How Necessity, Inherent Logic, Technique, and Tool Influence Design

By Wesley Harris

In the January 2004** Newsletter, **jeweller and metalsmith Wesley Harris wrote about how the execution of ideas can redefine sources of inspiration. In this piece, he identifies four other critical factors and discusses their influence on design.

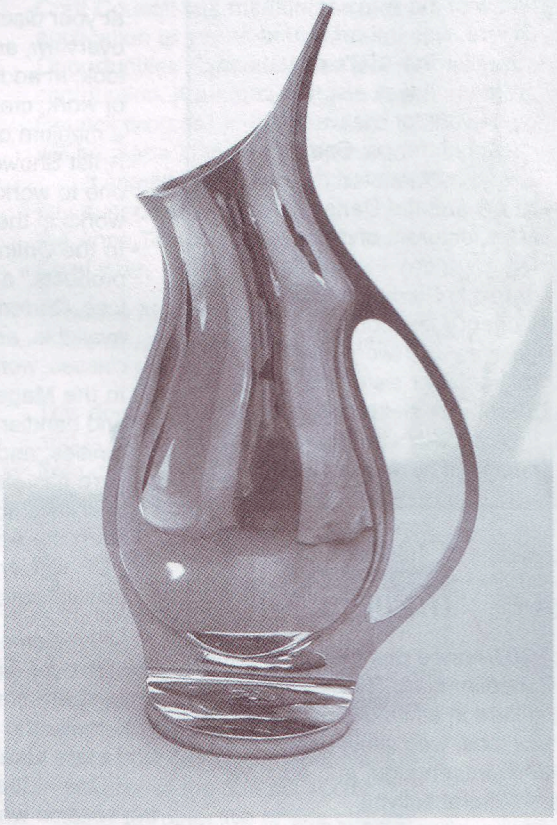
At some faraway point in history, even the most familiar craft techniques were figured out—or accidentally stumbled upon—for the first time. It's not hard to imagine, for example, an early stone-carver realizing the possibility of wearing an amulet as a pendant, and then devising a way to drill a hole through which a string of sinew was tied. Devising and discovering techniques that serve a design need or a functional requirement still occur as part of our work today.

I encountered my first modern-day example of this phenomenon when I was doing my MFA at Cranbrook Academy of Art (in Bloomfield Hills, Michigan). An instructor described how he had been commissioned to create a bishop's crosier—a hollow crook-shaped handle in sterling silver attached to a wooden staff. The silver hook was a nearly impossible form to raise or bend using traditional smithing techniques; our instructor had to figure out his own method and make his own tool. Here's what he did:

- he made two solid blocks, each 12" square and about 2" deep, out of layered composite board glued together
- he glued a layer of high-density masonite board on top of each block, then stacked and clamped the two blocks together, masonite layers in the centre
- he drew an outline of the crosier on the top of the clamped blocks and cut out the shape using a band saw, which yielded two matched blocks with the same crook-shaped vertical-sided opening
- both halves were lined up and re-clamped, this time with a 12" sheet of sterling silver sandwiched between the two masonite surfaces (the only silver visible was in the crook-shaped cut-away area)
- using ball-shaped dapping tools and rounded hammers, the silver area was stretched and smoothed down into the cavity below (the masonite helped maintain a crisp edge between the sterling shape and its flange)
- the process was repeated from the opposite side with another sheet of sterling

The results? Two 12" squares of sterling silver, each with mirror-image halves of the crosier emerging from the plane. The excess flange was trimmed away, the halves were soldered together, and the tubular crosier handle was complete.

This masonite-die process clearly shows how a design requirement can give rise to a new technique. It also shows how the characteristics of a given technique can themselves stimulate innovative designs—for here is what happened next . . . .



PHOTOS: Courtesy of Wesley Harris

The students at Cranbrook quickly saw the potential of the flange—an unavoidable by-product of the masonite-die process—for their own designs. Around uniquely shaped trays or bowls, portions of the flat flange were retained and shaped to create handles. Flanges also provided a structural edge for incorporating hinges. It became possible to create the illusion of a vessel "trapped" in a plane or within a thickened flange. In the brass water pitcher shown at left, for example, I thickened the flange to create a comfortable width of handle, and then curved both flanges below the vessel to make a base.

One of my fellow students experimented with cutting the die line in an arc (that is, the 12" x 12" block was cut through along a curve). The masonite was then pressed and glued into matching concave and convex surfaces. When the sides were clamped together, the outline of a vessel could be cut down through both. Given sufficient arc, the curved flange could stand by itself, on its edge.

The more we thought, the more exciting the artistic possibilities became. Two or three vessel forms could be made to appear contained in one plane or arc, as if vying for position. An interesting interplay could also be set up between convex and concave forms. The negative and positive spaces could be nestled side by side in one plane or curve, or they could be parallel to one another on opposite sides of a thickened slab or wedge or arc. The design potential of the flange is truly great, yet it could have been easily overlooked if it had been considered only a throw-away by-product of the masonite die process.

In my own work, the need to devise a new technique is usually concept-driven. I often visualize a design that has no traditional means of execution. This is particularly so with regard to stone-setting, where I instinctively strive for clean surrounds and a feeling of substance around the stone.

In the sterling stem vase pictured on the facing page, for example, I wanted the quartz crystal to "hover" within the stem as if it had just formed there. There is simply no prong or bezel setting that could produce this effect. Instead, I precisely fitted the crystal top and bottom into the stem. Then, when the base

and the vase were dovetailed together along the surrounding framework, the crystal was "locked" tightly in place. The stone was then "set" indirectly using rivets through the framework.

In the amethyst ring pictured above, which appears to be a traditional prong setting, I wanted to reduce the prongs needed for a secure setting from three to two. By cradling the bottom of the stone into the metal below, I was able to secure the stone so that just two prongs locked it in place.

Over the years I have thought a lot about what might contribute to feelings of inherent logic in design. Why do some designs seem to ring true, to have substance or synergy? Part of the answer, I believe, has to do with an artist's ability to redefine sources of inspiration into his or her work. I believe the public can sense that sincerity and recognize a personal style. Another part of the answer has to do with "fusion of form and function," or a coincidence of elements.

In the amethyst ring, a single plane of silver curves around and intersects itself to create a teardrop form. The intersections then taper to points precisely where the functional requirement of prongs are needed to set the stone. Suddenly there is something more than the sum of the parts, even in a design that is so seemingly simple.

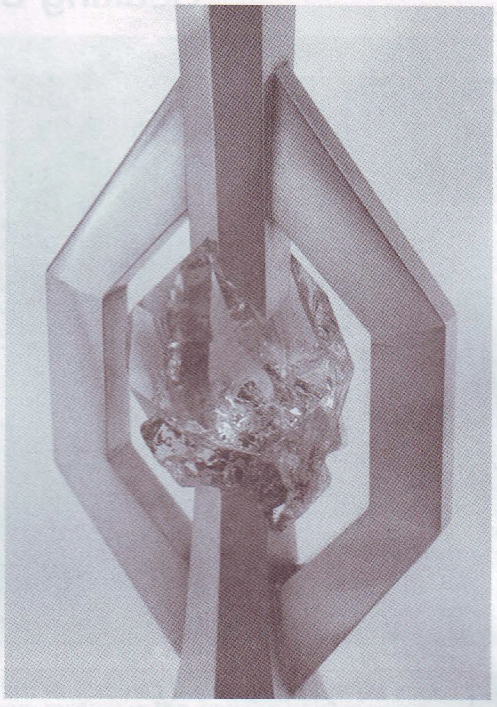
In utilitarian design, an inherent logic results when the purpose of a piece and its human overtones both read clearly and feel comfortable. The real beauty of design comes in finding the coincidence of elements, where functionally derived shapes might overlap or dovetail with one another. When the logical outcome of one functional requirement combines neatly with another, the expressive potential within the limits of utilitarian design can be exploited with very clear and beautiful results.

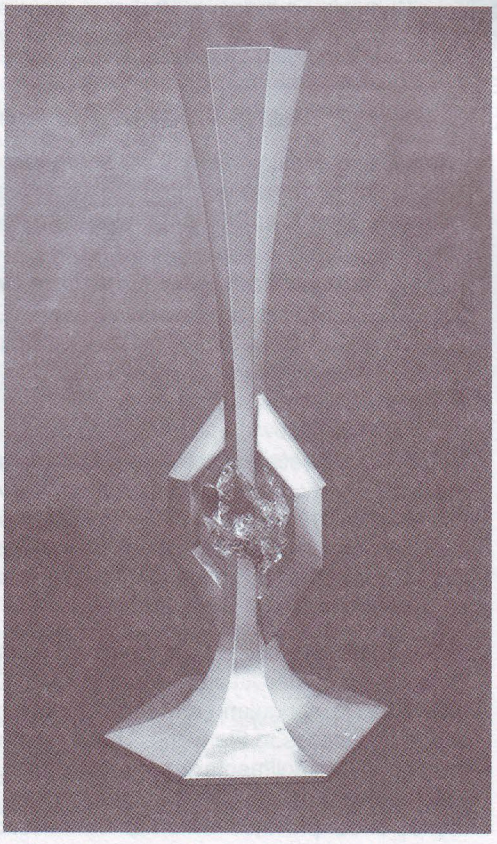
Feelings of inherent logic in design, I believe, also have to do with "readability" (clarity or directness), which can come from technique and tool. The lovely dappled effect of a planished surface on a hammered metal bowl is entirely the result of the smithing process and the flat-faced hammer used to iron the surface. The round wire patterns that I sometimes build into my pieces are the result of twisting and braiding wire like rope. I think the public can sense the three-dimensional integrity of these patterns.

Even when the viewer does not understand the process, I think the readability or logic of the results are still felt. In the masonite-die pitcher, for example, the clear distinction between 3-D vessel and flat flange is due to the technique and tool. The tool need not be complicated or expensive in order to be evidenced in the piece. Often the skilful application of simple hand tools will yield the most direct clarity or readability; I think the viewer can sense "hands-on," "attention-paid-to-detail," and "time-was-taken."

In conclusion, design in relation to technique and tool can be thought of in two ways. First, characteristics or by-products of technique can stimulate new designs (viz. the flange in the masonite-die process). And second, a clear design concept that has no traditional method can lead to developing a new technique (as in the original masonite die). In addition, the inherent logic and readability of our designs can be due, in part, to a clear, direct use of technique and tool.

In this article, I've used examples of techniques that are familiar to me—those of the jeweller and metalsmith—but I believe that the underlying thought processes may be applied to methods within your own craft discipline or area of expertise.





The shape of the tool is reflected in the piece. *The clarity of the vase's six-sided crystalline form results from careful hand-work with large flat files. I avoided the power buffing machine, which would have rounded and dragged the solder joins at the corners. Instead I hand-polished the piece to a satin finish.*