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JAPAN'S RICH CULTURE OF STONE

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THEME FOR **OCTOBER:**
**JAPAN'S RICH CULTURE
OF STONE**

Since ancient times, Japanese people have made extensive use of stones of different kinds as materials for tools, construction, and handicrafts. In this month's issue, we look at some of the characteristic features and uses of stones in Japanese culture



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ON THE COVER

Osaka Castle viewed over high stone walls; jadeite *magatama* beads; a rock garden at Taizo-in Zen Buddhist Temple, Kyoto

Photos: Courtesy of Osaka Castle Museum; Courtesy of Itoigawa City Tourism Association; Courtesy of Taizo-in Zen Buddhist Temple

EDITORS' NOTE

Japanese names in this publication are written in Japanese order: family name first, personal name last.

A roughly 2.8-meter-high statue of the Dainichi Nyorai (National Treasure) in the Furuzono Cluster of Stone Buddhas, Usuki City, Oita Prefecture



A *suseki* stone suggestive of “mountains afar”



Japan's Rich Culture of Stone



The former Oya stone quarry at the Oya History Museum, Utsunomiya City, Tochigi Prefecture



A mosaic in the Central Hall of the National Diet Building, Tokyo

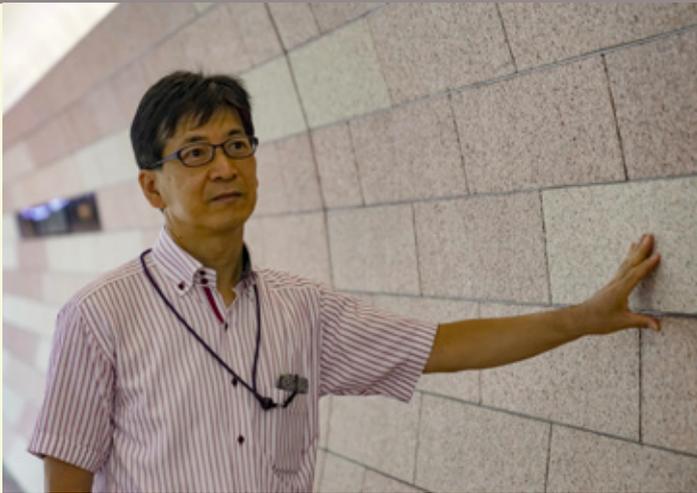
Photos: Courtesy of Usuki City; Courtesy of Nippon Suseki Association; Courtesy of Utsunomiya City; Courtesy of the House of Councillors, The National Diet of Japan

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ince ancient times, Japanese people have made extensive use of stones of different kinds as materials for tools, construction, and handicrafts. In this month's issue, we look at some of the characteristic features and uses of stones in Japanese culture.



The Diversity of Japanese Stones



Nishimoto Shoji, professor at Aichi University
Photo: Kumamoto Hitoshi

SINCE ancient times, Japanese people have made extensive use of stones of different kinds as materials for tools, construction, and handicrafts. We spoke with Nishimoto Shoji, a professor at Aichi University, regarding the characteristic features of Japan's stones.

What types of rocks are found in Japan?

Rocks (commonly referred to as stones) can be divided into igneous rock, sedimentary rock, and metamorphic rock, depending on how they are formed. Igneous rock is formed when hot magma cools and solidifies. Sedimentary rock is formed when sedimentary products such as clasts (sand, clay or fragments of pre-existing rocks) and/or volcanic products such as volcanic ash accumulate. And metamorphic rock is formed when igneous and sedimentary rocks are subjected to heat and pressure.

These rocks are aggregates of various minerals such as quartz, feldspar, and mica, so they are classified according to the type and percentage of minerals they contain. They also differ in terms of characteristics such as color and hardness.

Although Japan's land area is not so large, it yields a wide variety of naturally occurring stones, reflecting its complex geological features. Each region has its own local stone that

has been used as a material for tools, construction, and handicrafts, depending on its particular characteristics.

Tell us about the ways that stones have been used in Japan.

In the earliest times, stones were used to make stone tools. One such stone is obsidian, which is formed when magma cools rapidly. Obsidian is a natural glass that produces sharp-edged cracks when smashed, so it was used to make stone tools such as arrowheads and knives from about 30,000 years ago up to the Yayoi period (10th century BCE to 3rd century CE). Obsidian occurs naturally in many parts of Japan, being a volcanic country, but the area from Wadatoke in Nagano Prefecture to Mt. Yatsugatake is especially famous. Ruins of an "obsidian mine" site have also been discovered, and archaeological digs have revealed that obsidian was widely distributed outside the region.

From the third to the sixth century, *kofun* (ancient tombs covered with mounds of earth or stone) of various kinds were built in Japan, some of which used stones. One *kofun* that comes to mind when I hear the word 'stone' is the Ishibutai Tumulus in Nara Prefecture. The earth that once covered the Ishibutai Tumulus has now gone, exposing the stone chamber constructed with some 30 massive boulders of tonalite stone (similar to granite), a type of igneous rock distributed in the area. The stones are estimated to weigh around 2,300 tons in total, so it is astonishing to think that they were transported by human effort.



Arrowheads made of obsidian occurring naturally in Nagano Prefecture
Photo: Courtesy of Kitaaki Village



Ishibutai Tumulus in Nara Prefecture
Photo: tenjou/PIXTA

Owing to the abundance of wood resources in Japan, stone buildings were not widespread. It was, however, used for the foundations of buildings such as houses, temples, shrines, and castles. Huge stone walls were also constructed for castles built in the sixteenth and seventeenth centuries. The stone walls of Edo Castle built in Edo (present-day Tokyo), the seat of the Tokugawa shogunate, can still be seen up close around the Imperial Palace. Edo was located in the center of an alluvial plain formed by the accumulation of sediment carried by rivers, so it was not possible to extract large stones suitable for building. Despite this, the stone walls of Edo Castle are constructed of blackish andesite and whitish granite. Andesite was mainly transported by ship from the Manazuru Peninsula in Kanagawa Prefecture and the Izu Peninsula in Shizuoka Prefecture, not far from Edo, while granite was transported by ship from islands in the faraway Seto Inland Sea. Hard granite is a more suitable material for stone walls, but in the days before railroads there was no way to transport large pieces of granite overland from inland areas. Many feudal lords were mobilized by the Tokugawa shogunate for the construction of Edo Castle, and its massive stone walls are a testament to the power of the shogunate.

Why was there an increase in the use of stone to construct buildings in Tokyo during the Meiji period (1868-1912)?

During the Meiji period, Japan actively adopted the social systems, culture, and technology of Western countries in order to modernize the nation. One aspect of this process was the construction of Western-style buildings made of stone. The development of railroads in the Meiji period too enabled different types of stones to be brought to Tokyo from inland areas. This historical background is evident from the stone materials used in modern Western-style architecture from the Meiji period to the early Showa period (1926-1989).

One example is the State Guest House, Akasaka Palace in Minato City, Tokyo. This was constructed in 1909 as the Togu Goshou (Crown Prince's Palace) and is the only Western-style palace in Japan built in the Neo-Baroque style. Its



Section of the stone walls of Edo Castle constructed from a mix of blackish andesite and whitish granite
Photo: Courtesy of Nishimoto Shoji

exterior walls are made of Makabe stone, a type of granite found in Makabe Town, Sakuragawa City, Ibaraki Prefecture. Makabe is one of the three major granite stone production areas, particularly famous for its stone lanterns



Exterior walls of the State Guest House made of Makabe stone
Photo: Courtesy of the Cabinet Office State Guest Houses

as a traditional handicraft. The other two are Aji Town in Takamatsu City, Kagawa Prefecture, and Okazaki City, Aichi Prefecture. The exceedingly hard composition of granite makes it difficult to carve finely, but the Makabe stone on

the outer walls of the State Guest House features many finely wrought carvings, showing the impressive skill level of the stonemasons of that time. Incidentally, beautiful marble from Europe is used extensively for interior surface

Nihonbashi Bridge features four types of stone
Photo: PhotoNetwork



finishing.

A variety of stones were also used to construct the Nihonbashi Bridge in Tokyo's Chuo City, one of the most famous bridges in Japan. The Nihonbashi Bridge was first built by the Tokugawa shogunate in 1603 out of wood, but it burned down several times during the Edo period (1603-late 1860s). The current western-style Nihonbashi Bridge was built in 1911 and makes use of four different types of granite. The piers and foundations are made of Tokuyama stone from Kurokamijima Island (Yamaguchi Prefecture) in the Seto Inland Sea. The parapets are made of Kitagi stone from Kitagijima Island (Okayama Prefecture), also in the Seto Inland Sea. The flanks are made of Makabe stone, and the arches and road surface are made of Inada stone from Ibaraki Prefecture. I think these four different types of stones were chosen for their particular characteristics, such as strength and ease of processing. Later, their use as building materials extended more widely to roads and buildings, underpinning the modernization of Japan.

Another building constructed entirely of Japanese stones, in accordance with the policy of using materials found in Japan as far as possible, is the National Diet Building, completed in 1936. Both the exterior and interior of the building make great use of many different types of Japanese stone, giving it the appearance of a "stone museum." This comprehensive use of stones to construct the National Diet Building may have encouraged the use of stone materials in Japan.

Tell us about the appeal of natural stone as a building material.

I would say that its appeal is the uneven patterning found in nature that can never be produced artificially. In the rapid development of Tokyo from the Meiji period onward, many different types of stones from Japan and abroad were used. However, since Japan is prone to earthquakes, it was difficult to follow the Western architectural tradition of building only with stone. Instead, concrete became a popular material for the main structure of buildings during the Meiji period, with stone being widely used mainly



Ammonite fossil on the wall of an underground walkway in Tokyo
Photo: Courtesy of Nishimoto Shoji

as a material for interior and exterior decoration. This was partly due to the fact that the use of stone could make a building look Western, but I think it was also due to the decorative appeal of the colors and patterns of stone created by the earth over incredibly long periods of time. Interior and exterior walls made of undressed concrete may be perfectly functional, but when marble is used I think many people feel a sense of luxury.

Tell us what you find interesting when you see stones in the city.

Many people don't notice it, but cities are full of stones. Stones are used everywhere—the walls of buildings, sidewalks, hotel lobbies, and so on. When I see a stone, work out what type it is, look into how it was formed and why it was used, I appreciate that stones have a significance that goes beyond the field of my own specialty of geology, connecting widely to the history, culture, and economy of a city. It is extremely interesting.

Tokyo in particular is a treasure trove of stones. The area around Tokyo Station is embellished with a variety of stones from all over the world, making it the perfect place to view stones. If you look closely at the stones used for the exterior walls, interior walls, and floors of buildings such as department stores, hotels, and high-rise offices, you can even discover fossils of ammonites and other prehistoric creatures contained in the limestone (commercially "marble") formed more than 100 million years ago. Pay attention to the stones even in the city that you casually walk around every day, and you are sure to discover something new. ■

Interview by SAWAJI OSAMU



Jadeite, A Representative Stone of Japan

Jadeite (*hisui* in Japanese) is a stone that occurs naturally in Japan and has long had a special place in the affections of Japanese people. In September 2016, “jadeite (and jadeitite)”¹ was selected as the national stone of Japan by the Japan Association of Mineralogical Sciences. We introduce jadeite, its connection to the Japanese people since antiquity and its enduring appeal.

SASAKI TAKASHI

Modern-day jadeite *magatama* (comma-shaped beads) of the type first produced in Japan in the Yayoi period more than 2,000 years ago
 Photo: Courtesy of Itoigawa City Tourism Association

It is thought that jadeite (and jadeitite) forms only in subduction zones, places where two plates on the Earth’s surface overlap. In Japan, the best known variety of jadeite is the slightly transparent green jadeite, which is a valuable gemstone. Besides that, white, lavender, and light blue varieties are also found. The Itoigawa region of Niigata Prefecture is the main production area of jadeite, but the mineral is also quarried in various other parts of Japan.

The history of jadeite processing in Japan dates back to ancient times, and jewelry made of jadeite has been found in early Jomon period ruins dating back 5,000 to 6,000 years. *Taishu* for example, a type of pendant produced in the Jomon period (which lasted from 10,000 BCE until the start of the Yayoi period), are said to be the first jadeite artifacts ever made by humankind. In addition, many burial necklaces strung with jadeite *magatama* (comma-shaped beads) have been unearthed. These date from the Yayoi period (10th century BCE to 3rd century CE) and the Kofun period (3rd century to 6th century), indicating that by the end of the Yayoi period jadeite was used in almost every part of Japan. Jadeite would seem to be the first gemstone valued by people living in the Japanese archipelago.

From the Nara period (710-794), Jadeite went from being prized in ancient times to being consigned to obscurity for

some 1,200 years. The reason for this is not well understood, but it came under the spotlight again in 1938, when raw jadeite was discovered in the Kotakigawa river in Itoigawa City, Niigata Prefecture. The surrounding locality was found to be the largest source of jade in Japan, and the boulders of jadeite strewn about the riverbeds of the Kotakigawa and Omigawa rivers that run through the area came to be protected as national Natural Monuments. Visitors to the area can observe jadeite in its natural setting, as well as see one of the world’s largest jadeite boulders weighing 102 tons at the Jade Furusato Gallery in Itoigawa City, on the Sea of Japan coast. In August 2009, the Itoigawa Geopark was designated as a UNESCO Global Geopark in recognition of the land’s contribution to “the world’s oldest jade culture.”

In September 2016, “jadeite (and jadeitite)” was selected as the national stone by the Japan Association of Mineralogical Sciences (JAMS), an organization dedicated to the advancement and dissemination of the study of mineralogical sciences and related fields.

“In selecting the national stone, our aim was to get more people interested in rocks and minerals,” says Miyawaki Ritsuro, geoscientist and chair of JAMS.

The selection process began with the formation of a working group which established five criteria, including that the



Green jadeite is the best known variety of jadeite in Japan.
Photo: Courtesy of Fossa Magna Museum



White jadeite
Photo: Courtesy of Fossa Magna Museum



Multi-colored jadeite
Photo: Courtesy of Fossa Magna Museum, by Miyajima Hiroshi



Multi-colored jadeite
Photo: Courtesy of Fossa Magna Museum, by Miyajima Hiroshi

national stone should be a beautiful stone that occurs naturally in Japan, have global significance, and be connected to the daily lives of Japanese people. A list of twenty-two candidate stones were selected by the working group and the general public. Then, in 2016, an annual meeting of JAMS was held where the candidates were narrowed down to five: granite, stibnite (antimonite), gold, quartz, and jadeite. Finally, jadeite was selected as the national stone of Japan.

“Jadeite is composed of chemical elements such as sodium, aluminum and silicon. However, the mechanism of its formation has not been fully explained. This mystery may be said to be part of jadeite’s appeal,” says Miyawaki.

Jadeite is a beautiful stone that naturally occurs in Japan and is well known there. Its connection to the Japanese people dates back to ancient times, and it has a profound history of being used to create artifacts. Jadeite’s special place in people’s affections as a representative stone of Japan is sure to continue. **J**



An excavated *taishu* pendant produced in the Jomon period some 5,000 years ago
Photo: Courtesy of Itoigawa City

i Rocks that consist mostly of jadeite are called “jadeitite.”



The former Oya stone quarry at the Oya History Museum
Photo: Courtesy of Utsunomiya City

Senju Kannon, one of ten Buddhist statues carved into a rock wall at Ooyaji Temple
Photo: Courtesy of Ooyaji Temple



Oya Stone

Loved through the Ages

Utsunomiya City in Tochigi Prefecture is the production area of the highly-popular construction material, Oya stone. The culture of quarrying stone and using it in various ways has been passed down through the generations here. In 2018, “Utsunomiya, Home of Oya Stone Underground Adventure” was designated as a Japan Heritage site.

KATO KYOKO

OYA stone is a rough, whitish tuff found exclusively in the town of Oya in Utsunomiya City, Tochigi Prefecture. Its soft texture and ease of processing has led it to be used in structures such as warehouses and stone walls in the environs of Utsunomiya City, many of which still stand today.

Tuff beds are believed to have formed as a result of a submarine volcanic eruption some fifteen million

years ago. Tuff was also used to create the rock chambers of the burial mound clusters built in this area during the sixth and seventh centuries.

The Edo period (1603-late 1860s) saw the emergence of a trader who managed the entire process from mining to distribution, which led to Oya stone being used to build such structures as the stone walls of shrines and the walls of private homes. It was used to build Utsunomiya in such ways, creating the city's characteristic appearance. The Oya stone mining industry flourished even more after the Meiji period (1868-1912),

and with the development of railroads and other means of transportation, Oya stone was shipped in large quantities to Tokyo and Yokohama, where it was used to build cities as Japan modernized.

“In 1923, the Imperial Hotel’s main building [the Wright Building] was completed in Hibiya, Tokyo. The building was designed by American architect Frank Lloyd Wright, and was a unique construction of reinforced concrete and Oya stone. Instead of choosing granite or marble, Wright skillfully incorporated the soft and easy-to-process Japanese Oya stone into the building’s decorative features. However, on September 1 that year, the day the opening ceremony was held, the estimated-magnitude 7.9 Great Kanto Earthquake struck. The fact that this building that used Oya stone didn’t sustain serious damage in the earthquake made it famous for its superior earthquake resistance,” says Seiji Ryota of the Utsunomiya City Oya Stone Culture Promotion Council.

Later, the main lobby of the Wright Building was relocated to Meiji Mura (Meiji Village, an open-air museum) in Inuyama City, Aichi Prefecture, where the geometric patterned carvings, exposed pillars and walls, and other architectural features harnessing the soft texture and warmth of Oya stone have been preserved in their original form.

In the environs of Oya in Utsunomiya City, Tochigi Prefecture, there are places where visitors can get more familiar with Oya stone. One such attraction is Senju Kannon, the principal statue of the Buddhist temple Ooyaji Temple. Known as Ooya Kannon, the four-meter-high statue is said to have been made in 810 by Kukai, the founder of the Shingon sect of Buddhism. Carved directly into the rock wall of the temple hall are ten Buddha statues, including the principal Senju Kannon, which have been nationally designated as a Special Historic Site and as Important Cultural Properties.

As well as being used in traditional storehouses and stone walls, Oya stone is being used for new building applications, according to Fukuda Tomomi of the Utsunomiya City Oya Stone Culture Promotion Council.

“Lately, thin Oya stone panels have become a popular material for interiors. Oya stone is pocked with small holes, which makes it useful when it comes to controlling humidity. Used as a wall material, for example, it has the effect of maintaining a comfortable level of humidity inside a room.”

The Oya History Museum, which combines a small history museum and a huge disused stone quarry, is the perfect place to learn more about Oya stone. The labyrinthine former quarry also serves as a venue for concerts and exhibitions.

“In 2018, ‘Utsunomiya, Home of Oya Stone Underground Adventure’ was designated by the Agency for Cultural Affairs as a Japan Heritage site, in recognition of Utsunomiya’s Oya stone culture. Oya stone is a source of local pride and we would like to harness its appeal for tourism and industry to revitalize the town,” says Seiji.

Initiatives continue to make full use of the characteristics of Oya stone, a material loved through the ages. 



Blocks of soft, hole-pocked Oya stone
Photo: Courtesy of Utsunomiya City

A lamp shade made from Oya stone
Photo: Courtesy of Utsunomiya City



Frank Lloyd Wright’s Imperial Hotel main lobby and entrance (reconstructed at Meiji Mura) showcase the qualities of Oya stone
Photo: Courtesy of Museum Meiji-Mura



The Diet Building viewed from the front

Japan's Stone Architecture, Born of Modernization

The National Diet Building in Tokyo, completed in 1936, was constructed using a rich variety of stone sourced from around Japan as the country pursued modernization.

SATO KUMIKO and SAWAJI OSAMU

FOLLOWING the fall of the Tokugawa shogunate in 1868, the newly established Meiji government set about modernizing the nation by introducing social systems and technologies from the countries of Europe and America. In 1881, after the announcement that the first Diet session would be held in 1890, the government embarked on a plan to construct the National Diet Building (hereinafter, “the Diet Building”). At the time, Japan did not yet have people with the necessary skills to design large Western-style buildings, so the government commissioned renowned German architects Hermann Ende and Wilhelm Böckmann to design the Diet Building. In 1887, the two men created a design proposal for a Neo-Baroque style¹ Diet Building with a brick framework and natural stone exterior walls, but the proposal was not realized owing to the time it would take to construct and budgetary constraints. Later, however, a succession of Western-style buildings appeared using brick and stone designed by Japanese architects who had studied Western architecture. These included the former Yokohama Specie Bank main branch building (now the Kanagawa

Prefectural Museum of Cultural History, completed in 1904), Togu Gosho (Crown Prince’s Palace, now the “State Guest House, Akasaka Palace,” completed in 1909), and Tokyo Station (completed in 1914).

“In the second half of the nineteenth century in Europe, there was an increase in brick buildings constructed using stone in prominent places on their exteriors in order to add prestige. Buildings with walls made entirely of stone in particular were considered to be the most prestigious,” says Horiuchi Masaaki, visiting researcher at the Institute of Modern Culture, Showa Women’s University. “Ende and Böckmann’s



A mosaic in the Central Hall

All photos: Courtesy of the House of Councillors, The National Diet of Japan

design proposal was never realized, but it became the starting point for the Diet Building that stands today.”

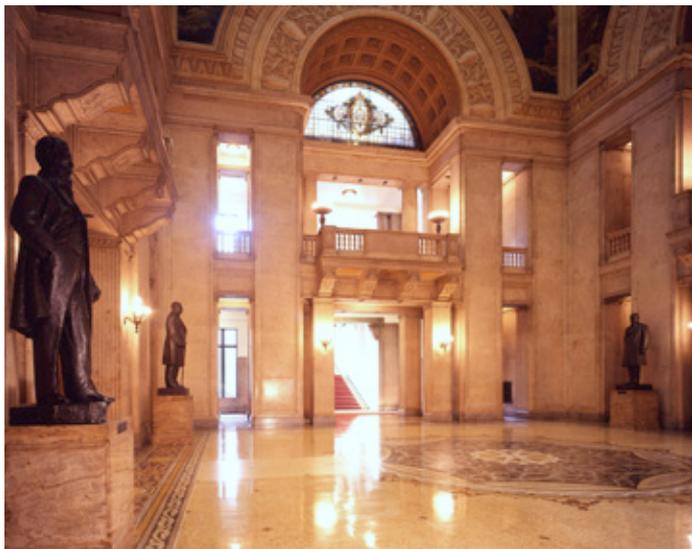
After various discussions, construction of the Diet Building began in 1920. Government policy stipulated that the Diet Building be constructed from materials sourced in Japan as far as possible. Prior to commencing construction, therefore, stones around Japan were investigated and selected for use based on their robustness, workability, and beauty.

In 1936, the Diet Building was finally completed, with three floors above ground and one floor below ground, and a high tower in the center flanked by two parliamentary houses. The basic structure of the building is steel-reinforced concrete, which constituted state-of-the-art technology at the time. The rest of the building, including interior and exterior walls, floors, and stairs, features the generous use of various types of natural stone.

“One of the technical officers in charge of the design of the Diet Building stated that it was important for the building’s external appearance to be ‘solemn and quietly modest.’ I believe that perfectly sums up the Diet Building, which combines the solemnity of Neo-Baroque architecture with the quiet modesty of twentieth century modernist architecture



Central entrance of the National Diet Building



The walls and pillars in the Central Hall feature stones from Okinawa such as Ryukyu stone (coral limestone)

that exerts restraint over ornamental features,” says Horiuchi. “The technology and culture of building with stone developed as Japan modernized, and the Diet Building is one fruit of that.”

The outer walls of the Diet Building are made of graniteⁱⁱ. The first floor is made of Tokuyama stone, a stone from Kurokamijima island in Yamaguchi Prefecture with a slightly grayish hue. The second and higher floors are made of Odachi stone (also known as *giin* [diet chamber] stone), a stone with a pale pink hue that comes from Kurahashijima island in Hiroshima Prefecture.

The interior features more than thirty types of marble. Particularly exquisite are the mosaic floors of the Central Hall and the Hall in front of the Emperor’s Room. The arabesque patterns are created from 1.6 million tiny pieces of marble in more than ten different colors (one million pieces in the Central Hall and 600,000 pieces in the Hall in front of the Emperor’s Room). The walls and pillars of the Central Hall are made of Ryukyu stone (coral limestone) from Okinawa, in which fossils of snails and other creatures can be found.

“If you look at the individual stones in the exterior walls, you’ll notice that even those sourced from the same region are a slightly different color. This creates an appealing subtle quality that can’t be achieved with today’s uniform industrial materials such as bricks or concrete,” says Horiuchi. “When I visited the Diet Building last year (2020), it was raining. The stones of the building wet with rain had a glossy appearance, different from usual. The way natural stones change their appearance depending on the weather may be said to be another aspect of their appeal.”

As a prominent Japanese building that fully exploits the characteristics of the nation’s stone, the Diet Building continues to work its charm. **7**

i The Neo-Baroque style of architecture spread throughout Europe in the latter half of the nineteenth century and is characterized by ornate stone decorative features.

ii Granite is a coarse-grained igneous rock composed mainly of minerals such as quartz and potassium feldspar.



A roughly 2.8-meter-high carving of the Dainichi Nyorai (National Treasure) in the Furuzono Cluster of Stone Buddhas, Usuki City, Oita Prefecture

STONE BUDDHAS REFLECTING THE PASSAGE OF TIME

Usuki City, Oita Prefecture is home to clusters of Buddha images carved into rock and known for their delicate and elegant forms. The expressive countenances of the “Usuki Stone Buddhas,” designated as a National Treasure, bring peace to the hearts of those who view them.



Detail of the Dainichi Nyorai carving

YANAGISAWA MIHO

As a country blessed with abundant forest resources, Japan has an enduring culture of using wood as the main material for buildings, furniture, and tools, with Buddha statues too usually being made of wood. Buddha statues made of stone are more rare, but *magaibutsu*¹ like those found in India and China were made in some regions of Japan. One example is the “Usuki Stone Buddhas” designated as a National Treasure and Special Historic Site in Usuki City, Oita Prefecture, considered one of Japan’s most important collections of stone Buddha images due to

i Buddha figures carved directly into natural rock faces or cliffs

their scale, the number of figures, and the high quality of their carving. Although collectively referred to as the “Usuki Stone Buddhas,” the magaibutsu are in fact found on different parts of the hillside in four clusters: the Hoki First Cluster, Hoki Second Cluster, Sannosan Cluster, and Furuzono Cluster. In total, 61 Buddha images are carved directly into the natural cliffs, ranging in height from around one meter to around 2.8 meters.

It is not actually clear when, by whom, or for what purpose these carved Buddha images were made.

“The prevailing theory is that they were commissioned by the Oga clan, which ruled the area from the end of the twelfth century. It’s thought that the Oga clan had the Buddha images carved into natural cliffs, from where they could not be moved, to ensure the lasting prosperity of the clan,” says Kanda Takashi, director of the Cultural Properties Research Office of the Usuki City Board of Education.

Kanda goes on to explain the characteristics of the carved Buddha images.

“The Usuki Stone Buddhas are regarded as precious due to their exquisite and elegant carving, which is rare among stone Buddhas. The location where the Usuki Stone Buddhas were carved consists of welded Aso tuff created by hardened pyroclastic flow that erupted from Mt. Aso in Kumamoto Prefecture, adjacent to Oita Prefecture. This material is easy to work with, having similar qualities to wood. Wood carving techniques for Buddhist statues had just become established during this period, which enabled craftsmen to apply the techniques to the creation of stone Buddha statues—circumstances that made these beautiful magaibutsu possible.”

When the Usuki Stone Buddhas were first carved, they were covered in a hut. They were not directly exposed to wind and rain but the hut eventually collapsed. They were then exposed

to the weather for long years, and many of the Buddha carvings collapsed, losing heads and arms or other parts. However, in their dilapidated state they were noticed by a photographer. That was Domon Ken (1909–1990), a photographer who pursued realism. He photographed the Buddha carvings in their dilapidated state, later publishing them in a collection of his own works and bringing the Usuki Stone Buddhas to public attention. This led to the Usuki Stone Buddhas being appreciated for the aesthetic value of their naturally dilapidated state.

Nevertheless, large-scale restoration work on the Usuki Stone Buddhas was conducted between 1980 and 1993, and many parts of the carvings that had fallen off were returned to their original positions. Moreover, shelters were built to protect the magaibutsu from the wind, rain and falls in temperature.

Those parts of the magaibutsu which could not be returned to their original positions are being held in secure storage until a restoration method is established. However, completing the restoration will be no easy task.

“The Buddha carvings are not being restored simply by imagining the original positions of each displaced part,” says Kamatani Ryohei of the Usuki City Board of Education. “Rather, restoration work will only be worthwhile when we have established where the displaced parts were originally positioned and what form the carvings actually took at the time they were created.”

The Usuki Stone Buddhas reflect the passage of time from when the images were carved to the present. Although we still have no clear idea who created the Buddha images or why, their individual expressions communicate the thoughts and energy of those who lived some 900 years ago. 

The Hoki Cluster of carved Buddha images



Suiseki

The Essence of Nature in a Single Stone

Suiseki is an example of a traditional culture of appreciating nature, which developed independently in Japan. Suiseki strongly reflects Japan's aesthetics and way of seeing nature, and has garnered attention from around the world in recent years.

SUGIYAMA MAMORU

A *suiseki* stone suggestive of
“mountains afar”



SUISEKI is the art of appreciation of a single naturally occurring stone. Suiseki stones are said to lie at the heart of “*bonseki*,” which entails representing a Japanese garden on a small tray and viewing the creation. As the novelist Kawabata Yasunariⁱ writes in his essay *Japan, the Beautiful and Myself*, “the Japanese garden... symbolizes the vastness of nature. [...] Compressed to the ultimate, the Japanese garden becomes the *bonsai* dwarf garden, or the *bonseki*, its dry version.” (<https://www.nobelprize.org/prizes/literature/1968/kawabata/lecture/>) In other words, *suiseki* and *bonsai* can be called the twin pillars of a traditional Japanese

culture that appreciates the vastness or essence of nature.

The art of *suiseki* is said to have originated from a pastime of stone appreciation that existed in fourteenth-century China, and there is even a *suiseki* stone that is said to have been used by Emperor Godaigo (1288-1339). Subsequently, numerous intellectuals, tea masters, businesspeople, and others became fascinated by *suiseki*, and the appreciation of *suiseki* came to strongly reflect the Japanese view of nature.

There are various cultures of stone appreciation around the world. In Japan, *suiseki* stones with a pitch-black color are considered to be the finest. That is because, rather than novelty or brilliance, value is attached to a stone's capacity to evoke the natural atmosphere of remote mountains and valleys, or give a sense of the mystery of all creation.

ⁱ Japanese novelist and literary critic (1899–1972), the first Japanese to be awarded the Nobel Prize in Literature

Suiseki stones are typically left outside and exposed to the elements to develop a patina of age



looking for shapes and scenes in the stone, the viewer's aesthetic sense and creativity is exercised through this principle of *mitate* (here, the aesthetic concept of likening a stone to something in nature).

According to the Nippon Suiseki Association, there are five factors used in evaluating a stone and its potential as a suiseki. An excellent suiseki should be of good material; have a fine shape, surface texture and color; and have an appearance that intimates age. In the case of the patina of age factor in particular, aspects such as who has previously owned the stone and in what circumstances, or the owner and associated episodes, all become things to be appreciated. Furthermore, the practice of stone rearing contributes to the creation of the patina of age on a stone.

Kobayashi explains, “Freshly picked stones are pointy and give an impression of roughness. You then place them outside and expose them to the elements and let them dry in the sun for a long period of time to create a patina of age. Pouring water on a stone changes its expression (texture), and the properties of the stone will determine how it absorbs the water and changes over time.”

Suiseki has become popular in other countries too in recent years, with more and more foreign enthusiasts coming to display their stones at Japanese exhibitions. Kobayashi says that the works of these people are innovative and always stimulate him.

“Anybody can take up suiseki appreciation anywhere, so I want people to start by going out and looking for stones from rivers and mountains.”

If you pick up a natural stone lying in the rivers and mountains and gaze at it in your hand, a small cosmos will unfold. That discovery is the first step to enjoying and appreciating suiseki. 

Kobayashi Kunio, who is a leading bonsai craftsman, the founder of the Shunkaen Bonsai Museum, and chairman of the Nippon Suiseki Association, comments, “Just like there are Shinto shrines that enshrine stones as objects of worship, the Japanese have strongly sensed divinity in stones since ancient times. That kind of sensibility is tightly condensed in suiseki.”

The first pleasure to be derived from suiseki is their resemblance to certain shapes. Stones that resemble the shapes of birds, animals, gods, the Buddha, or holy people are easy to understand. There are also suiseki stones that express islands in the sea, inlets, waterfalls flowing down the mountainside, and other forms of natural scenery. An especially important motif, which might well be considered the foundation of suiseki, is one that is suggestive of “mountains afar.” In



Osaka Castle viewed over high stone walls

The Stone Walls of Osaka Castle

The *ishigaki* stone walls of Osaka Castle are clear evidence of the high standard of Japanese construction technology when the castle was built early in the seventeenth century.

SATO KUMIKO

OSAKA is one of Japan's leading major cities and will host the World Expo in 2025. At its center stands Osaka Castle, which is characterized not only by the impressive castle structure itself but also by the magnificent, 12-km-long stone walls that surround it.

Toyotomi Hideyoshi (1537-1598), a warlord who successfully unified Japan, commenced construction of Osaka Castle in 1583 and is said to have completed the central core of the castle, the Honmaru, in a year and a half. However, after Hideyoshi's death, the castle was attacked and occupied by Tokugawa Ieyasu (1543-1616), the founder of the new (Tokugawa) shogunate. The present

day castle is that reconstructed by the Tokugawa shogunate in the first half of the seventeenth century.

At the time of this reconstruction, Japanese castle-building technology had entered a period of maturity, so the stone walls of Osaka Castle were built using the best of technologies. We can observe a high degree of technical perfection, for example in the near complete absence of gaps between the stones in the walls.

By order of the shogunate, the tasks for constructing the stone walls were shared among the sixty-four *daimyo* (feudal lords) across western Japan. As evidence of this, stones inscribed with the various daimyo's crests can be seen in the walls even now. In all, about one million granite

stones are used in the walls. These were transported from nearby Mount Rokko and islands in the Seto Inland Sea, and from quarries on the island of Kyushu, some 420 km from Osaka.

It is thought that the large size of the castle walls, as well as their refined and orderly beauty, are a result of the daimyo staking their prestige on the quality of their workmanship.

Just beyond the main entrance that is the Otemon gate are three eye-catching giant stones, each around 5 meters high and between 8 to 11 meters wide. These stones were processed into the shape of sheet-like slabs to serve as vertical barriers at the foot of the stone walls.

"These three rocks are three slices of a single giant boulder," says Atoke Makoto, chief curator at the Osaka Castle Museum. "This is amazing technology."

Facing the entrance within the central core of the castle is another giant stone, the *tako-ishi* (octopus stone), the



Stones inscribed with the crests of feudal lords



Tako-ishi (octopus stone), the biggest single castle stone in Japan

biggest single castle stone in Japan. It is 5.5 meters high, 11.7 meters wide and weighs about 108 tons. The stone is said to take its name from the fact that when the surface became wet the outline of an octopus appeared, though according to Atobe this phenomenon is no longer seen.

The stone wall on the east side of the central core is 34 meters high measuring from the base stones buried at the bottom of the moat, making it the highest among all Japanese castle walls. Atobe explains, “The wall is 24 to 25 meters high from the moat water surface to the top. If you view it from the opposite side of the moat, its height is quite wonderful

to see.”

An old stone wall was discovered during an excavation in 1959, so we know that the current castle was built on the footprint of the first castle constructed by Toyotomi Hideyoshi. In a 1984 reinvestigation, another stone wall from when the castle was first built was excavated in good condition. At present, the “Toyotomi Hideyoshi Stone Wall Exhibition Project” is under way to build a facility to show this stone wall to the public.

You could say that Osaka Castle is continuing to tell us about the high standard of stone construction technology in Japan several hundred years ago. **7**



One of the castle's original stone walls, discovered during a 1984 excavation (February, 2021 photo)



The three giant stones (lower section) carved from a single boulder to form a vertical barrier



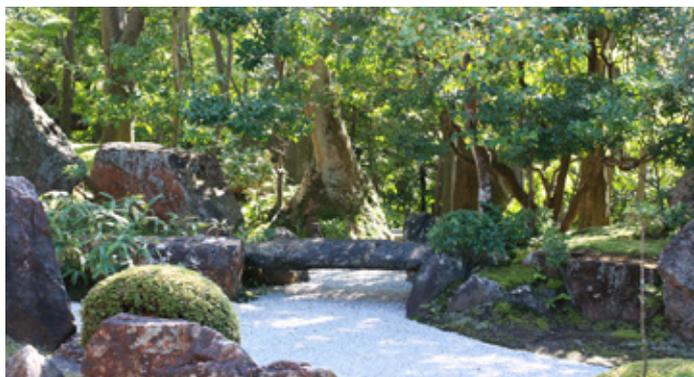
In the Motonobu no Niwa, white sand is spread out to resemble a pond, at the back of which is an arrangement of rocks representing a waterfall and mountains

Stones in a Japanese Garden

Permanence and the Changing Seasons

Stones are a key structural element in a Japanese garden. A single stone can be used to balance the appearance of a garden as a whole, or stones can be arranged in combination to represent such things as waterfalls or mountains. One Japanese garden noted for the conspicuous role stones play is Taizo-in, part of the Myoshin-ji temple complex in Kyoto.

SUGIYAMA MAMORU



A stone bridge spans the river of white sand in the Motonobu no Niwa

All photos: Courtesy of Taizo-in Zen Buddhist Temple

TAIZO-IN is situated in the precincts of Myoshin-ji, a Zen Buddhist temple located in Hanazono, Kyoto City. It has three gardens, each with a different aesthetic appeal: a dry landscape (*karesansui*) garden, a rock garden, and also a *kaiyu*-style gardenⁱ.

Generally, a dry landscape garden refers to a garden that uses mainly rocks and plants without water to depict mountain and water's edge landscapes, while a dry landscape garden consisting mainly of rocks and gravel is called a rock garden. Dry landscape gardens have a particularly deep connection to Zen Buddhismⁱⁱ.

"Zenⁱⁱⁱ was influenced by Taoism in China, and advocates the ideal of ascetic practice in remote mountain locations. The dry landscape garden is a reproduction of that landscape," explains Matsuyama Daiko, Deputy Head Priest of Taizo-in.

Taizo-in is located in the grounds of Myoshin-ji, a temple

ⁱ A style of Japanese garden designed to allow the changing landscape to be viewed from various angles.

ⁱⁱ Zen Buddhism emphasizes the practice of *zazen* (sitting meditation).

ⁱⁱⁱ Zen is a school of (Indian) Mahayana Buddhism that originated in China in the sixth century. The practice of Zen spread in Japan from the late 12th century. "Zen" is a Buddhist term meaning "a state in which the mind has become free of agitation."

complex dating back some 600 years to 1404. It is home to a garden renowned as a dry landscape masterpiece, said to have been created by Kano Motonobu, a painter active from the latter half of the fifteenth century to the early sixteenth century. Motonobu was the second grand patriarch of the Kano school, one of the leading schools of painting of the time, and laid the foundation of the school's style of painting. The dry landscape garden is called Motonobu no Niwa, and is estimated to have been created when the artist was aged around 70 years old.

In the Motonobu no Niwa, white sand (gravel) is spread to resemble a pond, at the back of which is an arrangement of rocks representing a waterfall that is the source of the water for the pond, and mountains, with a bridge of stones spanning the stream of white sand flowing from the pond. The garden as a whole is said to represent an earthly paradise rather than just a natural landscape. It is famous for its picturesque beauty that only a painter could have created.

The Japanese garden Yoko-en and the rock garden Inyou no Niwa were built in 1965 by Nakane Kinsaku (1917-1995), one of the master landscape garden designers of the twentieth century. The centerpiece of the Yoko-en, a *kaiyu*-style garden, is a pond filled with actual water, at the back of which is a waterfall represented by rocks used in a similar way as in the Motonobu no Niwa, suggesting a homage to Motonobu. In contrast to Motonobu no Niwa, where evergreen trees are arranged to express the eternal and unchanging character of the garden, the Yoko-en garden is planted with deciduous trees that change with the seasons. This is rare for a Zen temple, and imparts a sense of elegance to its orderly compositional beauty.

Situated near the entrance of Yoko-en is the Inyou no Niwa (Dark and Bright Rock Gardens), a pair of yin and yang rock gardens. The contrast of black sand in the yin garden and white sand in the yang garden expresses the duality of things. *Samon* (ripple marks) representing the undulations of water are raked into the gravel. Eight rocks in the yin garden and



Japanese garden Yoko-en viewed over the pond in autumn

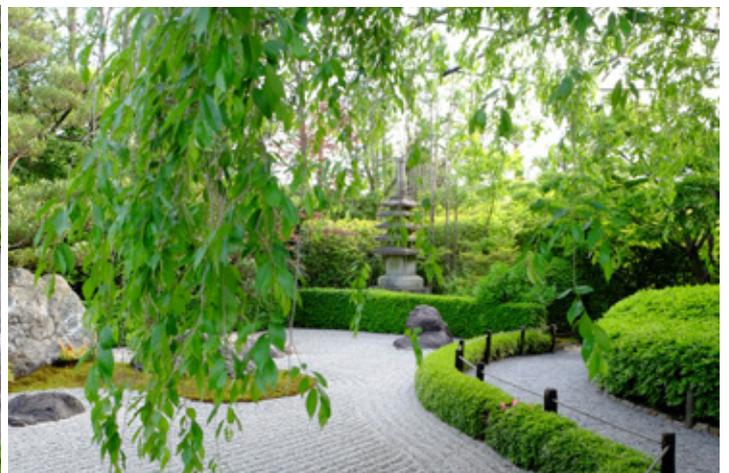
seven in the yang garden are placed in an exquisitely balanced formation, the total number of fifteen having been regarded since ancient times as signifying perfection. The red weeping cherry tree planted in the center of the garden is said to symbolize the fusion of duality.

“Inyou no Niwa is a Japanese garden that incorporates various meanings, such as expressing permanence and the changing seasons, or what is referred to in Zen as ‘*funi*,’ which represents the oneness of the duality of things. Rocks are an essential element of expression in this. Another aspect of its appeal is the way the colors of the stones change when wet with rain, producing a variety of expressions,” says Matsuyama.

Garden stones are an immovable and unchanging element that communicate the intention of the garden's creator. However, as Matsuyama says, their color changes even during the course of a single day due to the weather, as well as taking on a different expression over time as they become covered with moss. Japanese people have always placed stones and rocks possessing such duality in their gardens, imbuing them with deep meaning. 7



The Dark (Yin) Garden of Inyou no Niwa



The Bright (Yang) Garden of Inyou no Niwa

1st Global Youth Forum for a Culture of Lawfulness

The 14th United Nations Congress on Crime Prevention and Criminal Justice was held in Kyoto in March 2021. Built on the achievements of this Congress, the 1st Global Youth Forum for a Culture of Lawfulness was held in Tokyo in October 2021.

SAWAJI OSAMU

THE United Nations Congress on Crime Prevention and Criminal Justice (hereinafter the UN Crime Congress) is one of the largest UN conferences in the field of crime prevention and criminal justice, held once every five years since 1955. The United Nations Office on Drugs and Crime (UNODC) in Vienna serves as the secretariat of the UN Crime Congress. At the UN Crime Congress, ministers of justice and prosecutors general, criminal justice professionals and scholars from around the world, including those of international organizations and non-governmental

organizations (NGOs), discuss national initiatives and international cooperation, aiming to make the world a safer place.

After being delayed due to the global spread of COVID-19, the 14th UN Crime Congress (commonly referred to as the Kyoto Congress) was held in Japan for the first time in over fifty years at the Kyoto International Conference Center, with thorough COVID-19 infection control measures in place, from March 7 to 12, 2021. It was held in a hybrid format combining in-person and online participation and attracted more than 5,000 participants registered from 152 UN

Member States, both of which were the largest numbers ever.

The overall theme of the Kyoto Congress was, “Advancing crime prevention, criminal justice, and the rule of law: towards the achievement of the 2030 Agenda.” The 2030 Agenda for Sustainable Development is an action plan adopted by the UN in 2015, which lays out the seventeen Sustainable Development Goals (SDGs). Goal 16 is aimed at promoting peaceful and inclusive societies and providing access to justice for all. At the Kyoto Congress, comprehensive strategies for crime prevention towards social and economic development, integrated approaches to challenges facing the criminal justice system, and other themes were discussed. The Kyoto Declaration, incorporating the promotion of crime prevention, the rule of law, and international cooperation, was adopted as the outcome of the Kyoto Congress. The Kyoto Declaration represents medium- to long-term guidelines for initiatives in these fields for the UN and its member states.

(See <https://www.moj.go.jp/KYOTOCONGRESS2020/en/> for more information on the Kyoto Congress)

Global Youth Forum

The Kyoto Declaration emphasizes the importance of empowering “youth to become active agents of positive change in their communities to support crime prevention efforts, including by organizing social, educational, cultural, recreational,



The opening ceremony at the 14th United Nations Congress on Crime Prevention and Criminal Justice (the Kyoto Congress) in March 2021

sports-related youth programmes, and youth forums, as well as by using social media platforms and applications and other digital tools to amplify their voice.”

Against such a background, the Ministry of Justice of Japan held the 1st Global Youth Forum for a Culture of Lawfulness at the Tokyo International Forum on October 9 and 10, aiming mainly to promote understandings among young people about modern issues related to the rule of law and justice, to raise awareness in the field of justice among young people, and to build a global network of youth participants. About 120 people from 41 countries participated in the youth forum, which was held in a hybrid format. During the opening ceremony, following the Minister of Justice’s opening remarks, Her Imperial Highness Princess Tsuguko offered encouragement and hope to the youth, who will be responsible for building a better and brighter future for the world.

With an overall theme of the Role of Youth in Achieving a Diverse and Inclusive Society, discussions were held by dividing participants into two group sessions, each addressing one of two agenda items: “Reaching the Age of Adulthood and Participation in Society,” and “Crime Prevention and Criminal Justice in the Post-COVID-19 world—Youth Participation in Achieving an Inclusive Society.”

In the two group sessions, many fresh ideas on the ways to overcome the COVID-19 pandemic and achieve a diverse and inclusive society, which is at the heart of the 2030 Agenda, emerged



Furukawa Yoshihisa, Minister of Justice, offered the opening remarks at the 1st Global Youth Forum for a Culture of Lawfulness

from lively discussions among the participants.

Based on the discussions in the group sessions, the recommendations of the two group sessions were adopted by all participants during the closing plenary session. These recommendations encouraged governments to actively engage young people to promote their participation in society and to address difficulties specific to young people. They also encouraged governments to offer opportunities for young people to acquire social skills and to receive care for the isolation and mental health issues that have surfaced as critical issues facing young people during the COVID-19 pandemic. These

recommendations will be presented at the UN Commission on Crime Prevention and Criminal Justice (CCPCJ), one of the functional committees of the UN Economic and Social Council.

(See the links below for more information regarding the implementation of the Kyoto Declaration and the Youth Forum. https://www.moj.go.jp/Implementing_the_Kyoto_Declaration/en/index.html and <https://twitter.com/CongressKyoto>)

Note: This article has been created with the consent of the Ministry of Justice and on the basis of materials published by the Ministry.



Participants in the group sessions



Participants attended discussions online

Road boundary blocks made using CO₂-SUICOM

Photo: Courtesy of Kajima Corporation

Concrete that Absorbs Carbon Dioxide

A new type of concrete has been developed that uses materials which absorb carbon dioxide (CO₂) to reduce CO₂ emissions during manufacturing to virtually zero.

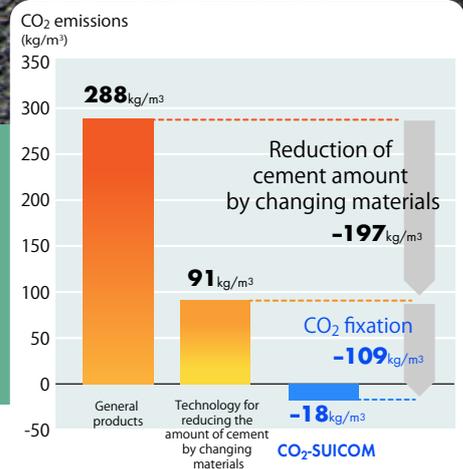
UMEZAWA AKIRA

SINCE CO₂ reduction has turned into an international issue as a measure to prevent global warming, the Japanese construction industry is developing various technologies to reduce CO₂ emissions. The reduction of CO₂ emissions associated with concrete production is one among them. Concrete is usually made from materials such as cement,ⁱ water, sand and gravel. Cement plays an important role as it reacts with water to solidify the concrete, but it also emits a lot of CO₂ during manufacturing. Therefore, the industry is making efforts to reduce CO₂ emissions by replacing cement with industrial byproducts (blast furnace slag, coal ash, or the like) produced at steel mills and thermal power plants. Concrete is said to be the second most consumed substance in the world after water, and its impact on the

environment is highly significant.

In 2011, Kajima Corporation, the Chugoku Electric Power Company, Incorporated, Denka Company Limited, and Landes Co., Ltd. jointly developed CO₂-SUICOM, the world's first type of concrete that reduces CO₂ emissions during manufacturing to virtually zero or less. CO₂-SUICOM is an acronym for "CO₂-Storage Utilization for Infrastructure by Concrete Materials." Compared to ordinary concrete, which emits 288 kg of CO₂ per cubic meter during production, CO₂-SUICOM cuts 306 kg of CO₂ per cubic meter by both absorbing and reducing CO₂. In other words, CO₂ emissions from concrete production will be virtually zero or less, and the more CO₂-SUICOM is made, the more CO₂ will be reduced (see figure).

Torichigai Takeshi, Chief Research Engineer in the Concrete and Construc-



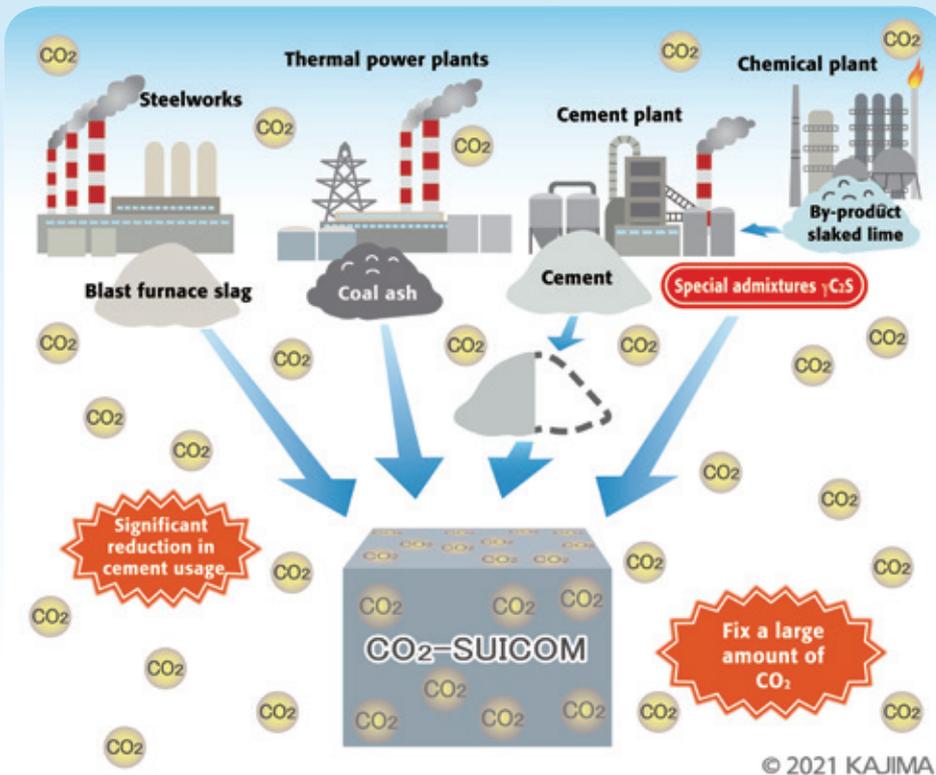
Comparison of CO₂ emissions during manufacturing of conventional concrete and CO₂-SUICOM (estimate)

CO₂-SUICOM: Reduces 197 kilograms of CO₂ per cubic meter by substituting some of the cement that emits a large amount of CO₂ during manufacturing with special admixtures that emit less CO₂ and industrial by-products such as blast furnace slag fine powder. In addition, carbonation absorbs 109 kilograms of CO₂ per cubic meter.

tion Materials Group at Kajima Technical Research Institute, comments, "CO₂-SUICOM is made by combining the new

i. Cement is a powder used as a binding material in the production of concrete. The most commonly used powder is Portland cement made by adding gypsum to clinker, which has been heated in a kiln after mixing with limestone, clay, or other materials.

Image of CO₂-SUICOM fixing CO₂



technology of concrete carbonation with the conventional technology that uses industrial byproducts.”

Carbonation absorbs and fixes CO₂ in concrete by causing the cement to react with CO₂. According to Torichigai, this technology emerged out of research on extending the life of concrete. The inspiration came from a survey of the remains of a concrete dwelling built about 5,000 years ago and discovered at the Dadiwan site in China. Modern concrete has a lifespan of about 100 years, but the concrete found at Dadiwan had more or less retained its original form.

Torichigai explains, “A survey conducted by the research team found that the people of the time built the concrete structure on the ground. They then used clay to construct dome-shaped walls on top of the concrete and lit a fire inside the structure to dry it. In short, when the concrete was solidified inside that sealed space with a high concentration of CO₂, it absorbed, by coincidence, a large amount of the CO₂. Thanks to the carbonation, the concrete was formed in a chemically stable state and retained its original shape for 5,000 years.”

Based on this survey, Kajima chose γ (gamma) C₂S as the material for CO₂-SUICOM. Made from calcium hydroxide and silica, γ -C₂S is a powdery substance with a property that reacts with CO₂ and hardens. In other words, γ -C₂S is a

material with a CO₂ absorbent function in addition to the same function as cement to harden concrete.

In 2006, Kajima developed a commercial version of long-life concrete by using γ -C₂S to absorb CO₂. As a result of further research, Kajima perfected CO₂-SUICOM, a completely new type of concrete, which uses γ -C₂S and industrial byproducts from thermal power plants and steelworks as the main materials to absorb and harden large amounts of CO₂. Compared to conventional concrete, CO₂-SUICOM reduces the amount of cement by half. In addition, since CO₂-SUICOM fixes CO₂ when it hardens, it contributes to reducing CO₂. As a proof-of-concept, the company has also successfully fixed exhaust gas (CO₂) from a thermal power plant, showing that it is possible to directly capture and reduce the CO₂ in exhaust gases.

CO₂-SUICOM is currently used in boundary blocks between sidewalks and roadways, road pavement blocks, river embankment blocks, and in balcony ceilings for apartment buildings. There is much interest from overseas, especially from Western companies with a strong awareness of measures to prevent global warming. Several companies have expressed interest in commercializing and selling our products.

CO₂-SUICOM is also attracting attention because it was mentioned as an example of a practical application of car-



Road boundary blocks and (top) road pavement blocks made using CO₂-SUICOM

Photos: Courtesy of Kajima Corporation



Brillia ist NAKANO CENTRAL PARK in Nakano City, Tokyo. The apartment block uses CO₂-SUICOM for its balconies, as part of urban development with environmental consideration as one of its projects. CO₂-SUICOM also has the effect of protecting reinforced concrete in places exposed to the outside air.

bon recycling in the “Green Growth Strategy Through Achieving Carbon Neutrality in 2050” published by the Japanese government (Ministry of Economy, Trade and Industry) in December 2020.

Torichigai comments, “If CO₂-SUICOM is used in large-scale buildings and public facilities, costs will go down and the effect of CO₂ reduction will be enhanced. We would like to contribute to carbon recycling worldwide by escalating its use.”

Theodore Brown (second left) guides geologists from overseas at Kotakigawa Jade Gorge Geosite

Photo: Courtesy of Itoigawa Geopark Council

Promoting the Charms of the Itoigawa UNESCO Global Geopark to the World

Captivated by the natural environment and culture of Itoigawa City in Niigata Prefecture, American Theodore Brown has been working as a city official promoting the Geopark and the city's other attractions both within Japan and abroad.

SATO KUMIKO

UNESCO Global Geoparks are “single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development.” As of April 2021, 169 Geoparks have been designated in 44 countries around the world, including in 9 areas in Japan.

Itoigawa UNESCO Global Geopark in Niigata Prefecture was one of the first three areas in Japan to be designated as Global Geoparks in 2009. The Geopark features many important geological heritage sites distributed throughout 24 thematic areas. These include the Itoigawa-Shizuoka Tectonic Line—a massive fault line separating southwest and northeast Japan—as well as locations such as ruins, shrines, and museums that have a deep

historical and cultural association with Itoigawa. Theodore Brown, who is from the United States, works in the Geopark Promotion Office of Itoigawa City, promoting the park's attractions both within Japan and abroad.

“One of the attractions of the Itoigawa UNESCO Global Geopark is the dynamic landscape created by the steep terrain that runs from the 3,000-meter-high mountains of the Northern Alps to the 1,200-meter-deep submarine canyons of the Sea of Japan,” says Theodore.

Theodore was born and raised in the US State of Ohio, home to a Japanese automotive company and other Japanese businesses servicing the industry, so he was familiar with Japanese culture from a young age through his interactions with Japanese people transferred there for work. He went on to study

Japanese at university, including a study abroad period in Japan. Keen to work in Japan after graduation, Theodore applied for the JET (Japan Exchange and Teaching) Programme, through which Japanese local authorities invite and employ young people from abroad. In 2008, he took up a position as an Assistant Language Teacher (ALT) in Itoigawa City elementary and junior high schools.

“I knew nothing about the area so I was a little nervous, but the warm-hearted locals helped me out, and in no time I was enjoying my life in Itoigawa,” says Theodore. “I was also fascinated by the local cuisine using fresh land and sea produce, such as mushrooms, wild vegetables, red snow crab, and shrimp, as well as the cycling in the great outdoors.”

At the time of him taking up his post, Itoigawa City was working



Guiding Nicholas Zouros (president of the Global Network of National Geoparks) (center right) and Sigurður Sigursveinsson, a representative from Katla UNESCO Global Geopark (Iceland) (left), at Fossa Magna Park

Photo: Courtesy of Itoigawa Geopark Council

A view of the coastline from Oyashirazu Geosite, one of 24 thematic areas in Itoigawa UNESCO Global Geopark

Photo: Courtesy of Itoigawa Geopark Council

toward designation as a Geopark. Theodore assisted on a voluntary basis in activities such as issuing information in English, continuing to be involved even after Itoigawa was officially designated a Global Geopark.

When Theodore's term as an ALT ended in 2013, he was taken on as an employee of the Geopark Promotion Office of Itoigawa City Hall. Besides working as a guide and lecturer for visiting officials from overseas, he was assigned the task of interpreting, preparing English documentation, and making presentations for the UNESCO

Global Geopark registration review held every four years.

The number of foreign tourists visiting Itoigawa City had been increasing prior to the outbreak of the COVID-19 pandemic, so improving the environment for overseas visitors by providing online information on tourist attractions in the city and creating sightseeing pamphlets in English were also important parts of Theodore's job. Believing that interaction between foreign tourists and local people will further enhance the appeal of Itoigawa, Theodore has also been actively involved in activities such as giving English hospitality lessons to local residents, advising restaurants on how to serve non-Japanese customers, and creating English versions of menus. In addition, he has created English teaching resources for children themed on the Geopark and gives lectures at local schools on the Geopark.

Over the past decade or so, Theodore has made repeated visits to sites in the Itoigawa UNESCO Global Geopark, and one of his favorite sites is Renge Onsen (Renge Hot Springs). Something he enjoys more than anything on his days off is spending time in the open-air hot spring bath (*rotenburo*) surrounded by mountains.

All this is testament to Theodore's profound attachment to Itoigawa. His current goal is to restore an old traditional house and make it his home because, says Theodore, "traditional houses are filled with the wisdom of people living in an area with heavy snowfall. To me, this wisdom is part of the cultural legacy of

the Geopark."

Theodore loves the natural environment of the Geopark and continues to experience first-hand the culture associated with it. No doubt, he'll transmit new chapters of the Itoigawa story to the world. 🍣



Local restaurants serve "Geopark Rice Bowls" like this one featuring fresh Itoigawa seafood such as *namban* shrimp, red snow crab and angler fish

Photo: Courtesy of Itoigawa Geopark Council



Theodore and friend at the open-air hot spring bath at the Renge Onsen in Itoigawa City, Niigata Prefecture

Photo: Courtesy of Theodore Brown



Theodore takes part in a rice planting activity at "My Land" (Mairando) in Itoigawa

Photo: Courtesy of Theodore Brown



Rice being dried over wood and bamboo racks, a traditional technique known as *hazaboshi*

Noto's Satoyama and Satoumi

The traditional and distinctive farm-village culture and sustainable agriculture, forestry, and fisheries of the Noto area in Ishikawa Prefecture, collectively entitled “Noto’s Satoyama and Satoumi,” were registered as a Globally Important Agricultural Heritage System by the Food and Agriculture Organization (FAO) of the United Nations in June 2011.

YANAGISAWA MIHO

THE Noto Peninsula of Ishikawa Prefecture projects out into the Sea of Japan and is surrounded by water on three sides. Most of the peninsula is hill country with an elevation of 200 to 500 meters. This area consisting of four cities and five towns¹ is known as the Noto area. A variety of land use and techniques that make the most of the topography have been passed down to the present day, including terraced rice fields carved into the slopes (notably, those of Shiroyone Senmaida), paddy

fields using the valleys, and more than 1,800 irrigation ponds for agricultural water use. Recognizing the area’s heritage of traditional agriculture, forestry, and fisheries and farm-village culture, including traditional technologies and festivals, as well as beautiful scenery, in June 2011 the FAO designated this area as a Globally Important Agricultural Heritage System, the first such designation in Japan.

Shiroyone Senmaida in Wajima City is one of the Noto area’s famous sights. It is about four hectares of land with more

than 1,000 rice fields, each field an average of about 18 square meters, all lined up as wave-like folds extending toward the sea. In the fall, another famous Noto scene appears, namely the wood and bamboo racks used to hang and dry harvested sheaves of rice. This traditional sun-drying technique, known as *hazaboshi*, steadily draws out the rice’s flavor. Drying rice in the sun like this is labor-intensive and farmers are also getting older, which has led to its ongoing decline across Japan and machine drying is now the norm.

1. Nanao City, Wajima City, Suzu City, Hakui City, Shika Town, Nakanoto Town, Anamizu Town, Noto Town, and Hodatsushimizu Town

2. Satoyama is “an area consisting of farmlands, irrigation ponds, secondary forest, plantation forest, and grasslands around human settlements” (Ministry of the Environment)

3. Satoumi is “a coastal area where biological productivity and biodiversity has increased through human interaction” (Ministry of the Environment)

The Shiroyone Senmaida terraced rice fields



It is not only in the *satoyama*² farming areas of Noto that these old-time sights remain. In fact, the same is true for the sea around Noto. In the coastal areas called “*satoumi*,”³ people have long made use of the sea’s abundant resources in their daily lives. For example, there is a salt-making method called “*agehamashiki*” that has been passed down in Suzu City but nowhere else in Japan. Seawater is drawn by hand and repeatedly thrown over sand, which is then gathered and mixed with seawater to create a solution with a high salt concentration. This solution is then boiled down in cauldrons and filtered to produce salt. Moreover, the *ama* (women divers) fishing of Wajima, which goes back more than 400 years, involves free diving to collect abalone, turban shell, and seaweed. Just like in the olden days, only women born here or married into the area can become *ama*. They have a self-governing organization with strict rules to restrict fishing, continuously protecting their tradition to use the marine resources sustainably, for example by managing the resources without damaging the underwater ecosystem.

The people making a living in the *satoyama* and *satoumi* also value the festivals by which they give thanks for these blessings. Examples include the “Kiriko Festivals,” where people pray

for abundant catches and harvests by walking in procession through the hamlets with sacred lights more than 10 meters high; the “*Aenokoto*” ritual for entertaining the deities of the rice fields (see *HIGHLIGHTING Japan*, November 2020); and the “mountain festivals” to thank the mountains for safety in the collection and processing of timber and firewood. People give thanks for ample blessings and pray for work safety and rich blessings. There are cases of such events and customs being simplified or completely ceasing with the passing of years. However, the Ishikawa Prefecture Government is proceeding with efforts to inherit traditional techniques as well as such traditional culture.

Tada Taketoshi of the Ishikawa Prefecture Satoyama Promotion Office explains, “We’re engaged in a variety of initiatives to pass down Noto’s rich *satoyama* and *satoumi*. For example, there has been an increase in abandoned paddy fields as the owners of the Shiroyone Senmaida become older, so we started an ownership system where people can borrow even just a single field. We’re also training human resources who can utilize natural resources to solve local issues as well as local leaders who can communicate models for sustainable local society, collaborating with local government

and academia.”

The *satoyama* and *satoumi* have been passed on and protected by the abundant nature of the Noto Peninsula and the people who have made use of it. Now, new initiatives are imparting the features of Noto to the next generation. 



An *ama* diver collecting shellfish



A farmer performing the *Aenokoto* ritual for entertaining the deities of the rice fields

Courtesy of JA Imakane



GI JAPAN PRODUCTS



Imakane Danshaku

今金男しゃく

Imakane Danshaku Potatoes

MAKANE Danshaku is a variety of potato with a starch content of more than 13.5% and with a bright white skin. It is characterized by stable quality and a silky-smooth, creamy mouthfeel.

Owing to strict grading standards, Imakane Danshaku are uniform in size and shape with white skin. Vegetable markets rate Imakane Danshaku as top-class in quality and taste, and sell it at prices 20% or more higher than Danshaku potato varieties from other areas.

For the production of Imakane Danshaku, as its name suggests, disease-free seed potatoes of the Danshaku variety, grown by seed potato farmers, are used.

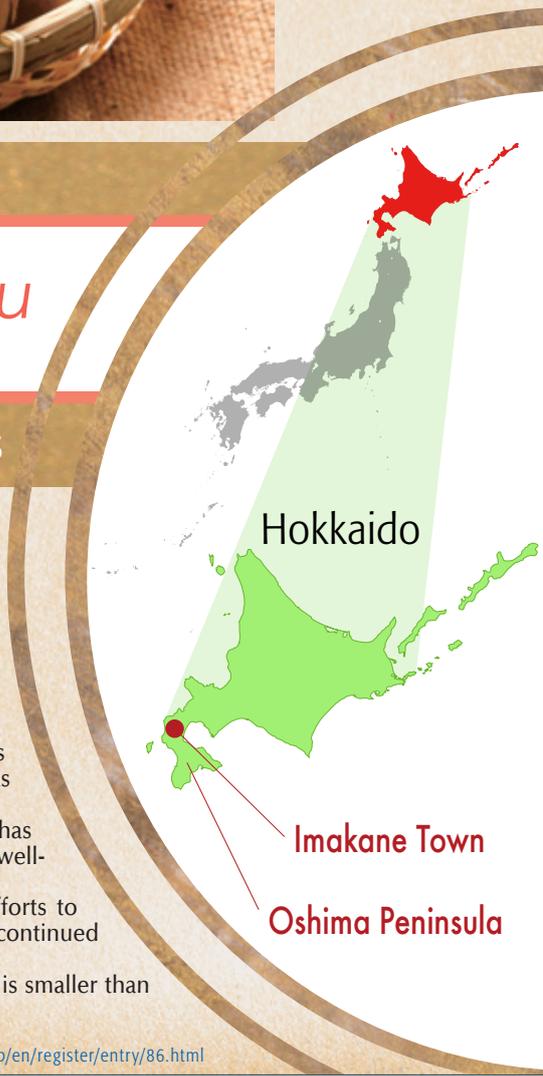
Potatoes are air-dried in storage for about one week before shipping to prevent rotting and peeling. When shipping, the quality is checked by inspecting for hollows. Potatoes confirmed to have deteriorated quality due to peeling or scratching cannot be shipped as Imakane Danshaku.

The producing area is located in the northern part of the Oshima Peninsula. The area has an inland climate with a big temperature difference between daytime and nighttime, and well-drained, fertile volcanic ash soil, which is suitable for potato cultivation.

Since 1953, farmers in the area have cultivated only the Danshaku variety, with efforts to improve quality, such as separating food potato farmers from seed potato farmers, being continued since 1967.

As of 2017, the production area totals 375 ha yielding 12,000 tons. Although the yield is smaller than other potato production areas in Hokkaido, production is increasing every year.

Text and images courtesy of Ministry of Agriculture, Forestry and Fisheries: <https://gi-act.maff.go.jp/en/register/entry/86.html>



Hokkaido

Imakane Town

Oshima Peninsula

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