PATTERNS and LAYERING
Japanese Spatial Culture, Nature and Architecture
Foreword by Kengo KUMA
Edited by Salvator-John A. LIOTTA and Matteo BELFIORE
PATTERNS and LAYERING

Japanese Spatial Culture, Nature and Architecture

Foreword:
Kengo KUMA

Editors:
Salvator-John A. LIOTTA
Matteo BELFIORE

Graphic edition by:
Ilze PAKLONE
Rafael A. BALBOA
# Table of Contents

## Foreword
- Kengo Kuma

## Background
- Salvator-John A. Liotta and Matteo Belfiore

## Patterns, Japanese Spatial Culture, Nature, and Generative Design
- Salvator-John A. Liotta

## Spatial Layering in Japan
- Matteo Belfiore

## Thinking
- Japanese Pattern Eccentricities
  - Rafael Balboa and Ilze Paklone
- Evolution of Geometrical Pattern
  - Ling Zhang
- Development of Japanese Traditional Pattern Under the Influence of Chinese Culture
  - Yao Chen
- Patterns in Japanese Vernacular Architecture: Envelope Layers and Ecosystem Integration
  - Catarina Vitorino
- Distant Distances
  - Bojan Milan Končarević
- European and Japanese Space: A Different Perception Through Artists’ Eyes
  - Federico Scaroni
- Pervious and Phenomenal Opacity: Boundary Techniques and Intermediating Patterns as Design Strategies
  - Robert Baum
- Integrated Interspaces: An Urban Interpretation of the Concept of Oku
  - Cristiano Lippa
- Craft Mediated Designs: Explorations in Modernity and Bamboo
  - Kaon Ko

## Doing
- Patterns as Initiators of Design, Layering as Codifier of Space
  - Ko Nakamura and Mikako Koike
- On Pattern and Digital Fabrication
  - Yusuke Oshita
When I learned that Salvator-John A. Liotta and Matteo Belfiore in my laboratory had launched a study on patterns and layering, I had a premonition of something new and unseen in preexisting research on Japan. Conventional research on Japan has been initiated out of deep affection for Japanese architecture and thus prone to wetness and sentimentality, distanced from the universal and lacking in potential breadth of architectural theories. Meanwhile, patterns and layering are based on dry reasons derived from mathematical concepts. Their methodology of departing from the reason to reach the sentimental being that is Japan seemed intriguing and full of possibilities.

Approximately one hundred years ago, in the nineteenth to early twentieth century, a temporary surge of interest in Japanese architecture occurred. The Arts and Crafts Movement in England took notice of Japanese traditional patterns. Neither fitting the categories of mathematical geometry nor a lifelike depiction of nature, the “third way” of Japanese pattern making was discovered. An alternative attitude toward nature in Japan dissimilar from that of the West was also discerned, which profoundly influenced subsequent Arts and Crafts movements and Art Nouveau.

In the United States, Frank Lloyd Wright had been inspired by layering techniques of Japanese space, disclosing in his autobiography that his works would not have been if not for the woodblock artist Hiroshige Ando and The Book of Tea written by Tenshin Okakura. Wright, upon learning that Japanese comprehend space within the overlapping of thin layers, understood that Hiroshige’s woodblock prints were products of this spatial comprehension. We may postulate that the unfolding of such layering technique defines Wright’s architecture. His layered architecture significantly affected European architects such as Mies van der Rohe, whose transparent architecture exemplifies extended versions of Wright’s layering techniques.

It is unquestionable that encounters with Japanese culture in this period brought on revolutionary significance for Western design and architecture. Regrettably, ideas linking patterns and layering did not exist then; Arts and Crafts and Art Nouveau were only interested in traditional Japanese patterns while Wright and Mies were solely interested in technique.

One hundred years later, Salvator-John and Matteo have attempted to create a link between patterns and layering. These two previously detached notions can now be integrated into one methodology mediated by structural concepts that, in my opinion, are the key to this link. Structural analysis of the twentieth century struggled to advance beyond the column and beam structural frame. Analysis today allows us to conceive stable structures through the accumulation of delicate members, which have the capacity to produce a variety of patterns while fulfilling their structural responsibilities.

This book aims to inaugurate this new integration which, I believe, has the potential to begin a new architectural and design revolution. Inside this beautiful book are many clues to that new revolution.

Foreword

Kengo Kuma
Background
Salvator-John A. Liotta and Matteo Belfiore

Conceived at the Kengo Kuma Laboratory, University of Tokyo, this work brings together the results of research surrounding concepts of patterns and layering. The current global crisis urges all of us to seek alternative solutions. While architecture during the twentieth century focused on function and form, the current architectural debate deals more with relationships, boundaries, and energies. Thanks to the current paradigm shift—in the attempt to synthesize nature, culture, and technology—it is possible to rethink both the meaning and the role that patterns might play as diagrams of spatial organization and generative elements of a project.

Today, there is a renewed interest in elaborating an architecture that can again balance economic and social forces and connect space through different spatial devices such as layering techniques. In this regard, layering—as a technique for articulating the space—conjugated through patterns reveals strong potentialities for producing a more appropriate architecture for our times. In our opinion, the West is looking to Eastern nations to re-orient itself by discovering different ideas, values, and concepts. To orient means to adjust to specified circumstances or needs, or to find one’s position in relation to new and strange surroundings. While Western culture is characterized by binary and dichotomous thinking, the Japanese one is made of a mix of different influences and inclusive thought. Perhaps the most unique thing that Japan can offer to the rest of the world is its culture of integration: the ability to learn from different cultures without giving up on its own.

Sometimes, Japan underestimates its own culture, yet every now and then, at the beginning of a new cycle, Japan always returns to its own culture, made of symbiosis and integration. Japanese boundaries, compared to those in the West, are more vague and blurred and can create relationships. Layering is made of devices able to create a juxtaposition of heterogeneous elements instead of creating uniformity. This leads to a non-dominant hierarchy, a de-centered and extended fragmentation of space similar in structure to the Japanese language. Characterized by a weak syntax, Japanese language is ambiguous, presenting multiple meanings, and a richness of images, which leave ample space for the intuition of its listeners.

True to Japanese culture, editorial effort was placed in creating a work with a high degree of diversity and inclusivity. Organized through the same logic of openness and aggregated by loose logical nexuses, this book addresses patterns and layering from diverse viewpoints. It is not meant to be a definitive study on this topic, but rather a first exploration of an uncharted territory of study.

The third part of this book includes investigations on patterns and layering conducted by PhD candidates at the Kengo Kuma Lab. Rafael Balboa and Ilze Paklone direct attention to the relevance of the concept of “eccentricity” in certain traditional Japanese patterns. For them, eccentricity is an aesthetic preference that became a singular feature able to consolidate Japanese identity. Ling Zhang analyzes the emergence of patterns during various periods in Japanese history, explaining the social and historical reasons that have encouraged the use of certain patterns over others. Yao Chen describes the introduction of Chinese patterns to Japan, and the selection criteria used by the Japanese in adopting them. Their preference for vegetal motifs over patterns with political connotations—such as the dragon pattern—unveils some traits of Japanese cultural identity. Patterns in vernacular architecture is the topic investigated by Catarina Vitorino Santos. Covering different regions of Japan, she underlines the presence of soft elements that wrap space with a thick softness. This shows the link between milieu, nature, and the ecosystem. Bojan Končarević speculates on psychological and physical distances in Kuma’s Bato Hiroshige ukiyo-e museum. For him, pattern sizes are essential to establishing a visual and physical relationship between the museum, its adjacent environment, and the human body. Comparing the differences between Eastern and Western spatiality, Federico Scaroni focuses on the definition of intermediate space and on the role of Japanese painting—ukiyo-e in particular—in creating space through layers. Robert Baum addresses the issue of light and shadow, emphasizing how boundaries in the East are porous and pervasive, ambiguous, and atmospheric: different from the West, in Japan, shadows have a positive connotation in defining spatiality. Focusing on the concept of spatial depth (oku) in Tokyo, Cristiano Lippa analyzes how interstitial spaces connect the layers of Tokyo’s urban structure. Finally, Kaon Ko writes about the encounter between Charlotte Perriand and Bruno Taut, and Japanese craftsmen. This meeting shows how the raw materiality of bamboo was adapted to traditional aspects of local production and modern Western forms, yielding somewhat familiar yet unseen patterns and aesthetics.

The last section of the book presents experiments on patterns and layering developed at Kengo Kuma Lab and Yusuke Obuchi Lab at the University of Tokyo. Ko Nakamura and Mikako Koike of the Kuma Lab describe how patterns and layering are used as a tool to design innovative architectures that can establish healthy connections between nature and people. Yusuke Obuchi presents a selection of recent projects realized at his lab, which use parametric design and digital fabrication. Here, pattern is used as a generator of three-dimensional forms and as a device to create performances.

The graphic concept of the book—designed by Ilze Paklone and Rafael A. Balboa—conveys an atmospheric abstraction of Japanese sensibilities. The book takes on a flow of two main axes—patterns and layering—and embraces other concepts rooted in Japanese aesthetic such as irregularity (不均斉 – furikase), simplicity (簡素 – kanso), and nature (自然 – shizen), rendered through the chosen color palette and the dialogue between images and text.

At the opening of each chapter, the book is enriched by the handmade silkscreen prints of Japanese artist Norika Niki. Her work—an exploration of contemporary Japanese patterns—is able to connect human and natural spirit through a mixture of seasonal colors and natural motifs. By layering organic and geometric forms, Niki produces a delicate stratification of shapes and colors that exudes sensuous beauty.

Calligraphy was contributed by Kaon Ko, whose strokes and sensibilities coexist with the text and capture the essence of the fluid spirit intended throughout the book design.

The rediscovery of traditional patterns and layering tools is a way to meet the needs of a radically changing society and can unveil new horizons in terms of sustainability. The March 11, 2011 earthquake that devastated Japan showed the weakness of contemporary architecture compared to the power of natural elements. Spatial layering and patterns are extraordinary tools to create buildings which are able to coexist in harmony with nature, people, and culture. In an age where feelings of uncertainty prevail, Japanese culture can have a decisive role in offering alternative solutions to crisis. We feel that now is time for the architecture world to move forward; Japan can provide the necessary tools to rethink both the meaning and the role that patterns might play as diagrams of spatial organization and generative elements of a project.
The Japanese space is built through overlapping several bi-dimensional planes. Whilst in Western architecture space is limited by thick heavy walls, in Japanese architecture the space for people is obtained by using shoji, mobile thin and light partitions formed by wood and paper frames. This building system, in my opinion, is not obsolete, but up-to-date, even more in the twenty-first century, when the environmental issue has acquired a worldwide interest. In the future, a low-energy consuming lifestyle will be important, using small areas and building small houses; in this challenge layering will play a crucial role. The architecture and planning of our cities, then, will have to be aimed at this perspective. We have to leave behind us the culture—characteristic of the twentieth century—which destroyed the environment to produce dilated spaces, consuming big amounts of oil and nuclear energy.

Kengo Kuma’s words effectively describe the role that the concept of spatial layering plays in Japanese architectural tradition and its relevancy in contemporary production. Through this system, the Japanese have always given a strong sense of spatiality to their architecture, although its dimensions were necessarily limited. The exceptional role of the image in the contemporary production of architecture influenced the role of space in the past, in particular through the Japanese building tradition which was born open and flexible, connected to the concept of patriarchal family. With the opening of Japan to the Western world and its consequent cultural contamination, which occurred from 1868 with the Meiji restoration, architecture adapted to the circumstances and started to become more rigid, losing the spatial flexibility that had characterized it. Today, it is again advisable to rediscover the opening up of the past, as an answer to a deeply changed society that requires more flexible spaces.

Spatial layering is an extraordinary tool for the creation of intermediate spaces and for contemporary architectural research. The potential of present technologies can recover tradition and its re-introduction in new forms. Its outcome in designing terms envisage the implementation of contemporary works of architecture, whose spatial features derive from understanding and metabolizing traditional spatial concepts. To better understand spatial layering it is necessary to dwell on certain concepts that permeate the definition of space in Japanese culture.
Japanese Spatial Concepts: From Space to Flatness

The first concept is "rikyu grey," or the "philosophy of grey," according to Kisho Kurokawa. The color grey, particularly in the last stage of the Edo period, enjoyed great popularity. It was linked to the concept of iki, explained by Kurokawa as "richness in sobriety," and was a consequence of the teachings of the famous tea master Sen no Rikyu. Describing the city of Kyoto, Kurokawa remarks that all the elements of its architecture tend to dissolve in the twilight, losing all perspective and three-dimensional character. "At the very basis of Japanese aesthetic consciousness, be it in painting, music, drama or even in buildings and cities, is this two-dimensionality or flatness. It is a quality of timeless non-sensuality, a non-sensuality produced by the reduction of three-dimensionality to a plane world; it is the continuum in which contradictory elements coexist and the quality which dissolves demarcations between disparate dimensions and cancels out ambiguity. Rikyu grey, or the 'philosophy of grey' shares all and is a medium of all these concepts. Needless to say, such concepts epitomize the special qualities imparted to Japanese culture by the pervasive influence of Buddhism."

Kisho Kurokawa defined rikyu grey as a device able to transform space into a succession of two-dimensional elements. It is therefore the phenomenalological contribution to the cause of space in architecture. In Japanese architecture, including tearoom architecture, the traditional spatial elements of a design such as ceilings, alcoves, and walls are each autonomous, that is, they are on the independent planes of a two-dimensional world. The heterogeneous elements mutually deny any direct three-dimensional relationship. There are many examples, such as where the windows in two walls opposite each other are placed with total disregard to conformity in size, height, or other measurements. This is one technique of encouraging the sense of two-dimensionality. In any case, rikyu grey likewise is a medium in which three-dimensional, cubical, sculptural, substantial space of single meaning is rendered into plane, one-dimensional, non-sensual space of multiple meaning."

In this definition one can perceive the idea that space—seen in the western sense—has a direct meaning, substantiated and devoid of ambiguity. In contrast, the idea of space in Japan implies the existence of numerous interpretations and hidden meanings. Rikyu grey is an element able to characterize the space, making it more suitable for identifying a society "characterized by a more refined ambiguity and a highly sophisticated rhetoric."
The Japanese word ma (ま) means “pause” and gives an idea of space including the concept of time. Unlike the Western concept, which has a quantitative connotation, the Japanese term suggests a relativized and sensorial perception of space. Arata Isozaki contributed to the diffusion of this concept through the Exhibition Ma: Space-Time in Japan (1978-81) in Paris and New York. As he stated: “In Japanese, when the concepts of time (じき) and space (くさかん) were first written down, the Chinese ideogram ま—an interstice—was used as the second character for both. I determined to search for clues in this space in between... [Ma] ‘originally means the space in between things that exist next to each other; then comes to mean an interstice between things—chasm; later, a room as a space physically defined by columns and/or byobu screens; in a temporal context, the time of rest or pause in phenomena occurring one after another. Such definitions tend to confuse original uses with present-day meanings—those that came into being after the introduction and translation of Western concepts of time and space. Extensions of meaning such as ‘in-between space’ and ‘pause’ must have attained common usage only after the importation of Western ideas... It seems to me that ma ought best be thought of as ‘gap’ or (as with the original Sanskrit meaning) an original ‘difference’ immanent in things. Only much later did the term come to signify ‘marginal void,’ a latter-day usage of ma that is scarcely explicable.” This principle is constantly present in many aspects of Japanese culture, from photography to theater, from music to architecture, thinking in terms of figure-background, one might imagine ma as a “negative space”—a very effective definition supplied by Yoshinobu Ashihara. 5

In the Western tradition, via the Greeks, man was the measure of all things and the space was his domain. In paintings, the human being was frequently the center of the composition and there was a constant tendency to fill every void. The subject of the painting was enclosed by a frame, signifying a correspondence between the space and a well-defined point in time. In the Taoist and Buddhist tradition, man was instead intended as an integral part of nature. The void had an intrinsic value and did not need to be filled. Space and time were intimately connected (空間 = space-time). For this reason, paintings often took place on scrolls symbolizing the idea of dynamic space. The concept of ma is often applied in traditional Japanese architecture, especially through garden design. “The Japanese, in the past, did not recognize distinct concepts of time and space, which were perceived, instead, as inseparable entities, and expressed by the concept of ma, indicating both the distance between objects in space, and the interval of time between different phenomena and therefore, on the one hand, the empty space in which the different phenomena take place, lose their specific outlines and finally disappear and, on the other, the instant of passage, full of tension, randomness, ambiguity. The importance of this concept can be seen in the treatment of traditional space, as in the Kaashiki garden—which elements are not positioned to be appreciated in an overall view, but are arranged to reveal themselves gradually during the course of an itinerary which takes place over time, marked by the points in which the observer pauses to enjoy particular vistas—or in the roji garden—in which the stones marking the path toward the tea house (とび石), irregularly arranged, determine with their intervals (ま) the rhythm of the steps of the guest, in keeping with the way of walking of the master of the tea ceremony.”6

The third concept is carried in the word oku (奥) which makes reference to an idea of “innermost area.” Fumihiko Maki writes: “The Japanese have always postulated the existence of what is called oku (innermost area) at the core of this high density space organized into multiple layers like an onion. The word oku, expressing a distinctive Japanese sense of space, has long been a part of the vocabulary of daily life. It is interesting to note that the use of the term with respect to space is invariably premised on the idea of oku, or depth, signifying relative distance or the sense of distance within a given space. The Japanese, long accustomed to a fairly high population density, must have conceived space as something finite and dense and, in consequence, developed from early in their history a sensitivity finely attuned to relative distance within a delimited area.”7 One could even define oku as an “acentric centrality.” This and other concepts, such as inner space, veiled space, and relational space, are typically Japanese and are the starting point of architectural research by Fumihiko Maki. 8 Besides the theory, the concept of oku is present in some of his works: “Fumihiko Maki’s preference for collaged and fragmentary composition, similar to the layered spaces of traditional Japanese architecture and gardens, is particularly evident in the façade of the Wacoal Media Center (1985). The so-called Spiral Building echoes the heterogeneous urban context of Tokyo and, like the Topia Building (1989), pays tribute to icons of twentieth-century architecture and Cubist art in particular. The Spiral Building also illustrates the concept of phenomenological depth (深く): the main gallery space, surrounded by a gently sloping semi-cylindrical ramp, is situated at the back of the building and shielded from the street by the entrance lobby, the café, and gallery space. Naturally illuminated from above, it can be seen from the street entrance. An intimate relationship between the inside and the outside is created by the broad staircase that shows in the façade.”9

Gaps in Japanese traditional architecture:
- Kasuga Taisha, Nara
- Torii, Fushimi Inari Taisha, Kyoto
- Katsura Imperial Villa, Kyoto

(by the concept of ma, indicating both the distance between objects in space, and the interval of time between different phenomena and therefore, on the one hand, the empty space in which the different phenomena take place, lose their specific outlines and finally disappear and, on the other, the instant of passage, full of tension, randomness, ambiguity. The importance of this concept can be seen in the treatment of traditional space, as in the Kaashiki garden—which elements are not positioned to be appreciated in an overall view, but are arranged to reveal themselves gradually during the course of an itinerary which takes place over time, marked by the points in which the observer pauses to enjoy particular vistas—or in the roji garden—in which the stones marking the path toward the tea house (とび石), irregularly arranged, determine with their intervals (ま) the rhythm of the steps of the guest, in keeping with the way of walking of the master of the tea ceremony.”)

The third concept is carried in the word oku (奥) which makes reference to an idea of “innermost area.” Fumihiko Maki writes: “The Japanese have always postulated the existence of what is called oku (innermost area) at the core of this high density space organized into multiple layers like an onion. The word oku, expressing a distinctive Japanese sense of space, has long been a part of the vocabulary of daily life. It is interesting to note that the use of the term with respect to space is invariably premised on the idea of oku, or depth, signifying relative distance or the sense of distance within a given space. The Japanese, long accustomed to a fairly high population density, must have conceived space as something finite and dense and, in consequence, developed from early in their history a sensitivity finely attuned to relative distance within a delimited area.” One could even define oku as an “acentric centrality.” This and other concepts, such as inner space, veiled space, and relational space, are typically Japanese and are the starting point of architectural research by Fumihiko Maki. Besides the theory, the concept of oku is present in some of his works: “Fumihiko Maki’s preference for collaged and fragmentary composition, similar to the layered spaces of traditional Japanese architecture and gardens, is particularly evident in the façade of the Wacoal Media Center (1985). The so-called Spiral Building echoes the heterogeneous urban context of Tokyo and, like the Topia Building (1989), pays tribute to icons of twentieth-century architecture and Cubist art in particular. The Spiral Building also illustrates the concept of phenomenological depth (深く): the main gallery space, surrounded by a gently sloping semi-cylindrical ramp, is situated at the back of the building and shielded from the street by the entrance lobby, the café, and gallery space. Naturally illuminated from above, it can be seen from the street entrance. An intimate relationship between the inside and the outside is created by the broad staircase that shows in the façade.”
Maki’s image can be found also in the formation of Japanese cities, where the built develops in a centripetal way, enveloping an often empty nucleus in onionskins. Unlike Western cities, where the center is dense and strong, Tokyo converges to emptiness. Tokyo’s urban structure still bears the imprint of this concept, found in the topography made of elements that surround empty spaces through stratified margins. In this regard it is interesting to quote Roland Barthes’ definition of void: “It does possess a center, but this center is empty.... One of the most powerful cities of modernity is thereby built around an opaque ring of walls, streams, roofs, and trees whose own center is no more than an evaporated notion, subsisting here, not in order to irradiate power, but to give to the entire urban movement the support of its central emptiness, forcing the traffic to make a perpetual detour.”¹⁰ Such an idea of emptiness finds different conflicting opinions, in particular Donald Richie’s, who speaks of “nourishing void.” The empty space, in this case, feeds on itself. “What is all that empty space doing there? Why isn’t it filled in? It is not filled in because it is already filled in with itself. It is a structural support... It has its own weight, its own specific gravity, its own presence.”¹¹

Don Hanlon defines four typologies of spatial layering in architecture: horizontal, vertical, concentric, and radial.¹² The spatial layering described by Maki can be defined as concentric. Those who are acquainted with Japanese culture know the extreme care and attention devoted by the Japanese to enveloping objects. In the same way, as described by Maki’s onionskin metaphor, they tend to envelop space. One could define this approach as “spatial wrapping.”

Another concept, intimately linked to that of oku, is miegakure. “This term indicates a spatial composition in which it is not possible to see all the parts at the same time. The Japanese have used this technique with great skill, especially in the architecture of temples, not so much in order to create surprise as to allow the mind the possibility of reconstructing a mental image of the entire edifice, and to reveal the beauty of change.”¹³ Also in this case, Maki’s definition is the most discerning: “Literally ‘to glimpse something that is hidden’ such as the moon passing behind clouds, it is a concept that embodies both the ephemeral and ambiguous. Maki explains it as the abstraction of an experience completed only in our minds. For instance, it is the white undergarment beneath the collar of a kimono that seduces the viewer into imagining what lies beneath—or, as Maki frames it for a Western audience, the lace negligee that hints at the shape of a naked body, without revealing it. Maki also describes the elements of Japanese cities as veiled.”¹⁴
Frank Lloyd Wright was particularly impressed by the ability of Japanese painters to recreate depth without using perspective. In particular, he got to know and appreciate the work of Utagawa Hiroshige and Katsushika Hokusai, whose work embodies many elements of the Japanese concept of space and layering in particular. From Hiroshige, Wright also learned the concept of notan. Unlike the Western concept of chiaroscuro, that recreated the effect of depth and three-dimensionality through the use of shadows and shades, notan more simply obtained the same effect by the superposition of layers with different color intensities. Japanese people once often wrapped objects and even space; this process appears in the paintings of Hiroshige. Between the observer and the horizon exist numerous layers, with a consequent effect of considerable depth. The sight is always confined within the framework which prevents it from getting lost in infinity. Mount Fuji is one of the most common motifs, along with layers of clouds that block the view, containing it within the scene. Despite these limitations, the effect obtained by the painter is again a considerable depth, as reported by Wright himself during a speech: “Because here he (Hiroshige) had an idea of swinging this horizontal into the vertical; and
in doing that so handled everything to give you a continuous sense of space. Not something within the frame, as most of these others were, but something of which you caught a glimpse which gave you a sense of a great continuity. That element wasn’t present in any of the previous things. But you see that go through all the series. The greatest idea in landscape that ever could be found. This is unique in the history of art. And this certainly was a great idea. Now here Hiroshige did, with a sense of space, very much what we have been doing with it in our architecture. Here you get a sense of tremendous, limitless space, instead of something confined within a picture. Now the non-objectivists are preaching that everything should be within the frame. That you choose a spot somewhere in it, and that everything should be concentrated on that spot. Well, I think that’s absolutely the bunk when you see what can be done by disregarding any spot... eliminating the spot. Where is the focus? Show me. On what is your attention focused? Nothing. You’re right in the great breadth and spread of the scene.”

The theme of the frame is also reflected in the work of Hokusai. Wright was also impressed with the similar sense of spatial continuity between the subject and the observer which Katsushika Hokusai created in many of his compositions, in his case by actually allowing objects to break through their surrounding frames, as in The Manifestation of the Peak for example, over which Wright enthused: ‘There you get an idea of the mountain that you never could if you cut it off in a frame. That is a characteristic Hokusai trick.’ Apparently in response to this idea, Wright often allowed selected parts of his own renderings to penetrate the frame of the drawing, again, seemingly in an attempt to break down the artificial separation between the observer and the building created by the rectilinear frame... In several of his renderings Wright actually omitted the lower frame of the drawing entirely, with the result that the space of the picture seems to flow out beneath the observer, so reinforcing the viewer’s sense of standing within the scene itself.”

In the West, the frame is an element that discretizes a portion of space, staring at a particular point in time. In Japan, as we have seen, time and space are closely interrelated, thus the frame is designed differently as a kind of side scene. The observer’s viewpoint is different: it does not watch the image, but is inside it. “It was no coincidence, then, that in Wright’s own renderings the lateral vanishing points are rarely within the field of vision. Like Hiroshige, Wright frequently used tree trunks and foliage as inner frames with which to effectively deny the actual frame of the picture and so create the illusion that the viewer is occupying the same space as the subject.” The overlapping of planes gives a strong sense of depth, so the eye moves within the composition. The torii for example—the sequence of gates for access to shrines—can be understood as frames that the observer walks through, penetrating the space in a given time sequence. At the same time they surround portions of the landscape, creating a dynamic sequence of images similar to that of a film. Kunskawa writes: “The spatial organization of the Katsura Palace is similar to the sequence of images of a film: the perspective point moves, the façades of buildings and road space dissolve into flat elements.”

The elements present in the foreground of the image act as a side scene, rather than by frames. They create a virtual limit to the eye, over which the image is dilated and the spatial dimension is multiplied. “In addition to the ground plane the designer also uses other planar elements: fences, walls, and hedges. These elements are used in two ways: as frames for the garden, in which case they act as clean background for the details of the garden, or, they are interjected in between visually complex elements—plantings and earth-work ‘mountains’—in order to add depth to the garden through layering.”

In photography, the depth of field is the distance between the nearest and farthest objects that appear in the scene. We can imagine the space as a sequence of infinite planes parallel and overlapping. By adjusting the aperture one can decide which planes should be in focus. Similarly in painting, the artist chooses which planes of the image to enhance. The effect of depth is closely tied to the visibility of such planes. “A landscape painter or photographer viewing classical Japanese gardens for the first time would very likely be struck by the similarity of the framing techniques used there to those of his own art. Mass plantings of small-leaved azaleas broken by a massive, flat-topped viewing rock at the water’s edge may frame the scene from below; the irregular trunk of a maple or pine may frame it from the left; the horizontally spreading branches of the same tree or the undulating foliage of forested hills in the distance may frame it from above; and forming a crisp frame around the whole picture may be the horizontal and vertical lines of the veranda, posts, and eaves of the owner’s residence. Exactly how the garden is enjoyed and how its views are framed will be greatly influenced by the configuration (shape and topography) of the site and the position of the adjacent buildings and surrounding features. A classical Japanese garden—at least until the advent of the tea garden and its offspring, the stroll garden, in the sixteenth and seventeenth centuries—was primarily viewed like a painting, from the shelter of the residential quarters.”
The comparison with photography and films appears meaningful and involves the way in which the observer interacts with the space. Gardens that are viewed primarily in this way, like a painting seen from several vantage points centering around a principal one, may perhaps be called 'scroll' gardens to distinguish them from the stroll gardens and tea gardens of later times. Viewing a 'scroll' garden from a fixed position is similar to Japanese filmmaker Yasujiro Ozu’s long takes from a camera mounted at what would be eye level for a person seated on the tatami-matted floor of a Japanese house. The composition of each frame has been well thought out, and invites the viewer’s lingering contemplation. Viewing a stroll garden while moving through it, on the other hand, is comparable to the film technique known as montage, in which a succession of different images is presented to the viewer.25 Yasujiro Ozu has been one of Japan’s most interesting and influential film directors of Japan.

“Gardens that are viewed primarily in this way, like a painting seen from several vantage points centering around a principal one, may perhaps be called ‘scroll’ gardens to distinguish them from the stroll gardens and tea gardens of later times. Viewing a ‘scroll’ garden from a fixed position is similar to Japanese filmmaker Yasujiro Ozu’s long takes from a camera mounted at what would be eye level for a person seated on the tatami-matted floor of a Japanese house. The composition of each frame has been well thought out, and invites the viewer’s lingering contemplation. Viewing a stroll garden while moving through it, on the other hand, is comparable to the film technique known as montage, in which a succession of different images is presented to the viewer.”25 Yasujiro Ozu has been one of Japan’s most interesting and influential film directors of Japan.

“In creating narrative space in his films, Ozu was clearly conscious of traditional two-dimensional art forms in Japan, for he frequently extrapolated the implications of traditional attitudes toward space into the time medium of cinema. Of the many ways in which Ozu imitated traditional spatial constructions, the most obvious and obviously conscious of these imitations is the view into deep space framed by objects in close-up.”26 Donald Richie effectively describes the essence of the spaces represented by Ozu, with their simplicity, stratification, and presence of the void. “His world is created of very little: the frames of domestic architecture; a single camera position, low; one form of punctuation only, the straight cut; no plot, simply layered scenes of single, haiku-like cause and effect. Often his scenes are empty.”27

The use of space as a dynamic sequence of frames implies a different way of thinking about architecture in relation to its context. Kengo Kuma writes: “We must reverse the direction of vision. We must reverse our form of perception. Instead of looking at architecture from the outside, we look at the view from inside. The architecture must be designed as a frame through which to view the environment.”28 Reversing the direction of vision means to connect the architecture intimately to its context. Frank Lloyd Wright writes: “In organic architecture it is completely impossible to regard the building as one thing, the furnishings as another, and the location and surroundings as something else again. The spirit in which these buildings are conceived sees all this together as one thing.”

In Wright’s definition—shared by Kuma, who speaks of “anti-object”—the building cannot be “on the hill” but must be “the hill.” One of the most common techniques used to connect the architecture to the surrounding landscape is defined as “borrowed landscape.” “Japanese designers found a very different yet equally effective means of linking the tectonic to its natural context. As the indigenous Japanese term for this device, ikidori, or ‘captured alive’, suggests, it is the active procuring of a remote scene which differentiates shakkei from an ordinary vista. This is achieved by a carefully designed frame localized some distance from the viewer, which is usually of natural plant material, trees and hedges. The frame is positioned to trim the raw view aesthetically, while at the same time obscuring many of the spatial depth clues which would normally indicate the true distance between the observer and the far-off landscape. This concealing of the intervening space has the effect of bringing the distant natural scene forward so as to appear part of the built foreground. In being visually connected to a recognizable feature in the landscape, the viewer not only knows unmistakably where they are, but through the apparent merging of the tectonic and the natural, is also made to feel that, like the garden, they too in a sense belong there.”29

The image taken at the Chiran Samurai District (Fig. 30), shows an example of “borrowed landscape.” The hilly landscape in the background becomes an extension of the garden in foreground. At the same time it represents the limit for the sight, and the sequence of layers one can perceive gives the composition a strong sense of depth. The feeling is to be completely enveloped by the scene, thanks to the presence of the pine in the foreground that acts as a side scene and multiplies the space. Kengo Kuma has theorized the need to abandon the idea of building as an object. The comparison with gardening helps to understand this concept: “The practice of gardening provides us with many hints and gives us courage. Gardening and landscape planning deal with the same domain but are different disciplines. That is the key point. As the ‘scape’ in landscape indicates, landscape planning is a scenic art
and a visual methodology. The planner stands ‘outside’ the landscape and visually manipulates it. In gardening, on the other hand, no privileged position from which a ‘planner’ observes and manipulates the scenery exists. The ‘gardener’ is always inside the garden.”30

Such a vision appears in continuity with the approach traditionally used in Japan, usually in contrast with the Western approach. For example, there is a significative difference between the paths of approach to the Parthenon and the Ise Shrine. The first is recognized as an “object” from every point of view, and located on the Acropolis as a goal of many visual axes. The Ise Shrine is rather hidden, undetectable from a distance and therefore “invisible.” What matters is not the aim, as in the Parthenon, but the path of approach that represents a way of purification.31 Hiromi Fujii describes the layered architecture of Japanese gardens and compares it with those in Europe, particularly Versailles. In the latter, he says, there is a central point of observation (the castle), from which one can perceive the garden as a whole. The same is missing in the Japanese garden: “The availability of an unobstructed view of the entire layout from any point within is what is most notably absent in the Japanese garden. Shrubs and trees and rock arrangements overlap to obstruct the line of vision, create shadows and eliminate vistas. One may work one’s way past shrubs, circle a pond, cross a stone bridge arching over a stream, and walk over a stone-paved path, all in search of a vista, but the landscape changes its appearance from moment to moment as one moves and no vista appears. The overlapping landscape bends one’s line of vision and foils attempts to see the entire garden. The landscape is not integrated through vision. It is, in fact, compelled to flex and fragment itself. This absence of vista is precisely what is distinctive about a Japanese garden...”32

The characteristics mentioned until now show a substantial difference between Japan and the West in the definition of space. A concise summary, in this regard, is provided by Kisho Kurokawa: “I would like to suggest that the difference between the Western concept of space and the Japanese concept of space is the difference between spatial confrontation and spatial continuity. Western architecture emerged from a philosophy of confrontation with nature and the impulse to conquer it. In that sense the stone wall which sharply divides inside from outside is extremely significant. The Japanese concept of space reaches out to embrace nature and to achieve unity and harmony with it. Another reason that the complete wall did not develop in Japan was a matter of materials; wood, rather than stone became the primary building material. But more significantly, there was always a conscious effort made to allow inner and outer space to inter-penetrate.”33

The characteristics mentioned until now show a substantial difference between Japan and the West in the definition of space. A concise summary, in this regard, is provided by Kisho Kurokawa: “I would like to suggest that the difference between the Western concept of space and the Japanese concept of space is the difference between spatial confrontation and spatial continuity. Western architecture emerged from a philosophy of confrontation with nature and the impulse to conquer it. In that sense the stone wall which sharply divides inside from outside is extremely significant. The Japanese concept of space reaches out to embrace nature and to achieve unity and harmony with it. Another reason that the complete wall did not develop in Japan was a matter of materials; wood, rather than stone became the primary building material. But more significantly, there was always a conscious effort made to allow inner and outer space to inter-penetrate.”33
In most castle cities of Japan, the castle is surrounded by many approaches that act like layers of space. In time of need these maze-like approaches that layer the castle provide good defense. Besides the moat surrounding the Himeji Castle, the approach is surrounded by han-maru, nina-maru, sanno-maru, etc. The graduation of the approaches progressively from one plane to the next until reaching the castle is a dual dimensional progression. One might say correctly that the castle is wrapped in two-dimensional space.34

An ideal observer, watching from inside the traditional architecture, would find a sequence of layers with different permeability that separate it from the outside world. The first of these layers is represented by a series of elements, defined as kyokai, which mediate between interior and exterior architecture. The second intermediate space is often made from the garden, which, as we have seen, is composed of many elements that block the sight and create depth. The third layer is composed ideally of the background, often constituted by one or more natural elements (hills, mountains, etc.) which close the image by providing a sense of intimacy. “In the West there is the idea that God is present in the finest details, but in Japan the idea is that it is precisely the finest details that house the whole. The details are not a part of the whole but incorporate the whole within. This is why the sukiya—the hut in which the tea ceremony is held—is thought of as a space constituting a microcosm of the whole universe. The sukiya projects itself radially out into the garden and further from the garden into the landscape beyond, thus eventually encompassing the whole of the world in its grasp… The world thus expands from the room out to the outer corridor, the garden and further into the landscape beyond the grounds of the property, resulting in the gradual layered expansion of the world from a single point inside the room. The Japanese awareness of space is that the outward expansion of space conversely comes to incorporate everything, including the universe itself. A single point is thus a concentration of the whole world.”35

The Katsura Rikyu Imperial Villa is a paradigm of traditional Japanese architecture and of the intimate relationship it can establish with the context. It was known in the West thanks to Bruno Taut, who praised its qualities and proclaimed it as an example of architecture for the future, away from formalism. As Kuma states, “In the bamboo veranda of Katsura Detached Palace, in the subtle integration of its garden and architecture, Taut discovered a culture of relationships, a culture of boundaries. He could not help but burst into tears in front of the bamboo fence. The Japanese of the time did not understand the meaning of his tears.”36 Kenzo Tange wrote about
the structural principles of the Katsura Palace in Kyoto: “Instead of defying gravity, they have preferred to seek space in which to spread out horizontally. Thus, in the Japanese concept of architectural space, the organization and balance of forces is reduced to two dimensions; what one has is a succession of planes. The proportions of structural members are governed not only by physical principles but simply by aesthetic sensibility.” The first element we encounter in approaching Katsura is the bamboo fence. It contains many of the compositional principles just mentioned. “Note how the natural look of the bamboo is retained while gently nudging it into the shape of a fence. There is a distinct harmony between the natural and the artificial. This is unlike what one would find in most western Estates, where the trees are all forced into artificial patterns. The western gardener often attempted to dominate and control nature. The Japanese gardener wanted to conform, or at least seem to conform with nature. Structures such as this bamboo fence, commonly referred to as Katsura Fencing, display the subtle artistry of the Japanese designer who did not take a natural form and bend it to his will, but rather, almost created a form of nature that complimented his aesthetic ideals. The final result being a flawless blending of the natural with the artificial that is at times so perfect as to make it difficult to determine where one might end and the other begin.”

Walking through the garden, similarly as described earlier about the “scroll gardens,” space is perceived as a sequence of planes. “The spatial composition of Katsura Detached Palace is similar to a drawing in a picture scroll in which the point of perspective moves, dissolving building façades and street space into plane elements. This is a garden of meandering walks among hills and around a lake, it refines any single, fixed point of perspective. It is a two-dimensional world created by a moving visual point and in the grey of twilight the most dramatic effect of this two-dimensionality appears.” Arata Isozaki, describing the path in the Imperial Villa garden, compares it to a musical composition. The breaks in the space, previously defined as “gaps,” are similar to the spaces between the notes. The path becomes a metaphor for a melody and layering transforms the space into space-time through their breaks. “If the views from the tea house were likened to pauses in music, the tour route that connects them is, as it were, the device that makes us sense the changing scenery via its continuous minute vibrations. It consists of varied textures, even of the path, that regulates the walking manner and the breathing tempo: gravel, paving stones, and stepping-stones of various patterns, in association with the styles of calligraphy, bridges with different degrees of camber, the stone stairways, slopes, and so on. The regulation or more precisely the contextualization lets the visitors choose their own speed and itinerary, at the same time as defining the general orientation of the gaze. ... The gaze constantly moves around, and meanwhile the scenery is broken into segments; yet again, the touring route laid out on both land and water recombines the segments. In the same way that the flying geese formation expresses the depth of space by way of layering the shifted planes, the touring gaze first segments the scenery and then layers it to make a circular structure. ... It is full of unexpected beauties, deriving from different layers of time.”

Walking through the garden, similarly as described earlier about the “scroll gardens,” space is perceived as a sequence of planes. “The spatial composition of Katsura Detached Palace is similar to a drawing in a picture scroll in which the point of perspective moves, dissolving building façades and street space into plane elements. This is a garden of meandering walks among hills and around a lake, it refines any single, fixed point of perspective. It is a two-dimensional world created by a moving visual point and in the grey of twilight the most dramatic effect of this two-dimensionality appears.” Arata Isozaki, describing the path in the Imperial Villa garden, compares it to a musical composition. The breaks in the space, previously defined as “gaps,” are similar to the spaces between the notes. The path becomes a metaphor for a melody and layering transforms the space into space-time through their breaks. “If the views from the tea house were likened to pauses in music, the tour route that connects them is, as it were, the device that makes us sense the changing scenery via its continuous minute vibrations. It consists of varied textures, even of the path, that regulates the walking manner and the breathing tempo: gravel, paving stones, and stepping-stones of various patterns, in association with the styles of calligraphy, bridges with different degrees of camber, the stone stairways, slopes, and so on. The regulation or more precisely the contextualization lets the visitors choose their own speed and itinerary, at the same time as defining the general orientation of the gaze. ... The gaze constantly moves around, and meanwhile the scenery is broken into segments; yet again, the touring route laid out on both land and water recombines the segments. In the same way that the flying geese formation expresses the depth of space by way of layering the shifted planes, the touring gaze first segments the scenery and then layers it to make a circular structure. ... It is full of unexpected beauties, deriving from different layers of time.”

Fig. 35, 36, 37, 38: Layering, Former Hosokawa Residence (Gyobutei), Kumamoto

Walking through the garden, similarly as described earlier about the “scroll gardens,” space is perceived as a sequence of planes. “The spatial composition of Katsura Detached Palace is similar to a drawing in a picture scroll in which the point of perspective moves, dissolving building façades and street space into plane elements. This is a garden of meandering walks among hills and around a lake, it refines any single, fixed point of perspective. It is a two-dimensional world created by a moving visual point and in the grey of twilight the most dramatic effect of this two-dimensionality appears.” Arata Isozaki, describing the path in the Imperial Villa garden, compares it to a musical composition. The breaks in the space, previously defined as “gaps,” are similar to the spaces between the notes. The path becomes a metaphor for a melody and layering transforms the space into space-time through their breaks. “If the views from the tea house were likened to pauses in music, the tour route that connects them is, as it were, the device that makes us sense the changing scenery via its continuous minute vibrations. It consists of varied textures, even of the path, that regulates the walking manner and the breathing tempo: gravel, paving stones, and stepping-stones of various patterns, in association with the styles of calligraphy, bridges with different degrees of camber, the stone stairways, slopes, and so on. The regulation or more precisely the contextualization lets the visitors choose their own speed and itinerary, at the same time as defining the general orientation of the gaze. ... The gaze constantly moves around, and meanwhile the scenery is broken into segments; yet again, the touring route laid out on both land and water recombines the segments. In the same way that the flying geese formation expresses the depth of space by way of layering the shifted planes, the touring gaze first segments the scenery and then layers it to make a circular structure. ... It is full of unexpected beauties, deriving from different layers of time.”

Fig. 35, 36, 37, 38: Layering, Former Hosokawa Residence (Gyobutei), Kumamoto
Koshoin is the oldest part of the Katsura Shoin building in the Imperial Villa. Inside this building you are struck by the sense of transparency that permeates this space and connects it with the surrounding garden. The elements that enclose the space of traditional architecture, as said earlier, are called kyokai. These devices aimed to organize space and play a basic role in creating Japanese intermediate space. This “establishes zones without creating a serious physical spatial barrier… The use of symbolic markers instead of physical walls or ramparts to delineate space reflects a characteristically Japanese understanding of space.” Arata Isozaki effectively describes the way in which these elements act as mediators between the inside and the outside of the Koshoin: “At the moment we step into the Koshoin, we are impressed by the sense of transparency filling the whole space. The shoji that surround the extension soften the sunlight, which then edges its way into all corners and back rooms. The Koshoin complex consists of five rooms: the porch called Okoshiyose (Imperial Carriage Stop), the Veranda Room, the Room of the Spear (Yarinoma), the Second Room, and the First Room. They are mostly divided by fusuma: on a ground of Paris white, great paulownia crests embossed with golden mica charmingly glisten as they gather the light. The dark lines of the blue-dyed cotton tatami edging, the black-lacquered edges of the fusuma, and the dark colors of the aged columns and lintels criss-cross the shining space. These verticals and horizontals appear like modular lines that articulate a whole three-dimensional space, creating the impression of infinite space. Finally it represents something like a variable space based upon the homogeneous module that modern architecture took as its premise. It is no surprise that the modernists appreciated the Koshoin in particular.”

Also Teruyuki Monnai describes the use of boundaries in Japanese architecture: “The Japanese space can be interpreted as a field-graph whose limits are not well defined. Rather than a simple division between exterior and interior, a series of spatial devices – gate (wan), wall (hei), hedge (Akebuku), veranda (Engawa), awning (Hisashi) – create a multiple border between the street and the edifice. Interior/exterior interchange is regulated by a sequence of subtle planes with various degrees of transparency and permeability: rolling bamboo blinds (sudare), wooden grates (kashi), sliding paper doors (shoji). The theme of the ambiguous boundary can be seen in the research of contemporary architects: for example, in the theory of multi-layered spatial structure elaborated by Hiroshi Hara, or in the works and theories of Takefumi Aida and Hiromi Fujii.”

Fig. 39
Layering: Ideal conception of sightline of an observer embedded in a Japanese traditional house

Fig. 40, 41
Side scene: Sumiyoshi pine, Katsura Imperial Palace, Kyoto
Route in a typical Japanese garden: Katsura Imperial Palace, Kyoto
In contemporary architecture, the re-discovery of kyokai can produce environments able to start social and environmental relations and to act as containers. They can also supply functional performances, such as filtering light, views, and sound and contribute to the building’s sustainability, thus favoring natural air control or producing energy. As Kengo Kuma writes—having analyzed in depth the role and potential of kyokai in a recent publication—‘by “modern architecture” I mean an architecture that can control boundaries at will, that is, an architecture that can subtly adjust relationships between human beings, between human beings and things, between human things and nature. It is not a self-centered, sculptural architecture that is formally self-assertive, but an architecture of relationships.” 44

The concept of layering is also recognizable in the construction of these elements. Often they are constituted by the superimposition of several layers of material in contact with each other. This process improves the quality of construction, while contributing to the thermal insulation. The traditional roof, as an example, has a remarkable stratification (Fig. 53). The same goes for fusuma, the movable boundaries used in the traditional house. “A fusuma’s internal structure consists of a wooden lattice called the hone (skeleton), made up of an outer frame and frets. The skeletal elements include a number of reinforcements, such as heavier, center-mounted horizontal and vertical strips called chikanabe, corner boards, and a board that is positioned so that the screen-pull can be mounted on top. The making of a fusuma begins with a process known as honeshibari (binding the frame), in which paste is applied to the skeleton and it is covered with hagogyami (scrap paper). The next layer is the uchizuke-bari (fastening layer), which makes the surface opaque. This is followed by the reinforcing honeshibari-osae (frame-binding cover). Once this has dried, there follows a process called minobari, in which successive layers of rice paper are applied, suggesting the many-layered straw raincoat known as a mino. As the surface begins to bulge, it is held down with a layer called the betabari (contact layer), and then the kukanobari (casing layer) is added. As the finishing touch, the whole surface is covered with a single sheet, the facing layer or uwabari. High-quality fusuma can have ten to twelve lining layers.” 45

Even the phenomenological aspect contributes to spatial stratification. The shadows create a layer, always variable, which coats the wall surfaces to create a skin that reacts to environmental stress. There is a Japanese word to describe this concept: utsuroi. “Originally the word utsuroi meant the moment in which the shadow of the divinity (kami) emerged from the void; later it came to mean the moment in which nature is transformed, the passage from one state to another. The Japanese space can be interpreted in terms of changes over time. Things that fade or disappear, flowers that wilt, the reflections of light on water or earth, the changing of the seasons all stimulate emotion in the Japanese, who are distrustful of eternal entities, and attribute greater value to the ephemeral qualities of things which appear and disappear. This view of reality is reflected in traditional spaces, in which heavy physical elements of separation are avoided, and where thin, sliding, sometimes transparent surfaces, overlapping one another, are used to control light and vision, creating an ambiguous space in which the play of light and shadow alludes to the changeable world of nature.” 46
These diagrams are inspired by the Japanese design concept notan (superposition of layers with different color intensities), showing an interpretation of the diverse elements and their overlap in the whole spatial composition. The image at the top depicts the original photography of a traditional garden and a residence. It is then decomposed in several layers in different tonalities of grey. This graduation shows the relative distance of each element from the observer, thus underlining the idea of spatial layering.
Experiments in Spatial Layering: From Modernism to Now

After the Meiji opening, the West got to know and appreciate many elements of Japanese culture, particularly the concept of space. Basel Kotob analyzes the role of spatial layering in the definition of Cubism’s poetics. This movement’s revolutionary theories have, as widely known, deeply influenced twentieth-century architecture. The concept of overlapping bi-dimensional layers appeared in Japan in the twelfth century with the use of collage and was later rediscovered by Cubism. The process helped to translate this concept from paintings to architecture. “Just as the planes overlap each other in an ambiguous state in paintings, they are actually constructed one on top of the other in collage, and finally are physically separated from each other in architecture. The translation of the concept to architecture is a transformation from visual layering to experiential layering.”47 The presence of time links poetic Cubism with the idea of space-time present in Japan. Sigfried Giedion wrote: “Cubism breaks with the Renaissance perspective. It considers the objects relatively, that is, from several points of view, none of which has absolute dominance. In dissecting the objects in this way, it sees them simultaneously from all sides, top and bottom, inside and out. It revolves around objects, and penetrates them. Thus, to the three dimensions of the Renaissance, which lasted through many centuries as the basic features, it adds a fourth, time.”48

In the essay entitled “Transparency: Literal and Phenomenal,” Colin Rowe and Robert Slutzky are confronted with the issue of spatial layering, describing it as an effect of transparency in architecture. The paper opens with the definition supplied by Georgy Kepes: “If one sees two or more figures overlapping one another, and each of them claims for itself the common overlapped part, then one is confronted with a contradiction of spatial dimension. To resolve this contradiction one must assume the presence of a new optical quality. The figures are endowed with transparency; that is they are able to interpenetrate....Transparency means a simultaneous perception of different spatial locations.”49

Le Corbusier’s house in Garches is used by the authors as a case study to talk about spatial layering obtained by superposing layers with different transparency levels. “Each of these planes is incomplete in itself and perhaps even fragmentary; yet it is with these parallel planes as points of reference that the façade is organized, and the implication of all is of a vertical layer-like stratification of the interior space of the building, a succession of laterally...
extended spaces travelling one behind the other." In the text the concept of fragmentation also appears. “It can be argued that the concept of fragmentation came in part from the discovery of the x-ray by W.C. Roentgen in 1895. What appears to be a wholesome entity from the outside, becomes fragmented in the x-ray. This may have served to inspire artists and architects to be more curious about the inside of solids.”

As objects were broken up into particles by Cubism, in the same way architecture can be broken up and a “particulation”—according to Kuma’s definition—can be created. “One of these strategies has been the use of a large number of thin elements, or slats, as a means of partitioning between inside and outside or between other spatial units. The handling of these repetitive elements, made up of various materials such as metal, plastic, bamboo, and wood, has become so important in Kuma’s architecture that he even coined a new word for it: ‘Particulation’. Kuma understands his slat arrangements not as an additive or cumulative use of thin elements, but rather as the opposite: the unified and monolithic entity of a particular material is broken down into its elementary particles. Such discontinuous continuity of a material is then expressed in a variety of thin screens or filters... Rather than creating a physical entity or object, in this project Kuma was able to design architecture as atmosphere.”

The pseudo-perspective in use in Japan—of Dutch influence—reproduced also a spatial condition through the fragmentation of the image into small elements (increasing the detail rate) and their dimensional change according to the distance from the observer. Each element corresponded to a plane of the image equivalent to a given distance. This kind of layering was also present in Hiroshi Horiguchi’s ukiyo-e—as mentioned before—where the Western perspective was replaced by a sequence of planes having different levels of visual permeability.

We know the contribution of Cubism to the poetics of neoplastic De Stijl. Two people, in particular, should be given the responsibility of “contaminating” the culture of architectural modernism and, more broadly, of being mediators between East and West: Frank Lloyd Wright and Sutemi Horiguchi. Horiguchi, who graduated from the University of Tokyo in 1920, was among the young Japanese architects of that time who rebelled against the formalism of tradition. He visited Europe for about two years, during which he studied Dutch architecture, meeting the major protagonists. Besides assuming the role of messenger for the European architectural research in Japan, Horiguchi brought Japanese culture to the De Stijl movement. His stay in Holland from 1923 to 1924 coincided with the construction of the Schröder House (1924) by Gerrit
Rietveld. This house was probably inspired by the ideas of flexibility and modularity typical of Japanese culture. Commonly regarded as the paradigmatic work of the Dutch De Stijl, the little house on the outskirts of Utrecht is also the most interesting result of convergence between East and West in architecture. The originality of the design solutions adopted make it a unicorn. The three themes derived from the East in this work, each traceable to a certain aspect of traditional Japanese architecture, are the interior/exteriors relationship, the flexibility, and the modularity. The design of Schröder House seems inspired by the dimensions and modularity of tatami, which regulates the construction of a traditional Japanese house. The same also applies to the logic of fragmentation of the interior, through apertures and furniture that recreate the effect of spatial stratification mentioned above. Frank Lloyd Wright found inspiration in Japanese space for “destroiling the architectural box,” one of the most important challenges of his career. Similarly, Gerrit Rietveld’s Schröder House decomposes the space and recreates the volume as a superposition of plane elements. “Organic architecture, to put it briefly, never regards the third dimension as weight or mere thickness, but always as depth. Depth is a spatial element; the third dimension is transformed into a spatial dimension. Penetrating the inner depths of space becomes an architectonic and valid design motif. This depth perception that penetrates the depths causes to bloom a freedom of design never heretofore known by architects, who can now use it in their blueprints—a true liberation of life and light inside the building; new structural integrity; the perception that penetrates the depths causes to bloom a freedom of design never heretofore known by architects, who can now use it in their blueprints—a true liberation of life and light inside the building; new structural integrity; the outside comes inside; and space in which we live is projected outward.”

Frank Lloyd Wright was strongly influenced by the Japanese concept of spatial depth. In his Prairie Houses—the works which mainly show this influence—both horizontal and vertical boundaries create a continuous set of spaces having different values; unified by an overarching Japanese-inspired roof. Already in 1893 he had the opportunity of visiting Ho-o-den, the Japanese pavilion at the Columbian Exhibition in Chicago. Kevin Nute writes: “Japanese Homes and the Western approach of enclosing and subdividing space. Moreover, in their treatment of the boundary between interior and exterior as an indefinite permeable zone, rather than a rigid line, they would seem to have shared at least one important spatial characteristic in common.”

Kengo Kuma recently analyzed the contribution of Japanese culture to Wright’s stylistic development, in particular Hiroshige Ando’s role and the role of The Book of Tea by Kazuho Okakura. “Wright learned these truths from the ukiyo-e prints of Ando Hiroshige and The Book of Tea by Kakuzo Okakura, Hiroshige, Okakura, and the tea house suggested to Wright a mature civilization, and the mature spaces distinctive to it. Wright’s encounter with the transparent spaces based on multi-layered boundaries achieved in Hiroshige’s ukiyo-e prints enabled him to go beyond the perspectival space of the West. He was able to transcend the laws of perspective to express depth in space that had constrained Western architecture and painting since the Renaissance. Hiroshige had as powerful an impact on Wright as the Japanese pavilion at the Chicago Exposition. Just as Hiroshige expressed depth in woodblock prints by overlapping various screens (i.e., boundaries) in two dimensions, Wright expressed depth in buildings by overlapping screens in three dimensions.”

Artificial stratification, Aoshima island
Natural stratification, Aoshima island
Fragmentation, Kengo Kuma, Asahi Broadcasting, Osaka
Transparency, Juan Garduño, Nara

as an instrument to mediate the relationship between the interior and the exterior of a building. The rupture of the architectural box through the fragmentation of walls made by Wright thus generates an organic relationship with the environment and creates a fluid space. “Wright himself appears to have conceived of space as essentially a continuous flowing substance which could be articulated but should not be artificially confined... There is perhaps a parallel to be drawn between the way in which Wright’s later interiors progressively ‘unfold’ as one moves through them—never fully revealing themselves from any single viewpoint—and the carefully controlled sequence of glimpsed views presented to the observer in a Japanese stroll garden. However, in the case of the garden at least, this sense of flowing is of course based on the movement of the observer, rather than on a concept of space itself as a fluid substance... Indeed, in their additive nature Wright’s work and traditional Japanese buildings were both in marked contrast to the more typical Western approach of enclosing and subdividing space. Moreover, in their treatment of the boundary between interior and exterior as an indefinite permeable zone, rather than a rigid line, they would seem to have shared at least one important spatial characteristic in common.”

Hiroshige Ando’s role and the role of The Book of Tea by Kazuho Okakura: “Wright learned these truths from the ukiyo-e prints of Ando Hiroshige and The Book of Tea by Kakuzo Okakura, Hiroshige, Okakura, and the tea house suggested to Wright a mature civilization, and the mature spaces distinctive to it. Wright’s encounter with the transparent spaces based on multi-layered boundaries achieved in Hiroshige’s ukiyo-e prints enabled him to go beyond the perspectival space of the West. He was able to transcend the laws of perspective to express depth in space that had constrained Western architecture and painting since the Renaissance. Hiroshige had as powerful an impact on Wright as the Japanese pavilion at the Chicago Exposition. Just as Hiroshige expressed depth in woodblock prints by overlapping various screens (i.e., boundaries) in two dimensions, Wright expressed depth in buildings by overlapping screens in three dimensions.”

Inspired by this representational technique—interposing several layers between the observer and the building to increase the perception of depth—Wright used it often to represent his projects.
Paraphrasing the conception of space theorized by Lao Tsu, understood as the essence of the content rather than the container, Wright said, "The reality of the building is the space within to be lived in, not the walls and ceiling." Such a statement had enormous consequences, not only in the poetry of the American architect, but also in all the people who drew inspiration from him. "The Book of Tea, written in English and published in the United States in 1906, was also major a influence on Wright. Okakura saw that the essence of a tea house lay not in the building itself but in the void generated in that building. The idea that architecture is not a material object but the space generated inside that object was not original, however, to Okakura. Gottfried Semper (1803-79), a representative German architect of the nineteenth century, is regarded as the first to develop such an architectural theory of space, that is, a spatial view of architecture as opposed to a formal view of architecture. The modern architecture movement, with its themes of spatial continuity and transparency, is said to have started as an extension of Semper’s rejection of a formal, material theory of architecture."57

Through Nikko shrine in particular, Wright learned from Japan the method for breaking the architectural box. The temple of Nikko, with its “Baroque” superabundance—in harmony with nature—probably held an important role in Wright’s poetry. "The trip to Nikko would give him this unexpected answer, because here Wright understood ... that the decoration can always ‘break’ the space, can turn it, move it all the time, adopting a form that can not be fixed, which constantly urges—by its very constitution—movement, light, movement, misalignment, tilt, overlap."58 Wright understood the potential of decor in fragmenting the space in layers and realizing the unity with nature that his organicism advocated. "My sense of ‘wall’ was no longer the side of a box. It was enclosure of space affording protection against storm or heat only when needed. But it was also to bring the outside world into the house and let the inside of the house go outside. In this sense I was working away at the wall as a wall and bringing it towards the function of a screen, a means of opening up space which, as control of building-materials improved, would finally permit the free use of the whole space without affecting the soundness of the structure."59

Another outstanding figure of twentieth-century architecture, Carlo Scarpa, visited Japan and was particularly influenced by it. In 1969, invited by Cassina, he visited Tokyo, Kyoto and Nara. The outcomes of this travel, and of his great interest in the East—which he had already expressed in the previous years—can be read in his works.60 As he admitted during an interview, "Yes, I’ve been strongly influenced by Japan, not only because I was there, but even before I went there I admired their essentiality and above all their supreme good taste. What we call good taste, they have everywhere. It is an unsophisticated taste, plain, not exactly peasant, but almost. Many have also looked in the direction of China, but in their personal virtues the Japanese are simple and have an incredible purity."61 Carlo Scarpa, studying Japanese architecture, had the opportunity to understand its essence in terms of space. In particular, he was able to absorb the concept of ma and, together with it, the idea of layering. "Scarpa realized that space, as for the Japanese, is an experiential rather than measurable compound. And if space is experiential, it must be sequential and depending on empirical experience—hence its temporal aspect. In architecture, space becomes both layer and procession. It’s no accident that in Japanese ideograms, time is expressed as a ‘space in flow’.62 It could be said that
Scarpa uses spatial layering as a superimposition of layers of history. In this approach one can see the different Western and Eastern ways of behaving with historical context. Western culture tends to save substance, the Eastern prefers meaning and technique. Carlo Scarpa then uses layering to relate ancient and modern, superimposing his architecture with existing structures so as to enhance their value, while preserving the contemporary language. "In creating space, Scarpa’s use of spatial strata serves to form individual zones or to provide a transition from one area to the next. His strata of material serve to define space and transport narrative components involving the locale, history, or material. In his building modifications, his intervention is one stage among many in the sedimentative process by which the building was created. He uses the mechanics of stratification to make visible levels that chronologically follow each other, and formal given. At the same time, the design process does not stop with implementation and continues to be a reaction to existing conditions. What was there earlier remains in existence like a kind of palimpsest and begins a communication with the newly added elements. The way layers applied at different periods of time are made visible illustrates the development of the buildings. Different epochs and different ways of using forms can exist side by side with their content legible."

Among the greatest experimenters of spatial layering in Japanese contemporary architecture, Kengo Kuma is the most prolific. In his works, inspired by a careful spatial research uniting traditional culture and present technology, he often uses bi-dimensional elements acting as filters or connections that mediate through the interior and exterior of architecture. In the museum dedicated to Utagawa Hiroshige and designed by Kengo Kuma, several elements of Japanese spatial layering converge. Kuma writes: "Hiroshige took note of the particles that constitute the natural world and in his works showed the essence of nature by layering the particles he observed. He had a tremendous influence on Europe’s Impressionist movement and on Frank Lloyd Wright’s architecture. What I attempted to do with the Hiroshige Museum was the exact opposite. Avoiding concrete as building material as much as possible, I created virtually all the architectural elements, from the roof and the walls to the partitions and furniture, out of louvers made of cedar wood grown on the mountain behind the museum. I hoped that the use of wooden louvers as particles would make the building blend in with the surrounding environment, thus erasing the architecture." Through the spatial layering obtained by the iteration of loopholes, Kuma shifts the observer’s standpoint, transforming the experience from external to internal, and erases architecture, thus creating an “anti-object.”

In the late 1970s, Kengo Kuma studied at the University of Tokyo with Hiroshi Hara and Fumihiko Maki. According to Botond Bognar, Kuma’s interest for the theme of spatial layering might be connected to his teachers’ influence. Hara, for example, at that time was researching “multi-layered structures” and, in 1979, Maki wrote his text on the concept of oku. Takayuki Taki Suzuki, who worked with Hiroshi Hara, describes the use of layering in his works. "In 1982, Tszaki was a Jury member for the La Villette Competition. While Bernard Tschumi and Rem Koolhaas competed for first prize, Hiroshi Hara received an
honorable mention. His project corresponded with Koolhaas’s in its organization of space. Hara named his concept ‘Multi-Layered Structure,’ which would lead him to the concept of ‘Modal Space of Consciousness.’... Hara said that he tried to put a multi-layered structure into practice. Multi-layered structure is the structure found in landscape or our consciousness and means the state that several layers overlap, relating to each other.” Almost all of Kuma’s works show his interest for layering as a device used to give an effect of continuous openness, while strongly connecting architecture to its environment. “As a result of the cumulative effects of the use of reflective glass, the play with translucent and transparency, and the strategies of layering and filtering, the spatial quality of Kuma’s works has gained a fascinatingly elusive fluidity.”

Even though with substantially different conditions and outcomes from Kuma’s, Toyo Ito’s architecture also shows the spaces formed by often undefined and ephemeral surfaces acting as filters, re-creating a “vague and ambiguous condition as the one of drifting particles.” Toyo Ito defines this concept as “graduation.” In a recent interview, Ito states: “In my architecture I always try to go beyond the frame in which I have been constrained, to make the project overstep the mark. I try to make landscape go beyond the space I had to carve out, to make reality progress towards a blurring image. I call this way of working ‘graduation’. I think of graduation as a process in which clearly shaped objects start to melt, a form which gradually blurs. I am very deeply interested in the passage from one state to the other and the other shape. Taking that process and reversing it we get something which, thanks to the photographic tool, has a form which means the state that several layers overlap, relating to each other.” Almost all of Kuma’s works show his interest for layering as a device used to give an effect of continuous openness, while strongly connecting architecture to its environment. “As a result of the cumulative effects of the use of reflective glass, the play with translucent and transparency, and the strategies of layering and filtering, the spatial quality of Kuma’s works has gained a fascinatingly elusive fluidity.”

Layering: Intermediating Patterns exhibition, Tokyo

Examples of gradation: Kyu Shiba Rikyu Garden, Tokyo and Katsura Imperial Villa, Kyoto

Examples of gradation: Kyu Shiba Rikyu Garden, Tokyo and Katsura Imperial Villa, Kyoto

Layering: Intermediating Patterns exhibition, Tokyo

YAP Young Architects Program, Rome

Another meaningful project is T House. Defined by its author as a ‘garden of a tea house,’ this building is designed following a kind of organic layering, where the elements overlap following different directions. This is not so different from the sequence of layers that one can experience walking through the Katsura Rikyu garden. “As one moves forward on the stepping stones of the path, at every instant the landscape is changing. Sometimes these changes occur in continuity, but they can also be very abrupt. The passage from one stepping stone to the next is constantly modifying interrelations. The impressions one has while walking or stopping for a moment in such a garden are similar to the feelings one can experience in the space of this house.”

“Layered house” is the name of a dwelling recently designed by Jun Igarashi and inspired by the concept of spatial layering as described here. The spaces, organized according to a linear sequence, are separated by curtains and permeable boundaries and represent a line wisely mediating the relationship between home space and external landscape. The sleeping area is the most protected and sheltered core of the dwelling, a sort of oku; and is enveloped by the other areas. Here too, as in the traditional Japanese dwelling, there exists generous spatial flexibility. Jun Igarashi, playing with mobile boundaries, wisely narrows and dilates space, creating what has been defined as a “house of illusions.”

The theme of spatial layering has also been concretely experimented within some of the projects I designed with Salvador-John A. Llorens. Intermediating Patterns, for instance, is an exhibition which took place in 2011 at the Italian Cultural Institute of Tokyo, presenting research on patterns and layering carried out at the Kengo Kuma Lab, Tokyo University. A parametric installation entitled Paper Garden explored the potential of spatial layering by using strips of recycled paper, showing how it is possible to produce quality spaces by using bi-dimensional boundaries and patterns.

YAP is the title of the project designed for YAP (Young Architects Program), promoted by the museums MoMA in New York and Maxxi in Rome. Inspired by Katsushika Hokusai’s famous waves and the concept of harmony permeating Japanese culture, it envisages the creation of a “flock” suspended in Maxxi’s external space. The elements composing it derive from the parametric re-elimination of a Japanese traditional pattern (nataru tayusshida) and are assembled by flat modules in sequence, thus implementing a spatial layering able to supply shadow, create relations, and give new and unexpected perspectives of the museum. This work shows that traditional patterns can be successfully used to produce intermediate spaces and new architectural forms and structures.
A Layered Future: Potentials and Perspectives

“Architecture can never be closed off completely. That is the premise of my work. One may enclose space with walls and bury it underground, but architecture is always situated in— and connected to—the world. More precisely, architecture is a device mediating between the subject (i.e. mankind) and the world.”

This intimate connection of architecture with its context, underlined in the words of Kengo Kuma, has always characterized traditional Japanese architecture. Through the use of kyokai and spatial layering, architecture has been able to adapt to narrow territories, creating the conditions for comfortable and sustainable living. The rediscovery of traditional patterns and layering, reinterpreted with a contemporary language, is the way to meet the needs of a radically changing society. According to the definition of Zygmunt Bauman, our age can be defined as “liquid modernity.” This is an age when feelings of uncertainty and ambivalence prevail. It may be compared to a fluid, which adapts to its container assuming its shape. Contemporary society can reasonably be called “non-linear.” This character is traditionally attributed to Asian culture. “From a cultural point of view, time is cyclical in the east and linear in the west. For the West there are absolute truths establishing the pure and abstract concept of opposite terms. To the East, everything is relative and complementary. For them, reality is part of a great interrelated balance, where opposed doesn’t mean contraire. Western mentality, educated in the Cartesian dualism and in the Aristotelian logic, is unable to understand these nuances. Following the previous terminology, we could say that the West is based on solid philosophical foundations. By contrast, the East is based on liquid patterns... It looks like the new liquid modernity had patterns in common with eastern philosophies, or, better yet, like it was better adapted to the new era that we are initiating.”

At the end of the last century, Yoshinobu Ashihara glimpsed what would be the orientation of society and architecture in this century. The world is moving today towards “mass customization.” The technology that has linked people and forms of sociability has taken directions unimaginable until a few years ago. The architecture, understood as standardized and repeatable, is no longer suitable to meet human needs. “As the twenty-first century nears, we are entering a democratic age, in which total planning based on whole-oriented conceptualization will be increasingly ill-suited to the needs of urban development. No matter how troublesome it may seem, the parts-oriented approach oriented to individual tastes and specific purposes must be given its due. We are entering a time when individual fulfillment and distinctive tastes are demanding...”
priority. People are no longer willing to submit quietly to the overriding interests of the whole but are asserting their
demand for attention to the parts. This shift in values is already changing economic and political life, and it will no doubt
affect the development of modern cities as well. The qualities of a city like Tokyo that is parts-oriented to begin with,
although appearing chaotic and lacking any principle of order, may at last be appreciated in the coming age.”

The Japanese culture is therefore a key to understanding contemporary society. Japanese architecture represents a
paradigm in this sense. The boundaries are the heart of this trend. In the eastern tradition, boundaries are understood
as vague and blurred, able to connect rather than separate. Ashihara compares the behavior of boundaries to the infinite
interaction between yin and yang that characterizes the eastern culture. “This borderline is the embodiment of the
perpetual transformation of yin into its opposite, yang, and yang into yin. There is a constant appearing and disappearing,
enlarging and shrinking, that occurs in the time sequence. The changing shapes are the result of recognizing the
potential for latent shapes where there is no apparent shape.” Once again, space and time are strictly connected. The
overlapping layers that compose the boundaries could be seen as a time sequence that creates variable moods and
perceptions. Architecture interacts with mankind and acts as a filter between the humans and their natural and social
environment. Using overlapping surfaces with different permeability can also significantly improve performance in
terms of climatization. This comes as a different approach to sustainability. It makes it possible to combine technical
and structural requirements with cultural and traditional values. Fumihiko Maki was one of the pioneers of this trend:
“Maki’s buildings could rarely be considered sustainable by such measures as energy consumption, carbon emissions,
or waste reduction. Instead, Maki’s buildings embody a different kind of sustainability—one that lies not in their technical
performance, but in the conceptual overlays that imbue them with meaning. While Maki’s screens do block the sun, and
consequently reduce the need for air conditioning, he does not conceive them as purely energy-saving devices. Rather,
they derive from concepts that embody cultural, religious, social, spatial, material, artistic, technological, economic and
humanistic ideas.”

The correct use of the materials according to their intrinsic characteristics and potential plays an important role in
creating this type of architecture. Frank Lloyd Wright was aware of the importance of materials: “New expressiveness in
architecture means that new materials determine the form and structures, and demands a new outlook that in the end
characterizes both as ornament... No Western nation has ever used wood with such understanding as did the Japanese
in their buildings, where wood always appeared and stood out in noble beauty... I learned to see wood as wood, and concrete,
glass, or metal each by itself and as what it was.” Also the works of Kengo Kuma are marked by an extreme emphasis on the
materials and their potential: “I have been trying to see if there is not a way to design public buildings that does not depend on first creating a silhouette and then sticking a pattern on
that silhouette. For example, Chokkura Plaza (2006) is the result of cutting the local Oya stone into distinctive L-shaped
pieces and piling them up. By adding those elements, a unique texture is produced and a silhouette that makes the best
use of that original texture is made manifest.”

In the past the walls were thick and this was mainly related to the limits of technology. Starting with modernism, walls
became thinner, almost disappearing through the use of glass. Today it’s time to regain the thickness of the past, but
creating boundaries as a superposition of layers with different permeability made through the pattern. This is the key to
consider the margin as an element that creates relationships. We can imagine to break up a heavy thick wall into small
particles. In doing that, we are modifying the physical characteristics of the object. The pattern is a “code” that controls
this decomposition. Far from being seen as only a decorative element, it becomes functional and offers an infinite
number of potentialities. Through the use of parametric softwares, one can check real-time performance of the layering
and adapt the boundary to the needs of the project. Wright had understood the full potential of the fragmentation of the
layers through the pattern. Designing the Tokyo Imperial Hotel, for example, he realized that fragmenting the walls with
ornamentations was possible to obtain a lighter structure and therefore resistance to earthquakes. “And why not extreme
lightness combined with tenacity and flexibility instead of the great weight necessary to the greatest possible rigidity?”
Why not, then, a building made as the two hands thrust together palms inward, fingers interlocking and yielding to movement—but resilient to return to original position when distortion ceased? A flexure—flexing and reflexing in any direction. Why fight the quake? Why not sympathize with it and outwit it? That was how the building began to be planned. The outside cover-hangs of the cantilever slabs where they came through the walls were all lightened by ornamental perforations enriching the light and shade of the structure.9,10

Spatial layering is a tool that can radically redefine the role of architecture and its way of interacting with context, both physical, social and cultural. The rediscovery of the heritage of traditional Japanese patterns and boundaries can unveil new horizons and new challenges to sustainability in world’s architecture. Through layering we can protect ourselves from natural elements, without detaching us from nature.

Industries
3. ibid.
13. ibid. 6.
14. ibid. 8.
17. ibid. 7.
21. ibid.
24. ibid. 6.
25. ibid. 8.
27. ibid. 11.
30. ibid. 12.
31. ibid. 18.
33. ibid. 2.
34. ibid. 8.

Acknowledgements
Photos by Author.

Fig. 64 © KKA 2011.
Diagrams concept by Author. Caterina Vitomina designed the diagrams and contributed to research.
Calligraphy on the opening page: Kuan Kuo.

Mattie Belfiore
Mattie Belfiore is a licensed architect and postdoctoral researcher in the Kengo Kuma Lab at the University of Tokyo. Besides architecture, he has a strong interest in photography and visual arts. His works and articles are published in international magazines such as Domus, Volume, Compasses (for which he is editor), and books. He has edited three books published by G Norton (2010). His projects have been exhibited at MoMa (NY) and Maxxi (Rome), Venice Architecture Biennale, and Triang Festival (London). He has practiced at Mec Arts Architects (2007). He has curated the exhibition Intermediating Patterns in Tokyo together with Kengo Kuma (2011). His current research is focused on studying the potentials of spatial layering in contemporary architecture.
Acknowledgements
The editors wish to give their sincere thanks to Kengo Kuma, who has kindly devoted his time and ideas to this project, Kengo Kuma and Associates–KKAA, and to all the contributors of this volume.

Endorsements
The Japan Society for the Promotion of Science
The University of Tokyo
The Italian Embassy in Tokyo
The Italian Cultural Institute in Tokyo
The Italian Chamber of Commerce in Japan

This book was partially funded by
The Japan Society for the Promotion of Science
Kengo Kuma Laboratory, the University of Tokyo

Copyrights for silk screen artworks belong to Norika Niki.
All rights reserved.
A journey into the activities of Kengo Kuma Laboratory

“This book aims to establish the interrelation between patterns and layering within architecture. These two previously detached notions can now be integrated into one methodology mediated by structural concepts. Patterns and Layering is the first book to introduce this new interrelationship, which has the potential to begin a new architectural and design revolution.”

Kengo Kuma