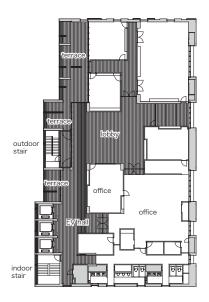


Mokuzai Kaikan Presented by Mr. Tomohiko Yamanashi

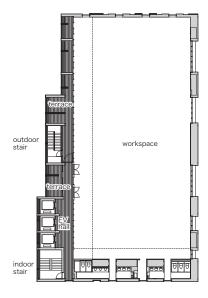
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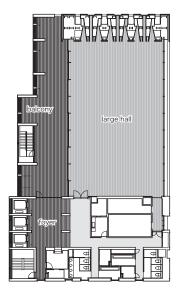
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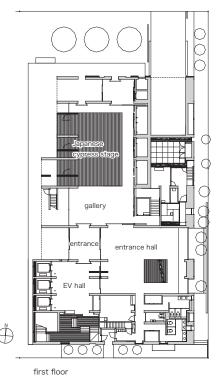




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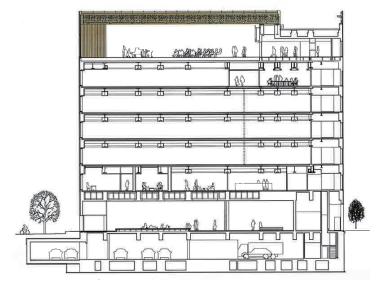


seventh floor



1 (000

plan 1/600



section 1/600

Building Name: Mokuzai Kaikan Location: Shinkiba 1 Chome, Koto-ku, Tokyo Use District: Quasi-Industrial District / Fire Protection District / Shinkiba and Tatsumi 3 Chome District, District Planning Area

Site Area: 1,652.90m² Building Area: 1,011.26m² Total Floor Area: 7,582.00m²

Use: Office, meeting room and assembly hall

Number of Floors: Seven floors above ground and a basement floor

Structure: Steel reinforced concrete structure with partially steel structure and wood structure

Design: NIKKEN SEKKEI LTD Construction: TAISEI CORPORATION Completion date: July 2009

Designing Mokuzai Kaikan

March 16, 2010

Organized by: Japan Council for Advancement of Timber Utilization

Venue: Large Hall, 7th Floor, Mokuzai Kaikan



Thank you for having me here today. I am Tomohiko Yamanashi from NIKKEN SEKKEI LTD. Today's lecture is about how we designed Mokuzai Kaikan, as the title suggests. I would like to begin by explaining our design team structure, because many of those present today work in the wood industry or other industries not related to architecture. I work for NIKKEN SEKKEI LTD, one of the so-called "corporate architecture firm", where many architects work together and design architecture as a team.

The client of the Mokuzai Kaikan project was Tokyo Mokuzai Tonya Kyoudou Kumiai (Tokyo Lumber Wholesalers' Cooperative Association) consisting of leading authorities in the wood industry, and we architects and the clients worked together to design this project. Moreover, many of those engaged in the construction, including the site office manager from TAISEI CORPORATION, put their souls and hearts into this project. Before moving on to the main topic, I would like to note that Mokuzai Kaikan could not have been successfully achieved if we had followed the usual procedure in which the architect designs, the contractor carries out the construction, and the client receives the completed building. Because I am giving this lecture alone, I might sound as I conceived and developed ideas presented here all by myself, but that is not the case. I would like to highlight the fact that all of the ideas were conceived and developed through close collaborations among the architect, contractor, and client.

Starting a New Project

Designing architecture is not just about making sophisticated buildings, but one has to consider so many things throughout the process. For example, we often need to start thinking about production engineering aspects including how to assemble wood members during the design phase. We also need to consider the social significance of using wood.

Because we are designers, we naturally need to think about design as well as functions and economics. We also need to pay careful attention to environment issues especially in recent years. Today, many different factors are involved in architecture in extremely complex ways, and architects have to do much more than simply making sophisticated buildings. Architecture is conceived through the process of considering what should be done while paying attention to various factors involved. The question is how we can incorporate all the factors without ignoring some of them.

Mokuzai Kaikan is an office building. In the past, office buildings were planned based on functions and performances including the spatial efficiency and the rentable floor area ratio. Today, on the other hand, people increasingly consider that intellectual productivity is one of the most important factors in office buildings, and architects increasingly consider it important to observe the behavior of people working there in addition to functions and performances when designing office buildings. People tend to think that architects make "boxes." But actually, that is not the case. Architects should start designing by thinking about people's activities.

For example, you are engaged in an activity of listening to my talk here. Now is the time to think about architecture based on people's activities. Did you notice the pleasant scent of Japanese cypress upon entering this room? Architects should predict what people will feel upon directly experiencing the building and incorporate that into their design. I know it is a very difficult thing to do, though.

Because architecture always exists in society, we should think about architecture in relation to people's positive and negative social behavior. The best thing to do is to find common ground between the architect and client which would bring goodness and happiness to society. In order to achieve this, we also need to take sociological and cultural anthropological approaches. It would be naturally impossible for architects to handle all of these by themselves, but I think architectural design as a profession should incorporate a wide range of things or "parameters" as much as possible.

Then, what methods can we use to incorporate as many parameters as possible without omitting them? If we compare architectural design to mathematical formulas, it would be equivalent to an equation with multiple variables, which could be solved using multiple computer networks today.

In our case, we strive to find solutions through team-



Exterior view of the west side of the building

work. By working as a team, we would be able to see things from new perspectives and conceive new ideas, which cannot be done by a single person. I came here to talk with you to-day not because I just wanted to brag, but because I wanted to take this opportunity to hear your opinions and hopefully incorporate them in our next design. We may say this is a form of "collective knowledge." One of my ambitions as an architect is to create better architectural design by using all methods available. This is exactly what I hope to achieve.

We often hear the term BIM recently. BIM is an abbreviation for Building Information Modeling, which is the latest design method using three-dimensional CAD. Some people seem to think that our design relies on computers, because I have written some books on BIM that outline the three-dimensional architectural design method using computers. But in fact, we draw by hand and make many models, too. We are willing to use all methods available without any particular preference in order to create good architecture. I think this attitude is essential for architects. We are willing to take BIM-based approaches and achieve a good design using the latest information technology. In the old days, many people had preconceptions that architects who are good at hand drawings are not good at using computers, while architects

who are not good at hand drawings actively use computers.

Today, many artistically talented architects actively use computers, too. Information Technology (IT) is an effective means for achieving good architectural design. Today's rapid transformation using IT may seem as revolutionary as the drastic transformation in the Renaissance period to future generations. As a person living in this era of drastic changes, I strive to make the best use of IT as much as possible.

We also place much importance on creating effective visuals. It is important for us to visually convey our design ideas, such as where trees are planted and how they look. We also think heuristically. Some people seem to think that architects design intellectually based on specific concepts. But they actually develop design through a long and arduous process of trial and error including making models, drawings, computer-generated graphics and more. We may say that architectural design is not really a sophisticated profession like some might imagine. Architects constantly struggle and endure "birth pangs" until architecture comes into existence.

Essence of Design Is to "Make Something Visible"

In my opinion, the essence of design is to "make something

visible." Our design method characteristically utilizes computers to "make something visible."

For example, you are actually looking at the large beams spanning over the hall on the seventh floor of Mokuzai Kaikan now, but it is impossible to show this actual condition to the client during the design process. So, we make computer-generated graphics, mock-ups, and models to help people understand our ideas. We need to visualize something that will eventually materialize, and computers are very useful tools for this purpose.

On the other hand, there are various intangible factors that impose restrictions on building forms including the building codes. We can incorporate building code restrictions in the design process by visualizing them through the use of computers. For instance, the facades of this building are protruded and recessed in some parts as a result of various studies to achieve the maximum allowable floor area based on the comprehensive design system designated by the Building Standards Law. Rather than considering various restrictions designated by the comprehensive design system as preexisting disadvantages, our design team actively incorporated them in the design process by visualizing them on computers.

Moreover, the most significant advantage of using computers is their ability to "make something invisible visible." Let's imagine what may happen if we can actually see how the air moves through this space. In the past, Air conditioning engineers would start planning air conditioning systems after architectural design was completed. Today, Air conditioning engineers get involved in the design process at an early stage, because they can easily visualize air flows using computers.

The same applies to lighting design. While the level of brightness was determined intuitively in the past, effects of lighting can be predicted to a certain degree by creating precise simulations using computers today. Our professional competence is measured by how we can utilize the latest technology available in our time in the most appropriate way possible, and that's the design method we hope to achieve.

Bringing Back the Power of Wood to Urban Architecture

In recent years, the range of Japanese architects' work has expanded globally and many of them are increasingly engaged in projects outside Japan. Still, Japan is a "distant country in the Far East" to people all over the world, and the majority of people overseas have never visited Japan. Although few

of them would wrongly assume that the Japanese are still walking around with swords stuck in their belts and their hair tied into "chonmage" (topknot), many of them still seem to believe that Japanese architecture is made of wood and paper. But in fact, we hardly see wood buildings in cities in Japan today. If we look closely, we can find wood benches in squares and plazas and wood finishes partially used inside. But we hardly see wood buildings representing Japan as the "country of wood."

Most of the people around my age or older have some kind of memories of daily life related to wood, such as "4 su-n (approximately 12cm x 12cm) square wood columns standing in the house." Many Japanese people still have nostalgic feelings for wood architecture. We have to bring back wood architecture to cities before people lose such feelings, or otherwise Japan's rich tradition of wood architecture would be lost. I felt strongly that we had to do something to preserve the tradition and bring back wood architecture in the city center.

Specifically, we decided to develop ideas focused on the three points, including the extent of using wood as structural components, the extent of using wood as exterior finishes, and the extent of using wood as interior finishes.

As an architect at NIKKEN SEKKEI LTD, I have had



View of the entrance



View of the gallery on the first floor

many opportunities to design large-scale office buildings, but I must say I am a total amateur when it comes to wood architecture. That is why I took time to learn about wood architecture throughout the design process of Mokuzai Kaikan. At first, we felt tempted to use wood using highly advanced and acrobatic methods. But after we started seriously focusing on our aim of bringing back the power of wood to urban architecture and increasing demand for domestic lumber, we realized that it would be difficult to put such highly advanced and acrobatic methods specially developed for this building into general use. Methods used to construct this building should be applicable to any other buildings. Since the building is located in Shinkiba (meaning "a new lumber land") historically known as the center of lumber business, I am hoping that some of the neighbors around Mokuzai Kaikan will like the building and decide to build wood architecture using the same method and this "wood architecture" movement will spread throughout the city. It would be difficult to do so if highly advanced methods are involved. We came to think that it is essential to use wood utilization methods that can be put to general use in order to spread this movement.

Lumbers used here are standardized products based

on traditional modules established during the Edo period including "4 su-n" (approximately 12cm x 12cm) or "3 su-n 5 bu" (approximately 10.5cm x 10.5cm) square sections, which are one of the oldest industrial standards in Japan Since the Edo period. Lumbers based on these modules are still in constant demand in the Japanese market despite the decreasing number of wood buildings. In order to bring back the power of wood to urban architecture, we have to think about ways to use materials readily available on the market in the construction of urban architecture. In other words, we need to take pragmatic approaches while considering current situations in the lumber market.

Using Wood Without Applying Non-burning Processing

We also aimed at using wood without applying non-burning processing. Because wood is generally considered as highly combustible material, many non-burning processing methods have been developed including the borax solution immersion method. It helps expand possibilities of wood on the positive side, while it drastically increases the weight of wood on the negative side. The increase in weight deprives

wood not only of its lightness, but also of the inherent warm touch and atmosphere. Considering that the "warm touch" is one of the important characteristics of wood, we decided to use natural wood as exterior and interior finish materials as much as possible, in addition to using them as structural components.

I would like to start by explaining what it means to "use wood as exterior secondary structural components." At first, we had figured it would be technically possible to construct Mokuzai Kaikan entirely of wood by using highly advanced construction techniques, and conducted research on a similar case in Northern Europe. The structural components of the building in Northern Europe are covered with fireproof materials, and it seems to me that the beauty of wood is completely hidden beneath the surface. We therefore decided that our top priority was to use exposed wood in the exterior and interior, while the main structural components would be made of concrete and steel. Considering the fact that most high-rise buildings in cities are made of concrete and steel, we decided to use wood as secondary structural components. We thought that everyone would be able adopt this method without difficulty.

We tend to associate "buildings using wood" with "wood construction." But we should remember to use the right material in the right place on an appropriate scale. In order to bring back the power of wood to urban architecture, we need to think about how and where wood can be used to enhance contemporary urban life in the most effective way while making the best use of unique characteristics of wood. In this project, we intended to bring back the power of wood, instead of blindly trying to bring back "wood construction." We thought that we should aim for new wood architecture which may be called "ligneous architecture" instead of focusing too much on wood construction.

Having said that, we were still unsure about using wood extensively, considering regulations regarding fireproof buildings in the city center. But as a result of various studies, it turned out that a considerable amount of wood can be used without applying fire retardant treatment. We found that it is possible to use wood extensively in the interior and exterior on condition that the same level of safety as stipulated by the building code is achieved by taking appropriate measures to prevent fire from spreading to upper floors according to the 2000 amendment to the Building Standards Law. In this building, 90cm-high interlayer compartments are installed between exterior finishes on upper and lower floors, and these parts are made of fire-retardant-treated wood. In other words, the use of wood was allowed by strictly adhering to

the rule that the structure must be securely protected when fire occurs by preventing the fire from spreading to upper floors. Hearing this, you may say, "Why, it's easy!" But I think that the method everyone can adopt should be "easy as pie."

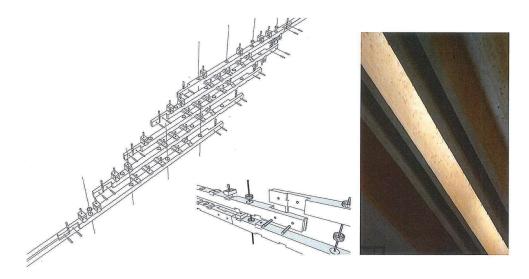
Secondly, I would like to talk about "using wood as interior finishes." It was actually a long and hard struggle. But in retrospect, we successfully achieved this using a method that was also "easy as pie." To be honest, I have mixed feelings about imparting our hard-won knowledge, but I will show you all the tricks in the hope that our knowledge will help bring back many wood buildings to cities.

The space under the roof was said to be entirely exposed in the architecture of Shinto shrines in ancient Japan. The concept of ceiling was introduced when Buddhism arrived in Japan and it has continued until the present day. As a result, all office buildings have ceilings today—I may have over-simplified the story. Columns and beams are usually hidden and mostly invisible in these buildings with ceilings. People hardly notice the ceilings, either.

In designing office buildings, we always painstakingly make efforts to reduce the size of smoke exhaust ducts as much as possible. In the case of Mokuzai Kaikan, we increased under-ceiling space volumes used to accommodate accumulated smoke in case of fire by removing drop ceilings and exposing ceilings. "Safe evacuation in case of fire" means that people are able to evacuate before smoke comes down to their faces. That is, we can provide sufficient evacuation time and achieve evacuation safety in a building by planning in such a way that smoke from burning wood accumulate and stay under the ceiling long enough so that people can evacuate before smoke comes down to people's faces. This method is specifically called the evacuation safety validation method, which is a technique usually used to reduce cost by minimiz-



View of the meeting room on the sixth floor



Assembling Wood Components

The hall on the top floor consists of wood components made of Japanese cypress using a computerized fabrication process. The wood components are securely fixed in place by inserting wood plugs made of shirakashi.

Massive plank-like beams made by fastening the components using bolts constitute a roof structure of the hall.

Natural light entering through skylights in the roof illuminates the hall and the wood components.

Detail of the rabbeted scarf joint, the seventh floor large hall



ing the size of smoke ducts.

This time, we used this technique in order to use wood and enhance the design. We found that it is possible to use plenty of wood in the interior by making under-ceiling spaces deep enough to accommodate accumulated smoke when fire occurs, while complying with the Building Standards Law. In my view, another significance of exposing the ceiling is to make the ample space hidden beneath the drop ceiling visible to people working there for the first time.

Thirdly, we made efforts to use "wood as structural members." Our goal was to make a large space using unfinished square lumber in the seventh story hall. Because it is a conference room, we assumed that there would be few combustible items in the space to begin with. We developed design based on the grounds that safety would be ensured if beams are designed in such a way that they do not catch a fire in case something catches a fire and a fire breaks out.

Here our goal was to use wood as structural members, because we were not satisfied with using wood only as finish materials. Beams spanning over the hall are top floor beams, which means that they support only the weight of the hall itself. Due to this simple structural condition, this place was conveniently capable of accommodating various experiments. It was confirmed by the fire resistance validation method

that beams do not catch fire if the distance from the floor to the underside of beams is 5.4m or more. It was in this way that we confirmed that it is possible to use wood as structural members without applying fire-retardant treatment.

In summary, we successfully achieved the initial goal of using wood as interior and exterior finishes, and structural members based on the three conditions including "taking necessary measures to prevent fire from spreading," "a sufficient space under the ceiling to accommodate accumulated smoke should be provided," and "a sufficient height under the beam should be provided so that beams do not catch a fire in case a fire breaks out." It is surely not easy, but anyone can do the same thing if he/she thoroughly reads and understands the performance regulations of the Building Standards Law.

Placing All Elements on the West Side

Mokuzai Kaikan is located in front of Shinkiba station, and planned in conjunction with two neighboring buildings based on the comprehensive design system of the Building Standards Law. The building is located in such a way that only north and west facades facing the station are visible from the street and it has views from the inside towards the



View of the west facade

outside only on the north and the west sides. When making floor plans, stair and elevator cores are generally placed on the west side to block out the western sun. But we cannot thoughtlessly take this conventional approach and place a core on the west side of this building, or views from the inside would be entirely lost. Therefore, we designed in such a way that an appropriate amount of sunlight is brought inside while using the core on the west side to block the intense western sun and provide a pleasant environment in the west-facing office.

Wood used in this building are not thinly sliced materials. We chose square lumber, because our idea was to reuse the wood components after they have fulfilled their missions. The life of an office building is generally fifty years at most. On the other hand, the structural strength of wood is said to reach the pinnacle approximately two hundred years after felling. For this reason, wood used here can be reused as building materials even after the life of this office building is over. Taking the Colosseum in Rome as an example, the extremely thick stones had been torn off from the building and reused for various purposes in later times. Following this precedent, we used square lumber as they are and avoided using glue so that they can be easily dismantled and reused after the life of the building is over. All components are fas-

tened using metal fixtures and bolts.

Another material constituting the west facade is concrete. We also paid particular attention to the surface finish. The surface texture of concrete actually reflects the surface texture of the formwork. Wood forms were often used in the old days, but they were replaced by veneer board forms in order to prevent yellowing from wood lye and eliminate wood grain patterns on the concrete surface. Then, they started using coated veneer forms to eliminate wood grain patterns, which later became a popular concrete finish called "fairfaced exposed concrete." In recent years, they even developed a complicated method of scraping surfaces of wood panels using wire brushes to intensify the grain patterns, making molds for plastic forms using the scraped wood panels to replicate the wood grain textures, and cast concrete using the forms to replicate beautiful "wood grain patterns" on the concrete surface. It seems to me an extremely distorted way of thinking. In this building, we simply used unpainted cedar formworks in order to transcribe the texture of a lump of wood onto concrete.

Wood looks whitish and very beautiful when it was newly constructed, and it eventually ages and turns grey as time goes by. Some people are worried about Mokuzai Kaikan and I often hear them say, "It is beautiful now, but will eventually



Interior view of the gallery on the first floor

turn grey and dirty." When wood turns grey, do you perceive it as dirty? This is an important question. Does wood have to stay "white and new" to be perceived as beautiful?

We are impressed by traditional architecture in Kyoto and Nara, but they are not new and shiny at all. We perceive old buildings that had weathered over long periods of time as beautiful. Byodo-in had been painted in bright colors in the old days, and the colors completely faded over the years. Many Japanese people look at it and feel that the weathered and faded appearance makes the building even more beautiful. I think the spirit of "Wabi-SabI" was born out of this kind of sensibility. In order to achieve our goal of "bringing back the power of wood to urban architecture," it was necessary for us to emphasize that weathered wood is beautiful and create architecture that ages beautifully.

This concrete with wood grains engraved on the surface and yellowing from wood lye was a specific measure we took to achieve this idea. Concrete used at Mokuzai Kaikan is slightly yellowish due to the yellowing effect of cedar wood lye, which architects used to avoid in the old days. In this building, we used the yellowing effect from wood lye on purpose. Because we do not have enough knowledge about the precise mechanism of the yellowing effect by wood lye, we are not entirely sure if concrete will turn yellow the way we expect. Hopefully wood will gradually turn grey and concrete will turn yellow, and they will become the same color in several years. And after the color continues to change to a certain point, we expect that the color of concrete becomes like wood, and the color of wood becomes like concrete. Modern office buildings are designed to look most beautiful at the time of completion. On the other hand, wood buildings have been pursuing beauty that increases with time. Upon designing Mokuzai Kaikan, we set a theme of "creating architecture that changes with time" based on the tradition of wood architecture. I personally would like to continue exploring this theme.

We used square lumber instead of thinly sliced wood based on this idea. The bench made of square lumber at the entrance hall on the first floor already has many scratches on the surface, but I think that the important thing is not to worry about scratches it gets. If we use thin wood veneer on furniture, we cannot help worrying that it may easily chip off if something bumps into it. But we don't need to worry about that here. This is an office building, and a space where people get nervous about something is not appropriate for a place of intellectual production. Sturdy wood can be reused many times, and scratches on the surface increase the beauty of wood. This is the strength of wood we learned from working with raw wood.

Making Active Use of Three-dimensional Drawings

Our team actively uses three-dimensional design methods. I think it is important to visualize spaces three-dimensionally from an early stage of architectural design. BIM is an extremely convenient tool for three-dimensional visualization of architectural spaces. Architecture is expressed through two-dimensional drawings in general, but our team confirms design ideas by making three-dimensional drawings first and makes two-dimensional drawings after that. Every step of the design process is confirmed visually as we move along.

We made a large terrace space on the west side of the building. The terrace is composed of concrete walls that were cast using cedar forms and the eaves, floor, and benches made of Japanese cypress. The eaves constitute part of wood lattices on the facade when seen from the outside, while they constitute part of ceilings that enhance the pleasant atmosphere when seen from the inside. You can open the sliding door and goes out to take a break on the bench—it is a very



View of the terrace on the typical floor

refreshing moment. In Japan, we can spend time outside pleasantly throughout the four seasons, except for mid-summer and mid-winter. But the pleasant climate condition had not been incorporated in the office building design until today. The facades of this building work well with the climate in Japan. The eaves (ceilings) and walls constituting the lattices around the terrace are composed of three-and-a half (approximately 10.5cm x 10.5cm) square lumbers placed with 2cm-gaps in between to prevent water accumulation between the members which may cause wood rot. Wood rot on the surface is acceptable when using wood outside, but we should never let it rot to the core. Wood rot is prevented by making gaps in between the members to prevent water accumulation due to the surface tension. At the same time, the gaps in between visually articulate wood members so that everyone can see that this building is made of lumber. These are basic design ideas for Mokuzai Kaikan.

Expanding upon concrete formwork, concrete takes shape as a result of interaction between concrete and the formwork, and I think that is the beauty of concrete. Thick wood planks called "mitsuwari" (approximately 3cm x 9cm section) are usually used to make "honzane" (tongue-and-groove joint) type cedar wood forms. Because we made forms for this building using relatively thin wood planks, forms slightly warped outward. The warp was not caused by yielding to the concrete pressure, but the wood planks

absorbed water, warped outward and pushed concrete back. I am actually satisfied with a soft impression the warped surfaces of forms added to the concrete. Exposed concrete finishes cannot be redone anyway, though.

Expanding on the details, edges of the tongue-andgroove jointed cedar wood planks have to be chamfered, or otherwise bumps and dents on the edges caused by getting hit by other materials during the assembling process would be transcribed onto the concrete. For this reason, edges of concrete forms for Mokuzai Kaikan were chamfered widely, which resulted in creating beaded joints on the concrete surface. People often tell us, "Formwork carpenters must have had a hard time making so many beaded joints." It was a hard work indeed, but the thing is, if edges of planks are chamfered properly to facilitate easier handling of materials and concrete is cast carefully, beaded joints are naturally made as a result. In the case of Mokuzai Kaikan, TAISEI CORPO-RATION kindly prepared a work environment where we were able to directly communicate with formwork carpenters. It was in this way that we were able to work things out with mutual understanding.

Looking closely, you can find different types of marks and traces left on the concrete surface. Here we face the same question that we posed regarding the wood surface: Is it "dirty" or "beautiful?" I personally think that beautiful architecture emerges out of things that bear natural marks and



traces of other materials. What do you think about this?

Interior of Mokuzai Kaikan

As you can see in the floor plan, the exterior facade system continues into the interior. The space resembling an exterior engawa (edging strip or a kind of veranda between inside and outside in Japanese architecture) is called "Gallery" and a stage made of Japanese cypress is placed there. Based on the concept of providing various experiences of wood, we decided to make a space where one can feel wood with his/her feet. After the building was completed, I had an opportunity to bring young employees of NIKKEN SEKKEI LTD here and gave them a talk. I felt the effect of sitting in a circle, either in the seiza style or cross-legged position, on the stage made of Japanese cypress: they listened intently to my talk, although they usually don't pay much attention to what I say at the office. I suppose the Japanese cypress floor made them sit up straight. Maybe we should have important meetings here from now on, sitting in a circle on the Japanese cypress stage (laughs). "Making a wood floor at the office" may become a new slogan for promoting intellectual productivity in offices from now on.

One enters the entrance hall through the front door. A large bench made of Japanese cypress is placed there. The floor is finished with stone, and gravels are laid in front of large glass windows to prevent people from colliding into glass. We used regular washed crushed stones instead of expensive polished gravels. We made the bench at the final stage of the construction. During the construction, I was often moved by the beauty of stacked lumber at the site, and the bench was designed based on this impression. The entrance area was designed in such a way that light reaches deep into the space, and it feels brighter than the actual illu-



View of the entrance hall on the first floor



View of the indoor stairs on the first floor

minance level.

The first floor also accommodates a Japanese-style room and a tea ceremony room. We made efforts to reduce waste by using wood made from small-diameter timber in a relatively wide range of colors. The illuminance level in the tearoom is kept as low as possible. There is a stairway in the back of the elevator hall next to the entrance, which looks like "chigaidana" (staggered wall shelves). It actually serves as indoor emergency stairs. In typical office buildings, emergency stairs are not visible because they are enclosed in the cores. In this building, we deliberately placed them outside of the cores, made them visible, and integrated them into the entrance hall. Spatial impressions in Mokuzai Kaikan are effectively enhanced by the accumulation of small design ideas such as these.

Ideas behind Work Places on Typical Floors

Mokuzai Kaikan is basically a building for rent. We developed various ideas for work places in this building. A typical



View of the office, terrace, and emergency stairs

office building consists of a "box" where the cores and work places are distributed accordingly. This type of floor layout causes some inconveniences, including work places with columns in the middle of the space or irregular-shaped work places in a regular square-shaped office building. I believe that work places are the heart and soul of office buildings. If it is a headquarter building of a company, the owner basically make decisions. But if it is a building for rent, it should be designed to serve the convenience of the majority of people.

In designing Mokuzai Kaikan, our initial idea was to make workplaces without columns in the middle first, place elevators and stairs around them, and bring light and wind inside, while making efforts to use wood in the best way possible. We didn't take advantage of the fact that we got commissioned by Mokuzai Kaikan and design as we pleased while using plenty of wood. We designed it in such a way that there is no column in the middle of work places, while engawa-like spaces are provided on the west side and spacious offices are brightly lit with plenty of natural light. The engawa spaces extend from the elevator hall, through the interior space and connect with terraces outside. One goes out to the terrace from the office through a sliding door. Exterior spaces are filled with fresh air and natural light. While exterior spaces like this would not be pleasant in extremely cold countries in Northern Europe or extremely hot countries such as Dubai, they are very pleasant in Japan. Emergency stairs integrated into the exterior spaces are clearly visible from work places, and they also serve as eaves blocking the sun. We used wood as much as possible in places where people's hands touch, including stair handrails. Air conditioning indoor units are installed in step-down ceilings on the terrace side and air conditioning outdoor units are installed in ceiling plenums above the terraces.

Another notable characteristics is that natural ventilation can be adjusted flexibly by opening and closing sliding doors. In recent years, architects have been competing over how they can eliminate vent windows or make them invisible on the exterior walls due to their over-enthusiastic pursuit of homogeneous beauty of curtain walls. Come to think of it, this is total nonsense. If vent windows are not visible, it is difficult for building users to know where they are located. In fact, I think that opening and closing of vent windows are as important as operating ventilation. According to the concept of modern building services engineering, air becomes clean or dirty automatically and users are not allowed to operate the ventilation system by themselves. In my view, it is headed in a questionable direction. Users should be able to operate the system by themselves, physically engage in the operation, and acknowledge the consequence of their actions. In other words, it is important to establish interactive

relationships among the action, consequence, and humans.

Taking sliding doors as an example, they are extremely well designed elements in the sense that the user can directly confirm the result of his/her operation but they are unfortunately rarely used in contemporary architecture. Opening and closing of sliding doors can be carefully adjusted by hand. The amount of operation is directly visible. In other words, a user can visually confirm the current state of his/her careful operation and make adjustments as necessary at the same time. This is the best-designed fixture that I know. This is why I use many sliding doors in Mokuzai Kaikan. The wind is brought inside through sliding doors, and people come and go between the terrace and the office through sliding doors.

We also came up with ideas for lighting. In general, ceiling lights in office buildings are installed directly in the ceiling. If you work in an office building, I would like to encourage you to take some time to observe the ceiling. You would probably notice that the ceiling looks rather dark. The reason why it is difficult to achieve a pleasant level of brightness despite the considerable number of lighting fixtures installed in the ceiling is because the ceiling, which takes up a large part of one's field of vision, is dim and a number of glaring ceiling lights are installed in it.

In Mokuzai Kaikan, we exposed the ceiling and provided under-ceiling spaces to accommodate accumulated smoke so that the use of wood in the interior is allowed. Lighting fixtures are installed at a certain distance from the ceiling so that they light up the floor and the ceiling simultaneously. As a result, the ceiling becomes very bright and the level of illuminance perceived by office workers becomes higher than the actual illuminance level. Today, most office workers use computers, and the screens emit light. Currently, the standard illuminance level of offices is said to be 750 lux, but I think it maybe too high considering contemporary work styles and activities at the office today. If we can lower the illuminance level, it would effectively reduce energy consumption and consequently the air conditioning load would be reduced. Considering this, reduction of artificial lighting is a key theme for offices from now on. It should be noted, however, too much reduction would be pointless, as they may impose inconveniences. We should continue efforts to make environmentally-friendly and pleasant spaces based on our physical senses. We devised many environmentally-friendly ideas for Mokuzai Kaikan.



View of the terrace on the seventh floor

Large Beams Spanning Over the seventh floor large hall

Taking an elevator up to the seventh floor, one finds a large terrace there. The terrace connects to the large hall on the same floor through sliding doors. It is a pleasant space where one would feel like having a glass of beer and enjoying the night view.

Next, I would like explain details of the hall.

A series of large L-shaped beams running along the ceiling and walls are the first things one sees upon entering the hall. Natural light enters through the gaps between the beams and highlights the presence of an overwhelming amount of wood. At the same time, a large amount of Japanese cypress used in this space gives off a pleasant scent.

Firstly, I would like to explain how the large amount of wood was used to build the structure. The mechanism is relatively simple. Beams will not catch fire if they are designed in such a way that flames coming out of burning objects on the floor or smoke hot enough to ignite wood do not reach them. In Mokuzai Kaikan, large beams are set at a height of 5.4m above the floor. This method made it possible to make large beams entirely of natural wood without applying any fire retardant treatment. We had to apply fireproof treatment on columns because it was impossible to lift them 5.4m off the floor. They are made of steel covered with fireproof coating and finished with fireproofed wood. On the other hand, large beams are entirely made of wood.

The hall consists of a 24m-long, 19m-wide and 5.4m-high (from the floor to ceiling) structure with large wood beams spanning in the longitudinal direction. People often ask me why only beams on the seventh floor span in the



View of Japanese cypress Hall (large hall) on the seventh floor

longitudinal direction while beams on the lower floors span in the short direction. The longest spanning column-free space that I had designed up until this point was 24m-long. The ultimate goal of designing Mokuzai Kaikan is to "bring back the power of wood to urban architecture." We wanted to make beams spanning 24m in the longitudinal direction by all means, because we wanted to set a good precedent that can be adopted in typical office buildings.

The 24m-long large beams are all made of 4m-long Japanese cypress square lumber with the cross section of 120mm x 120mm. Pieces of lumber are bolted together to make beams. A traditional joinery method called okkake-daisen-tsugi (rabbeted scarf joint) is used to connect them in the longitudinal direction. Because they are assembled entirely without adhesives, the beams can be easily disassembled into 4m-long lumber pieces. Traditional wood buildings including Horyu-ji Temple have been preserved through the long history by repeatedly adding and replacing many wood components throughout the long history.

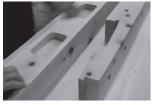
Longevity and reliability of wood architecture are secured by establishing a maintenance system composed of several carpenters. Because wood components are not perfectly fabricated industrial products, it is important to establish a maintenance system in order to take necessary measures in a timely fashion should any problem arise. Because we at

NIKKEN SEKKEI LTD have few opportunities to deal with wood construction, we made efforts to thoroughly understand the nature of wood using our physical senses by putting many wood parts around us at the office. We also learned many things from those working at Mokuzai Kaikan as well as contractors. In addition, we repeatedly conducted experiments using full-scale mockups, and actually experienced failures including the cracking of square lumber pieces made of shinmochizai (lumber containing wood core). The wood beams are securely fixed in place by inserting wood plugs made of shirakashi (Japanese white oak) which is a type of hardwood used to make plane stocks.

Even though we knew the name of the material, we didn't have a thorough understanding of the nature of shirakashi instilled in our physical senses. Contractors who have long experiences in using the material compensated for our lack of experiences. Shirakashi was selected based on advice given by TAISEI CORPORATION in charge of the construction and Suenaga Manufacturing throughout the process of repetitious structural experiments. Their advice regarding towards which direction the material should be oriented greatly helped us improve the performance level of the beams and consequently develop the structural system. I still recall these experiences whenever I see these plugs made of shirakashi.







High precision fabrication using NC machines

I would also like to talk about the latest technology we adopted in making the beams. A tremendous number of square lumber pieces were cut with the utmost precision and speed using NC (numerically controlled) machines. It is necessary to make "relief cuts" when executing hand fabrication techniques. We can say that "relief cuts" are especially one of the unique characteristics of Japanese wood construction techniques. In making these beams, however, we could not afford to make "relief cuts" as needed to make beautiful beams, because we would not be able to achieve the required strength otherwise. This is why we needed to use computerized NC machines. These machines were originally developed for the fabrication of metal parts such as three-dimensional components for shinkansen (high speed train) cars, but we confirmed that they can be used for the high precision fabrication of wood due to its softness. By adopting NC fabrication methods, we were able to fabricate wood components with astonishing speed while achieving a high level of precision. It only takes ten seconds to fabricate something that would take ten minutes by human hands.

People tend to assume that anyone can make high-quality fabrication by using computer-controlled machines in the same way. But they are wrong. "Master-hands" exist in the age of digitalization, too. Suenaga Manufacturing was in charge of NC fabrication for this building. In order to achieve the same level of precision as master carpenters, they carefully observed conditions of sawdust and used the most suitable type of NC machine blades specially made in Germany. NC machines can perform their best and execute high-precision fabrication only when they are operated by those who are deeply committed to the art of fabrication. In the past, craft persons who have profound knowledge of wood and dexterous hands, such as Jingoro Hidari, were called "master-hands." Now we live in a time when those who

have thorough knowledge about the unique characteristics of computers, NC machines, and wood, as well as how to use different types of blades to achieve high precision fabrication in the best way, are called "master-hands." Master-hands are born in all eras of history, while transforming themselves according to the needs of each era. I came up with a term "digital craftsmanship" to explain this. While the traditional craftmanship will probably continue to exist, the digital craftsmanship will surely become a mainstream in the future. Seventy percent of the cost of wood actually involve factors other than the cost of the material itself, including cutting, transportation, and fabrication. We should be able to use more wood without a doubt by cutting down the fabrication and reducing the cost of wood as a result.

While some people have an impression that Mokuzai Kaikan is an extremely expensive building, it was actually built at a reasonable cost due to our continued efforts to devise and execute these small ideas.

During the design and construction processes, I re-acknowledged the importance of wood culture that still exists in Japan as well as the pride Japanese people take in the wood culture on some occasions. Although the grade of wood we specified in the design drawings was "fushi-ari" (wood containing knots), many parts of this building, as you can see in the ceiling above, are actually made of wood without knots (called "fushi-nashi"). According to our calculation, we needed to cut 3,900 trees to make this building. But the master carpenter told us that they had cut 11,000 trees in total. The number is a result of their dedicated efforts to procure more materials than expected and select the best quality materials, even though we didn't ask him to do so. I felt that his sincere attitude represents the pride Japanese people take in the wood culture. The 7,100 unselected trees were certainly not wasted. Because they were all standard-sized materials

for residential construction to begin with, I would imagine they were resold in the market without difficulty. This is also one of the traditions of Japan's wood culture.

Lastly, I would like to show you a photo of a night view of Mokuzai Kaikan, which is one of my favorites. In this photo, wood and concrete are almost indistinguishable. I think that the building will probably look like this in several years due to ageing, and am sincerely hoping that it will look as beautiful as this photograph. I am looking forward to, and perhaps a bit nervous about, knowing how you will evaluate this building then.

I am grateful that you have given me an opportunity to talk about Mokuzai Kaikan and reflect on the design and construction processes today. To be honest, I have some afterthoughts, like "maybe I should have done it in this way." But I should prepare myself for the next design with these thoughts in mind. Needless to say, I will continue to watch over Mokuzai Kaikan as an architect for years to come. Thank you very much for listening.



Night view of the west side of the building

Bringing Back the Power of Wood to Urban Architecture

It has been eight years since the completion of Mokuzai Kaikan, and the building still continues to receive many visitors, with an annual average of two thousand visitors and a total of twenty thousand visitors.

Many guests from overseas have visited, including a group of fifteen Dutch architects. I heard that employees at the Union Secretariat had to rush around, trying to deal with the situation without an interpreter.

Mokuzai Kaikan is getting so much attention because it is recognized as one of the most innovative buildings that actively use environmentally-friendly wood. In response to requests from members of the association, we sent Mr. Tomohiko Yamanashi at NIKKEN SEKKEI LTD, an architect in charge of Mokuzai Kaikan, a request for an interview, and he kindly agreed to talk with us.

—Thank you for taking the time out of your busy schedule. We would like to firstly ask you this question sent in by many members of the association: How did you manage to get permission to build this building while complying with various laws and regulations as required? Former Chief Director Yosiaki Kichijo mentioned that NIKKEN SEKKEI LTD took on a challenge for them. Would you explain the process?

The top floor consists of wood construction. Firstly, we have to comply with the Building Standards Law (BSL). BSL includes performance-based regulations and bulk control regulations, with a proviso stating that (these regulations) "This does not apply if the Minister of Land, Infrastructure, Transport and Tourism recognizes that they are at the same safety level."

Considering the fact that a top floor generally consists of steel construction, we can build a top floor out of wood on condition that the same level of safety or the amount of evacuation time as the steel construction is secured in case of fire. Uses of rooms should be considered, too. The Large Hall on the seventh floor in Mokuzai Kaikan is used as an assembly hall, which means that nobody would build a fire on the floor to have a barbecue there. We expect that fire might occur only in rare situations, including a case when someone accidentally sets fire on documents. Fire resistant design method stipulates that if an architectural design firm can prove that the structure is



Interview with Mr. Yamanashi

capable of withstanding fire in some way, it is regarded as being at the same level of safety as stipulated by the BSL.

The ignition point of wood is 230°C. I asked them, "Can we get a permission for wood construction if we can prove that the wood beams will not reach 230°C in case something catches fire on the floor?", and they said, "Yes." Based on our calculation, we successfully proved that beams would not reach 230°C by fire or smoke rising from below if they are set at a height of 5.4m above the floor. Because we worked this out based on the law called Fireproof Performance Verification Method, those outside of NIKKEN SEKKEI LTD should also be able to do the same thing. Most people have preconceived ideas that it is impossible to build wood buildings in cities. Actually, we felt as if the scales fell from our eyes in a way. But it dawned on us that we can make it happen as we made efforts to thoroughly read and studied the law. The columns in this building are made of steel and covered with fire-retardant treated wood to prevent fire from spreading to beams.

Today, the law is amended in such a way that anyone can build wood buildings by using fireproofed wood without submitting complicated calculations. The top floor of Nagasaki Prefectural Government Building that we designed was build using one-hour fire rated wood. Because we did not have this law when Mokuzai Kaikan was built, Fireproof Performance Verification Method was the only law that we were able to rely on. NIKKEN SEKKEI LTD came up with ideas to making good use of the law.

—Did you get the permission on the first attempt? Or, did it take time to negotiate?

We naturally took time to study and do calculations. At first, we even thought about including a restaurant, but it was impossible. We went through some difficulties, as they pointed out many detailed matters including small inconsistencies in our calculations. I think anyone outside of NIKKEN SEKKEI LTD should be able to do this, if he/she has a firm determina-



View of the small hall on the six floor

tion. It seems that only NIKKEN SEKKEI LTD was stubborn enough to come up with this idea (laughter).

—What are disadvantages of using fire-resistant wood?

Fire-resistant wood consists of a core material made of wood wrapped in a fire-resistant layer made of concrete and finished with fire-resistant wood board. It is naturally expensive, with hardly any fragrance of natural wood, and its color and texture are different from natural wood. We wanted the right material for the right place, and decided to use unfinished wood as much as possible in places where the use of unfinished wood is allowed. The beams over the seventh floor large hall of Mokuzai Kaikan are made of standard-sized wood assembled and bolted together. We avoided using adhesives. As a result, we can still enjoy the pine fragrance today.

We suggested using wood while avoiding adhesives as much as possible, because wood is alive. It is also an effective measure to prevent cracking. However, we used adhesives to put wood together to make a bench at the entrance hall on the first floor, because we assumed it would not crack because it was small enough, although it was assembled in the same manner as the beams. As a result, it unfortunately continues to crack. This was one of the important lessons I learned from my mistakes.

—The building is composed of two different structural systems: The lower part of the building from the first to sixth floors is a reinforced concrete structure and the sev-

enth floor large hall is a wood structure. I suppose the two structures would sway in different ways when an earthquake occurs. What were your thoughts on this matter?

A building sways more significantly when the top part is heavy. For example, if you put a sheet of paper on a board and let it sway, the sheet of paper hardly sways. Because the seventh floor large hall is much lighter than the lower part of the building from the first to six floors, it hardly causes the building to sway. We did calculations to ensure the structural safety. I think it was a rational idea to make the top floor of the building out of wood, because it helped shorten the overall construction period. After the "wet" construction from the first to six floors was finished, we were able to carry out the interior construction on the lower floors while building the seventh floor large hall at the same time.

The top floor accommodates executive suites and an assembly hall in addition to other uses. It makes sense to make the top floor out of wood considering the design and structural effects. It also embodies the concept of using "the right material for the right place," because fire does not spread any further than this floor.

After the completion of Mokuzai Kaikan, we didn't have an opportunity to build a building like this. But when we were working on the Nagasaki Prefectural Government Building, we were faced with a difficult situation where we had to drastically shorten the construction period because they unexpectedly found underground obstacles. So, we presented a proposal to



View of the column in the large hall on the seventh floor

build the top floor out of wood in a timely fashion, and it was accepted.

—Does the top floor sway in different ways?

It sways in different ways, of course. It is called "structural discontinuity" in an engineering term. It is safe because the wood construction on the top floor is much lighter than the weight of the rest of the building.

—What are columns on the seventh floor large hall made out of?

They are box-shaped columns made of steel and finished with fire-retardant-treated wood. Today, it is possible to make them entirely out of wood on condition that fire-resistant wood materials are used, as you can see in the Nagasaki Prefectural Government Building that we designed.

—The east and west sides of the building are entirely finished with glass. Isn't it necessary to attach braces?

No, it is not necessary. The column depths are extremely large, as you can see. They are designed to structurally serve as braces. In addition, the box-shaped members connecting the columns serve as steady braces in the opposite direction.



View of the columns serving as braces in the large hall on the seventh floor

—The columns and beams on the north side are connected in L-shapes. How are they connected to the structure on the south side which is not visible from below?

We made bed-like components out of concrete, and the beams are fastened to the top of these components with pins. It is necessary to provide some reliefs to absorb excessive seismic energy to prevent the failure of wood beams in case of great earthquakes, because wood beams are likely to fail if they are tightly fixed to both sides.

—Did you conduct inspections and surveys after the Great Tohoku Earthquake in 2011?

Yes, of course. I still remember vividly the moment when Chief Director Yosiaki Kichijo gave me a call then. He said that he rushed to the seventh floor large hall immediately after the earthquake and confirmed that the beams didn't fall off. It was a great relief. We would have been in big trouble if they had fallen off (laughter.) We were sure that they would not fall off, but we couldn't be one-hundred-percent confident because it was our first case.

TAISEI CORPORATION regularly checks the heights of the beams regardless of whether or not an earthquake occurs. The worst thing that could happen to a wood beam is deflection under its own weight. But because the beams were meticulously assembled, they stay in their original position even after the earthquake and up until today, even though the corners of unfinished wood members have been moving slightly.

—Wood decks are laid on the terrace on each floor. Are they Non-combustible treatment?

No, they are not. As long as a "burn-stop" layer is inserted between the inside and outside of the building, any materials can be used on the outside. Actually, I didn't know this before. In order to prevent fire from spreading to every floor, wood



View of the large hall on the seventh floor

members inserted between lower and upper floors must be fire-retardant treated. Boric acid solution is infused into wood as a means of non-burning processing. As you can see, wood becomes slightly whiter than the natural wood color. Although it was not required by the law, we adopted this method on a voluntary basis, because "safety first" is NIKKEN SEKKEI LTD's policy. Wood materials on the first floor are also fire-retardant treated based on the same idea.

—We heard that wood components used on the west side of the building are designed in such a way that they can be disassembled and reused. Would you tell you the details?

Structural strength of wood continues to increase and is maintained for a long time after cutting. We assumed that some of the wood materials used on the outside may crack and weather in ten years or so. Our idea was to reuse them to make furniture after they have been replaced with new materials. Sixty-year old lumber is said to last for two hundred years after cutting. This means that the lumber fixes carbon dioxide for two hundred and sixty years in total before it returns to earth.

Wood components are bolted together without using any adhesives in the same way as the beams over the seventh floor large hall so that they can be easily disassembled and reused. One of the reasons for making the balconies was that they can conveniently used as substitutes for scaffolding when disassembling or replacing the wood components. Moreover, we used standard-sized 3.5-sun (approximately 10.5cm x 10.5cm) square lumber considering the availability of the material at the time of replacement. In fact, to our surprise and joy, we hardly see any cracks. Originally, we had planned to reuse them to make furniture ten years later, but I think the plan will be postponed until much later.

We used 1000m³ of wood in total. Because the budget was limited, we had originally planned to use wood "with knots", but it turned out that a large amount of wood "without knots" were actually used. Wood "without knots" are used in highly visible areas, thanks to the master carpenter's spirit of craftsmanship.

-To what extent can wood used in the interior?

Different rules are applied to interior construction. It is decided based on how long it takes for accumulated smoke, which has been generated from burning wood in the room, to come down to the height of one's face. We need to make separate calculations for respective rooms based on the amount of wood used and the ceiling height of each room. Although we can use as much fire-resistant wood as we please, we used unfinished wood as much as possible here in Mokuzai Kaikan.

—What did you think when you got a commission from Mokuzai Kaikan, who represents the lumber industry? And what did you think when it was completed?

When we got the commission, I felt that it was our mission to use wood. We, as architects living in a time when many people assume one cannot make buildings out of wood, wanted to prove that it is possible to use wood as structural and interior finish materials while complying with the law. At the same time, we aimed to bring back the power of wood in urban architecture. We expected that people will use wood more actively if we successfully make a building using methods that anyone can easily use. In designing this building, we made efforts to show how wood can be used in the best way possible, instead of simply devising an excellent architectural work. It was not our intention to use wood by all means. We wanted to use wood in such a way that everyone would appreciate the significance of wood.

After the construction begins, I often visited site feeling excited and anxious at the same time. During the construction of this building, I thought again, "Wood is beautiful. It resonates with the Japanese sensibility." I was also convinced that our decision to use solid unfinished wood instead of thinly sliced wood was a great success.

In addition, the beauty of weathered wood has been forgotten in contemporary architecture. I am looking forward to finding out how this building will be evaluated when it becomes weathered. Because we used wooden formwork to cast concrete for exterior walls, they will gradually turn yellow. Wood will get sunburnt and turn grey. I imagine that concrete may take on the color of wood, and wood may take on the color of concrete in the future. I am looking forward to finding out what the building looks like when all materials including wood, concrete, and steel age and turn grey.

—Have you received more commissions like this building after you completed Mokuzai Kaikan?

Well, we had some opportunities but unfortunately the Nagasaki Prefectural Government Building was the only one we materialized. NIKKEN SEKKEI LTD is actually receiving more commissions like this. And we set a company objective of using wood as much as possible in buildings in urban areas. An increasing number of people are thinking along the same lines now. Maybe we were ahead of our time, considering the fact that we built Mokuzai Kaikan around that time.

The value of wood buildings has been reappreciated not only in Japan but in the world, and people started building high-rise residential buildings made of wood. I am personally interested in designing apartment buildings made of wood, but unfortunately nobody has asked me so far (laughter). I person-



View of the lobby on the second floor

ally gave tours to roughly two thousand visitors here, and I hear that they continue to receive many visitors today. I am grateful to have had the opportunity to work on this building.

—There was a large space like a spacious hall outside the secretariat office, which were too large to be called a "corridor" and looks a little strange.

As I mentioned earlier, our idea was to reuse wood to make furniture pieces and place them there. We had originally planned to have some furniture pieces ready for installation around this time, but wood hasn't weathered as much as we had expected (laughter.) Japanese cypress is very durable. I think we need a little more time to carry out the plan.

-I was very impressed with the water tank.

The design is inspired by my personal experience. As you know, water tanks are usually made of either concrete or FRP. If you stay at an budget room in a hotel in New York, you would often have a view of water tanks through the window. They are mostly made of wood. Because we used so much wood at Mokuzai Kaikan, we suggested that we also make a water tank out of wood, and they agreed. At



first, the water had a faint smell of wood, but it faded out soon. I think that the water quality is excellent.

—It was a great pleasure talking to you. Thank you very much.

Interview conducted by Genji Itoh, Tatsuo Inoue, Yoshio Nakahara, Keiko Takawa Article written by: Itoh



Tomohiko Yamanashi Architect / NIKKEN SEKKEI LTD

1960 Born in Kanagawa Prefecture

1984 Graduated from Tokyo University of the Arts

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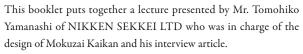
Engineering, The University of Tokyo

1986 Joined NIKKEN SEKKEI LTD

Presently serving as:

Senior Executive Officer Chief Design Officer

The winner of numerous awards including MIPIM Asia's Special Jury Award for Mokuzai Kaikan (completed in 2009) in 2009, as well as AIJ Prize for Design and CTBUH Innovation Award for NBF Osaki Building (completed in 2011) in 2014. He is a member of the Japan Institute of Architects and the Architectural Institute of Japan. Currently teaches architectural design in both undergraduate and graduate courses at universities.



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Tokyo Mokuzai Tonya Kyoudou Kumiai (Tokyo Lumber Wholesalers' Cooperative Association) Chief Director Akira Watanabe



Cedar Forest in Small Hall

Photo: Nacasa & Partners Inc. $pp.4 \sim 7, p.12 \ (top), p.14, p.20 \ (left), p.22 \ (bottom)$ $Harunori \ Noda/Gankosha$ $p.9, p.11, p.12 \ (bottom), p.13, p.15, p.17$



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