

# Waking up Your Eye

**O**n the southern shore of Lake Erie lies a narrow strip of cottonwood bramble called Magee Marsh. It's the last bit of shelter for migrating songbirds before they take flight across the open water. Stiff headwinds can cause a massive pileup with thousands of birds hunkered down, and hundreds of bird watchers converging to witness the spectacle. It's called a fallout. To a birder, a fallout is an event on par with a solar eclipse.

The first time my wife, Barb, and I stumbled into one, I wasn't prepared for it. The air bristled with brightly colored warblers as we stepped under the shelter of the tree canopy. I felt a puff of air on my cheek as a blur of yellow feathers darted close to my ear. Veteran birders around me ooh-ed and aah-ed, "There's a black-throated blue, and just above it, 5' back at 2 o'clock is a redstart!"

But my eyes weren't quick enough and I didn't know how to look, or what I was looking at. Over and over I just missed something wonderful and rare. A 9-year-old boy wearing a T-shirt proclaiming "Birding is not for Sissies" tried in vain to help me, but after a few minutes, politely slipped away. That first morning I wondered to myself if I'd ever

"For all men, not just architects, are capable of appreciating quality; but there is a difference between laymen and architects (designer/builders) in that the former cannot know what a building will be like unless he has seen it completed; while the architect knows perfectly well what it will be like...from the instant he conceives it in his mind, and before he begins it."

—Vitruvius, 1st century B.C.

get this. I didn't seem to have the eye for it. In spite of early doubts, gradually my eyes and brain started to mesh. As the day wore on, I began to see clearly those winged jewels I'd only read about in books.

This book is the equivalent of a "fallout" to awaken your designer's eye. Despite any doubts you might have, you already possess the inherent ability to see with your inner eye. It is, in fact, simply waiting for you to awaken it. You'll see what once seemed impossible and quickly gain the confidence to spread your creative wings. With some practice, the ability to see and unpack a design will become as natural as breathing.

### Looking for Clues in all the Right Places

We live in a media-saturated world filled with images bombarding us every waking moment. Yet, as Vitruvius observed, we're still plagued with a common dilemma: A layman looks while a designer sees. My own craft background, molded by modern industrial practice, left me dependent on measured drawings. The ability to visualize seemed beyond my grasp in spite of a lifetime of building things with my hands. Granted, I had strong opinions about furniture, art, cars and guns, and I knew immediately what I liked or considered ugly. But truth be told, I could only detect the glaringly obvious. Even then, I struggled to pin down what caught my eye. I could admire a masterpiece, but could not explain what tipped the scales in its favor. I'd look at a chair and think, "It's off; there's something awkward or clumsy about it," but rarely could I voice with certainty what looked awry. This is a little embarrassing to admit, but even if I started a project with clear pictures and plans, the image I formed in my head never seemed to match the actual parts

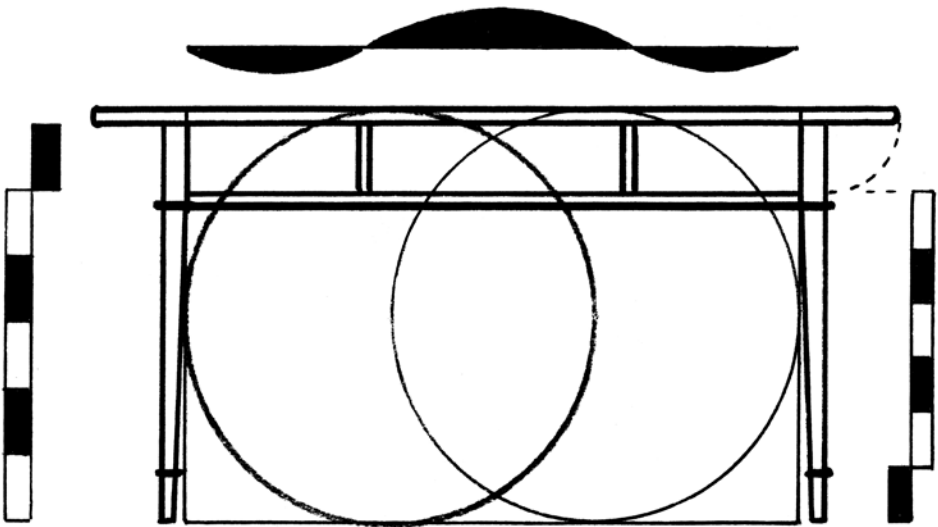


**FIG. 1.2.2.** Is this just a small writing desk or something more? My untrained eye would have said, "Nice work, nice lines," with little more meaningful comment to add.

as they came together. This reinforced the feeling that I couldn't trust my eye. Not that I couldn't "make to print"; I couldn't "see to print."

Our modern industrial approach doesn't awaken the eye. It's just the opposite; the aim is duplication, and that's achieved by removing the human element. I started my professional life in the trades as a machinist. Blueprints were my world and point of reference; drawings, measurements and tolerances were my comfort zone. Mistakenly I assumed that's what artisans had always relied on, just with a more primitive set of tools. I had no idea that the artisan age used drawings in a completely different way than anything I'd been taught.

In spite of my misconceptions, my own background in the trades gave me subtle clues that something had been broken. My apprenticeship as a machinist began in the 1970s, right at the sunset of the hand-drafting era. Apprentices got a taste of drafting in the engineering shop, a massive open room with row upon row of tilted drafting tables. Just a few years passed and those big drafting boards disappeared as computer-aided design (CAD) technology emerged. Down in the factory, those dog-eared paper drawings were stored away in a vault and replaced by crisp, freshly printed computer drawings with immaculate graphics. A few years later, machines came equipped with a monitor, eliminating the need for a paper drawing. The next step allowed machines to download the drawing directly into the machine controller and eventually, no image of the actual part was required, just data. Oddly enough we still called them "drawings" even though they con-



**FIG. 1.2.3.** You can learn to see what lies beneath the surface. This is what we are talking about!

tained no pictures, just code. Industrial drawings reached a new pinnacle; they could speak directly to machines in their own native tongue. What a success. It took nearly 200 years from the dawn of the Industrial Revolution for technology to finally and entirely remove the human worker from the equation.

Now don't get me wrong; this isn't a rant against technology. The ability to mass-produce and duplicate things with precision is crucial to our modern society. From safe baby food jars to fail-proof landing gear on an airplane, our world today is unimaginable without it. But at its core, measured drawings and the way we use them in our modern industrial approach focuses on duplication. It removes human error but at the expense of creativity by limiting choices and dictating rigid commands. Worst of all, by emphasizing measurements and ignoring proportions, it masks relationships between parts and how they relate to the whole. We look at a historic drawing and conclude the details shown to build it are sketchy. Conversely, an artisan-age craftsman might conclude that our modern drawings contain everything but the kitchen sink, yet they obscure the essence of the design. The creative spark requires a different set of conditions to ignite. It feeds on choices, options and the ability to see. In short, it needs the human element restored so that a dance can emerge between the play of hands, eye and the wood itself.

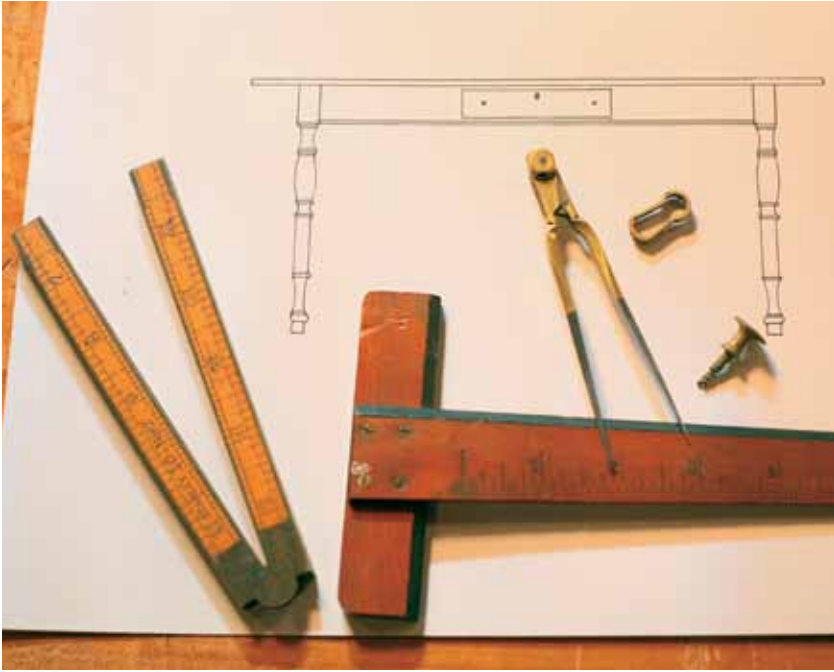
## Looking for Clues in all the Wrong Places

I recognized some common threads just beneath the surface in pre-industrial craft that struck a chord. It possesses a connectedness, not just by including the trap-

pings of nature, but also something deeper by interweaving the rhythms of nature and our relationship to it. The emphasis on proportion, harmony and contrast are timeless connecting points. Now, I don't like everything produced in the past. Some styles, such as Gothic Chippendale that drips with gee-gaws, I think of as Frankenfurniture. It's best left behind to a narrow band of history along with olive-green refrigerators and vinyl tops on cars. But I found myself drawn to some of the simple, hon-



**FIG. 1.2.4.** The artisan age sometimes gives us a wink and quietly lets us know there is more beneath the surface.



**FIG. 1.2.5.** Drawings can take many forms and serve many masters. Which ones best feed the designer's eye?

est work that displayed not just a high level of technical skill but an underlying knowledge about design. I'd look at a carving detail that seemed to sprout from the end of a chair arm and know there was more to this I needed to understand.

Given my background, my first thought was to look for answers in the shop drawings from the pre-industrial era. It was here that I found my first surprise; drawings were almost non-existent. At first I reasoned it was a fluke due to the scarcity of paper or its ephemeral nature. Looking closer, I had to admit that reams of day books, indenture records and estate inventories managed to survive, so why not drawings? Of the small handful that somehow did survive, none would even qualify as a true drawing in the modern sense; they are often similar to a crude sketch scratched out on a napkin over lunch. I could not imagine how thousands of workshops during long periods of time produced such a vast collection of incredible work. How could shops separated by long distances, even oceans, replicate styles and disseminate and experiment with regional interpretations without the assistance of drawings?

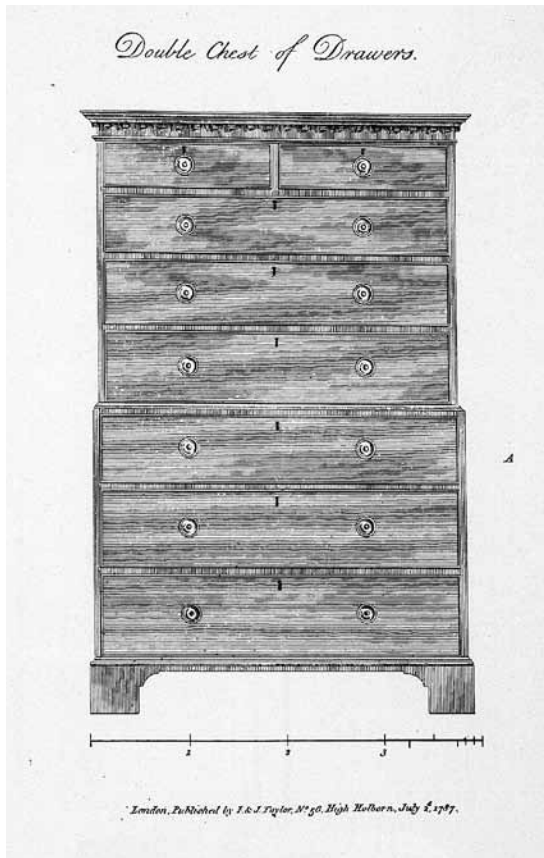
Drawings are a means of communication. Some speak the language of machines (duplication) and some foster creativity and speak to our inner eye. Woodwork-

ers have a wide range of drawing options to assist in the process of designing and building furniture. CAD programs are now widely available and allow projects to be viewed in virtual 3-D. Yet in some important aspects they may still fail to make the inner connection with our designer's eye. One is the pure physical aspect that makes visualization possible. I'm reminded of Beethoven who late in his career suffered the tragedy of deafness. Somehow he continued to compose by sawing the legs off a piano so that as he played, he could feel the notes through the vibrations in the floor. The great master still needed the physical connection to visualize and compose. The physical act of drawing manually with pencil and dividers taps into a portal in our mind via our fingertips in a fashion that differs from our hands pushing a mouse.

Many forms of drawing, and even full-sized mock-ups, don't automatically guarantee we see the design from a proportional standpoint. Seeing a width dimension on a table leg does not mean you will be able to visualize the relationship between width and height, and between the space that adjoins it. Walking off those spatial relationships with dividers helps the mind to think and see proportionally.

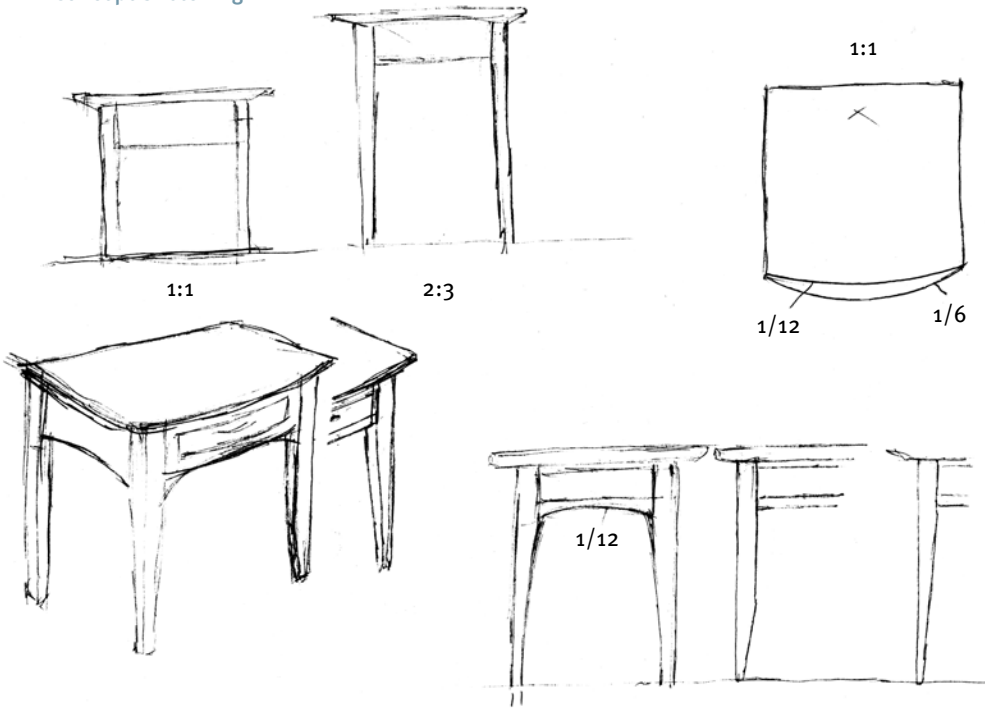
### Drawing on the Bright Side of the Brain

Traditional proportional drawing drafted by hand ignores dimensions. It instead relies on simple geometry and dividers to compose an image that conveys the proportional scheme. It employs a vocabulary of proportional notes that we can visualize internally. Because this type of drawing relies on proportions rather than specifications, it moves another step closer to a pure image in the mind. Pro-



**FIG. 1.2.6.** This period drawing contains no dimensions, just a proportional key at the bottom. Artisan-age cabinetmakers were so immersed and adept in proportions that they could quickly grasp and build the design with little more than this key.

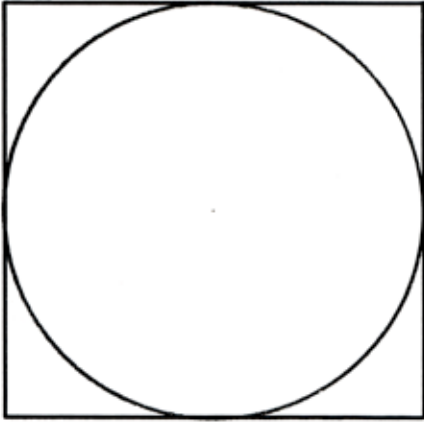
## Concept Sketching



**FIG. 1.2.7.** Freehand sketching is a fluid exploration of line and form intended primarily to connect internal ideas with a physical image. For those familiar with the language of proportions, these drawings can provide a powerful link through our senses into the drafting board in our minds. Like the proportional drawing, though they contain no dimensions, they may provide enough information to execute the design.

portional drawings can provide enough information to execute a build with simple tools; the drawings are organized in a way that meshes with traditional bench techniques. Even if you are adept with digital or industrial drawing, this type of drawing is not a step backward. Instead, it's a concrete method to begin making that connection with your inner eye.

Our goal ultimately is the drawing that takes place in your head. This is speaking the language of design from the artisan age in its purest sense. It's what Vitruvius wrote about when he said an architect could see clearly from the instant he conceives it in his mind. It uses a simple language of visual notes to create spatial music to help you acquire the ability to conceptualize internally. This is at the opposite end of the spectrum from the industrial approach – using that ability to spur creativity and provide a practical means of expression. You may still choose

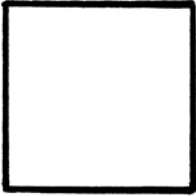


**FIG. 1.2.8.** Our task begins by learning to visualize a small set of simple visual notes.

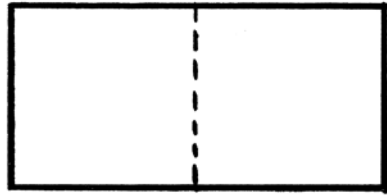
to employ modern drawing techniques and (egads) SketchUp, but the goal is to always encourage the flow of clear images from the drafting board in your head.

## Make Your Designs Sing

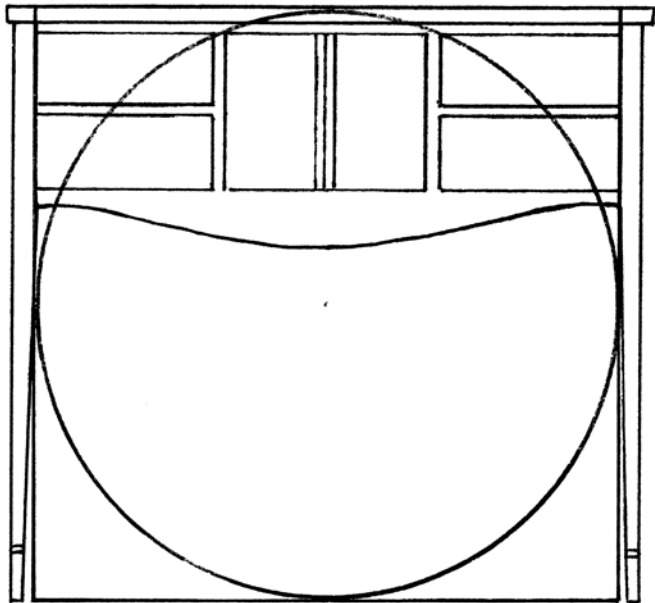
This concept of clearly seeing a design in the mind's eye is a learned skill. Let's do a little experiment. Take a moment, close your eyes and sing the "Happy Birthday" song silently to yourself. You weren't singing out loud were you? (If you did, start again and sing it just in your head.) Could you hear it? Think about this for a moment. No audible sound, but you



**FIG. 1.2.9.** The single square (left) is at one end of the scale and the double square (right) is at the other.



**FIG. 1.2.10.** Relax. We won't try to convince you there are squares and circles under every bush (you'll find that out for yourself after a while).





could clearly hear it in your mind. Try this: Sing it silently to yourself again but at a slower tempo. Can you still hear it, only slower? Can you imagine it sung in another voice? How about a deep, clear Nat King Cole version? How about a sultry Marilyn Monroe singing to John F. Kennedy? Can you hear the song played on an instrument? A piano? Try a trumpet. How about bagpipes? Stop! Cruelty alert: Step away from the bagpipes. The point is, you have the amazing ability to visualize already.

You not only could hear the song, but you could manipulate it, express it with different voices and instruments. I'd venture a guess that if you thought about it, you have hundreds of songs tucked away in that stereo in your head. Chances are, few of you have ever formally studied music. In fact, most of us could not write down the musical score for the song. It's not about notes you can write on paper, but notes you can hear in your mind.

Music at its simplest is made up of a handful of simple building blocks we call notes. Musical styles and genres can span a huge range from Bach to John Lee Hooker to ZZ Top. Underneath it all is the same handful of simple notes. Accomplished musicians, including the likes of Yo Yo Ma, practice the musical scales daily. The scales are nothing more than a note sequence arranged to keep a sparkling clear image freshly imprinted in the mind. Do you doubt that a musician develops a heightened ability to imagine music? The reason we struggle to see spatially is that we never learned a set of visual notes.

Close your eyes again and visualize a square. Can you see it clearly? If not, take a moment and draw a square with pencil then try again. Now close your eyes and imagine two squares side by side, one next to the other. Now imagine two squares arranged one on top of the other. Can you see the squares clearly? It doesn't matter how big the squares are, or whether they float in space. They can be solid or simple line drawings. The important part is that you can see them. Now do the same visual exercises again, only this time imagine a circle. Then visualize two circles, a pair side by side, and a pair one on top of the other. Consider the circle and square to be interchangeable. There's lots more to say about the circle later, but for now all you need to realize is that they are both easy to visualize. Congratulations. You have just taken baby steps in learning to see. You have just imagined the visual notes that bookend the range of our visual scale. The single square or circle begins the sequence, and the double square or circle completes it. In between are a handful of intermediate notes. The circle and square are the basic building blocks, and though it might seem like a small step to you now, in reality you've taken a giant leap toward unlocking your inner vision, and toward making your designs sing.

A DRAWING EXERCISE

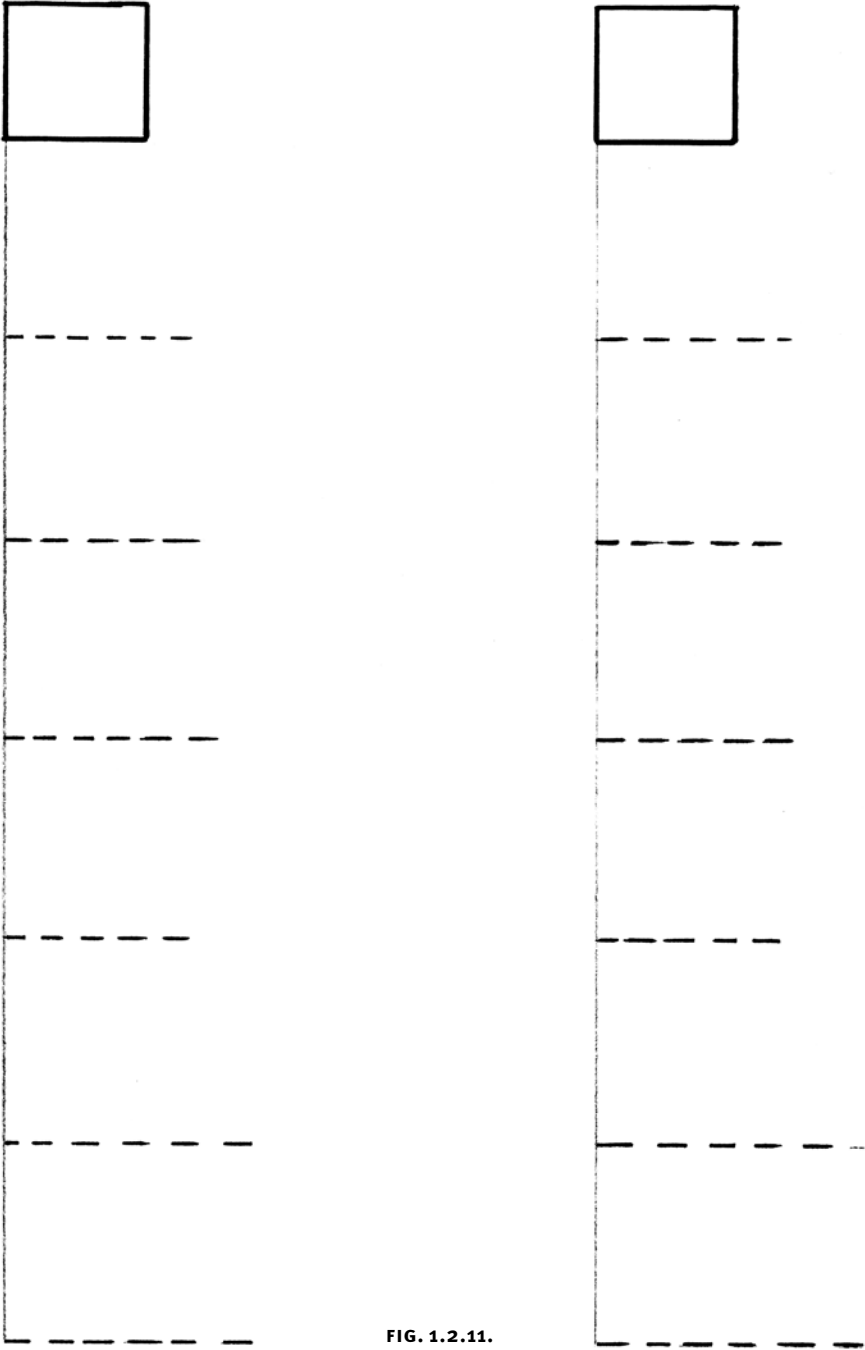


FIG. 1.2.11.

## Creating a Visual Scale

You just imagined the two notes that bookend the scale; let's draw the entire sequence. Adjust your compass to draw a circle that will just fit inside the square at the top of the previous page. Leave your compass at the same setting and on the line at the bottom of the page draw two circles side by side but just touching. Encompass them both with a rectangle.

You have just drawn the visual notes at the bottom and top of our visual scale. Pre-industrial artisans had a fancy name for these. They were called a square and a double square. Take a moment again to close your eyes. Can you see the shapes clearly?

Now that you know how to draw a double square, can you think through how you might draw two circles that overlap to create a square and one half square? Draw that and encompass it with a rectangle. If this is confusing you can turn to page 30 for an example drawing (1.2.13), but it's important that you think through this and draw it out.

Using the same logic of overlapping circles, can you draw a square and  $1/4$  square, a square and  $1/3$  square, a square and  $2/3$  square, and, finally, a square and  $3/4$  square? Encompass each with a simple rectangle.

You have just drawn the basic rectangular building blocks needed to construct forms in your head and at your workbench. You may or may not have drawn them in a sequence that goes from small to large. If not, draw them again in sequence starting at the top right side of the page.

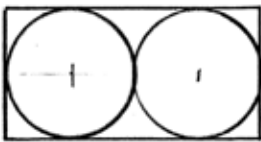
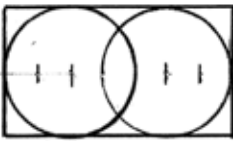
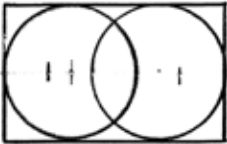
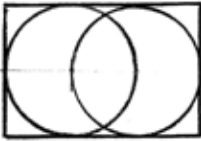
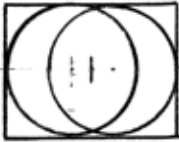
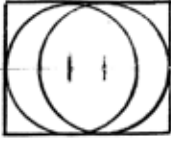
**IMPORTANT POINT:** We created a set of visual notes that extend horizontally. You can also arrange these so they extend vertically.

You have just tapped into something profound on three levels:



**FIG. 1.2.12.** The same notes can cover a range of space either horizontally or vertically, with the single square in the center.

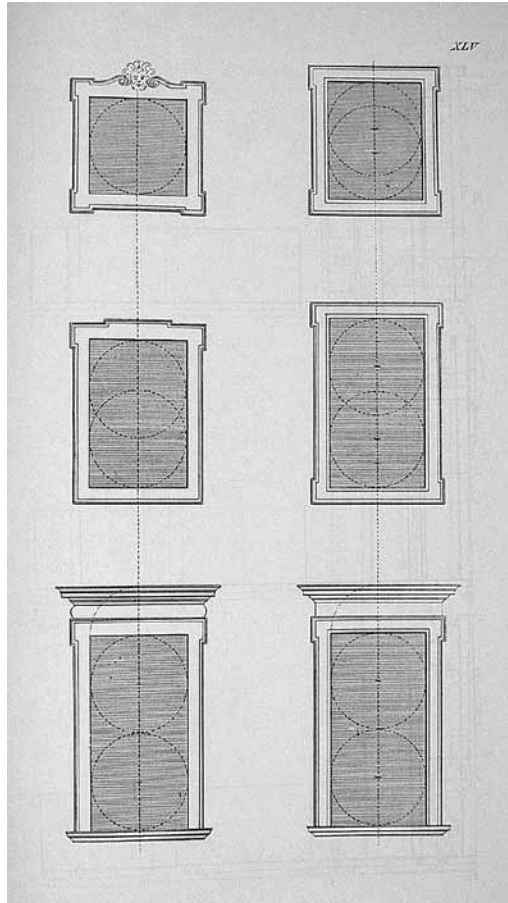
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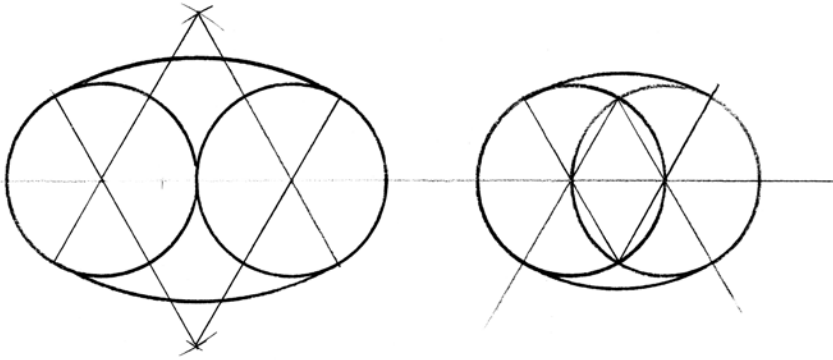
**FIG. 1.2.13.** In this visual note sequence, the center rectangle is a square and one-half.

1. This is a series of visual notes that can be visualized with clarity. The single and double square are intuitive; those notes in between can, with only a small amount of practice, also become clear.

2. These simple shapes are easy to apply in practice with just a straightedge and compass. Thus, they dovetail perfectly with actual shop layouts at the workbench.



**FIG. 1.2.14.** Anything look familiar? Gibbs describes these as square, square and one-half, double square, etc.



**FIG. 1.2.15.** Can you plainly see the connection – how these ovoid shapes use the same simple notes as the rectangles? Can you visualize them in your mind also?

3. These notes have deeper connections (more to come on that later). For now it's powerful enough just to know that they are easy to imagine and practical at the workbench.

Perhaps it's so simple we look beyond them for something more complicated.

At left is an engraving from James Gibbs's "Rules for Drawing" (circa 1732) on different window configurations. Throughout historical design books these series of simple visual notes show up in examples of ideal room sizes, fireplace openings and furniture.

We use circles to generate these simple rectilinear shapes. By extension, the same can be applied to ovoid shapes.

## Conclusion

Now you have a simple scale to practice and become familiar with. You can begin to combine these just like a songwriter arranges notes in a song. Yet music is more than just notes on a scale or tossed about at random; music employs melody, harmony and rhythm. In the next chapter, we'll take a closer look at how to begin arranging these visual notes to create fresh, lifelike compositions. It begins with understanding forms and the ability to look at the underlying bones in a design.