LEIGHA: THE CREATION OF A THREE-DIMENSIONAL INTARSIA SCULPTURE

By Arthur Lee Anderson

Traditional gem intarsia, essentially flat interlocking mosaic work, is generally restricted to two-dimensional surfaces. Taking intarsia into three dimensions "in the round" requires the use of new techniques. This article illustrates the process of creating a contemporary three-dimensional intarsia sculpture. The skirt in Leigha was executed with over 800 separate pieces that averaged 1 to 2 mm in thickness. As the skirt is over 12 inches (30 cm) long, the necessary tensile strength to hold the pieces together required the use of the relatively new ultraviolet-curing cements, as well as structural design elements that would not be concerns in two-dimensional work. Inspired by an ancient Minoan motif, this intarsia sculpture illustrates some of the expanding possibilities for gem materials in the realm of gemstone objets d'art.

Objets d'art, the French term meaning "art objects," have captured the imagination of the lapidary throughout history. As the many examples in the tombs of ancient Egypt illustrate, such art objects—often inspired by religious beliefs—are among the oldest known uses for gem materials. For the gem artist, gemstone *objets d'art* are the natural marriage of the finest artistic materials and the vision of the artisan.

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Traditions for the creation of *objets d'art* vary from the single artisan working in solitude to execute a personal vision to, in the case of some ancient Chinese jade carvings, 50 carvers working for 10 years on a single piece (Thomas and Lee, 1986). Current practices include "houses" in Germany and elsewhere that draw on the skills of many stone artists to execute various parts of a single piece.

Whatever the approach used, the common link to the successful execution of all gem material *objets d'art*, in addition to artistic aesthetic, is engineering. With the advent of newer adhesives, broader dimensions of design and combinations of materials may be employed, resulting in creations that were structurally impossible in the past. This is particularly true of adhesives such as ultraviolet (UV) light–curing cements that have come into common usage in the lapidary field only in the last decade (L. Wackler, pers. comm., 1998).

Figure 1. Leigha*, a contemporary intarsia sculpture, is based on an ancient Minoan figure from the island of Crete. It is shown here against a backdrop of the doorway to the Queen's Room in the palace at Knossos, the center of the Minoan civilization. The statue stands 27 inches (68 cm) tall; the skirt, which contains more than 800 pieces of gem materials, is a unique example of three-dimensional intarsia that could not have been constructed without contemporary adhesives and techniques. Photo © Harold & Erica Van Pelt.*

This article describes the creation of a contemporary intarsia sculpture called *Leigha* (figure 1), which is based on an ancient Minoan figurine from the island of Crete circa 1700 BC. Although the lapidary technique of intarsia has been known for many centuries now, this statue illustrates some of the effects made possible by new technologies combined with precise engineering. For example, the skirt contains more than 800 separate pieces of garnet, smoky quartz, obsidian, black jade, and epidote, averaging 1 to 2 mm thick; it measures over 12 inches (30 cm) from waist to hem. A work such as this could not have been considered with adhesives from lapidary traditions of the past. The statue has a total finished height of 27 inches (approximately 68 cm); it was executed by the author over a period of two years. The inspiration for this statue, both the Minoan motif and the historic technique of intarsia, are discussed below. This discussion is followed by a description of the specific materials and techniques used to produce this distinctive object.

BACKGROUND

The Minoan Motif. The Minoan culture flourished from approximately 2600 BC to about 1150 BC on the islands of Crete and Thera (present-day

Santorini), in the Aegean Sea between Greece and Egypt (Cotterell, 1979). It appears that this civilization never recovered from the devastating earthquakes and tidal waves that followed the eruption of the volcanic island of Thera in 1400 BC (Durant, 1939). These natural disasters destroyed the palace of King Minos at Knossos, remembered in mythology for the labyrinth thought to be hidden there and the minotaur, half bull–half man, who was said to live in the center of it.

Much of what is known or conjectured about the Minoans comes from excavations that have revealed their art. Extensive frescoes reveal a society in which women were highly esteemed for, among other things, their physical prowess. For example, Minoan frescoes reveal women acrobats "bull jumping"—a sport in which a person grabbed the horns of a charging bull and performed an acrobatic flip over the bull's back (Cotterell, 1979; Castelden, 1990). Women are also prominently portrayed as priestesses, often holding snakes in their hands, the snake and the bull being common totems among the Minoans (Cotterell, 1979).

The colors and designs of the frescoes suggest a culture with a keen artistic appreciation. The dolphin fresco over the entrance to the Queen's Room in the palace of Knossos in Crete (illustrated here in the background to figure 1) is an example of this. Other frescoes reveal the Minoan style of dress (Canby and Ross, 1961): The men often wore little more than codpieces, whereas the women are portrayed in finery, generally long pleated dresses open at the breasts and some of the earliest known representations of corsetry. Long braids adorned both men and women. The women wore makeup, especially eyeliner (kohl), and apparently esteemed physical beauty (Cotterell, 1979).

Much has been written about the Minoans in a somewhat idyllic vein—an island society, steeped in the arts (e.g., Durant, 1939). However, glimpses of another side to the idyll were revealed in excavations in the 1980s that uncovered the remains of two women in the act of sacrificing a young man when the palace roof collapsed during the earthquakes (Castleden, 1990). To this day, the Minoans remain an enigmatic culture.

Many statuettes with the motif of a woman holding two snakes have been discovered in the ruins of ancient Minoa, fashioned from various materials ranging from clay (e.g., in the Athens Museum; Hammond, 1988) to ivory (Boston Museum; Durant, 1939). This image has been described as a "household deity" (Durant, 1939) and is commonly referred to as the Snake Goddess (Castleden, 1990). However, because the ancient Minoan language (Linear A) has never been successfully translated, the significance of the figure of a woman, bare breasted in the Minoan fashion, holding two snakes has never been conclusively established. The author's inspiration came from a faience figurine of the Snake Goddess discovered in the ruins of Knossos (Cotterell, 1979; figure 2). He chose this subject both for the opportunity it presented to reinterpret an ancient image through contemporary gem work, and for its suggestion of primal strength in a feminine form.

Intarsia. Derived from the Italian *intarsiare* (to inlay), which descended from the Arabic *tarsi* (an inlay, incrustation; *Webster's Encyclopedic Unabridged Dictionary*, 1996), intarsia encompasses many forms of inlay, although wooden mosaic work is perhaps the best known. For the most part, traditional gem intarsia incorporates flat surfaces, with the design executed in two dimensions, that is, as inlay of gem materials on a tabletop or on the top or sides of a box or pendant. Scrutiny of ancient pieces of gem inlay from the Cairo museum reveals no stone-adjacent-to-stone construct; there is always a border of metal, generally gold, securing stones in those designs. This early style of gem inlay mosaic work could be considered a precursor to modern intarsia (Saleh, 1987). The more contemporary, stone-fitted-to-stone intarsia is exemplified by the mosaics from Florence, Italy, where masters of flat intarsia work have reigned since the 1700s. Intarsia work with gem materials flourished from the late 1600s to the mid-1800s in western Europe, commonly in snuff boxes and other decorative items (Elliott, 1986).

Although gem intarsia is traditionally confined to two-dimensional representations, there were some earlier departures from these models, such as the peasant and other lifelike figurines executed by the artisans of Peter Carl Fabergé (Von Habsburg, 1983) at the turn of the century. Although carved in realistic detail, these figures are relatively simple in engineering. Generally, they represent the marriage of three or four separately carved pieces of stone, not actually a mosaic, or intarsia style, so perhaps they are better described as multistone gem carvings.

New technologies, especially the availability of new adhesives, have greatly expanded the creative and technical possibilities for current intarsia artists. Today, a master such as Russian-American artist Nicolai Medvedev incorporates hundreds of individual pieces in his gem intarsia boxes; typically the only metal is that used for the hinge of the box or other mechanics. The rest is composed strictly of gem materials bonded to other gem materials with, in some cases, an ornamental wooden lining inside the box (Elliott, 1986). Medvedev prefers using five-minute-setting epoxies that the manufacturers claim will last up to 1,200 years. He also uses cyanoacrylate glues (i.e., Instant Glue or Krazy Glue or similar commercially available instantly bonding glues). Both types of adhesive create a durable bond, but the epoxies have a gap-filling property, whereas the cyanoacrylates are useful only for areas of very tight fit (N. Medvedev, pers. comm., 1998). Another innovator in gem inlay is Montreal gem cutter Yves St.-Pierre, who has used ultrasonic drilling techniques to literally vibrate a harder stone *into* a softer one, creating a flush inlay of one stone into the other (Y. St.-Pierre, pers. comm., 1996).

Virtually all traditional intarsia work uses opaque gem materials exclusively (Sinkankas, 1962). This is because most pieces must be backed with some material, which would show through if transparent gem pieces were used. The only way transparent materials could be used effectively would be in a panel style, similar to stained glass work, with no backing and suspended in three-dimensional space. The pieces would have to be finished front and back, unlike traditional intarsia work which is only finished on the exposed side. Without a backing material to add stability to the construct, only very strong adhesives could achieve the necessary strength to create larger pieces; and, as the pieces in intarsia are cut very thin, the adjoining edges would have to fit together perfectly in a pattern conducive to tensile strength. In the statue described in this article, Leigha, just such techniques were used to take intarsia into the round, in three dimensions, with transparent gem materials (figure 3). To the best of the author's knowledge, this has not been attempted before in gem intarsia.

MATERIALS USED

Gem materials are the palette of the lapidary executing an art object. Considerations in selecting materials include availability in sufficient sizes and quantities for completion of the piece, as well as consistency of color tones and diaphaneities to meet the design criteria of the finished object.

The author's conceptualization of this piece required the creation of a transparent skirt over a fully sculpted figure. Consequently, a material was needed for the body of the statue that would be available in sufficient size to execute the entire initial figure. A 200 pound (91 kg) block of marble from the Carrara Mountains in Italy was selected as the starting point for the creation of the four separate components of the body: one section from the waist down, another for the torso and head, and two for the arms.

Figure 2. The contemporary intarsia sculpture, Leigha, *was inspired by this faience (painted clay) statuette of the Minoan Snake Goddess, which was excavated from the palace at Knossos and is thought to come from the middle Minoan period, around 1700 BC. It is currently in the National Museum in Athens. Photo from Cotterell (1979).*

Materials for the clothing were chosen for their "earth tones" (to suggest the ancient use of vegetable dyes) and for their various diaphaneities. The materials for the skirt and headdress consist of transparent orange grossular garnet from California,

Figure 3. This view of the statue shows the contours in the three-dimensional intarsia work. Such lapidary work requires engineering beyond the two-dimensional considerations of flat mosaic intarsia. Photo © Harold & Erica Van Pelt.

epidote from Pakistan, and smoky and colorless Brazilian quartz, as well as translucent sheen obsidian. Materials used for the bodice, girdle, hair, and snakes include black jade from Wyoming, sheen and rainbow obsidian from Mexico, Baltic amber, malaya and orange grossular garnet from California, basalt, and green jadeite from Alaska.

Faceted gems incorporated into the figurine include original gemstone designs by the author: a 14.50 ct "halo cut" citrine (figure 4), a 4.25 ct "iris cut" citrine (figure 5; see also Anderson, 1991) , and a 4.30 ct oval "blossom cut" malaya garnet (figure 6). Obsidian, magnesite, indicolite, black agate, and clear quartz were used to fashion the eyes. Ringlets of 14k gold adorn the braids.

Additional considerations of hardness and toughness influenced the selection of some materials. For example, a material such as amber, cut into thin slices, is only suitable if backed by another material. Consequently, amber was selected for the bodice and the headdress, where it would be backed by the marble. As essentially all the pieces used in the clothing of the figure are thin cuts, the engineering of the construction was more important than the hardness or toughness of the material used in most cases. In fact, the materials in the skirt are supported more by the way they are cross-braced and interlocked than by the strength of the materials themselves. However, because the girdle area around the hips is the contact point between the marble of the body and the skirt, a tougher material—in this case, black jade—was essential.

The base of the statue consists of a laminated oak bowl, black lacquered and filled with Portland cement, in which the marble of the main figure has been inserted. An ornamental covering of silica sand constitutes the ground on which the figure appears to stand.

GENERAL CUTTING AND ASSEMBLY CONSIDERATIONS

The execution of this work involved a combination of stone-working techniques: traditional lapidary techniques for the gem materials, and marble working for the body of the statue. Nearly all types of lapidary methods were used: from sawing, lapping, and grinding, to faceting, carving, and hand polishing. As space considerations preclude discussion of general lapidary techniques, the reader is advised to consult reference books on the subject for more detailed information (see, e.g., Sinkankas, 1962; Hunt, 1996).

The marble work required the use of power saws with carbide blades, handheld power grinders, and traditional hand chisels. Although ultimately all stone work is executed by the same principle of cutting softer materials with harder ones, the chief difference between lapidary work and marble sculpting is that, because marble is relatively soft, steel tools may be used, whereas gem materials usually require diamond and silicon carbide abrasives. However, the marble was given a final treatment using diamond burrs in flex-shaft machines, which is more typical of lapidary carving than traditional marble sculpting.

Figure 4. The headdress includes a 14.50 ct "halo cut" citrine inlaid in a smoky quartz crown. Amber and obsidian define the brim, and the top of the crown is embossed with an appliqué of garnet, citrine, and epidote. A close view of the face reveals the composite nature of each eye, including obsidian pupils, indicolite irises, magnesite whites, and black agate eyeliner. The cornea is clear quartz. Photo © Harold & Erica Van Pelt.

In creating a gem work of this nature, engineering considerations were paramount from the outset. Because the final object would have numerous fragile features that would make it impractical to transport safely as one piece, it had to be designed so that it could be disassembled. Thus, the statue had to be constructed in sections that could be fitted together by pegs. The final work is in six separate sections: the upper torso and head, the two arms, the legs and lower torso, the skirt, and the base.

Another critical structural consideration was the selection of adhesives for the different areas. Generally speaking, 330 epoxy (which contains a resin and hardener) was used throughout the piece in areas where opaque materials were bonded to opaque areas; cyanoacrylate glues were used in areas where smaller bonds were required, such as in the assembly of the eyes; and an ultraviolet-curing cement was used wherever transparent materials were joined and the bond would be visible.

Although the epoxies and cyanoacrylates both have the durability and strength to bond most of the opaque areas, there are situations where an epoxy is preferable, such as when some slight movement is needed to position a piece, or in an area where one might wish to build up the surface behind the piece being glued, as was the case of the amber over the marble. As a 330 epoxy sets in about 15 minutes, there is plenty of time to adjust a misaligned placement; a cyanoacrylate glue, however, bonds instantly. With the UV-curing cements, the artist can adjust the fit until he or she is satisfied, at which point the cement is exposed to UV light to secure the bond. Throughout this piece, the individual area dictated the most expedient bonding method.

The skirt of the statue, which was intended to be a composite of transparent materials that would enable the legs of the figure to show through, required the use of UV-curing adhesives. Not only were the length and thickness of the skirt important considerations, but also the fact that the skirt had to be a separate three-dimensional construct that could be removed from the figure for transport. It required a transparent glue that would bond not only hard and rigid, but also strong enough to hold the pieces together. (Epoxy, for example, would have been too malleable.)

Duro Crystal Clear™ UV-curing cement was chosen on the recommendation of a jewelry supply

Figure 5. Highlighting the back of the waist is this 4.25 ct "iris cut" citrine. By scalloping the embroidery motif of garnet and epidote, the overall surface area connecting to the lower part of the skirt is increased, adding strength to the construct. Photo © Harold & Erica Van Pelt.

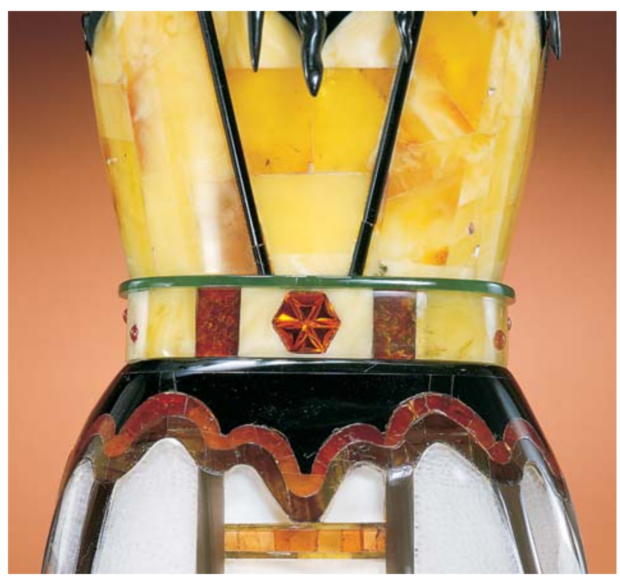

Figure 6. On the front, the belt features a 4.30 ct oval "blossom cut" malaya garnet. The numerous textures in the belt, bodice, and skirt help expand design elements in the clear quartz panels. The varying directions of the interlocking pieces add to the structural stability of the skirt. Photo © Harold & Erica Van Pelt.

house, which had been getting good reports on it from other users. To test the appropriateness of this UV-curing cement to the structural problems posed by the skirt, several pieces of different gem materials (including the quartz, garnet, and epidote planned for use in the skirt) were cut approximately 1–2.5 cm long and 2 mm thick. They were then bonded end-to-end, resulting in three sets that each connected different materials. Once the bond had set and cured for 24 hours, attempts were made to break the pieces along the joint with finger pressure. The gem plates themselves broke, but not the cemented joints. Then the pieces were put in a tumbler with comparable-size beach rocks and tumbled for approximately two weeks. Two out of the three sample sets held along the bond. On this basis, the author decided that this product would provide the necessary tensile strength.

Another consideration was discoloration of the adhesive, since a joint between transparent materials requires an invisible bond. The UV-curing cement selected is sold primarily for its "crystal clear" bond, which is recommended for use in repairing dishes that are washed in a dishwasher.

The author was unable to locate scientific information on the long-term durability of this cement. The fact that UV-curing cements are used extensively in dental work, however, led him to believe that its durability has been well established.

In most instances, midday sun was used to cure the ultraviolet cement. Such cements will lock hard in seconds on exposure to strong UV light, although full curing takes 24 hours. Sunlight between the hours of 11:00 a.m. and 2:00 p.m. was found to be most effective in my southern Oregon locale. A portable UV light was also used for tabletop curing, although the bonding with the artificial light was slow: about five times the exposure time needed with strong daylight. Note that the exposure time and strength of the bond varied with the intensity of the UV radiation. Some bonds achieved in direct sunlight earlier or later in the day subsequently separated when the pieces were worked. One New York colleague reported a higher failure rate for the same cement during his experiments using sunlight there (J. Hatleberg, pers. comm., 1997). Where there is any question about what effects smog and geographic position might have, it is recommended that the UV lamp be used and/or that additional time be allotted for bonding and curing.

This cement was used to bond the more than 800 pieces that form the skirt. As figure 7 illustrates, the cement does not affect the appearance of the skirt's transparent materials. In fact, because UV cements must be exposed to UV light to cure, they can be used only on materials that allow UV rays to permeate the stone (Hunt, 1996). These adhesives are a relatively recent innovation for the lapidarist, so it can be argued that a construct such as this skirt would not have been possible even 20 years ago.

Also important to the structural integrity of the piece was the engineering of the freestanding components in the skirt so they would cross-brace themselves, with each piece supported by the adjacent piece. To this end, the pattern was designed to incorporate triangulation, in which diagonals alternate with parallel edges (again, see figures 6 and 7). The stability and strength of triangulation was popularized by Buckminster Fuller in his geodesic domes and "tensegric" tower, which are composed of triangular supports that achieve superb structural stability (Fuller and Marks, 1960); these have become the basis for radio and television towers, as well as for long-span roof designs in large buildings.

CREATING *LEIGHA*

The Body. The central concept of a freestanding figure wearing a transparent skirt required that the ntire figure of the body be carved first, and then the clothing fit to the figure. Initially, a clay figure was constructed to scale to provide the dimensions for the marble. As noted earlier, the marble was cut and carved in four sections: the lower half, from the waist down; the torso, from the waist up and including the head; and the two arms. A horizontal bar of marble was retained across the base as a cross-tie to connect the feet (figure 8). This triangulation gave strength to the ankles, which support the weight of the completed statue. Because the feet were carved slightly raised, this tie was easily hidden beneath the ornamental sand, giving the impression of a freestanding figure. To keep the center of gravity perfectly vertical, the author periodically checked the piece by balancing the base of the lower section on a pencil laid flat on a table. By repeatedly checking the balance and then carving and removing material as needed, the artist maintained the center of gravity throughout the carving process. The torso and the lower half were drilled, and an aluminum peg was inserted to connect the upper and lower body. The arms were likewise drilled and attached to the torso via aluminum pegs.

The Skirt. With the marble body as the form, the skirt was assembled from the waist down. First, a girdle was constructed around the waist and hips (again, see figures 5 and 6). Composed of several pieces of black jade that were carved and then epoxied to one another, this scalloped girdle established the reference points for the later alignment of the skirt panels. To create the skirt, several pieces at a time were cut and glued, then finished completely front and back, before the next section was begun. An "embroidery" of orange grossular garnet and green epidote followed the scallop pattern in the jade. Because the garnet was transparent, UV-curing cement was used to attach it to the opaque girdle. (Only one of the two components must be transparent for the UV light to permeate and bond the cement, although bonding is substantially slower than when both pieces are transparent.) This embroidery was chosen both for aesthetic considerations and to create an interlocking structural support for the black jade of the girdle. Interlocking support is achieved any time there is a break from the symmetry of parallel joints. By joining at a curve or line that is diagonal to parallel joins, the artisan creates a triangulated support that increases the tensile strength of the construct. The scalloped curves of the embroidery motif also add strength by increasing the surface area connecting the skirt to the girdle.

Next, a panel was created that ran from waist to hem down the front of the skirt. Dominating the panel was a pattern of diamond shapes formed from transparent colorless quartz, smoky quartz, grossular garnet, epidote, and obsidian. The two types of quartz were carved and sandblasted on the back to create a stippled translucency as an aesthetic counterpoint to the more transparent areas of the skirt. The striped effect on the colorless quartz was achieved by the blade of a diamond band saw, which left a rippled cut on the back of the stone; alternating ripples were then sanded and polished (again, see figures 6 and 7).

As with the embroidery to the girdle, the rest of the skirt was designed to change the angles at

Figure 7. The skirt is composed of garnet, obsidian, epidote, smoky quartz, clear quartz, and black jade. It is 12 inches (31 cm) long, and the individual pieces average 1–2 mm thick. A UV-curing cement both provided the strongest bonds and maintained the transparency of the gem materials. Photo © Harold & Erica Van Pelt.

which pieces adjoined, mixing diagonal and weaving patterns with straight parallel pieces, edge-glued to create a structural stability that would have been absent with purely parallel or right-angle fits (figures 5–7). Building from the central front panel, additional panels were cut, sandblasted, fitted, and cemented. An average thickness of 1–2 mm was maintained for the transparent-to-translucent pieces; the obsidian rods used as dividing pleats were made slightly thicker to allow some adjustment of fits.

The back of the skirt was completed with panels of transparent colorless quartz, accented by garnet and epidote. Clear panels were chosen to allow light transmission when the figure was backlit, so the legs would be silhouetted through the skirt.

The Belt and Bodice. Once the skirt was completed, the belt was assembled by veneering Baltic amber to the marble. The front and back were inlaid with the specially cut malaya garnet (front) and deep orange citrine (back; figures 5 and 6). All the faceted gems in the piece were secured by a thin layer of UV-curing cement along the girdle of the stone, so that the pavilion was suspended in a cavity. Smaller cabochons of grossular garnet were added to each side as accents, and a line of green jade was used to separate the belt from the bodice.

The bodice/corset was formed by a veneer of Baltic amber placed over partially incised marble. A border of black jade accents the upper edge.

Figure 8. The triangulation provided by the marble base between the feet provided structural support to the finished work. Photo by the author.

Eyes, Hair, and Headdress. Each eye contains seven pieces of gem material (figure 4). Constructing outward from the obsidian pupil, the artist used indicolite tourmaline for the irises, magnesite for the whites (each iris and "white" portion was composed of two separate halves), and black agate for the eyeliner. A clear quartz cap was added over each eye to give positive curvature to the cornea. Each eye was backed with white-gold leaf before it was inset, so that any light shone directly into the eyes would be slightly reflected from behind the indicolite iris, creating a subtle brightening.

The headdress was constructed on a headband of obsidian and amber. The cap was cut from a piece of smoky quartz, and a specially cut citrine was inlaid in the center front as a crowning effect (figure 4). Careful use of internal reflection in the smoky quartz hat created the impression of a solid headdress, when in fact it is transparent. The top was accented by a thin veneer of garnet, epidote, and citrine.

The braids were carved from basalt and given a satiny finish. Each braid was attached to the head under the rim of the headdress with epoxy (figure 3). The gold rings were simply bent into place without soldering, to suggest the plaits that were the Minoan fashion.

Armbands and Snakes. The armbands were constructed from two pieces of black jade sandwiching a slice of amber. In addition to being decorative, the armbands conceal the joint where the arms slide into the torso. The upper and lower half of each snake was carved separately, and the figure's hands were partially drilled to fit the snakes in place. Rainbow obsidian was selected for the snakes to suggest fluidity of movement (figure 9).

Base. Portland cement was poured into the oak bowl around a mold of the bottom of the marble legs. After the cement had set, the mold was removed, leaving a space into which the marble tie between the feet fits snugly, so the legs can be removed easily. The cement (and marble tie) are covered with a thin layer of sand so that the feet appear to be standing on the sand.

CONCLUSION

When the medium of hard stone is married to artistic creation, engineering becomes integral to the design. The larger the piece and more numerous the components, the more involved the process becomes. In the design for *Leigha*, a central consideration was that the weight had to be evenly dis-

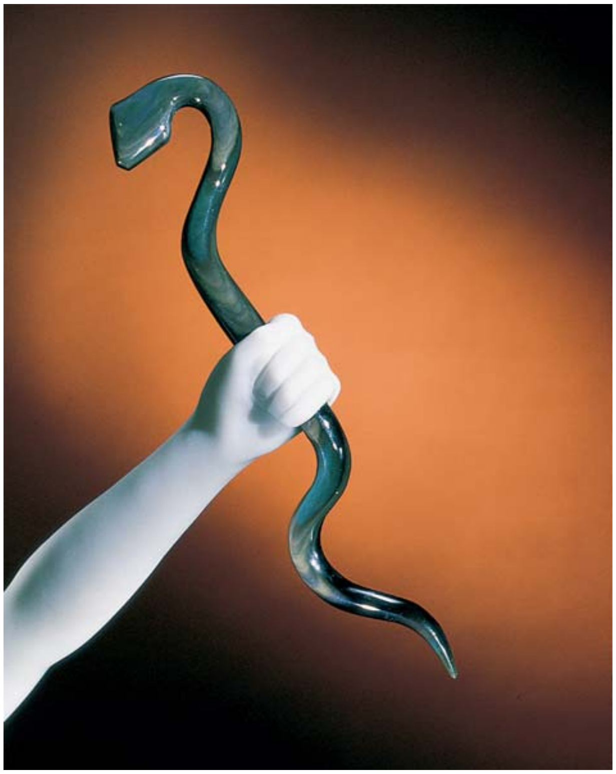

Figure 9. Rainbow obsidian from Mexico was chosen for the snakes, to suggest fluidity of movement. Photo © Harold & Erica Van Pelt.

tributed so that the relatively thin ankles could safely support the entire figure. In addition, the three-dimensional intarsia of the skirt—which is composed of 800 pieces—required cross-sectional support, through manipulation of the design itself (the skirt panels, diagonals, etc.) and the use of ultraviolet-curing cements that would be strong and durable enough. By distributing the weight, manipulating gravity and balance, and identifying new technologies (such as UV-curing cements), the artist was able to create a freestanding sculpture that uses extensive three-dimensional intarsia, but still has both structural integrity and aesthetic beauty.

In creating an *objet d'art*, the starting point is always the inspiration, what the feel of the piece is to be, and what it is to convey aesthetically. The next step is consideration of what is possible in a given medium, what engineering is necessary, and what the palette of materials is to be. To take intarsia work out of its traditional two dimensions and into a freestanding, three-dimensional, curved surface entailed techniques the author could not find in books or in existing examples of *objets d'art* in museums or contemporary galleries. Consequently, much of the creative process involved devising new techniques and making them work.

There is an inherent excitement in recreating a vision from 4,000 years ago in a way that could never have been imagined by the original artist. While working on the piece, the author often thought of the original artist working to create his or her faience figure. Both of us strove to execute the most beautiful representation of the same image, but in different eras, carrying the same vision forward through time and space.

The techniques devised for this statuette represent one more step in providing a broader range of artistic possibilities within the lapidary field. Increasingly, lapidary arts and gem sculpture are only limited by the artist's imagination.

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