

The Layered Art of Mokume Gane

By Wesley Harris

Working small-scale brought success when this jeweller explored a Japanese style of combining metals.

In March, 2003, I applied for a Canada Council grant to research a technique called *mokume gane* (a Japanese term for "wood-grain metal"). I wanted to learn how to create large sheets of mokume and use them to smith hollowware pieces such as tall stem vases. Mokume gane is a lamination process. Under heat and pressure, multiple layers of metal actually fuse as one block. When hot-forged out to a workable sheet, the layers within may be exposed, which creates a wood-grain effect. The colours of the metals themselves will sometimes contrast, or they can be given a chemical patina to bring out the pattern.

I received the Canada Council grant in June (2003), began to research how to make mokume, and soon learned of two approaches. One option uses a coal-fired furnace. A clamped stack of metal layers is placed in the furnace and closely observed until "sweating" (the beginning stages of melting) appears on the edge between layers. The second method uses a modern digitally controlled electric kiln. Called solid state fusion, it relies upon molecular growth between the layers without melting. This is the option I chose to pursue.

By December, I had acquired a digital kiln and all the necessary tools. Finally I began to work. However, to make a long story short, each of my large-scale attempts failed, whereas my jewellery-scale trial run had succeeded. It is the process of making this small jewellery piece that I would like to share here. As shown in the series of photographs, this is how the "owl in a hollow tree" pin/pendant pictured on the opposite page came to life.

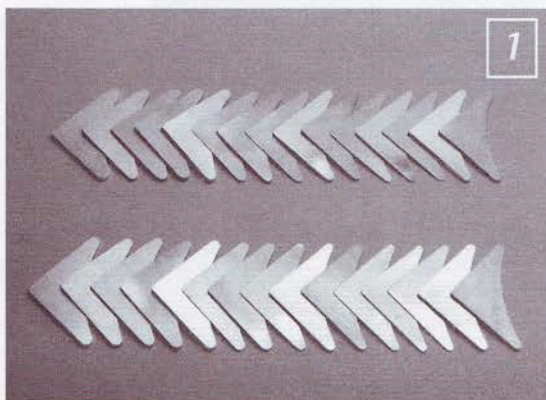


Photo #1 – Two rows of 15 triangular pieces of metal. These include layers of 18k green gold, sterling silver, copper, shakudo (an alloy of 96% copper and 4% pure gold that patinas to a rich plum/black), and shibuichi (an alloy of 85% copper and 15% silver that patinas to a lovely turquoise/gray). All the pieces were perfectly flat and immaculately clean. Two stacks (15 triangles each) were carefully sandwiched between two steel plates and bolted down tight under 20 tons of hydraulic pressure. The entire assembly was then placed in a stainless-steel foil bag and surrounded by granular charcoal. When sealed, the charcoal-filled bag absorbed any oxygen that might have been trapped inside. In the kiln, the bag and its contents were held at precisely 1400° F for 10 hours. The combination of heat and pressure in a non-oxidizing environment allowed for crystalline growth at a molecular level between the layers. A eutectic or resultant alloy forms where two metals are in contact; it bonds them strongly as one.

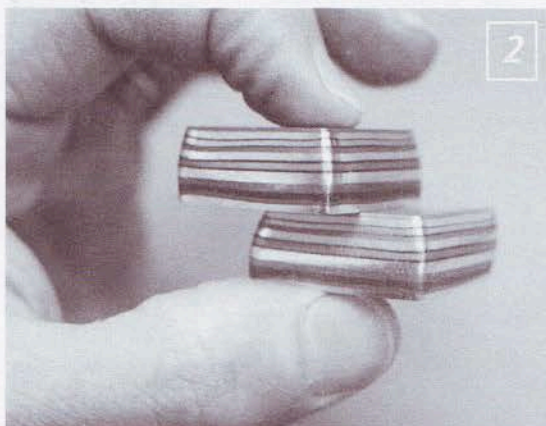


Photo #2 – The two triangular stacks fused as two solid blocks, each about 16 mm thick. At this stage I temporarily experimented with patinas. The contrasts result from fuming the stacks over ammonia. The blocks are next hot-forged by being hammered (gradually and gently at first) on an anvil. They repeatedly become work-hardened, and must be annealed (heated to a dull red) to be softened, then hammered again while hot. They gradually flow out like triangular pancakes.

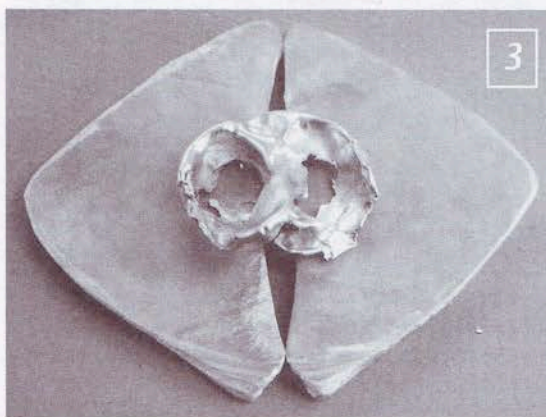


Photo #3 – The hammered triangles, each now about 4 mm thick. The surface area has now increased nearly fourfold. Interestingly, a few of the upper layers have squished out at two of the corners and can be seen flattened on the surface. I placed a previously made "owl's face" on the triangles to begin to visualize the desired effect of an "owl in a hollow tree." The "owl" itself was created serendipitously, when I was water-casting (dropping molten gold into water).

Photo #4 – The two triangles soldered together down the middle. The entire shape has been curved like the trunk of a hollow tree (in the picture, my fingers are resting in the concave interior). Pattern development has now begun. This is the fun part! The lines by my thumb, for example, were created by filing with a flat file through the upper layers. The 3-D pattern on the right was freshly carved out with ball-burrs and was subsequently hammered smooth.

FEATURE : EXPERIMENTING WITH TECHNIQUE

Photo #5 – Wood-grain pattern development. All of this patterning was originally carved out with ball-burrs. The upper edge of the tree stump has been given a weathered look. The tallest points have actually been bent up from the body of the form. In each case the lamination remained strong.

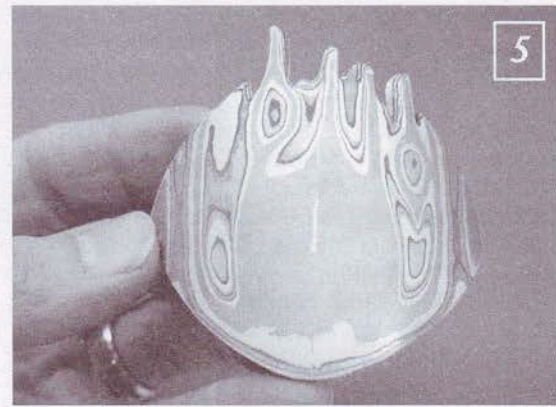
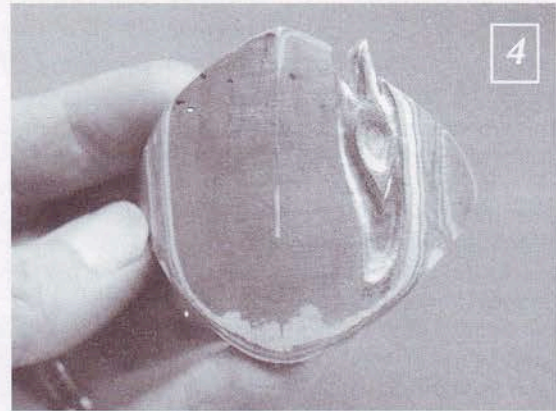
Photo #6 – The “knot hole” pattern developed and hammered out flush. The overall thickness of the mokume is now about 2 mm.

Photo #7 – The “knot hole” cut out, with all the edges trimmed and smoothed. On the back, I have soldered a mount for the “owl’s face” assembly as well as the brooch hinge and catch. Finally, the mokume is suspended over ammonia fumes for about five minutes. Gold and sterling silver colours remained unchanged; on copper, the patina turned a lovely chocolate colour, while the other copper alloys turned black and turquoise. I gave the final surface 20 coats of Johnson’s floor wax, to protect it from fingerprints and light wear.

Photo #8 – The finished piece. The owl’s face is set with moonstone eyes.

The effect of this piece pleases me because it is open to interpretation. The bold wood-grain pattern almost takes on a life of its own, sometimes looking like flames, sometimes like part of a totem pole. (Interestingly, at the time I was carving the pattern, I was reading a book about Haida artist Bill Reid). Also, the little owl has such an ambiguous quality about it. Is it an owl, or something skull-like? Are those moonstone eyes a sign of life or inner wisdom or . . . ? The answers are not clear, which, I think, engages the viewer. Somehow the possible interpretations combine and are more than the sum of the parts. And I like that.

Wesley Harris earned an MFA in Metalsmithing from Cranbrook Academy of Art, Michigan, in 1981, and worked as a silver designer with Lunt Silversmiths in Greenfield, Massachusetts, from 1981 to 1985. He has freelanced as a jewellery artist and metalsmith in Newfoundland and Labrador since 1986.



PHOTOS: Wesley Harris