literally: a blink or twinkle of time)
    existential space.
  
  - 間に合う (ma-ni-au) To be in time for (literally: to meet the time)

  - 間もなく (ma mo naku) Soon (literally: in no time)²³

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2.2 Experiential Space, Breaking Time Up

Each of these spatial qualities and volumes add to the composition of Japanese architecture and how these spaces become perceived. Despite having parameters designed around spatial quality, these volumes also become unique experiential outlines as well. Iterative of the different aspects, experiential spatial quality becomes another element of Japanese design dictated by space. Through these different spatial qualities, a grounded understanding of Japanese design begins to emerge, thus dictating how spaces can be combined and sequentially ordered. By creating an order to the spaces, experiences from them are born.

The path through a place can be broken down into experiences that each of these realms encompass. Tying in with the fourth-dimension excerpt of time and space, experiences are part of a “time-structured process”\(^2)\). By breaking down an experience into smaller sections of time, more can be observed, thus obtaining a greater value towards space.

Nitschke compares this to the idea of unrolling a scroll or even walking through a gardens rock path, each of which break apart time in their own way. The scroll is meant to be unrolled, moving the space of the scroll, so that each second passing is a new memory that a user can latch onto.\(^2)\) The beauty of the scroll comes from the fact that not all is shown at once, but instead segments as the piece is unrolled. Similarly, this is how


“ma” is experienced as well, allowing for the user’s field of vision to move across the different spaces, seeing each piece of the space as its own entity.

This same concept of “time-structured process” can also be found when experiencing nature. The idea of breaking up time instead comes from breaking up the user’s movement which is accomplished by careful, strategic placing of stepping stones (tobi-ishi). By controlling the frequency and location of the stones, people are forced to speed up, slow down, stop, or even turn along the path compelling the user to rush through, delay, halt, or defer from their original path. By doing so, the user is given an altered experience through nature, one that is carefully intended by the designer.

2.3 Space in Art, Balancing A Composition

When taking into account the aesthetic composition of traditional Japanese art and calligraphy, the pieces are contradictory to their western counterparts. In the realm of western art, designs fill up the entire canvas, balanced by the careful placement of each component in the composition. Compared to art and calligraphy from Japan, these compositions instead are beautified by the balance of the composition against the empty space of the art.

This concept again originates from the root word “ma” and dictates a delicate balance between the form of the characters as well as the surrounding non-form. Japanese calligraphy art becomes a simple, yet highly disciplined form of art that takes into account the fourth dimension of time and space.

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"The proper appreciation of calligraphy also takes note of the dimension of time, for calligraphy is more than simple painting or drawing. It is an intricate mixture of poetry, dance and action painting. It is not only the placing of form into space, but also the marking of rhythm in time - the traces of the movement and speed of the brush."\textsuperscript{27}

\textbf{2.4 Space in Drama, Noh, A Synthesis of “Ma”}

Aside from the two-dimensional art realm exemplifying the fourth-dimensional realm, there exists a three-dimensional art that also encompasses elements of the fourth dimensional realm. The drama form known as Noh is the synthesized product of the different aspects of “ma”, creating drama and tension using both space and time as factors. As Komparu Junio quotes, “What [the actor] does not do is of interest” (\textit{Senu tokoro ga omoshiroki}). Indeed, Komparu Kunio regards noh as no more nor less than the art of ma: the staging is meant to “create a constantly transmuting, transforming space [ma] of action”; the acting, to do “just enough to create the ma that is a blank space-time where nothing is done”: the music, to “exist in the negative, blank spaces generated by the actual sounds”\textsuperscript{28} and the dance, to acquire “the technique of non-movement.”

Whether it is the voice of the actor, how they transition across the stage, or even the pauses of actions, Noh is the art and understanding of “ma”.

“Noh is the supreme expression of the art of ma, combining all the aspects into one great symphony. It epitomizes the traditional Japanese artistic preoccupation with dynamic


balance between object and space, action and inaction, sound and silence, movement and rest.”

The concept of “ma” serves as a base for which space is conceived in Japanese architecture. Through the clear understanding of the different dimensional values of space, an order is established, creating a guideline to how spaces and volumes are meant to be experienced sequentially. Each facet of the dimensional space understanding offers insight to how important spatial organization is in Japanese design. Despite centuries passing, this concept of understanding “ma” or void spaces is prevalent in Japanese design today and despite its Western influence from modernism, Japanese design maintains its identity showing discipline through the controlled organization of space.

2.5 Western Modernism’s Box, A Singular Space

In traditional Western modernism, often times the form of a design would be a singular volume, a box. This is a direct correlational evolution originating from the International Style, creating an efficient design using the most basic form. As a result, the singular volume would house all the different functions under a single roof.

Specifically examining the Farnsworth House and the Glass House, these designs are a singular volume, each one encompassing all functions and spaces leaving no division amongst the different rooms and transitional spaces in between. With a free plan, the volume becomes a much larger experience, one that is not interrupted by walls or

breaks in the design. This in turn also allowed for views to be framed on a much larger scale, further emphasizing the large volume in which the design occurs.

![Fig. 12 | Plans of the Farnsworth House and Glass House](image)

The free plan unified spaces within a single volume, but at the same time erased a crucial element of design, circulation. In both cases of the Farnsworth House and Glass House, there is no path which the user can walk through, leaving the user without a progressive experience through the space.

2.6 The Box in Japan

The box served as the center piece of modernist architecture and eventually made its way towards Japan where it would undergo an adaptation of its own. Tadao Ando was an architect who took the box form and broke it down into something that was adapted from the different aspects of traditional Japanese space. While maintaining the box form,
Ando was able to step away from the original idea of a singular free plan and instead insert multiple boxes into the volume. Doing so, Ando was able to break up and create transitional circulation points at which the user could traverse through.

Ando’s take on the box form was unique compared to the previous Western iterations due to the ability to have multiple functional volumes exist within one form versus a single volume for all functions. By breaking up the volume into multiple pieces, different spaces were created, reflecting traditional Japanese spatial design. The idea that circulation alone could prove an effective transitional point between multiple or singular volumes allows for more experiences to be perceived through the design.

2.7 Engawa, The Space of Circulation

The process of breaking the volume up and creating circulation through the space has been a concept throughout Japanese design. When looking at circulation spaces, there are ways that these volumes and spaces become connected aside from being adjacent to each other. The connecting veranda that has been prevalent throughout Japanese design is
known as the engawa, or space between. This design element has served as a multifunctional space that allows for the connection between other spaces that are located along the path the engawa follows.

Aside from the aesthetically pleasing nature of the engawa, it also grounds design more cohesively with nature, integrating both interior and exterior spaces.

Fig. 14 | A Traditional Engawa

“The engawa carries out the same function of rebuilding and reinforcing the connection with nature. Not only is it a physical medium, an in-between space, it also transforms as the climate changes, because it can be kept open or it can be closed according to temperature. During the winter, it becomes something like a loggia where you can benefit from the view of the outside; in summer it’s a porch-like structure that you can walk on, enjoying the breeze and the sunlight.”

The engawa has survived the test of time and is still integrated in today’s modern designs, offering a break from the built environment and blending the edge between the interior and exterior. Through modern interpretations and adaptations, this classic design element has maintained its importance as an integral piece of Japanese architecture. The modern interpretations that are a reinforcement of the importance of nature as an integral part of design. Today’s designs are also informed by their predecessors where the break between the space is equally important whether it be accomplished by a shoji screen or the immateriality of glass.

2.8 The Shoji Screen, Dividing Light and Space

“A tiny wooden lattice, covered with panes of oiled paper, relatively impervious and resistant to the wind that works as a kind of sliding door and window. The shôji is not transparent… it helps to avoid unwanted glances but when the sun impinges on such a wall, light intensities on its vertical plane are greatly reinforced… when the sky is cloudy the shôji produces pleasant though gloomy interiors… At certain times of the day, if the room becomes too dark the only solution is to slide the shoji and leave the wall open in order to increase light, however, in this process some inconveniences like insects or wind may appear.”

Japanese modernism, exhibits a completely different use of light. Where Western modernism allows in copious amounts of direct light, Japanese modernism lets in controlled amounts of light and is often diffused, similar to how light entered spaces in classical Japanese architecture. One such design element I believe this is drawn from the usage of the shoji or screen that separated the exterior of the house from the interior.

The shoji screen is a powerful design element in traditional Japanese architecture that is capable of controlling the amount of light that could enter the space. Aside from the amount of light entering, the light that did enter was diffused along the oiled paper, illuminating the space through different means than traditional illumination strategies.
“No words can describe that sensation as one sits in the dim light, basking in the faint glow reflected from the shoji, lost in meditation or gazing out at the garden.”

This means of diffusing light versus direct light, I believe, is prevalent in modernist architecture in Japan today. By playing with light as a design element against its traditional usage, it becomes something different, something warmer than the stark sunlight entering the Western modernist designs. Aside from the element of light, it is what interacted with it that made it richer as a design element, wood.

Wood is able to absorb the light and gently reflect the indirect light that is diffused through the shoji screens creating an atmosphere unique to the culture. Though the use of shoji screens is not common anymore, it is reinterpreted spiritually through the usage of diffused or indirect light that makes Japanese modernist architecture unique when it comes to how light is used. Many different Japanese modern architects were able to use light as a design element and create powerful architectural pieces that would

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influence the world.

“The light from the garden steals in but dimly through paper-paneled doors, and it is precisely this indirect light that makes for us the charm of a room. We do our walls in neutral colors so that the sad, fragile, dying rays can sink into absolute repose.”

Today’s use of the shoji screen has altered the materials of the screen, though is capable of paying homage to its origins and its rich effects on interior spaces. Shoji screens today are instead manufactured with different types of glass many times frosted and met with the contrast of a steel frame. In reverence to its origin, the frosted texture of glass allows like to become diffused, leaving a hazy effect on the light. The images on the previous page as well as the following pages show the interaction of light entering a space through a shoji screen as well as its interaction with the different materials inside,

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wood and concrete.

2.9 The Modern Shoji, An Understanding of the Past

In the modern design, shoji screens still maintain their original purpose of separating spaces, and though it may not be directly to the exterior, the shoji screen may act as a door. Contrary to a regular door that doesn’t allow light through, the modern shoji screen can enrich a space with its diffused light, something that classic shoji screens were capable of accomplishing.

Though the modern shoji screen may not necessarily interact with wood anymore, it is the understanding of another material working alongside it that increases the aesthetic value of the screen. In traditional design the combination of wood with the oiled paper offered a unique design element capable of illuminating a space, today’s shoji screens made of steel and glass are left to interact with a new element, concrete.
Glass and Modernism, The Invisible Divide

Glass is a fairly new material to the land of the rising sun and only was used within the past century. Despite being introduced not too long ago; the Japanese have used glass in a way that differs from traditional modernist designs. Comparatively, glass is used in a way to make it transparent, not only in the literal sense, but to blend the exterior with the interior spaces. It is through the reinterpretation of glass down to a cultural level that creates such an effect.

Glass in the traditional modernist sense was used in order to show off the technological advances of the time, such as being able to span large distances without any breaks in it. Much like the usage of steel in the Glass House by Philip Johnson, glass was meant to be embellished and a clear (not in the literal sense) design element that was a reflection of the technological advances during the 1940’s and 50’s. Though by using glass this way, there was a clear definition between the exterior and interior spaces; the
glass was meant to be a divider between the two. To be mentioned in a later chapter more in depth, Western modernism sought to oust nature from the spaces within, while Japanese designs pursued a way to blend the line between the two.

![A foggy view from within the Glass House](image)

**Fig. 21 | A foggy view from within the Glass House**

### 2.11 Blending Spaces Through Immateriality, Glass

I believe that through classic Japanese designs and the importance of the integration of nature within the designs that the utilization of glass as a material became something else, a material that became immaterial. Blending the lines between the exterior and interior in order to create the seamless transition as well as immersion into a space seemed to be a driving force behind Japanese design and its interpretation of the usage of glass. Some Japanese architects today portray this in their work and pursue the classic Japanese design principle.
Architects such as Shigeru Ban have created unique design syntheses that incorporate classic Japanese design alongside modern Japanese design. Ban also expresses finesse when it comes to working with glass. While glass exhibits itself as a transparent material, Ban used it in a way that almost “eliminated” it completely. In the example of his Curtain Wall House in Tokyo, the glass is eliminated by the fact that it can slide and completely open a space.

This I believe parallels closer to the idea of Japanese design with the shoji screens as a way to separate the interior from the exterior, but put upon with a modern twist. The different take upon the shoji screen as well as the walkway that separates it was Ban’s way of creating classic Japanese designs, synthesized together with modern designs and materials.

Aside from Ban Tokujin Yoshioka reflects this idea of immateriality with his interpretation of a teahouse. Constructed almost entirely of glass, this design pushes the idea of immateriality further by creating a unique interpretation of classic Japanese design with modern materials.
“Tokujin came up with the idea of tracing the origin of Japanese culture that exists in our unconscious sensation by perceiving the time that is created along with nature from the teahouse which is microcosmic space and by being released by superficial designs integrating with nature.”

It is through the immateriality of glass in Japanese design that makes it unique compared to that of its Western counterpart in modernist design. By utilizing glass in a way that blends the lines of nature pays homage to traditional Japanese design where there exists an unseen, yet defined border between the interior and exterior space. Thus this creates a unique interpretational usage of glass that is distinctive to Japan.

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3.0 Nature

“One can listen with such a sense of intimacy to the raindrops falling from the eaves and the trees, seeping into the earth as they wash over the base of a stone lantern and freshen the moss about the stepping stones… Our forebears, making poetry of everything in their lives, transformed what by rights should be the most unsanitary room in the house into a place of unsurpassed elegance, replete with fond associations with the beauties of nature.”35

An equally important design element, the environment serves as a connection for the interior and exterior space. Once again in both modernist design styles, the use of nature is treated differently and become two different entities that interact with design. The usage of nature as a design element can be dependent on location, however, the initial idea behind the international style revolves around the idea that each of these designs can be replicated to another location with little to no concern of the surroundings that it is placed in.

3.1 Western Modernism and Nature, Divided Space

Though some of the designs under the international style that fed into the Western modernist style prove successful, the usage of nature as a design element is viewed as something similar to light in a later discussion; it is often not within the space that is dwelled.

As mentioned previously, the examples of the Farnsworth House and Glass House

by Mies Van der Rohe and Philip Johnson respectively, are examples of the modernist box capable of duplicating itself and being sent to locations with little to no regard to the surrounding environment. Though the design of the large glass windows exemplifies Western modernism, they are environmentally impractical due to the high solar gain during the summer and high permeability to the cold during the winter. In each case, nature is viewed from the space within, keeping the worlds separate.

![The Glass House](image1)

Fig. 25 | The Glass House

![The Farnsworth House](image2)

Fig. 26 | The Farnsworth House

3.1.1 Nature in Japan, An Integrated Identity

Contrary to Western modernism, the usage of nature is instead incorporated into the design of the process on the interior of the project. The fact that the landscape was something to be viewed when looking out from the house and integrated into the design holds a bearing to the teahouse ceremonies as well where:

“"The space itself was meant to be small, to not to allow one’s thoughts to wander, but
instead look out into the garden that represented the cosmos”36

Some Japanese garden’s design philosophy can be traced back through Buddhist principles that are intertwined with one another. By combining these principles together, it creates the Japanese garden, a synthesis of design philosophies that despite the centuries of change in the world have still found their place alongside modern architecture as well. Through these designs, some Zen philosophies have found their way into the incorporation of nature’s interaction with the modern architects where they have taken bits and pieces of it in order to create their own designs with regard to their ancestral culture.

With such a deep reverence towards nature, the idea of incorporating it into design would be without question. The integration of nature in the space enriches the atmosphere and gives life to the otherwise a plain volume within the design. Integration

of nature through modernism was approached differently amongst different architects. Whether it was the creation of an interior courtyard or integrating the design with nature to intersect through the design, nature supports an important factor in Japanese modernist designs.

3.2 Integrating Nature in the Built Environment, Tadao Ando

This interaction with nature through modernist design as well as building design show the integration of nature principles in another way aside from just the garden itself. An example of a classic take on Japanese design while incorporating it with new age modernism is Tadao Ando’s Azuma or Row House in Osaka Japan. Already known for his definitive style incorporating concrete into Japanese designs, this house proved to be a pinnacle of what modernism in Japan looked like in the 70’s. Completed in 1975, this design from the exterior façade shows no views out, save for a small entry way in the center.

“An overall form having a gatehouse-like character and a doorway in a central location. In the design of the elevation Ando uses only two rectangular forms: the overall outline of the building, and the doorway. We can also see that the entire site has been divided longitudinally into three parts and that the courtyard too has been divided into three equal parts. Tripartition is applied to the building as a whole and echoed by the rhythm of long-short-long on the facade, namely, wall-doorway-wall.”

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Aside from the stoic exterior, the interior creates a completely different environment that one would expect. The integration between nature and the interior or the design offers a sanctuary away from all the life rushing past it on the exterior. But Tadao Ando created this courtyard not only out of aesthetic, but as an homage to his own culture.

“Ando’s treatment of nature in the city is something else that distinguishes his work. Confronted by the vulgar urban environment of downtown Osaka, he came to the conclusion that coexistence with nature was fundamental to human life. He proposed a new lifestyle in coexistence with nature, which is integrated into the dwelling. It can get extremely cold in winter; on rainy days an umbrella is needed to go to the toilet. Ando gave priority, not to some facile notion of convenience, but to being able to look up to
sky and feel the wind. The courtyard of the Row House is a secluded space cut off from the commotion of the city; it is open only to the sky. It is a window, accepting light, wind and rain so that nature is able to seep into the spirit of the observer. The courtyard, made of concrete, glass and slate, reflects incident light and causes complex shadows. Matter has a psychological effect on the observer precisely because the absence of ornament invites extraordinary empathy.”

Fig. 29 | Water Temple by Tadao Ando

Nature’s influence in Japanese modernist design is something that can be interpreted in another way aside from an actual garden. The importance of the connection between man and nature prove how powerful the synthesis between the two must be in order to create a cohesive design. Japanese modernism creates a bridge between the old and the new to create a place for nature to be able to enter and integrate with the design of the buildings.

Compared to that of Western Modernism, the integration of nature into Japanese modernism was an essential piece of the design, an integrated and cohesive thought process; Western modernism maintained the idea of creating designs with nature surrounding it, rather than allow nature into the space. Classic Japanese design necessitated the integration of nature, compared to that of Western culture and design where the built piece sits atop nature, pushing it away, rather than intertwined with nature, and accepting it into the design.

![Fig. 30 | Benesse House Museum by Tadao Ando](image_url)

3.3 Kengo Kuma, Transparency to Nature

Kengo Kuma is another architect who integrated nature into his designs. Rather than the traditional method of placing nature into his designs, Kuma’s design philosophy follows,

“You could say that my aim is ‘to recover the place’. The place is a result of nature and time; this is the most important aspect. I think my architecture is some kind of frame of nature. With it, we can experience nature more deeply and more intimately. Transparency
is a characteristic of Japanese architecture; I try to use light and natural materials to get a new kind of transparency.”

-Kengo Kuma

Kuma’s philosophy of “recovering the place” is another way for the design of a building to become integrated with nature. Rather than placing nature directly into a space, it is the connections to nature that he is concerned with. This was an important philosophy that stemmed from classic Japanese design and was successfully integrated throughout his designs. This idea of flows from another idea of his by “erasing architecture” so that man can become more connected to nature. Even in his designs of the proposed National Stadium for the Olympics in 2020, he wishes to integrate nature in such a way.

Fig. 31 | Kengo Kuma’s concept for the Olympic Stadium in 2020

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“I love the environment of this *gaïen*, this outer garden park system, which has a long history. In the Meiji era, the park system was conceived as a large series of interconnected outdoor landscape spaces. Our proposal for the stadium is to reintroduce a “green connection” in the center of Tokyo. We treated the stadium as a part of the park, using natural materials as much as possible.”

![Fig. 32 | Garden Terrace Miyazaki by Kengo Kuma](image)

The other important idea was to find a way to connect the stadium to the park system by a series of shadows. Shadows under the roof are important for Japanese buildings, acting as an intermediate zone between landscape and architecture. Throughout Japanese architectural history, shadows have always connected the gardens to the building volumes.”

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The amount of integration of nature into his modern designs is something that is seldom seen in today’s architectural world. Rather than creating designs that are one with nature and little impact to the surroundings, modern design often erases the surroundings in order to obtain a fresh start of what the design of nature should be.

Kuma’s powerful design philosophy was further pushed after the tsunami of Japan in 2011 where he stated that, “when it comes to man versus nature, nature will always prevail”\(^\text{43}\). With this ideology in mind, Kuma’s designs are a reflection of a modern interpretation intertwined with nature so that the architecture becomes transparent in a sense, where the design is something that is accomplished by working around nature, rather than erasing it and recreating it.

One of the first designs that Kuma began this philosophy upon was the Kiro-San Observatory. Nestled into a mountain, “The building here becomes invisible, hewn into the land, as if the architecture wanted to extend to the whole mountain and to the

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landscape offered to the beholder.\textsuperscript{44} The Kiro-San Observatory is different compared to Kuma’s designs today in the sense that this type of architecture was placed into nature and isn’t transparent in the sense of the direct visual connection to nature.

To me, this retains a connection to nature that Tadao Ando integrated into his designs where the design of the building is integrated with nature, but not transparent to nature. Kuma’s design philosophy changed after the Tsunami of 2011 and created a necessity to create architecture that is transparent to nature. This change in Kuma’s design philosophy created a different level of interaction with nature, where rather than building interacting with nature, nature interacted more with the design.

![Great Bamboo Wall by Kengo Kuma](image)

\textbf{Fig. 34 | Great Bamboo Wall by Kengo Kuma}

The idea of transparency of the structure so that nature can be accessed visually and physically is an important feature of Japanese design that lives on through Kuma’s

modern interpretations. Throughout his designs, the importance of the integration of nature at a level of creating designs that are transparent to nature are a reflection of Japanese design principles and cultural impact that have succeeded through modern interpretative designs.

Kuma’s transparent designs with strong connections to nature offer another way of integrated ideas that allows nature to become more synergistic with the design as a whole. This has become part of who Kengo Kuma is and is prevalent throughout his designs today such as the Besancon art center and cité de la musique France, Yusuhara Wooden Bridge Museum, and many other projects. The connection through nature isn’t just a one stepped process, but instead is part of a whole that necessitates not just the importance of nature, but materiality as well.

Fig. 35 | Yusuhara Wooden Bridge Museum by Kengo Kuma
The ways that modern Japanese architects have integrated nature into their designs speaks about how important nature is to the culture. By creating designs that integrate nature within the design, it becomes a first step towards a cohesive design rather than thinking of it after. Nature and landscape come secondary in western design as it is often left on the exterior of the designs rather than within them.
4.0 Materiality

“The effect may not seem so very displeasing while everything is still new, but as the years pass, and the beauty of the grain begins to emerge on the planks and pillars, that glittering expanse of white tile comes to seem as incongruous as the proverbial bamboo grafted to wood... And surely there could be no better place to savor this pleasure... where surrounded by tranquil walls and finely grained wood, one looks out upon blue skies and green leaves.”^45

Throughout Japanese designs one of the most common traits exhibited is the importance of materiality within the design. Whether it’s the praise of the patina, the choice of wood or any of the many other important material details that are prevalent in Japanese designs, materiality has always served as a pinnacle of Japanese design. Tanizaki parallels the idea of Japanese materiality with such importance and how the light ultimately can interact with it.

Amongst the modernist designs, the most prevalent material used was concrete, but concrete alone does not define the architectural style that has defined itself for many

decades. Instead it is the use of the other materials that enriches this style. In both Western and Japanese modernism exists the desire to fully embellish the details of the materials by exhibiting a minimal amount of ornamentation on the designs and by doing so, visual distractions are eliminated and the materials can be more pronounced.

While Japanese modernism uses these same materials as its Western counterpart it is that way that they are used instead that differentiates Western and Japanese modernism. In Western modernism, the use of steel, concrete, and glass are unified together to create many aesthetically pleasing designs that often embellish materials for what they are: concrete and steel for their strength and glass that spans over large spaces reminiscent of the International style. The materials used in modernist designs were able to show the full extent of what they were in the buildings.

To me, this speaks a little bit towards a Japanese architecture style, though instead with light to express Japanese details, shadows are used to accent what the space is. In another take, these design styles are two sides to a coin, one exhibiting light and the other shadow. In the Japanese aesthetic style, shadows are used to show the richness of design, ranging from the dark natural patina on wood to the gridded tatami mat that to the common eye would seem like any other type of flooring.

“The raw visual aesthetics of Japanese modernist materials can be traced back to the pursuit of beauty through imperfection or wabi-sabi. Wabi-sabi is underplayed and modest, the kind of quiet, undeclared beauty that waits patiently to be discovered. It's a fragmentary glimpse: the branch representing the entire tree, shoji screens filtering the sun, the moon 90 percent obscured behind a ribbon of cloud. the chilly mottled surface of an oxidized silver bowl, the yielding gray of weathered wood, the elegant withering of a
bereft autumn bough. An old car left in a field to rust, as it transforms from an eyesore into a part of the landscape, could be considered America's contribution to the evolution of sabi. An abandoned barn, as it collapses in on itself, holds this mystique. There's an aching poetry in things that carry this patina, and it transcends the Japanese. We Americans are ineffably drawn to old European towns with their crooked cobblestone streets and chipping plaster, to places battle scarred with history much deeper than our own. We seek sabi in antiques and even try to manufacture it in distressed furnishings. True sabi cannot be acquired, however. It is a gift of time.”

In saying something like this about the way materials were viewed in traditional Japanese architecture brings up how and why they are so important in today’s Japanese design. The aesthetics of Japanese modernist designs incorporated all the same materials as Western modernist design, but showed a deeper understanding for the incorporation of wood into their designs. As previous Japanese design have shown, the usage of wood is a carefully incorporated design element that can enhance and warm a space while being used in conjunction with concrete.

Japanese teahouses were epitomes of raw material usage, exemplifying the pure nature of the materials that were used in the construction. Whether it was the stone that was used, or even if the wood had knots in it, the ‘errors’ in the material were perpetuated as beautiful aesthetics that added to the space. These errors as aesthetics are known as the

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concept of wabi-sabi, or a celebration of what errors or imperfections appear on the building material.

Materiality in the modern teahouse also proved how powerful the control over materials can affect a space. Through this design initiative, the different architects took to heart the different designs that were produced as a reflection of their own culture as well as who they were as an architect. Some of these designers include Tadao Ando, Terunobu Fujimori, Shigeru Ban, as well as Kengo Kuma.

4.1 Ando’s Muse: Concrete

Tadao Ando’s complex understanding of use of materials concrete and light have led him to be a front runner in modern Japanese designs. Whether it is the previously mentioned Church of Light or other projects, the interaction of light and concrete prove to be Ando’s strong points. Ando’s mastery over the realm of the concrete was influenced through the works of Corbusier as well as Kahn, though Ando’s unique treatment of concrete is testament of his skill, resulting in creating his own style of “Ando Concrete”. Despite being created of such a monolithic material, it is the interaction with the spaces around it that result in the mastery of the material.

“It’s not only concrete; it’s concrete and the surroundings. There’s always a tension between the two. How you create that tension is with a vision. By having that vision—and by remaining faithful to it—you get that attention and impact. For one thing, concrete is a ubiquitous, ordinary material. Anyone all over the world can buy it. It’s very accessible and easily available. But I wanted to use that as a common material to create very unique architecture. It was about using everybody’s material in a way that nobody
else had before. The second part is that historical Japanese buildings are made in concrete, so by using concrete, I wanted to actually continue the tradition, succeeding in the preservation of the country’s architectural DNA.”

-Tadao Ando

Ando’s work of concrete is a reflection of Japanese design as well as Japanese culture; in order to obtain such smooth forms, a mastery of carpentry, something found in Japanese historical design. This parallels down to a clean Japanese aesthetic as a result of such a strict discipline when creating the casts for the concrete, which are completed by master carpenters. Often compared to be as “smooth-as-silk”, Ando’s concrete comes off as both structure and surface where the walls are never camouflaged or plastered over.

![Fig. 37 | An interior shot of Tadao Ando’s Water Temple](image)

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Since the concrete is cast and isn’t camouflaged over, I believe this puts a wabi-sabi aesthetic into the design, where the designed element is meant to be in its purest form. Instead, the clean concrete is a pure design element, one of beauty and through time may achieve some cracks and tarnishes, though will still maintain its purity of materiality. Much like wood gains a unique patina through the handling of it, concrete too may age and gain a new appearance over time. Ando’s usage of concrete in a unique method resulted in his legacy of Japanese modernist design.

4.2 The Timeless Material: Wood

Throughout Japanese design both old and new, wood has remained a staple material to create timeless pieces. In the past, wood was used in every aspect of Japanese design ranging from structural elements all the way to handheld objects; wood was meant to be a material that stood throughout time. In classic Japanese design, wood was used in every aspect of life and is still used in traditions today.

In Japan, carpentry is taken very seriously in training of recreating methods used centuries ago, even today carpenters are learning traditional Japanese building methods that don’t necessitate even a single nail. Aside from the arduous amount of finesse that goes into the work of the wood, it is the materiality of the wood that is important as well.

“Wood finished in glistening black lacquer is the very best; but even unfinished wood, as it darkens and the grain grows more subtle with the years, acquires an inexplicable power to calm and soothe.”

As mentioned previously with the other Japanese materials, wabi-sabi aesthetic maintains a large portion of Japanese design. While a material may seem beautiful in the beginning, it is only through time and the natural interaction of wood with man that wood obtains its full glory.

“Of course this “sheen of antiquity” of which we hear so much is in fact the glow of grime. In both Chinese and Japanese the words denoting this glow describe a polish that comes of being touched over and over again, a sheen produced by the oils that naturally permeate an object over long years of handling—which is to say grime. If indeed “elegance is frigid,” it can as well be described as filthy.”

This parallels along traditional western thinking of expelling every bit of dirt and grime from a space. Though in Japanese design, it is the grime (not necessarily dirt) that brings out the fullest in wood. Only through time can wood obtain this natural patina that exemplifies the importance of the material.

Understandably, wood is a natural material thus has a finite lifecycle. It is throughout the lifecycle that wood becomes a new element, something that cannot be simply replicated. Though wooden structures come and go in all parts of the world, in Japan, this has a different meaning. Rather than losing the structure as a whole, the Japanese design along a different philosophy.

“In the West there has always been the attempt to make the religious building, whether it’s a Medieval or Renaissance church, an eternal object for the celebration of God. The material chosen, such as stone, brick, or concrete, is meant to eternally preserve what is

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inside. But in Japan, there’s nothing like that, since the temple is made of wood. The divine spirit inside the building is eternal, so the enclosure doesn’t have to be.”

-Tadao Ando

The idea that Ando brings about gains a sense of immateriality of a space of worship, where rather than relying on an architectural space to create such importance for religion, it is the idea of the importance residing within the space that makes it eternal. This could be said also in the traditional Japanese Ise Shrine where every 20 years the temple is rebuilt in an adjacent lot. Known as Sengu, the building of the Ise Shrine is a method of teaching impermanence of all things, as well as a method to transfer down building methodologies. This idea of impermanence goes along the lines of wood as a material as well as a life lesson to be taught throughout the world.

“The Sengu is such a large event that preparations take over eight years, four years alone just to prepare the timber. It also involves the wish that Japanese traditional culture should be transmitted to the next generation. The renewal of the buildings and of the treasures has been conducted in the same traditional way ever since the first Shikinen Sengu had been performed 1300 years ago. Scientific developments make manual


technology obsolete in some fields. However, by performing the Shikinen Sengu, traditional technologies are preserved.”

By using wood in a structural way that doesn’t require nails or any other form of binding is a work of art in itself. Wood has been used throughout Japanese design as structural members since Japanese design began and is even continued to today. To me, this parallels along the lines of how structural steel was introduced into modernism back in the 1930’s. Where steel structural members were a reflection of the new trendy material of the time, wood continued to support itself on its own as a structural material in Japanese design. Structural steel used in modernist designs was a testament of the newest, sturdiest material available at the time and was used in all facets of modernist

Fig. 38 | Ise Shrine main hall

design. In these designs, steel was embellished both for its aesthetic qualities as well as structural capabilities.

4.3 Light as a Design Element

“(We) Orientals tend to seek our satisfactions in whatever surroundings we happen to find ourselves, to content ourselves with things as they are; and so darkness causes us no discontent, we resign ourselves to it as inevitable. If light is scarce then light is scarce; we will immerse ourselves in the darkness and there discover its own particular beauty. But the progressive Westerner is determined always to better his lot. From candle to oil lamp, oil lamp to gaslight, gaslight to electric light—his quest for a brighter light never ceases, he spares no pains to eradicate even the minutest shadow.”\(^5^4\)

A powerful design element prevalent in both design methodologies is the usage of light. Whether it enter the space through a large spanning glass window or through a controlled shaft, light is used to create different feelings of the architectural space in both Western and Japanese designs. Yet the light element in both design styles act as 2 completely different details when acted upon a space by the discipline of controlling of the volumetric quality as well as the usage of materials inside the space. This was the first of many steps in Japanese iterative design from Western modernism where a design element was the same, yet the overall effect was different.

“Yet the combination of that blurred old painting and the dark alcove is one of absolute harmony. The lack of clarity, far from disturbing us, seems rather to suit the painting perfectly. For the painting here is nothing more than another delicate surface upon which

the faint, frail light can play; it performs precisely the same function as the sand-textured wall. This is why we attach such importance to age and patina. A new painting, even one done in ink monochrome or subtle pastels, can quite destroy the shadows of an alcove, unless it is selected with the greatest care.”

This design philosophy can be visible amongst the different Western and Japanese modernist designs. Based on a design principle praising darkness, such an important cultural idea is prevalent in what Japanese modernism was to become. Western modernism often had the idea of maximizing the amount of light entered into the space, eliminating darkness completely and unifying the space as a single volume that light can travel through. Often met with more reflective materials such as polished concrete or simplified volumes to allow light in further, Western modernism welcomed light and maximized the amount that was allowed to enter the space. Western light usage differed significantly due to the way that it was used and could create completely different design elements.

“Lighting for architecture has been and still often is dominated by an engineering viewpoint, resigned to determining sufficient illuminance levels for a safe and efficient working environment. With a background in stage lighting, Kelly introduced a scenographic perspective for architectural lighting. His point of view might look self-evident to today’s architectural community, but it was revolutionary for his time and has strongly influenced modern architecture… which at night turns into a mirror, reflecting

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the interior lighting. By minimizing the interior lighting and illuminating the surrounding lawn and trees, Kelly restored the continuity and flow from the daytime into the night. "56

While light in the western modernist style follows a different path, Richard Kelly describes it as broken down into 3 primary forms of light: focal glow, ambient luminescence, and the play of brilliants.

Focal Glow:

"Focal glow is the follow spot on the modern stage. It is the pool of light at your favorite reading chair. It is the shaft of sunshine that warms the end of the valley. It is candlelight on the face, and a flashlight on a stair... Focal glow draws attention, pulls together diverse parts, sells merchandise, separates the important from the unimportant, helps people see."

Ambient Luminescence:

"Ambient luminescence is the uninterrupted light of a snowy morning in the open country. It is fog light at sea in a small boat, it is twilight haze on a wide river where shore and water and sky are indistinguishable. It is in any art gallery with strip-lighted walls, translucent ceiling, and white floor. (...) Ambient light produces shadow less illumination. It minimizes form and bulk."

Play of Brilliants

"Play of brilliants is Times Square at night. It is the eighteenth century ballroom of crystal chandeliers and many candle flames. It is sunlight on a fountain or a rippling brook. It is a cache of diamonds in an opened cave. It is the rose window of Chartres... Play of brilliants excites the optic nerves, and in turn stimulates the body and spirit, quickens the appetite, awakens curiosity, sharpens the wit...."\(^{57}\)

In the examples of both the Farnsworth House and the Glass House, light is fully flooding the spaces and ousting out any bit of darkness that might exist inside. Though the light penetrates the entire volume, it is the skilled usage of the layering of design and materials that allow for a truly successful modernist design.\(^{58}\) By incorporating different screens and materials, the space can become something magnificent on its own.

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4.3.1 Light and Darkness as a Material

“And there may be some who argue that if beauty has to hide its weak points in the dark it is not beauty at all. But we Orientals, as I have suggested before, create a kind of beauty of the shadows we have made in out-of-the-way places. There is an old song that says “the brushwood we gather—stack it together, it makes a hut; pull it apart, a field once more.” Such is our way of thinking—we find beauty not in the thing itself but in the patterns of shadows, the light and the darkness, that one thing against another creates.”

The usage of light as a material has also proven itself a powerful design tool amongst Japanese architects. Tadao Ando is able to use light against concrete in his Church of Light, as the most powerful design element of the piece. This is an example of work that utilizes both direct and indirect light in a way that softens up and lightens the heavy concrete.

“The church is composed of a concrete shell; the concrete adds to the darkness of the church by creating a more humble, meditative place of worship. As a testament to minimalist architecture, the crosses void in the east-facing wall is the only prominent religious symbol present in the church…”

Fig. 40 | Tadao Ando’s Church of Light

Ando’s approach to light and concrete in the Church of the Light, as well as his other projects, has a surreal effect that perceptually changes material into immaterial, dark into light, light into space.”

Throughout Tadao Ando’s designs, light is one of the most prevalent materials used in all his projects.

“In all my works, light is an important controlling factor. I create enclosed spaces mainly by means of thick concrete walls. The primary reason is to create a place for the individual, a zone for oneself within society. When the external factors of a city's environment require the wall to be without openings, the interior must be especially full and satisfying.”

– Tadao Ando

Fig. 41 | A close detail of Tadao Ando’s Church of Light
Light and darkness serve as two sides to a coin capable of enriching each other. Throughout Tadao Ando’s designs, the play between the two was another way capable of showing off the raw materiality of the concrete used as well. Against a plain surface, the light that acts upon the concrete is only as powerful as the shadow and darkness that contrasts it. Without each other, the strength of both light and darkness as a material is hindered.

In Ando’s Chichu Art Museum, light and darkness are again used in an effective manner, this time paralleling along a Japanese design concept known as “oku”, or the term describes a psychological and emotional experience triggered by one’s approach to deep, inner space. It is about the ways in which you are led on, and led inward, by the choreographing of spatial layers, and the obstructing intervals between those layers.⁶⁰

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It is through this transitional layering technique that Ando uses light and darkness again. Light is part of the layering, though due to the nature of light, it is limited as to how it can enter a space unless the volume is directly opened. The connection that is drawn from the external area to the internal space is what draws curiosity through privacy and layers of intimacy; the concept implies something innermost and inaccessible, something potentially profound, and it suggests a charged distance, heightened by impediments, between you and that profound intimacy.61 This in contrast to western modernism where Tanizaki goes into details entailing how light instead is used to its maximum potential.

Fig. 43 | Ryusenji House by Tomoaki Uno Architects

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“In making for ourselves a place to live, we first spread a parasol to throw a shadow on the earth, and in the pale light of the shadow we put together a house. There are of course roofs on Western houses too, but they are less to keep off the sun than to keep off the wind and the dew; even from without it is apparent that they are built to create as few shadows as possible and to expose the interior to as much light as possible. If the roof of a Japanese house is a parasol, the roof of a Western house is no more than a cap, with as small a visor as possible so as to allow the sunlight to penetrate directly beneath the eaves. There are no doubts all sorts of reasons—climate, building materials—for the deep Japanese eaves.”

In this passage, Tanizaki shows a very stark difference between Western and Japanese designs, paralleling along the differences between Western Modernism and Japanese Modernism. While Japanese Modernism does often exhibit a flat roof, there is a difference in how light is treated as a material against its opposing element, instead darkness is welcomed and a very necessary part of traditional Japanese design, which is visible in today’s Japanese Modernist designs as well.

Aside from the fact that most art does necessitate darkness, Ando’s usage of the element as a design tool shows how a design element from traditional Japanese design still holds its place in today’s designs. The sequential layering of traditional Japanese “oku” mixed with the dark and the light create a unique effect one that was praised by a user as,

“But you reach them by following a carefully choreographed path that, using translucent

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screens and unexpected openings between different levels, calibrates the passage from light into darkness and back again with tremendous sensitivity. At Naoshima, in the various museums designed by Ando, Taniguchi’s rationalism is jettisoned in favor of a take on oku that is highly dramatized, irrational, and deliberately labyrinthine. Ando’s masterpiece on Naoshima is the Chichu Art Museum, which Ando has constructed into a hill, so that the museum is almost entirely underground. Nevertheless, light is let in from above, and the handful of works on display (six late waterlily paintings by Claude Monet; two light installations by James Turrell) are very much about light.”

Fig. 44 | A detail of light at Chichu Museum

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The contrasting elements of light and darkness serve as one of the most powerful tools utilized in Japanese modernist designs. Many Japanese architects use light and darkness as a material in conjunction with concrete to synergistically create architecture that is truly an interpretation on classical Japanese design.

“How, in such a dark place, gold draws so much light to itself is a mystery to me. But I see why in ancient times statues of the Buddha were gilt with gold and why gold leaf covered the walls of the homes of the nobility. Modern man, in his well-lit house, knows nothing of the beauty of gold; but those who lived in the dark houses of the past were not merely captivated by its beauty, they also knew its practical value; for gold, in these dim rooms, must have served the function of a reflector. Their use of gold leaf and gold dust was not mere extravagance. Its reflective properties were put to use as a source of illumination. Silver and other metals quickly lose their gloss, but gold retains its brilliance indefinitely to light the darkness of the room. This is why gold was held in such incredibly high esteem.”

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Fig. 45 | A Golden Buddha Statue
Tanizaki’s explanation of the usage of gold in the classic Japanese architecture wasn’t necessarily a means to show wealth but to instead allow in the shy element of light. Aside from the traditional method of illumination through fire, another design element was introduced into the mix, gold. While the light was diffused through the shoji screen and the strength of contrast lying within the shadows, the gold was a means to illuminate spaces further within the volume.

“In India, where Buddhism originated, lamps were used to light priests' living quarters. These lamps were fueled by vegetable oil and were made of a simple dish elevated by a tripod base of three sticks tied together. The temples and shrines became illuminated, creating the symbolic replication of the Buddhist Pure Land within their structures. They used gold leaf in paintings and images, creating a magical reflective quality.”

Fig. 46 | The golden interior of the Koshoji Temple

The usage of gold was important in both the temple and the residential level where light could’ve been scarce on the interior. By using gold as a means to illuminate space brought about a warming quality of light through the transmission of indirect light from the shoji screens as well as the candles own luminescence. The aesthetic quality that was brought through the gold created a “warm” environment that was nestled in the shadows of the design.

“And surely you have seen, in the darkness of the innermost rooms of these huge buildings, to which sunlight never penetrates, how the gold leaf of a sliding door or screen will pick up a distant glimmer from the garden, then suddenly send forth an ethereal glow, a faint golden light cast into the enveloping darkness, like the glow upon the horizon at sunset. In no other setting is gold quit so exquisitely beautiful. You walk past, turning to look again, and yet again; and as you move away the golden surface of the paper glows ever more deeply, changing not in a flash, but growing slowly, steadily brighter, like color rising in the face of a giant.”

Tanizaki’s insistence on the necessity of gold in a design space of classic Japanese architecture suggests to me the importance of a secondary form of light. I believe that in times of scarce light or winter months when the sun would appear at a lower angle and for less amount of time in the day, the light quality that would transmit off of the gold could enhance the spatial quality and by doing so, keep the atmosphere of the interior spaces like that of the exterior during the warmer months.

Western architectural design methodology utilizes gold as a mean of illumination

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similar to Japanese design though on a different scale. Tanizaki takes gold to another example that proves how powerful gold is as a contrasting element against the darkness.

“The priest’s surplice of gold brocade is perhaps the best example. In most of our city temples, catering to the masses as they do, the main hall will be brightly lit, and these garments of gold will seem merely gaudy. No matter how venerable a man the priest may be, his robes will convey no sense of his dignity. But when you attend a service at an old temple, conducted after the ancient ritual, you see how perfectly the gold harmonizes with the wrinkled skin of the old priest and the flickering light of the altar lamps, and how much it contributes to the solemnity of the occasion. As with lacquer ware, the bold patterns remain for the most part hidden in darkness; only occasionally does a bit of gold or silver gleam forth.”

It is through the usage of gold that a contrast can be created and partially illuminates a space. In Japanese design, gold was used as a way to bring light in deeper to a space. While in western design, gold was used to signify the importance through contrast of light and darkness. Though both of these methods created a way to partially illuminate spaces, they were done in different ways.

Though the method of bringing light into spaces differ between these classic design ideologies, both western and Japanese modernism exhibit similar methods when bringing in light into spaces, the usage of concrete. In both design methodologies, the usage of concrete offers a way for light to enter a space via a bare, exposed concrete

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surface, allowing light to travel along the surface uninterrupted.

In many of Tadao Ando’s works, concrete is the primary building material, which Ando’s delicate usage of concrete as a material translates the ability to transmit light along its surfaces, illuminating spaces and creating a completely different spatial quality compared to that of artificial lighting. The light along the bare concrete creates a path that light can travel upon and reflect light into otherwise dim spaces similar to how gold in classic Japanese design was capable of accomplishing. In both the Church of Light as well as the Chichu Museum, the usage of concrete allows light to effortlessly travel along the bare concrete surfaces.

Fig. 47 | Light entering the Koshino House
“For the church he created a cross with intersecting slits on the end wall of the chapel, allowing light to dance across his planar concrete interior, which was reminiscent of the plaster walls of the sukiya tea houses and shoin residential architecture… In his 1990’s addition he did an encore performance with a dramatic vertical slit in the teaching room, bestowing light and grace of the interior and its activities. The design was firmly in the Modernist tradition of using the play of light on planar concrete.”

The usage of concrete as a new means to bring light into space was a method that could be traced back to Corbusier’s Chandigarh as well as Tange’s St. Mary’s Cathedral where light was a powerful design element against the bare concrete planes. All of these design methods exhibit the strength of concrete as an element that light can travel upon and illuminate the spaces within.

In certain western modernist designs, the usage of concrete can also parallel to Tanizaki’s theory, in which certain parts of...
the concrete (gold) are further embellished in order to achieve a higher contrast. Varying treatments to the concrete can create more contrast (similar to the priest’s gold brocade in darkness), and thus create certain parts of the concrete design to become a focal point.

![The Koshino House’s rich use of light](image)

Fig. 52 | The Koshino House’s rich use of light

The usage of concrete is the modern answer to bringing in light into a space without depending on artificial lighting. Similar to how the Japanese used gold as a method to bring in light to spaces, Ando has adapted Japanese culture to modern design methodologies. Visible in his other projects such as the Koshino house, the bare concrete planes of the walls serve as elegant methods to bring in and spread light. Ando’s consistent method of using concrete with a flat finish show a finesse and refinement of skill and knowledge of concrete and has thus redefined what gold was to classic Japanese design, a secondary means of illumination that is subtle yet equally mysterious.
4.4 Paralleling Materials: West is to Steel as East is to Wood

Steel used in modernist designs were used in a somewhat similar fashion to how wood was in both classic and modern Japanese design, where showing off the raw aesthetic of the material was the ultimate goal. Unlike wood, steel obtains no patina through time, and instead can look as new as it did the day it was manufactured to decades later.

![The Glass House’s materials fully embellished](image)

Japanese design’s usage of wood may have adapted slightly over time, though the concept remains the same, expression of materiality through clean design aesthetic. Over time, as mentioned previously, wood obtains its own unique patina through time and handling of the material, enriching it to a whole new level; steel maintains its stoic appearance while wood “softens” over time.

“The effect may not seem so very displeasing while everything is still new, but as the years pass, and the beauty of the grain begins to emerge on the planks and pillars, that
glittering expanse of white tile comes to seem as incongruous as the proverbial bamboo grafted to wood. “69

Though it is not without effort in today’s world that wood is still used and even has been used in a multistory structure designed by Shigeru Ban. Ban is an architect who exemplifies a complex understanding of materials, western modernism, as well as maintaining cultural integrity. A professional in the realms of paper tubes, timber and glass, Ban has chosen to favorite these materials over traditional modern building materials.

"Wood is the most ecological thing; Steel, concrete—we are just consuming from a limited amount. Timber is the only renewable material. A concrete building stays only a hundred years, and it’s very difficult to replace or repair, where timber is very easy to repair.”

-Shigeru Ban

Ban has also pushed the design envelope by utilizing timber on large-scale projects such as the Tamedia Building in Switzerland. The use of timber was for the structural system of the building, something that hasn’t been accomplished in decades. The usage of wood as a structural material not only warms the space, but proves itself as a building material.

“The main structural system entirely made designed on timber that, other its innovative character from a technical and environmental standpoint, gives the building a unique appearance from the inside space as well as from the city around.”

The usage of wood in today’s Japanese modern designs is a reflection of the strong ties to its culture not only as a structurally necessary element, but an amazing aesthetic material as well. Wood will never be far from Japanese design whether it’s used in the form work such as Tadao Ando, or integrated into the structure such as Shigeru

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Ban. With such ties to timeless design aesthetic, wood though impermanent, will live on in Japanese design.

4.5 Today’s Japan: Experimental and Unique Materials

In today’s modern society, new and improved technologies offer innovative ways to use traditional materials in ways previously inconceivable. Architects are now using different materials in ways that have defined themselves in the 21\textsuperscript{st} century unique to other architects. One could even say Shigeru Ban’s usage of wood in the Tamedia Building in Switzerland pushes the envelope when it came to integration of wood in a multistory building, something that hadn’t been accomplished in modern design ever since the use of steel and concrete as primary structural materials.

4.5.1 Shigeru Ban’s Paper Tubes

Shigeru Ban is one of those architects that has reinterpreted the way a building material could be used in today’s designs. Of these new materials, Ban has introduced something previously unheard of in today’s modern world, the usage of paper as a structural element. Ban has been able to use paper tubes as a mean to create temporary relief structures to locations struck by natural disaster. The usage of paper tubes allowed for a low cost easily produced material that could be erected with minimal efforts.

“For a little over three decades, Ban, the founder of the Voluntary Architects Network, has applied his extensive knowledge of recyclable materials, particularly paper and
cardboard, to constructing high-quality, low-cost shelters for victims of disaster across the world - from Rwanda, to Haiti, to Turkey, Japan, and more.”

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Fig. 58 | Paper Log House in use in India – 2001

Fig. 59 | Paper Concert Hall in L’aquila, Italy – 2011
Fig. 60 | Paper Log House being assembled – 1995

Fig. 61 | Paper Log House in Kobe, Japan – 1995
These temporary structures have been erected through a unique interpretation and usage of paper in order to create a structurally sound material. Much like the concepts of wood mentioned previously, an idea of impermanence resides in Ban’s work. Though temporary, these structures offer not only relief for those who need them on a basic level, but a spiritual level as well. Ban has created designs ranging from churches to temporary housing structures all from his unique paper tubes.

4.5.2 Materiality Through Kengo Kuma’s Mind

Kengo Kuma was another advocate for such rich material usage. Aside from his incredible amount of finesse when working with nature to create transparent designs, it is through his integrated designs with nature that come to play when embellishing materials within his projects. Kuma’s usage of different materials varies through the architect’s life, but each time was able to accomplish designs that integrated materials with design to create a holistic approach to create more memorable design.
“I prefer an ambiguous, unreliable condition, in which the substance is scattered all over the place. I don’t want to make particulate architecture but create a particulate condition…. More than, and prior to defining a style, what I desire is to create a certain type of place and a certain type of condition that can be experienced by the human body.”

-Kengo Kuma

By creating full body experience architecture, Kuma has created architecture that envelops the user within its design. Kuma’s original material expression was reminiscent of Ando, in that many of his initial designs integrated concrete into them. However, over time, Kuma began to shift towards more natural materials such as wood and bamboo, separating him from the other modernists at the time to create his own parallel of

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Japanese modernist designs. Kuma’s material design philosophy began to take a slight change after the tsunami of Japan in 2011, saying that,

“After the burst of the bubble economy in the 1980s, I began to think differently from before. After the tsunami in March 2011, I changed my definition to nature. Before tsunami, I thought that nature was important but after the tsunami, I began to really think that nature is not so weak. The strength of nature compared to building is an extreme imbalance- that was my response to March 2011. After the tsunami, I began to think that we couldn't use industrial materials anymore. This kind of shock came from the tsunami experience. The influence of the tsunami can show the humbleness in front of nature. The humbleness can be a reflection on the selection of material, of the detail and the scale of the building. And the criteria for architecture after the tsunami is humbleness.”73

Fig. 64 | An Interior view looking out from Great Bamboo Wall

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This shift in his material choice was in response directly to the tsunami where he felt as though man should submit to nature rather than trying to take control of it. Kuma’s design philosophy with materials incorporates the rich traditions of Japanese architecture and the importance of wood within design.

His approach to working with materials is an inverse of how many designs work today, where the form and design of the building is created first, and after materials are applied. Instead, Kuma works backwards and “thinks to what the finishing materials should be” before working towards the design of the piece. Kuma works in a way that, "For me, the visual effect is only [a small] part of the design. Totality of architectural design includes textures, the soft and hardness of the material, the smell of the material and the acoustic effect of the material." 

-Kengo Kuma

4.5.3 Engaging Another Sense as a Material

Aside from material integration alone, Kuma also incorporates something else into his designs that come from his material selections, the sense of smell. The integration of the sense of smell creates a further sense of place and investigation of the space, something that Kuma reflects in some of his pavilion designs. For one such project, the Sensing Spaces exhibition at the Royal Academy was one that integrated smell along with careful material selection into design.

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75 ibid
Rather than focusing on the aesthetic of the buildings, Kuma's focused on a minimalist design approach and integrated the strong smell of wood in order to encourage guests to focus on themselves rather than the architecture. The integration of smells within material selection created a design unique to the other exhibits, utilizing traditional Japanese scents.

“For the pavilions I chose two types of smell. One is the smell of hinoki timber and the other is the smell of tatami mats. Both are very much related with my personal memory; the house I grew up in was built before the Second World War. It's a very, very old house with these two smells: the timber smell and tatami mat smell. Those smells and the atmosphere of that house are very much related.

Fig. 65 | Kengo Kuma’s Sensing Spaces Exhibition Piece

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The Japanese tradition has not been a history of visual design, but it is closely linked to the history of smells and the tatami and hinoki smell are the two oldest smells of our tradition. Anybody can understand the beauty of those smells… A tatami mat is a typical material finish for the floor. We Japanese used to sleep on that tatami mat and that special smell can give the special kind of quietness, the feeling of healing.”

-Kengo Kuma

4.6 New Dawn of Materials, Carbon Fiber

Another unique design material utilized in Kuma’s design were carbon fiber threads. Though not initially incorporated in the design, Kuma’s introduction of the material created an entirely new approach to utilizing carbon fiber threads as a mean to help with earthquakes.

Fig.66 | Fiber cables anchored into the ground at the Komatsu Seiren Fabric Factory

“The fiber rod is said to be seven times stronger than iron, and this is the very first time that this material was used as a means of reinforcement against earthquakes, drawing from a technique of braiding ropes in this region, it became possible to add further flexibility to the carbon fiber.”

A completely unique design approach to alleviated the fear of earthquakes, Kuma usage of the carbon fiber rods offers a unique way of integrating this material into Japanese design. Though the carbon fiber rods are an addition and were not originally part of the design, the unique interpretation of the material more commonly used in furniture design and transport industries, its application in architecture is becoming more common. By using these carbon fibers, Kuma has created a unique spider web-like embrace on the structure.

Fig.67 | The Komatsu Seiren Fabric Factory’s unique web

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Throughout Kuma’s designs, the selection of materials was always and important running theme. His design philosophy can be paralleled closer to traditional Japanese design, due to the fact that he chooses materials first, which are natural. Ando on the other hand does choose his material first, often concrete, though integrates his materials through his designs in a more industrialist way that reflect a modern interpretation of Japanese design aesthetic. The concrete doesn’t erase the carefully obtained Japanese aesthetic simply because it is concrete, but instead it is the way of integrating modern materials in with design much like how traditional Japanese design treated their materials. Shigeru Ban’s unique approach towards the usage of paper into his designs offered another way for a traditional Japanese material to be incorporated into modern design. Each of these architects are artists with their own unique material selection that defined who they are as designers today, without feigning away from their cultural identity of Japan.

Fig.68 | An overview of the Komatsu Seiren Fabric Factory
5.0 Conclusion

The world in which we live in today is a melting pot where all across the globe, people are becoming a more homogenized culture. When different ideas are taken across the world, people latch onto them, exchanging their own ways and culture and embracing the global identity. When this occurs, I feel as though a bit of culture is lost each time to the different waves of trends that sweep the globe, when eventually all the nations across the world will be melded into one singular culture.

Similar to the International Style of design, this paradigm shift called for an erasure of culture and design elements, leaving the world with the simplified box form, one that could be replicated anywhere. The countries that took to the International Style were exposed to a global identity, thus losing a part of their own national identity. When this occurs, a bit of cultural degradation and identity loss occurs, submitting themselves to becoming a piece of the global identity.

Japan has persevered in its own way, maintaining its own culture and unique design elements. Through the different iterations of designs that take the world by storm, Japan maintains and grounds itself through the integration of the 3 explored topics of this thesis: space, nature and materiality. Despite having the initial influence of Western modernism as well as the international style, the box form was taken to Japan, and later transformed and adapted to the culture and design of the new environment.

My investigation searched for the surviving consistent elements of design that enriched and ultimately made Japanese modernism a unique interpretation of what the original Western design was. Aside from having a rich cultural background to be adapted
from, the prevalent elements that endured through the modernist wave I believe can serve as a base point of investigation when comparing other architectural trends that have passed through Japan. This can in turn become starting point to a design guideline that is capable of showing the shifts and subtle differences through generational changes as well.

To this accord, an investigation like this can occur to becoming country specific, resulting in a closer documentation of cultural design elements that withstand the test of time. These factors that come out from each investigation can become pillars of design that are ultimately make up the country specific culture and architecture. This has the possibility to bring about a better understanding and also promote a greater effort towards historical preservation or documentation. My experiences that I was able to obtain during my time on this project will allow me to choose whether or not I can continue this investigation into other countries or locales that are in danger of losing their architectural identity.
6.0 Bibliography


