

The Production and Use of Gold in Japan



Dr. Murakami Ryu, Director of the Takaoka Art Museum
Photo: Sawaji Osamu

DR. Murakami Ryu is an expert in the history of materials science, Director of the Takaoka Art Museum and Specially-Appointed Professor at Kyoto Arts and Crafts University. We asked Dr. Murakami about the history of the production and use of gold in Japan.

Gold has fascinated people throughout the ages, not only in Japan but around the world. What properties does it possess, and what makes it so attractive?

One of the properties of gold is that it doesn't oxidize, and therefore does not rust. While gold is in the ground, and even after it has been mined or placed in water, its brilliance remains basically unchanged. Mankind has revered and admired this unchanging nature of gold, and has been fascinated by gold as something that represents "eternity" and "immortality."

Gold also has excellent properties as a material; for example, it is workable. It spreads out well when hammered, and can be melted to cast items. Then there is its durability. When combined with other metals, it can be made harder, or more resistant to wearing away.

Gold is also a rare substance. If you calculated the amount of gold that humanity has mined to date, it would only fill around four Olympic-size swimming pools.

Humanity has long had the constant desire to mine gold in vast quantities, possess it, and process it into various items. Technologies for mining and processing gold have developed as a result. The strong desire for metals, namely gold, as well as silver and copper, has had a profound

impact on world history. As I will explain later, there was a time when Japan was one of the leading producers of gold, silver and copper, and these metals have been deeply involved with the development of the Japanese economy and culture.

Around when did gold start to be used in Japan?

It is estimated that by at least the fifth to sixth centuries gold products and gold processing methods had been introduced from mainland China and the Korean peninsula. Gold earrings and other ornaments have been unearthed from the *kofun* (tumuli, or burial mounds) of powerful people at the time. It is thought that gold was a symbol of the power of the buried person. It is rare to find gold products from around that time in places other than *kofun*. Gold was special and was likely not something the general public would ever see.

But when Buddhism was introduced to Japan in the first half of the sixth century, temples and altars began to be decorated with gold, and gold gradually became more visible to the public. In 749, the first production of gold in Japan took place in the Tohoku region in the Oda District of Mutsu Province (present-day Wakuya Town, Toda District in Miyagi Prefecture). This gold was used as the material for the gold plating of the Great Buddha at the Todai-ji Temple in present-day Nara City, which was at that time under construction and subsequently completed in 752. Then in 760, although it is not known whether the coins actually circulated as currency, the first gold coins in Japan, known as *kaiki shoho*, were minted. Following the production of gold in Mutsu Province, gold was discovered all over Japan, and Japan became one of the largest producers of gold in the world.



Gilt earrings excavated from the Omishinkanji Kofun (burial mound) located in Gyoda City, Saitama Prefecture (Collection of Tokyo National Museum; 6th-7th century)

Photo: ColBase (<https://colbase.nich.go.jp/>)

How was gold mined back then?

At the time, most gold was produced in the form of gold particles, including the gold from Mutsu Province. Veins of gold near the surface were worn away from weathering, and grains of gold that flowed down into rivers accumulated on river beds as gold particles. Compared with gold obtained by mining gold ore from underground, this gold was easier to obtain.

At the end of the Heian period (late 8th to late 12th century), samurai families took over power from the aristocracy. This led to the emergence of warlords who obtained large quantities of gold and used that wealth to seize power. One such example is the Oshu-Fujiwara clan, who flourished in Hiraizumi (present-day Hiraizumi Town, Iwate Prefecture), an area in the Tohoku region, in the 12th century. The Oshu-Fujiwara clan were supported by the gold particles produced in the Tohoku region. The Konjikido (Golden Hall) of the Chuson-ji Temple (see pp.10-11) constructed at the time in Hiraizumi Town remains from this time. Gold is used in abundance in the design of the hall, showing how prosperous the Oshu-Fujiwara clan was at the time. There is a theory that the “land of gold” referred to as “Zipangu” in the *Travels of Marco Polo* recorded by the Italian adventurer Marco Polo in the 13th century might have been Hiraizumi. While there is no firm evidence underpinning this theory, we can understand why some would believe it to be the case.

It is estimated that approximately 100 tons of gold was produced during the roughly 800 years from when gold particles were discovered in Mutsu Province until the mid-16th century when gold started to be extracted from gold ore. Japan is a rare country for producing this amount of gold from gold particles over such a long period.

How did the production and use of gold change in Japan after the mid-16th century when it became possible to obtain gold from gold ore?

From the mid-16th to early 17th century, there was a period of frequent conflict among *daimyo* (feudal lords) across Japan. During that period, powerful daimyos started to develop gold, silver and copper mines within their territories to finance the maintenance of their territories and their expansion. For example, the daimyo of Kai Province (present-day Yamanashi Prefecture), Takeda Shingen

(1521-1573) developed a gold mine. Then he used that gold to mint and circulate a currency known as *Koshu kin* (Koshu gold).

To show off their authority, some powerful warlords constructed buildings richly adorned with gold, and commissioned works of art from gold. The renowned warlord Oda Nobunaga (1534-1582) even built Azuchi Castle using tiles covered with gold leaf, and Toyotomi Hideyoshi (1537-1598), who rose to power after Nobunaga's death, built a tea room whose entire interior was covered with gold leaf.

The structure of the currency system based on the *Koshu kin* minted by Takeda Shingen was later inherited by the Tokugawa Shogunate that was established in 1603 by Tokugawa Ieyasu (1543-1616). A three-currency system based on gold, silver and copper was established by the Tokugawa Shogunate and these three types of coins came into circulation throughout the country.

How did mining develop during the 260 years from 1603 when the Tokugawa Shogunate ruled Japan, a time known as the Edo period?

During the Edo period, the Tokugawa Shogunate actively pursued mining development. The shogunate directly controlled the Sado Kinzan Gold Mine (see pp.16-17) and the Toi Gold Mine (located in present-day Shizuoka Prefecture). During the first half of the Edo period, Japan's gold production volume was one of the highest in the world. In addition to gold mines, silver and copper mines were also developed. Take for example the Iwami Ginzan Silver Mine in present-day Shimane Prefecture, which is registered as a World Heritage site. Following the discovery of silver at the site in 1527, the Iwami Ginzan Silver Mine, which eventually came under the direct control of the shogunate, is believed to have produced one-third of the world's silver at its peak in the late 16th and early 17th century. Similarly the Besshi Copper Mine in Besshi in present-day Ehime Prefecture, development of which began in 1690, was one of the world's largest copper producers at one point.

In this way, abundant gold, silver and copper supported the money-based economy of the Edo period. And while the Tokugawa shogunate limited exchanges with outside countries, it did engage in trade, limited to that with China and the Netherlands. Gold, silver and copper were primary exports in these trading activities.

However, in the latter half of the Edo period, production of gold, silver and copper gradually declined due to limitations in mining technologies, deteriorating profitability and resource depletion. Several mines that operated during the Edo period, including the Sado Kinzan Gold Mine, Iwami Ginzan Silver Mine and Besshi Copper Mine, continued to be run into the Meiji period (1868-1912), but almost



Ashi kame maki-e inro (box with reed and turtle design in make-e lacquer) (Collection of Tokyo National Museum; 19th century) (7.6 cm tall, 5.2 cm wide)
Photo: ColBase (<https://colbase.nich.go.jp/>)



*Mo ni namazu mitokoromono*ⁱ (algae and catfish sword fittings) created by Goto Joshin. (Collection of Tokyo National Museum; 16th century) Top: *kogai* (length 22.9 cm), bottom left: *kozuka* (length 9.7 cm), bottom right (two items): *menuki* (length 4.4 cm)

Photo: ColBase (<https://colbase.nich.go.jp/>)

all had closed by the latter half of 20th century.

During the Edo period, how was gold used other than for money?

One example is its use in crafts. During the Edo period, I believe that Japanese metalwork using metals such as gold, silver, copper and iron had reached a level unrivaled elsewhere in the world. The Goto family founded by Goto Yujo (1440-1512) was particularly renowned for metalworking. The Goto family manufactured large and small-sized metal coins, but also made decorative metal sword fittings known as *mitokoromono*ⁱ for shoguns, daimyos and other powerful samurai families. A feature of the *mitokoromono* made by the Goto family was the use of *shakudo* which was created by Yujo. *Shakudo*, which is said to be unique to Japan, is an alloy of copper that contains around 3% gold. A special coloring method adds a lustrous black color to the surface of the product. The glossy black of the *shakudo* with a slight purplish tint allowed gold and silver decorations to stand out beautifully.

*Maki-e*ⁱⁱ craftworks were also produced in great number. *Maki-e* is a decorative technique that developed independently in Japan from the Heian period onward, in which gold or silver powder is sprinkled on top of a pattern drawn in lacquer. During the Edo period, *maki-e* was used to decorate various craft items, such as *inro* (small wearable cases used for carrying small items) and inkstone cases used to hold writing utensils. *Maki-e* craftworks were also popular overseas. From the 16th century onward, furniture, dishes and other products made with *maki-e* techniques were exported to Europe.

Many of these crafts were exhibited at world fairs held in Europe and the United States from the late Edo period to Meiji period, and were very popular. One of these crafts was a golden *shachi*ⁱⁱⁱ from Nagoya Castle, displayed at the 1873 Vienna Expo. The golden *shachi* was the guardian deity of the castle and symbolized the power of the Tokugawa family. Two of the *shachi* were displayed atop the keep of Nagoya Castle, which was constructed in 1612. Standing at a height of around 2.5 meters, their surfaces were covered with gold plate. Unfortunately, these golden



One of two golden *shachi* on the roof of Nagoya Castle (height about 2.6 meters)
Photo: Nagoya Convention & Visitors Bureau

shachi were burned down along with Nagoya Castle during the war in 1945. The guardian deities adorning Nagoya Castle today are reconstructions made in 1959.

What role will Japan play in the world going forward to ensure effective utilization of limited mineral resources such as gold?

You may not think that metals such as gold, silver and copper are directly related to our daily lives, but these kinds of metals are actually used in all kinds of electronic devices and home appliances that are familiar to us, such as PCs, mobile phones and digital cameras. What's more, these products are produced and also thrown away in large quantities around the world. In other words, useful metals such as gold, silver and copper are thrown away along with the products that contain them. Nothing could be more wasteful.

The presence of useful and recyclable metals in various industrial products such as home appliances is referred to as an "urban mine." Japan possesses superior technologies for recovering useful metals from urban mines (see pp.26-27). As testament to this, the roughly 5,000 gold, silver and bronze medals awarded during the Tokyo 2020 Olympic and Paralympic Games were all made from gold, silver and copper recovered from products such as PCs and mobile phones. Among the various initiatives being pursued by the international community to achieve the Sustainable Development Goals (SDGs), I believe these Japanese technologies can make significant contributions. 

Interview by SAWAJI OSAMU

i *Mitokoromono* are the three ornamental fittings for a sword, comprising the *kogai*, a tool for pinning one's hair, the *menuki*, an ornament attached to the *tsuka* (hilt), and the *kozuka*, the hilt of a small sword.

ii See *Highlighting Japan* May 2022, "The History and Culture of Lacquer in Japan" https://www.gov-online.go.jp/eng/publicity/book/hlj/html/202205/202205_01_en.html

iii *Shachi* or *Shachihoko*. An imaginary creature with the head of a dragon or tiger and the body of a fish.