

The World of Minerals

By Vivien Gornitz

Jade Across the Millennia—Part 2

An old Chinese proverb states: “Gold has a value; jade is invaluable.” This saying applied not only to China, but to Mesoamerica and New Zealand as well. In Part 2, we will examine the other major jade cultures and the great cultural and spiritual significance jade had for the Olmec, Maya, Aztecs, and the Maori.

Mesoamerica—Chalchihuitl: the bringer of rain and water

In the pre-Columbian world of Mexico and Central America, jade was esteemed more highly than gold or other gemstones for over 3,000 years. The Olmec, Maya, Costa Ricans, and Aztecs associated the green color with water, young, maturing corn, vegetation in general, and hence, fertility and life itself.

Mesoamerican jade is mostly jadeite, although other stones were also widely substituted for similar purposes; the catch-all term “cultural jades” encompasses a slew of other greenish rocks or minerals such as albite, jaspers, aventurine, and serpentinites. Mesoamerican jadeites are primarily localized along the Motagua River valley, Guatemala, which outlines the trace of the Motagua strike-slip fault, a major tectonic feature that separates the North American plate from the Caribbean plate. The jadeites occur as blocks or boulders within or on serpentinites, or as boulders and cobbles in streambeds. The mineralogy of jadeite differs on either side of the Motagua fault zone. Jadeites north of the fault zone are generally massive, whitish to pale gray-green, transected by coarser veins of jadeite or albite. White to mauve, as well as medium green jadeite is also seen. Inclusions or veins of albite, omphacite, paragonite, titanite (sphene), analcime, zircon, rutile also occur, but quartz is generally absent. South of the fault zone, jadeites are often admixed with quartz, as well as titanite, vesuvianite, omphacite, phengite, lawsonite, and other minerals. Another mineralogical difference is that north of the fault zone, paragonite (Na-mica) is the dominant mica, whereas to the south, it is largely absent; instead, phengite (muscovite-celadonite) is more abundant. The mineral assemblages and associated rock types on the south side also imply higher temperatures and pressures of formation than on the north side. In general, jadeite and associated minerals crystallized directly from hydrous fluids released from the subducted slab and that were introduced into peridotite/serpentine rocks of the overriding mantle wedge.

Saturated green jadeite of a quality comparable to the finest Burmese jadeite, or even the highest grade of Mayan jadeite, has not been found on either side of the Motagua fault zone. This may be because the bright emerald-green jadeite so prized by Maya royalty, reminiscent of the rich verdant plumage of the quetzal bird, was quite rare to begin with and that the original sources became depleted, or that these locations remain yet to be re-discovered. At any rate, most of the specimens analyzed to date test extremely low in chromium. However, the greener

jadeites contain more abundant titanite and omphacite, potential sources of titanium and iron that can impart some color to the stone.

While the source of the treasured green jadeite still eludes geologists and archaeologists, erosion and landslides associated with Hurricane Mitch in 1998 has exposed abundant, massive blue-green jadeite boulders 10 km (6 mi) south of the Motagua valley, closely matching “Olmec blue” jade (below). Other jadeite color varieties from the Motagua valley region include dark green, variegated green and white, rare lavender, blue, and black “Galactic gold” jade (largely omphacite) flecked with pyrite, gold, platinum and other metals.

The Olmec

Around 1300-1000 BCE, the Olmecs began to shape jade into celts, axes, masks and human figures with thick, downturned lips, long ears, and almond eyes. Jade celts served as a form of currency and as “pre-forms” to be later fashioned into figurines, pendants, beads and other jewelry. Symbols carved on the celts denoted the four cardinal directions and world center, a cosmological worldview widespread across Mesoamerica. The Olmec, as well as the later Maya, also associated jade with maize and agriculture. Part human and part animal figurines may represent deities or shamanic transformation. Jade eagles, waterfowl, feline fangs and claws were also frequently represented in jade. The Olmecs preferred a dark-bluish green jade, known as “Olmec blue,” re-discovered south of the Motagua fault zone after Hurricane Mitch.

The Maya

Subsequent Mesoamerican cultures continued earlier jade traditions. The Maya (~1000 BCE-1530 CE) fashioned jade into a variety of objects, including celts, beads of various shapes, ear-pools (round earrings with a large hole in the center), tooth inlays, nose plugs, figurines, and plaques incised with images of high-ranking individuals and glyphs, usually denoting important events or dates in the Mayan calendar (Fig. 1). One of the most magnificent examples of Mayan jade art came from the tomb of Pakal the Great, a powerful Mayan warrior king (ascent 684 CE), who ruled Palenque, Guatemala. The king’s face was covered by a realistic funerary mosaic jade mask of bright green jadeite. In his ears were elaborate earrings, and around his neck, multiple jade bead necklaces. Another Mayan jade treasure is a 9.5 in tall jade mosaic vase depicting the maize god, from the late Classic period, Tikal, Guatemala.

Jade held great symbolic importance in the Mayan world. Jade objects were often laid out in the four cardinal directions with jade depictions of the maize god, representing the world tree or axis, at the center. The ruler was also closely associated with the maize deity. Depictions of throne symbols on jade reinforced the connections of jade to maize and kingship. Jade furthermore embodied the concept of the life spirit, closely linked to wind, rain, and water. Symbols of breath and wind on jade ear-pools reinforced this theme, as did imagery of the feathered serpent, Quetzalcoatl, who embodied the rain-bringing wind. This concept is akin to that of the Chinese dragon, often also depicted together with cloud and water imagery. The Maya also placed jade beads in the mouths of the deceased, another tradition reminiscent of that of ancient China. This burial custom likely stemmed from the close association of jade with the maize god, planting, and rebirth.

The Aztecs

The Aztecs, like the Maya and Olmecs, considered *chalchihuitl*, or green jadeite, to be among their choicest possessions. The Aztec nobility adorned themselves with strings of bead jadeite necklaces and bracelets. Among the gifts the Aztec emperor Montezuma (Moctezuma) gave to the Spanish conquistadors were “four chalchihuitls”, each of which was claimed to be worth more than a load of gold.”¹ Needless to say, the Spanish didn’t care much for the jadeite; they lusted after the gold.

The Aztecs also shared similar beliefs about jade with those of the Maya. They too associated jadeite with wind, water, feathered serpents, and breath, placing jade beads in the mouths of their deceased kings, and using jadeite in their sacrifices. In addition to jade, Aztecs adorned themselves with delicate turquoise mosaics set in gold, exotic bird feather headdresses, and jewelry made of other materials such as rock crystal, amethyst, opal, obsidian, shell. Most of this finery was reserved for the higher social classes.

Turning to the other side of the globe, jade, predominantly nephrite, was and still is highly esteemed by the Maori, the indigenous people of New Zealand. While it once served utilitarian functions in addition to a host of spiritual meanings, it now fulfills decorative and ceremonial roles, as well as a sign of cultural identity and pride.

New Zealand—Pounamu: symbol of vegetation and life

The Maori people are Polynesians whose ancestors settled in New Zealand about 700 years ago, roughly between 1320 and 1350. Approximately close to 800,000 Maori live in New Zealand (as of 2018), comprising up to 16.5 percent of the nation’s population. Although most Maori live on North Island, the greenstone or pounamu deposits are concentrated on South Island.

Pounamu, a dark green stone used by the Maori, most commonly refers to nephrite, but also includes bowenite (a deep to light green variety of serpentine), and serpentinite. The Maori, the indigenous settlers of New Zealand, treat *pounamu* as a treasure, which increases in *mana* (power or prestige) when handed down from generation to generation. To the Maori, the green color represents vegetation, fertility, and life itself—a color symbolism found in many other traditional cultures, as we have seen in the New World. Formerly, pounamu was fashioned into a wide array of tools, weapons, as well as ceremonial objects that continue to play an important role in modern Maori culture.

¹ As quoted by Pogue, 1915; 1974. Interestingly, Pogue devotes an entire chapter to “The Chalchihuitl Question”, in which he ponders the true nature of the stone referred to by the local New Mexico Pueblo Indians as “chalchihuitl”, but which they actually knew of as turquoise. The confusion undoubtedly arose because the Nahuatl Mexicans who guided the early Spanish to New Mexico, referred to all bluish-green stones as chalchihuitl. After a lengthy discussion, Pogue finally concludes that the Southwestern “chalchihuitl” referred to turquoise, a stone still widely used in the Southwest, whereas the green Mexican “chalchihuitl” was indeed jadeite.

Serpentinites, also found in Maori artefacts, encompass a separate group of hydrated magnesium silicate minerals (e.g., chrysotile, antigorite, lizardite). Although the color range closely resembles nephrite, serpentine is softer and less dense than either form of jade, and feels oily, greasy to the touch. It often substitutes for jade as a cheaper alternative in carvings and jewelry.

In New Zealand, nephrite usually occurs close to serpentinites along the Alpine Fault, in the Westland district, West Coast region; Dun Mountain, Nelson region; Fiordland, western Southland, and on the Arahura and Hokitika Rivers, on South Island.

Nephrite is estimated to have formed at temperatures between 300°C to 400°C (570°F to 750°F) at depths of 50 km (31 mi) or less, based on mineral associations. Eroded by glaciers and rivers, nephrite boulders and cobbles have accumulated in riverbeds and beach deposits. Because of their cultural significance to the Maori, pounamu deposits have been reserved for their exclusive use by treaty. In particular, the Pounamu Resource Management Plan gives the Ngai Tahu tribe of South Island ownership and management rights over pounamu deposits on South Island. While commercial mining is prohibited, the Ngai Tahu may extract and supply pounamu for tribal cultural purposes, as well as to the local pounamu industry (nephrite carvings and jewelry for sale to outsiders). Export of New Zealand pounamu in excess of 5 kilograms is prohibited, but crafted objects such as pendants and sculptures, as well as raw pounamu and stones under 5 kg can be taken out of the country. "Fossicking" or collecting is permitted on beaches in designated areas on the West Coast of South Island, but is limited to what an individual can carry in person within a 24-hour period.

Unlike the standard chemical and structural mineralogical classification, the Maori traditionally classified pounamu based on the stone's colors, hardness, special markings, and degree of translucency.

Maori classification of pounamu

- Kawakawa—the most common type, appears in many shades of green; may have dark flecks or inclusions (magnetite, or chromite)
- Totoweka—similar to mid-green kawakawa, but with reddish spots or streaks; rare, highly collectible
- Kahurangi—a translucent, vivid to forest green serpentine with few inclusions—rare, can be gemmy
- Inanga—a pearly white to pale gray-green, translucent to opaque variety of serpentine
- Flower jade—green to yellowish green, with swirling lines or streaks, found in the Marsden area, West Coast, South Island; popular with carvers
- Kokopu—also from the Marsden area—light to dark browns, tan, off-white, olive green, yellow with brown spots, like a mountain trout
- Tangiwai (bowenite)— “tears of sorrow”—yellow, olive-green, brown, bluish green, clear, translucent; from Milford Sound area
- Pipiwharauoa—named for the shimmering green and white plumage of the shining cuckoo—a rare chatoyant variety of pounamu.

Lacking metal prior to European contact, the Maori carved pounamu into a variety of useful tools such as adzes, axes, chisels, hammers, knives, fish hooks, and weapons (clubs, spear points), as well as ritual objects. While today’s Maori use modern metal tools and implements, they continue to carve traditional designs for amulets, ornaments, and ceremonies. Of these, the hei-tiki was the most revered symbols, represented ancestral spirit figures, which they passed down from one generation to another. Some of the traditional designs, increasingly popular among non-Maori as well, besides the hei-tiki, include toki, mere, hei matau, and koru (Fig. 2).

Popular traditional Maori designs

- Hei-tiki—probably the best-known design: a human-like form with big, round eyes, a large tilted head, protruding tongue (protection), arms resting on hips (fertility), and bent feet touching heels. The tiki symbolizes “first person”, or ancestor
- Mere—an elongated rounded shape with a sharp edge, formerly used as a striking/jabbing weapon, hung on the wrist by a cord, by powerful chiefs; symbol of authority and an important heirloom
- Toki—adze or axe—a smooth trapezoidal shape with a sharp edge, symbolizing strength, courage, authority, and power. These were originally used as cutting and digging tools and when lashed to a wooden shaft, Maori chiefs would wield their tokis during ceremonies.
- Hei matau—a stylized fish hook symbolizing abundance, respect for sea life, safety in traveling over water
- Koru--spiral forms representing creation, movement, new growth, regeneration, as in unfurling fern fronds and many other growing plants
- Pikorua--twists (intertwined and braided forms)—a popular modern design symbolizing the bond between two people united by friendship, love, family
- Whales’ tails—sea life, abundance
- Manaia—A complex design with a stylized bird head, human body, and fish tail representing the balance between the three realms (sky, earth, sea)
- Whales’ tails—sea life
- Leaves and other nature-inspired designs.

Jade today

Jade, both nephrite and jadeite, stands unique among gemstones in its multi-millennial history and multiplicity of uses and functions--as a tool, weapon, stone imbued with many symbolic and spiritual meanings, symbol of authority and status, cultural identity, and luxury item. It still retains many of these traditional associations throughout East Asia, including China, and amongst the Maori of New Zealand, whereas in Guatemala, its former meanings have been largely forgotten, but numerous workshops churn out relatively inexpensive jadeite jewelry, carvings, and trinkets for the many tourists who visit the colorful native markets and restored archaeological Mayan sites. Of the three traditional jade culture areas, China remains the leading center of jade consumption both for jewelry, sculptural carvings, and personal good luck charms and amulets. Although a revived interest for traditional nephrite is growing, particularly following the Beijing 2008 Olympic Games (Part 1), jadeite holds the greatest economic value and Hong Kong auction prices for exceptional quality jadeite have rivaled those

of diamonds. In New Zealand, the Maori people regard pounamu as a valuable treasure representing cultural pride, associated with multiple closely inter-twined legendary, historic, and ceremonial connections, and they strongly defend their rights to traditional pounamu grounds.

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Figure 1, Late-Classic Maya plaque of a Maya king from Teotihuacan, Mexico (Photo credit: Michel Wal, published under the [GNU Free Documentation License](https://www.gnu.org/licenses/old-licenses/gpl-2.0.html), Version 1.2 or any later version).



Figure 2. Hei matau pounamu pendant, Maori. (Photo credit: Sarang, November 23, 2009. In public domain).