

Precious and Semiprecious Stones (Mesoamerica)

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Ancient inhabitants of Mesoamerica, a culture area encompassing much of modern Mexico and northern Central America, utilized a wide variety of minerals and rocks for both utilitarian and sumptuary purposes. Metallic oxides – such as magnetite, ilmenite, and hematite – were used to make ceremonial mirrors. Serpentine, jadeite, turquoise, and a wide variety of greenstones were used to make mosaic masks, figurines, and other ritual objects. Crystalline and cryptocrystalline materials were carved and ground in an extensive lapidary industry, or knapped to form fantastic “eccentrics”. A wide variety of minerals were ground for pigments. Finally, toward the end of the Precolumbian period, native copper, gold, and other metals were used to make ornamental objects and tools.

Indigenous classifications of rocks and minerals are very different from those of modern geologists and mineralogists. Superficial properties, such as color and reflectance, often were more important to ancient Mesoamericans than the chemical and physical characteristics of materials. Moreover, economic criteria – precious and semiprecious – were not used to distinguish among different types of stones. What we call “precious gemstones” were used rarely in ancient Mesoamerica. In fact only one example, an emerald figurine of unknown provenance, has been identified. For these reasons, it is best to consider together those materials that native peoples prized for particular shared attributes. Just as modern Europeans associate different gemstones with the characteristics of distinct astrological signs, Mesoamericans believed that certain traits were embodied by different minerals and rocks. In this essay, I discuss two classes of rocks and minerals – greenstones and mirrorstones – that were highly prized in Mesoamerica.

Greenstone. Mesoamerican societies valued jadeite, a mineral consisting of sodium aluminum silicate, above all other stones. In its pure state jadeite is white, but the substitution of iron or chromium produces green colors. Greenstones that are similar to jadeite in appearance and ancient use are called “social jades” by archaeologists. To the Aztecs jadeite was *chalchihuitl*, but the Maya did not have a particular name for the mineral, calling it *ya'axil tun*: ‘greenstone’. In Maya, the root *yax* means not only ‘green’, but also ‘precious’ and ‘first’. Jade was



Figure 1. Jadeite figurine, Olmec culture.
Museo Nacional de Antropologia, Mexico.

associated with life, water, sky, vegetation, ripening corn, and the Young Maize God. In the Maya region, jade was used to represent *k'ulel*, the living spirit in all animate things (Schele and Mathews 1998). *K'ulel* was thought to reside in blood, so jade also was associated with bloodletting, a relation that can be traced back to the Formative Olmec culture. The etymologies of both ‘jade’ (from the Spanish *ijada*) and ‘nephrite’ (from the Latin *nephrus*) are reasonably traced to the Aztec belief that *chalchihuitl* could cure diseases of the liver, the spleen, and especially the kidney. Because of these mystical, religious, and curative associations, greenstones of all sorts – but particularly jadeite – were of great value throughout Mesoamerica.

Jadite rock or “true jade” can be found in only a few places in the world. Just one source in Mesoamerica has been discovered, located along the Motagua fault in Guatemala. Nonetheless, numerous unsubstantiated reports suggest that jade also can be found in the mountains of Guerrero, Oaxaca, and Chiapas, and also in northwestern Costa Rica. The tectonic forces – particularly those created by lateral faulting along major crustal boundaries – needed to produce jade are not present in highland Mexico (Harlow 1993), but they may exist in lower Central America. A Costa Rican jade source also seems possible because of the great number of jade artifacts found in Costa Rica (e.g., Reynoard de Ruenes 1993; Soto 1993). Trace element assay



Figure 2. Early Classic (c. A.D. 400) mosaic mask (jadeite, coral, and shell), earflares, and necklace, Burial 1, Structure III, Calakmul. Museo Regional, Campeche.

demonstrates that although most jade known from the Maya region does indeed come from the Motagua source, at least two additional chemical sources are represented in Costa Rican collections (Bishop et al. 1993).

The first great carvers of jadeite rock date to the Formative period. These include the Olmec of the Gulf Coast of Mexico and other cultures sharing the pan-Mesoamerican symbol set that emerged sometime before 1200 B.C. Jade was a particularly important material during the Middle Formative period (900-500 B.C.). At that time, many elements of the Formative iconographic system that previously had been expressed on pottery were transferred to the new medium of jade. The Olmecs of La Venta and other Middle Formative carvers made many intricate, naturalistic figurines (Figure 1), plaques, and celts depicting “were-jaguar babies” and other mythical beings. During the Classic period, jade was used extensively in central Mexico, Oaxaca, and the Maya region. In the Mexican highlands, jade beads commonly were placed in the mouths of deceased individuals as an offering or as a symbol of life. Divine

kings in Classic period Maya art often are portrayed wearing three jade pendants hanging from their belts. These pendants, some of which portray Maya kings and carry hieroglyphic inscriptions, were traded as far as the Bagaces region of northwestern Costa Rica. Another artifact made of jade is the mosaic mask (Figure 2), which typically is found in the tombs of the most powerful Maya kings. Such masks – along with the jade necklaces and beaded skirts found in burials and depicted in artwork – may reflect the belief that the dead king, like the Young Maize God, will be resurrected and usher in a new creation.

Turquoise, a blue-green stone, also was used extensively in Precolumbian Mesoamerica. In the Aztec language, turquoise was called *xihuitl*, which also means ‘comet’, ‘year’, and a kind of herb. In fact, the name of the Aztec fire god Xiuhtecuhtli means ‘Turquoise Lord’ (Miller and Taube 1993). True turquoise, a mineral consisting of hydrated copper aluminum phosphate, does not occur naturally in the heartland of Mesoamerica. The nearest sources are located in northern Zacatecas and San Luis Potosí, but most true, high-quality turquoise was imported from the American southwest (Harbottle and Weigand 1992; Wiegand 1992; Weigand et al. 1977). As such, its appearance at sites in the central highlands of Mexico, Oaxaca, and the Maya area indicates the existence of long distance, macroregional trade. Ancient Mesoamericans associated turquoise and its social equivalents with rain, fertility, political power, and knowledge. For this reason, turquoise and jadeite were viewed as interchangeable materials in many contexts.

The earliest known uses of turquoise and other similar materials date to the Late Formative period (c. 200 B.C.). But the first culture to extensively mine for and trade “social turquoise” lived in the Chalchihuites region of southern Zacatecas. Although true turquoise is not found in this area, other blue-green minerals – azurite, malachite, and cuprite – are common. During the Classic and early Epiclassic periods (A.D. 200-800), Chalchihuites people dug approximately 800 tunnel mines, the longest of which is 3 km in length (Weigand 1990, 1993). Excavated minerals were processed at important local centers like Alta Vista, and then were traded to the city of Teotihuacan in central Mexico, the greatest Classic-period consumer of blue-green minerals. It may be, as some archaeologists have argued, that the Alta Vista mines were controlled directly by a resident colony of Teotihuacanos (Kelley 1990). True turquoise, in contrast, was circulated in greatest quantities during the Postclassic period (A.D. 900-1519), when it replaced jade as the most desired greenstone in both the Mexican highlands and the Maya region. During the Postclassic period, turquoise from the American southwest was obtained from Hohokam, Anasazi, and other peoples living north of the Sonoran desert. In trade, these other

cultures received copper bells, both live macaws and feathers, and a variety of *pseudocloisonné* vessels made in northwestern Mexico. It also is likely that certain architectural and sculptural forms related to ritual behavior – such as the Mesoamerican ballcourt and the *chacmool* – diffused to the American southwest because of the turquoise trade.

Turquoise was used most commonly in the creation of complex mosaics and other composite artifacts. Greenstone masks of typical Teotihuacan style were encrusted with turquoise or similar materials, as well as shell and coral. In the Maya area, turquoise became an important material after A.D. 900, when substantial trading ties were forged with central Mexico. At Chichén Itzá, large mosaic disks covered with complex designs made of turquoise, pyrite, shell, and slate have been found (Figure 3). These disks, which contain images of the feathered fire/war serpent surrounding a central mirror, are depicted on sculpture at the site as part of the costume of a warrior. In central Mexico, this serpent, called *Xiuhcoatl*, was an important symbol of *Xiuhtecuhli*, the Turquoise Lord. It is possible that these mirrors also should be associated with the central Mexican god *Tezcatlipoca*, the complementary opposite of the feathered serpent *Quetzalcoatl*. The famous Atlantean columns atop Pyramid B at Tula sport similar turquoise incrusted mirrors on their backs. Both Toltec and Aztec Postclassic warriors are depicted as wearing turquoise pectorals shaped like butterflies and dogs. The *yacaxihuitl* nose piece, made of turquoise, symbolized the spirit of dead Mexican warriors. Finally, the *xiuhuitzollí* crown, also incrusted in turquoise, was an important symbol of Late Postclassic rulership (Miller and Taube 1993).

Mirrorstone. A second class of rocks and minerals were valued for their ability to reflect light. These include metallic oxides (magnetite, ilmenite, and hematite), iron pyrite (a sulfide), and obsidian (volcanic glass). Mirrors made of these materials, as well as bowls of water, were used widely in ancient Mesoamerica for divinatory purposes. To the Maya, a reflective surface was an *ol*, a portal through which the other world could be contacted. Mirrorstones also were identified with fire, perhaps because concave mirrors could have been used to ignite kindling. Their reflective nature led them to be associated with the sun, lightning, and pools of water. The Aztec deity *Tezcatlipoca* ('He of the Smoking Mirror') and the Kaqchikel Maya patron god *Chay Ab'äj* ('Obsidian Stone') were personifications of obsidian as a mirrorstone, and the Classic Maya god *K'awil* also is closely associated with mirrors and divination (Taube 1992).

Unlike jadeite rock or turquoise, sources of mirrorstones are relatively common in Mesoamerica. Magnetite, ilmenite, and hematite can be found in a wide

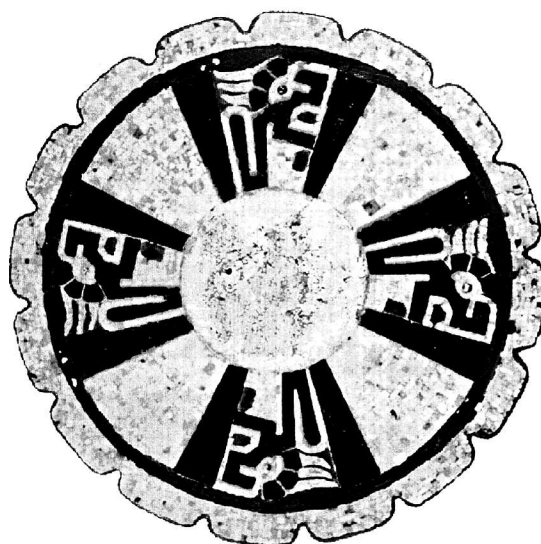


Figure 3. Mosaic disk (turquoise, iron pyrite, and slate) from Chichen Itza. Museo Nacional de Antropologia, Mexico.

variety of sedimentary contexts. Two particularly important source areas for these minerals were the Valley of Oaxaca and the Teuchitlan region of Jalisco (Weigand 1990). Iron pyrite also is common, and the volcanic highlands of Mesoamerica are rich in obsidian sources. Perhaps it is most important to note where mirrorstones do not occur naturally: the Gulf Coast region of the Olmec.

The use of mirrorstones in Mesoamerica can be traced to pre-Olmec cultures of the Early Formative period. But mirrors – typically fashioned of a single, polished, convex piece of metallic oxide – became particularly important during the late Early Formative and Middle Formative periods (1200-500 B.C.). These were worn by elites as pectorals, perhaps as an indication of their religious function or of their divine status. The spread of the use of mirrorstones during the Formative period is related to the expansion of the pan-Mesoamerican symbolic system frequently associated with the Olmec. Metallic oxide mirrorstones have been found at many Formative sites in Mesoamerica, especially in the Valley of Oaxaca, in the Basin of Mexico, and at sites in the Olmec heartland such as San Lorenzo Tenochtitlan and La Venta. The appearance of mirrorstones in this last region, devoid of mineral resources, demonstrates the existence of the organized trade of exotic, status goods between distant regions. This kind of exchange frequently is associated with the development of social stratification. Some of the metallic oxide minerals served additional purposes

during the Formative period. Numerous perforated cubes are known from the central depression of Chiapas and from late Early Formative contexts in the Olmec heartland (Lee 1989). Their function is unknown. A grooved bar of hematite found at San Lorenzo may have served as a magnetic compass used to orient architectural construction (Coe and Diehl 1980).

During the Classic period, iron pyrite replaced metallic oxides as the preferred mirrorstone. Unlike Formative examples, mirrors of the Classic period were made of numerous pieces of mirrorstone carefully cut into polygons and fashioned into a large mosaic. Often, the iron pyrite pieces were mounted onto elaborately incised slate backs. The spread of the use of mirrors, particularly those worn on the back, is related to the Venus-Tlaloc war cult, which perhaps originated in Teotihuacan. At that site, nobles frequently were buried with composite iron pyrite mirrors on their backs. Burials in Mounds A and B of Kaminaljuyú, a highland Maya site where evidence for some kind of interaction with Teotihuacan is evident, also contain many mirror disks, though these seem to have been worn on the chest or placed in the lap of sitting, dead elites (Kidder et al. 1946). The center of the mirror disk from Chichén Itzá (Figure 3) was made of polygonal pieces of iron pyrite, which have oxidized and have deteriorated.

During the Late Postclassic period (A.D. 1200-1519), ground and polished obsidian replaced metallic ores as the material of choice for mirrors. Obsidian, a volcanic glass, had been used for millennia in Mesoamerica for making chipped-stone tools, and an extensive lapidary industry using obsidian developed in highland Mexico during the Classic period. As mentioned, the Aztec god Tezcatlipoca was the personification of polished obsidian, which often is shown as a smoking mirror mounted on his head or replacing one of his feet. In the latter case, a snake may be emerging from the mirror, perhaps derived originally from depictions of the feathered fire serpent (lightning?) materializing from mirrors at Teotihuacan. The earliest known depictions of a Tezcatlipoca-like figure wearing a smoking mirror on his forehead and having a serpent foot appear at Chichén Itzá in the Maya region, suggesting that the association between smoking mirrors and a deformed deity was a pan-Mesoamerican theme by the 9th century. It also may be that the Maya god K'awil, the Classic-period personification of divine rulership, is an earlier manifestation of this mysterious figure. He too is depicted with a serpent foot, his spirit counterpart summoned out of a mirror, and often is shown either carrying a mirror or with an axe or smoking torch emerging from a mirror on his forehead. Tojil and Chay Ab'äj, the Postclassic highland Maya counterparts of K'awil, not only are associated with obsidian mirrors and divination, but also with lightning and storms.

A.V. Kidder - J. D. Jennings - E. M. Shook, *Excavations at Kaminaljuyu, Guatemala*, Washington, D. C. 1946.

P.C. Weigand - G. Harbottle - E. V. Sayre, *Turquoise Sources and Source Analysis: Mesoamerica and the Southwestern U.S.A.*, in T. K. Earle - J. E. Ericson (eds.), *Exchange Systems in Prehistory*, New York 1977, pp. 15-34.

M.D. Coe - R. A. Diehl, *In the Land of the Olmec. Volume 1: The Archaeology of San Lorenzo Tenochtitlán*, Austin 1980.

T. A. Lee, Jr., *Chiapas and the Olmec*, in R. J. Sharer and D. C. Grove (eds.), *Regional Perspectives on the Olmec*, Cambridge 1989, pp. 198-226.

J. C. Kelley, *The Classic Epoch in the Chalchihuites Culture of the State of Zacatecas*, in A. Cárδος de Méndez (ed.), *La época Clásica; nuevos hallazgos, nuevas ideas*, Mexico 1990, pp. 11-14.

P. C. Weigand, *The Teuchitlán Tradition of Western Mesoamerica*, in A. Cárδος de Méndez (ed.), *La época Clásica; nuevos hallazgos, nuevas ideas*, Mexico 1990, pp. 25-54.

G. Harbottle - P. C. Weigand, *Turquoise in Pre-Columbian America*, in *Scientific American*, 226 (2) (1992), pp. 78-85.

K. A. Taube, *The Major Gods of Ancient Yucatan*, Washington, D.C. 1992.

P. C. Weigand, *The Macro-Economic Role of Turquoise within the Chaco Canyon System*, in D. E. Doyel (ed.), *Anasazi Regional Organization and the Chaco System*, Albuquerque 1992, pp. 169-173.

R. L. Bishop - E. V. Sayre - J. Mishara, *Compositional and Structural Characterization of Maya and Costa Rican Jadeitites*, in F. W. Lange (ed.), *Precolumbian Jade: New Geological and Cultural Interpretations*, Salt Lake City 1993, pp. 30-60.

G. E. Harlow, *Middle American Jade: Geologic and Petrologic Perspectives on Variability and Source*, in F. W. Lange (ed.), *Precolumbian Jade: New Geological and Cultural Interpretations*, Salt Lake City 1993, pp. 9-29.

M. Miller - K. Taube, *The Gods and Symbols of Ancient Mexico and the Maya*, London 1993.

M. Reynoard de Ruenes, *A Possible Source or Raw Material for the Costa Rican Lapidary Industry*, in F. W. Lange (ed.), *Precolumbian Jade: New Geological and Cultural Interpretations*, Salt Lake City 1993, pp. 61-67.

Z. Soto, *Jades in the Jade Museum, Instituto Nacional de Seguros, San José, Costa Rica*, in F. W. Lange (ed.), *Precolumbian Jade: New Geological and Cultural Interpretations*, Salt Lake City 1993, pp. 68-72.

P. C. Weigand, *Evolución de una civilización prehispánica: arqueología de Jalisco, Nayarit y Zacatecas*, Zamora 1993.

L. Schele - P. Mathews, *The Code of Kings: The Language of Seven Sacred Maya Temples and Tombs*, New York 1998.