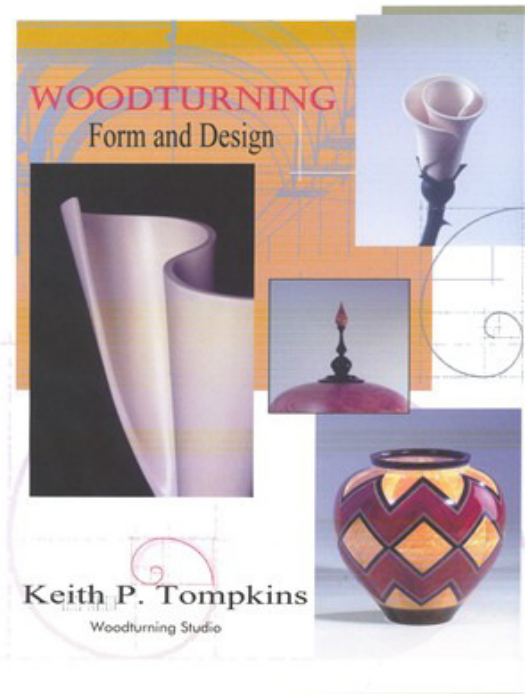


Woodturning Form and Design

By Keith P. Tompkins

Introduction: The purpose of this demonstration is to introduce wood turners to some of the principles of form and design, and to show how an understanding of these principles can be useful in improving one's work. This presentation will provide a good foundation for future study of design, and will help eliminate much trial and error in your design approach.

The principles described here have been relied upon since ancient cultures discovered them, and have withstood the test of time, and today are universally accepted. We will show how these principles apply to wood turning.

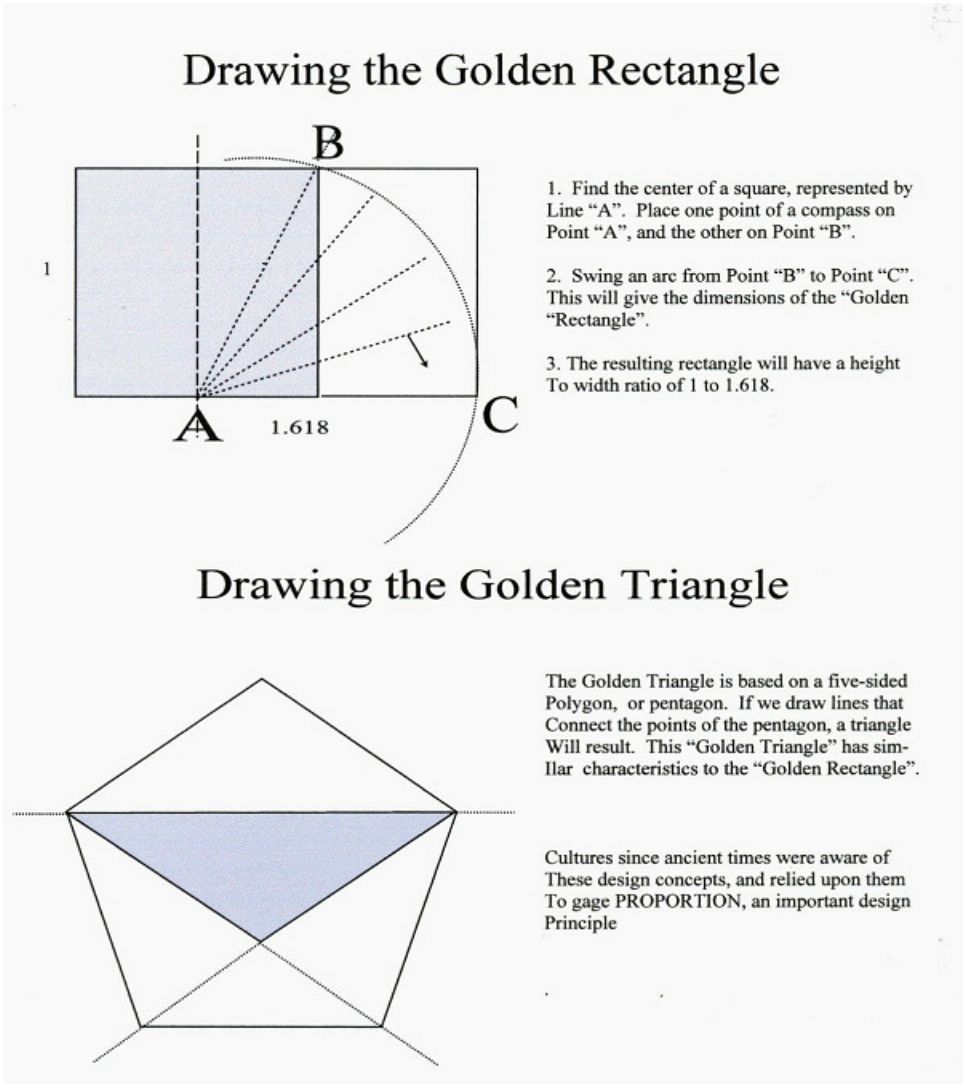
- **Proportion**: Proportion deals with the overall dimensions of an object, and with the relationship of elements within that object.
- **Balance**: the sense of equilibrium in an object
- **Rhythm**: repeating patterns or arrangement of elements within a design, create a sense of order or movement.
- **Emphasis**: Refers to the main focal point of an object. We can use emphasis to create visual interest.
- **Unity**: A sense of unity is created when the elements within a design work in harmony.

Proportion

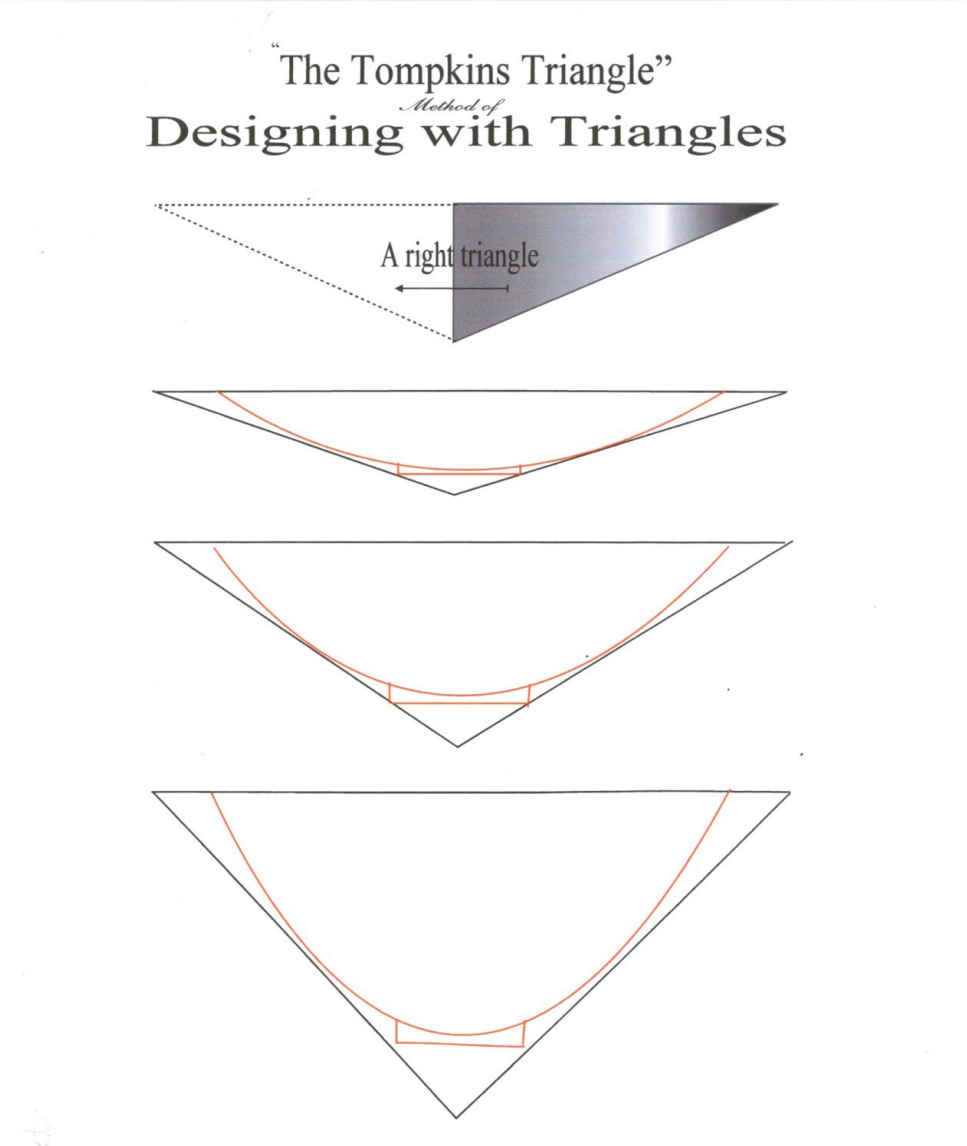
We will explore three formulas useful in determining good proportion: The Golden Rectangle, the Golden Triangle, and my own formula, which I have named the Tompkins Triangle.

The Golden Rectangle, named for its "divine" properties, is a well-known formula for determining proportion. The ancient Greeks used this formula in their architectural design…and designers still use this same formula today! The drawing on the following page shows how to construct this rectangle. Forms based on the Golden Rectangle will have a nearly perfect ratio of height to width.

The Golden Triangle is based on a five-sided polygon we refer to as a Pentagon. By drawing lines that connect the points of the pentagon, we can discover a most interesting phenomenon….the triangular forms that result have sides with the same ratio as the Golden Rectangle. The Golden Triangle is very useful to us as turners, as it allows us to create well proportioned forms that don't fit neatly into the Golden Rectangle.



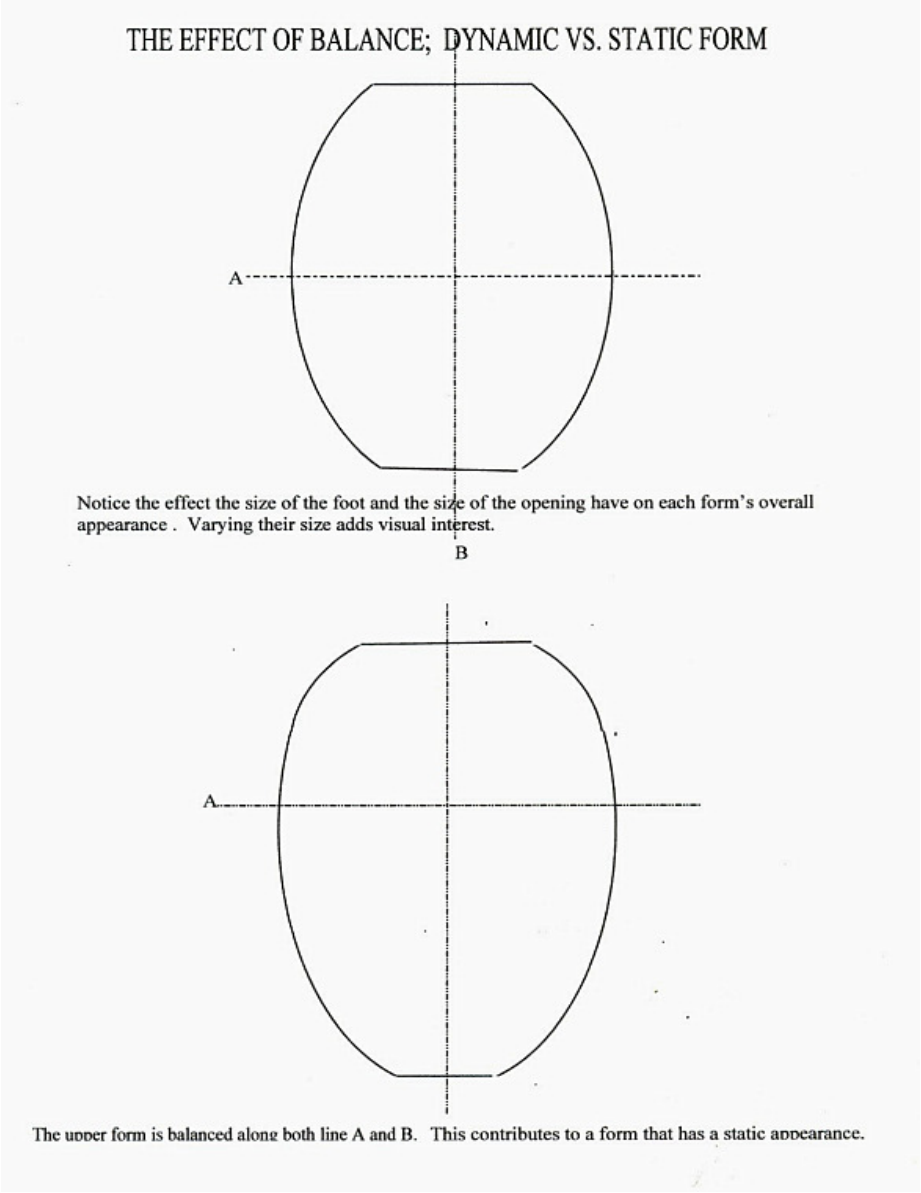
The Tompkins Triangle As I studied the above formulas, I began to discover shortcomings in their usage. For instance, the Golden Rectangle worked well for deep bowl forms and hollow forms, but was useless in designing other forms, such as a platter or shallow bowls. The Golden Triangle is similarly limited in its application; as there are only a few possibilities in the shapes that can be created. As a turning instructor, I began to look for ways to expand the usefulness of these formulas, and began to combine the two in various configurations. The resulting formula is called the Tompkins Triangle method, which I believe takes advantage of the strong points of each, while eliminating most of the drawbacks. In addition, this method also aids in creating well balanced forms.



How it Works If we take a right triangle (containing one 90 degree angle), and create a mirror image of it, a symmetrical triangle will result (isosceles). This flexible approach can be used to "stretch" the triangles to fit nearly any configuration; the resulting forms will be well proportioned and well balanced.

Balance

Most of the pieces we create are turned along a single axis, therefore, they are inherently balanced. This type of balance is known as symmetrical balance. Turners who explore multi-axis or offset turning are disturbing this natural balance, and must rely on asymmetrical balance.



The size of the foot, and the size of the opening of a vessel also affect the overall balance of a piece. A large foot, for example, may cause a piece to appear heavy and clunky, while a too-small foot makes the piece appear unstable. Balance is a critical component in turning a successful piece….a piece that is too balanced appears lifeless and visually uninteresting, while a minor shift in balance points can create a dynamic, visually exciting piece. A good rule of thumb: the foot should be one-third the overall diameter of diameter of a piece, but no larger.

Rhythm

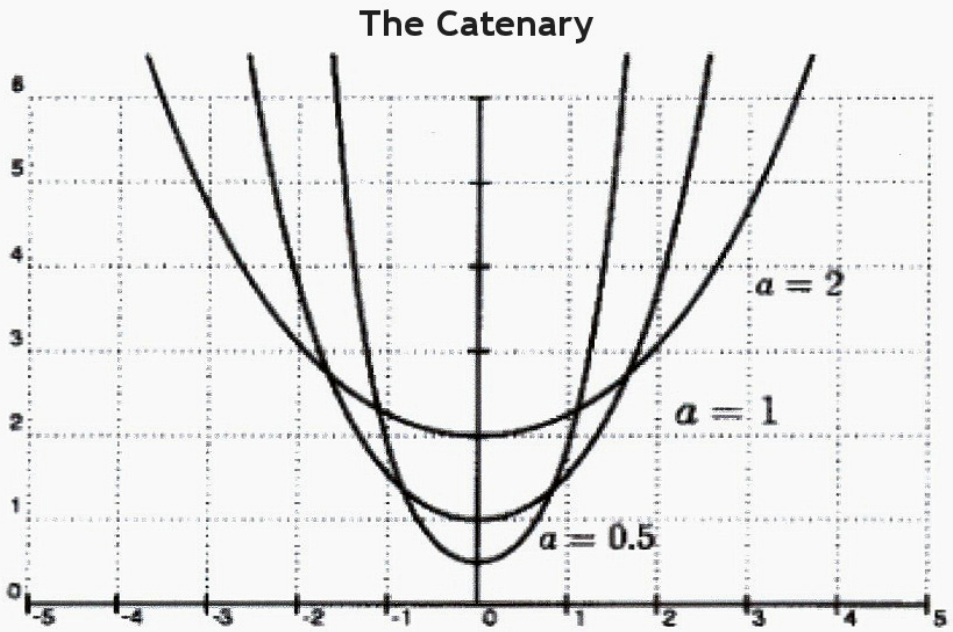
A sense of rhythm can also help create a more dynamic piece. Examples of rhythm in turnings are : hollow forms decorated with carved spirals from the base to the rim, segmented forms that repeat a similar pattern throughout the piece, or pieces that are pierced in repeating patterns. Rhythm helps creates a sense of movement in a turning.

Emphasis

We can use emphasis to our advantage, drawing the viewer's eye to key elements within our work. Examples of using emphasis are: A dramatic change in line in the shape of a turning, the placement of the "beauty ring" in a segmented turning, or the placement of the largest diameter in a hollow form.

Unity

All of the above principles are interrelated; each one will affect the other. When these principles work together, we create a unified composition. I describe a successful marriage of design elements as a synergistic relationship; the whole is greater than the sum of its individual parts.



A catenary is the shape produced when a chain is suspended by each end; the force of gravity acts upon the entire length of chain. The catenary effect can be used to produce smooth, flowing wood-turned forms. Smooth, uninterrupted curves are also referred to as organic curves.

Elements of Design We can use these elements of design to create pieces that are uniquely our own. The design possibilities are endless, limited only by our imaginations. I suggest, however, to strive for simplicity, and avoid complex designs in your work. Smooth, flowing lines will tend to unify a piece, as the viewer's eye isn't interrupted by sharp changes.

- **Point**
- **Line**
- **Movement**
- **Texture**
- **Color**
- **Pattern**

Overcoming Design Obstacles As woodturners, we encounter a unique set of design problems. For instance, a potter can take a lump of clay, and make any shape he chooses. He is not limited by the material's initial shape or size. This is true for most other crafts as well, including metal smiths and glass blowers. As woodturners, we tend to allow the block of wood we begin our project with dictate the size and proportions of the final work. To compound matters, the chuck, which serves to hold the work, often defines the size of the foot on many pieces. This limits our design possibilities. The suggestions below may help overcome these obstacles:

- Plan your projects in advance; paper is cheaper than wood. Once you are happy with a design, find an appropriate piece of wood to complete the project.
- The chuck is a holding device…it should have absolutely no effect on the final project.
- Follow through on a design…avoid design changes during the middle of a project. You will develop a better discipline, and will learn to trust your initial design ideas.
- One idea will lead to another…Each piece you produce may be the inspiration for the next. Learn to make sketches of these ideas, and save them for future projects.
- There is no substitute for practice; learn to use good tool technique along with good design techniques. It is difficult to eliminate bad habits once they are formed.

Thank you for attending this demonstration; I hope you find it beneficial.

Keith