Some Rules For Good Design

Russ Fairfield (Revised 3/7/2002)

   The question, "What is a good design?" is all too often answered with, "There are no rules", "You just know it when you see it.", or "You either have it, or you don't."

   I have heard these answers from the "experts" at AAW Chapter meetings, from demonstrators in various venues, and from informal discussions among woodturners. Many articles in "American Woodturner" have made the implication that there is an "insight" that is known only to a very few among us. It would appear that there is no hope for those of us who are not gifted with a natural ability to discern pleasing shapes and proportions.

   Nothing is farther from the truth. Pleasing shapes have been found in every civilization throughout history, and they all share the same basic rules of good design that were first taught in ancient Greece. When we deny their existence, we are either admitting that we are artistically illiterate, or that we refuse to believe that the rules, used for 3000 years of pottery and furniture design, could have any application to articles turned from wood.

   We can either mathematically calculate pleasing proportions from an ancient formula, or we can use some "Rule-Of-Thumb" formulas.

The "Rule Of The Golden Mean".

   The Greeks perfected and used the "Golden Mean," a formula for the ratio between the short side and the long side of a rectangle that will appear balanced to the viewer. I learned to use the "rule" for furniture design back when wood shop (Manual Arts) was still a required subject in high school.

   The Rule Of The Golden Mean simply states that: "The smaller is to the larger as the larger is to the whole." Without a lot of discussion, this can be reduced to: "The relationship between the smaller and the larger

is the ratio of 1 to 1.618". To complete the "rule" the sum of the length and width is the same as the length multiplied by 1.618.

We can find examples of the rule in the sizes of tables and other furniture. A 72" long dining table is 45" wide. An oval coffee table that is 42" long is 26" wide. The 60" round dining table still has a balanced proportion with a 36" leaf inserted in its center. A bookcase that is 72" tall will be 45" wide. All of these examples fit the "Golden Mean", the larger (length) is the smaller (width) multiplied by 1.618.

Bowl Design

To apply the "Rule" to a bowl design, we divide the diameter by 1.618 to determine its height and divide its height by 1.618 to determine the diameter of its base.

As an example: If we want to turn a 10" diameter bowl, its height will be: 10" ÷ 1.618 = 6.180", or 6¼" height And the base diameter is: 6¼" ¸ 1.618 = 3.72", or 3¾" These dimensions will give us a bowl of pleasing proportions, as taught by the ancient Greeks. What we do with the curves between these dimensions is the topic for another discussion.

Rules-Of-Thirds

There are other rules of proportion that we can use. One of these is the "One Third-Two Thirds" Rule that is easier to use and similar to the "Golden Mean" within the dimensions that we would use for a bowl design.

Rule 1 - "The bottom diameter is 1/3 that of the largest diameter." Using our same 10" bowl as an example, the bottom diameter would be 3 1/3", but 3¼" can be used for easier measurement.

Rule 2 - "The height is either 2/3 (preferred) or 1/3 (optional) that of the largest diameter." Using the same 10" bowl, its preferred height would be 6¾", or it could be a 3½" height in its shallower form. Both would appear to be proportional to the viewer.

Rule 3 - (Adapted from vase design) Bowl shapes have a more pleasing appearance when the maximum diameter is not at the top rim, but is located below the rim which is a smaller diameter. How far below the rim can be defined as: "If the height from Rule-2 is divided into 3 equal parts, the largest diameter will be 1/3 down from the top." This rule can also be inverted, locating the major diameter up 1/3 from the bottom. Using our same example from Rule-2, the 10" bowl that is 6¾" in

height", will have its maximum diameter located 2¼" down from the top, or up the same amount from the bottom in its inverted form.

Rule 4 - (Mine) I added this rule as a follow-up to Rule-3 after being asked for some guidance on how much smaller the rim diameter should be. I measured several bowls that looked pretty good to find something that they shared, and came up with the following: "The diameter of the bowl at the rim is smaller than the largest diameter by half the distance that the largest diameter is below the top of the bowl."

In other words, for the same 10" bowl that is 6¾" in height, the largest diameter is located 2¼" down from the top. With this "rule", its diameter at the rim would be half that amount smaller, or 1 1/8" less than the 10" diameter, making it 8 7/8" at the rim. If this bowl had the alternate shape that placed the largest diameter near the bottom, or 4½" below the top, the rim would be smaller by half that amount, or 2¼" smaller that the 10" diameter. And the bowl would be 7¾" diameter at the rim.

Conclusions

Now we know why the bowl we turned from that expensive 10"X 10" X 3" bowl blank "just didn't look right". Using either of the rules, the blank should have been at least 6" thick for the 10" diameter bowl. A better use of the wood may have been cutting it into four pieces and making a set of 5" bowls that had a more pleasing shape.

Vases and Urns

Considering that a vase is an elongated bowl, we can use the same rules, with one exception. The difference is that the relationship between diameter and height is reversed, and Rule-2 is modified to read: "For turning a vase or an urn, the largest diameter will be either ? or ? that of the height." All other rules for the magnitude and location of the various diameters will remain the same.

Russ' Rules

There are several other "rules" that I have learned, either from experience or from other woodturners.

Concentrate on form, not wood grain. A lot of wood turns darker with age, and all that you may have left is the shape.
All curves must be "fair". A fair curve is one that flows with smooth

transitions as it changes in shape or from a concave to a convex curve.

There are no flat areas between curves.

Lift the object off of the table or other surface on which it is sitting. Ideally, it should appear to be floating slightly above, rather than being firmly attached to the surface. With the bowl or vase sitting on a table, follow an imaginary continuation of the lines of the sides of the bowl or vase until they have intersected under the bottom of the vessel. This intersection will be inside of the foot of the piece. It should be above the table surface for the vessel to appear as being lifted above it.

Turn the bowl or other turned object upside down on the table. Its proportions should be just as pleasing to the eye as they were in the upright position. If not, there is something wrong with the proportions or the curves between them.

If you have made two bowls that are nearly identical in size and shape, place them along side of each other on the table, and concentrate on the shape of the space between them. The proportions of the space will be the reverse of those of the bowls, but it should have a "pleasing" appearance.

· When any pair of objects, vases, candle holders, etc., will be viewed at the same time, the shape of the space between them is as important as that of the objects themselves. Always work their design as a pair, and never as individual pieces that are later placed together.