

THE ANARCHIST'S DESIGN BOOK

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Plates by Briony Morrow-Cribbs



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By hand. A stone dovecote in Cornwall, England.

PREFACE

Anarchism

To build rather than buy.

On the surface, the words “anarchist” and “design” don’t belong together in a sentence. Most woodworkers think of “design” as a way to organize the visual elements of a piece of furniture and “anarchism” as something akin to chaos.

Once you understand a bit about the American brand of anarchism – a non-violent and anti-consumerist approach to living – I think these terms are allied.

Contemporary North American anarchism (which I wrote about in “The Anarchist’s Tool Chest”) is a tendency among individuals to eschew large organizations, corporations, governments and religions. It is a preference for individual action as opposed to mandates, mass-manufacturing and canonical law.

I think those who care about craft will agree that our furniture – and much of our material culture – has been ruined by mass-manufacturing. In the span of two generations, we have gone from a time when a newlywed couple would buy a dining room set that would last their whole lives, to a time when it’s accepted (even necessary) to replace your furniture every few years.

Anarchism in this context is a tendency to build rather than buy, to create rather than consume. You can call it self-sufficiency or DIY. But when you make something that does not have to be replaced in a few years, you throw a monkey wrench into a society fueled by a retrograde cycle. It begins with an advertisement of something you don’t need,

“(E)veryone should have a project: after all it is the best way to avoid being designed yourself.”

— G.C. Argan, “A Critical and Artistic Evaluation” in *L’Espresso*, May 5, 1974

which leads to the manufacture of an object of the lowest common denominator and ends with the object at the curb. Then there's a new advertising campaign.

This book is an attempt to show you how to design and build furniture that will last generations. But I hope it's also something more.

Among furniture connoisseurs in North America, the "best" objects are highly ornamented and elaborate, using expensive veneers, carving, inlay and a high-style finish.

I contend that striving to make this kind of furniture isn't the only path in our craft. Individuals have built furniture for themselves for hundreds of years, but these simple forms have mostly been ignored by historians.

I call these pieces "the furniture of necessity," and I think they are the perfect furniture form for the amateur woodworker. The pieces are straightforward, attractive and stout. They answer the call of "necessity" in some obvious ways. They hold your food off the floor, prop up your backside and protect your things from being stolen or ruined.

They also are "necessary" in the sense that we have to make things – anything – to preserve both the craft and our humanity. The history of civilization and woodworking are the same.

Making things makes you human.

That idea might seem overwhelming. Who has time to make all the furniture in the house? I think that you do.

In researching early furniture I found that many "necessary" pieces were built using just two simple techniques – the staked tenon and the tapered iron nail – that fell out of favor as the more ornate furniture styles demanded more technical and difficult techniques to build them.

Once you understand the basic principles of these two joints, which are detailed in this book, I think that you – anarchist or not – can design and build a whole houseful of furniture.

Christopher Schwarz

October 2015



For Lucy

*Without you,
none of this would be possible.*

DIE TRYING



J. C. Bendorp, inv. del. et sculp.

RP-P-1908-3743

The Muses Almanac. "The 1572 siege of Naarden" by Johannes Christiaan Bendorp (circa 1825). Spanish forces attack a blacksmith shop.

“What knowledge is this which thieves may steal,
mice or moths eat up, fire or water destroy?”

— *13th-century Parisian preacher in a sermon on
elaborately bound books*

Fig. 4.



Too much. A table leg from "The Cabinet Maker's Assistant: Original Designs for Furniture" (Blackie & Son, 1867).

DON'T MAKE THE FURNITURE OF YOUR GAOLER

Chapter 1

Imitate the taste of your boss's boss's boss?

We came in through the basement door of George Reid's tidy ranch-style house. Like most basement workshops, George's was a dark cave. As I put down my photography gear, my eyes adjusted to the dimness and I found myself staring at a full-scale drawing of a Chippendale chair that was tacked to the wall.

"Hmm," I thought. "Nice poster."

For the next two hours, a co-worker interviewed George about his lifetime of work. How he built his first milking stool on his family farm, constructed miniatures while he was working at Wright Field and fell into making furniture for clients by building hi-fi cabinets.

We looked at his exquisitely cared-for machines. We admired his carving tools, which he bought from a guy who worked on Pullman train cars. I was there to take photos, and what I remember most is how I just couldn't see anything in the low light.

At his workbench, George showed us two of his miniature pieces – quarter-scale chests of drawers with bow fronts. It was nice work, we

said. Do you have any other of your pieces here?

“Oh yes,” George said. “Let’s go upstairs.”

George lived on a nice middle-class street in Kettering, Ohio, in a compact, mid-century ranch home. He led us around the house from the shop, through the front door and into a state of speechlessness.

All I remember was that every wall was painted brilliant white, and every bit of space was occupied by amazing pieces of dark 18th-century-style furniture in mahogany. I almost kicked a Newport kneehole desk. There were highboys, lowboys, carved chairs and corner cabinets in every corner. All in Chippendale, Hepplewhite, Sheraton and Queen Anne styles. And all perfect, like they were fresh from the tool of the maker.

I have never seen anything like it since.

George Reid was one of the most talented makers I have ever met. Yet, I’ll never forget how wrong his beautiful pieces looked in the living room of his humble Ohio home.

This is Not for You

*“New, new, new,
just for the sake of
newness, for the
sake of the sales
curve, in order to
make people throw
away the old
things before they
have served their
time. Not so long
ago we looked for
a better form, now
we only have to
find a new one.”*

— Poul
Henningsen
(1894–1967),
Danish author,
architect & critic

While the work itself is amazing, most of the American furniture we celebrate as the pinnacle of design can be overbearing, over-embellished and a monument to waste and excess.

It also represents the furniture of people you probably dislike.

These high styles of furniture took hold in North America in the 18th century and persist to this day as both cult objects for collectors and as rites of passage for artisans. These are precious pieces that are auctioned, collected, reproduced and written about in exhaustive detail.

We call them by the names of their champions or designers – Chippendale, Sheraton and Hepplewhite to name a few.

And while I am quick to admit these pieces were made using exquisite materials by talented hands, I want to add an asterisk to the discussion of high-end furniture: This stuff was built for the ultra-rich to satisfy their whims and fancies.

Or, to put it a slightly different way, the people who could afford this furniture also owned mega-farms, factories and (sometimes) entire towns. This is not a knock on their wealth. But it is a simple way of asking a question that rarely gets asked among amateur makers: Why would you want to imitate the taste of your boss’s boss’s boss?

Is it because their elaborate furniture is the peak of design? Or is

it because it's put on display by institutions that are supported by the generous wealthy patrons – foundations, trusts, museums and cultural heritage centers?

Here's how I see the equation: Because the wealthy were (as always) scarcer than the rest of us, there simply aren't a lot of these pieces extant. It's their rarity more than anything that makes them expensive and desirable. Yes, the furniture is nice. But don't confuse a price tag with beauty or utility.

So if every log cabin on the frontier wasn't decked out with a set of Robert Manwaring chairs, then what were most people sitting on, eating off of and sleeping in during the last 500 years? After years of researching this question for myself, I think the answer is this: furniture that doesn't have a name, a museum or many champions.

“What seems to have happened is this. Certain pieces of furniture, because of their essential practicality and usefulness, began during this period [the 17th century] to achieve definitive forms for which they were to retain for many years. Skilled but unsophisticated country craftsmen, usually joiners rather than cabinet-makers, repeated the same designs again and again, without changing them much, because they had been found to be the best for a particular purpose. A good deal of furniture thus escaped from the influence of fashion and, however unconsciously, responded only to the principle of fitness for use.”

— Edward Lucie-Smith, *Furniture: A Concise History* (Oxford University Press, 1979).

The Furniture of Necessity

Among furniture historians, little has been written about this so-called “vernacular” furniture in comparison to the mountains of scholarship on high styles. There are a few books here and there (thank you Christopher Gilbert), plus magazine articles tucked between the gilded and carved masterworks. But the furniture of necessity is, for the most part, invisible.

Why? To be honest, vernacular items are tricky to study. They can be difficult to date because they don't change much – many of these forms are still made today in the same way they were built in the 1600s. Most of their makers are anonymous. These pieces, by and large, were built by amateurs or part-time, self-taught woodworkers.

This book does not pretend to be a proper study of Western vernacular styles from 1300 to present. I'll leave that to someone who is better at formatting footnotes. Instead, I want only to introduce you to pieces of furniture – some of them shockingly unfamiliar at first – that represent the core of our common furniture history.

This is the furniture of the people who work for a living. It is sturdy, made from everyday materials and isn't orchestrated to impress you with ornament. Instead, it is designed to keep you dry, comfortable and safe.

Also – and this is important – this furniture is largely disconnected from fashion. It cannot be labeled as a particular style, so it does not fall in or out of fashion. It looks at home in a log cabin, ranch house or an industrial loft. In fact, the only place it looks out of place is a high-style parlor or drawing room.

"I admire the everyday ordinary furniture from the past, particularly from before the Industrial Revolution, what's known as vernacular furniture. The makers are usually unnamed, often not professionals. I like it because of its directness, honesty and functionality. It tends to be kind of minimal and spare for reasons of cost. It is striking how the dictates or slogans of Modernism align with those of the vernacular or craft: 'less is more,' 'form follows function,' and so on. It's ironic because Modernism typically saw itself as release from the bondage of tradition."

— *Laura Mays, a furniture maker and graduate of College of the Redwoods.*

About this Book

"Of splendid books I own no end. But few which I can comprehend."

— *Sebastian Brant (1457-1521), "Narrenschiff" (Strassburg, 1494)*

In the 18th century, there was an explosion of so-called "pattern books" that were stuffed with illustrations of fashionable architecture, interiors and furniture. One count from the Metropolitan Museum of Art estimates there were 250 pattern books for architecture and 40 for furniture.

These books were usually gorgeous, oversized and expensive. Their copperplate engravings regulated and transmitted fashion throughout England, the United States and other parts of the world. In fact, the books are so influential that many are still in print (though usually as falling-apart paperbacks, which amuses me).

But there's never been a pattern book for the furniture of necessity.

This book, in a small way, is designed to echo those pattern books. Each of the furniture forms has a full-page illustration made via copper-

plate by Briony Morrow-Cribbs, a Vermont artist who specializes in this intaglio process.

Following the plate is an explanation of the piece – how it is constructed and its general features – much like the explanation you might find in André-Jacob Roubo’s “l’Art du menuisier” or any other 18th-century text. Then each chapter departs from this historical format.

Vintage pattern books don’t tell you how to build a Chippendale chair. The local cabinetmaker was supposed to be able to reproduce the particular set of details to suit the fancy of the customer. But unlike high-style pieces, the furniture of necessity was usually built by its designer and end-user. So I offer step-by-step instructions for constructing the pieces featured in the plates.

I hope you will find these pieces liberating in several ways. Like many furniture makers, I spent my adult life in the shadow of the 18th-century masterworks. I was told that to be a real furniture maker, you needed to build these high-style pieces. You needed to learn veneering, carving, turning and even gilding. Otherwise, you were just a glorified trim carpenter.

That is complete crap.

Beautiful, durable and useful furniture is within the grasp of anyone willing to pick up a few tools and learn to use them. It does not require expensive materials or a lifetime of training – just an everyday normal dose of guts.

Millions of people before you – and just like you – built all the furniture in their homes. They might not have left pattern books behind, but they left clues sprinkled through paintings, sketches and the furniture record. That is where our design ideas will come from. And that is where we will begin.

“In all its horrible eccentricity of non-descript Gothic, worse Chinese, and inane rococo, combined though they be with the most exquisite workmanship and occasionally a quaint gracefulness, Chippendale’s style is not in favour with those whose training enables them to discriminate between the true and false in design.”

— D. Adamson, “A Chat About Furniture,” *Work magazine*, March 23, 1889.



STAKED SAWBENCH

Chapter 4

Where to begin.

If compound-angle joinery seems difficult, then building a simple staked sawbench will expand your woodworking consciousness in a snap, like a Zen koan.

Even if you have no intention of building a sawbench, I recommend you read this chapter before moving on to the other staked projects in the book. This chapter – more than the others – takes you through the process of understanding the geometry and joinery with baby steps.

The first and most important thing to remember is this: Every angle, compound or otherwise, is just as easy to accomplish as 90°. Nothing is special about a square.

Why this Sawbench?

Since I was a kid, I've built dozens of sawbenches and sawhorses of every common design. Most used dimensional lumber and nails to create a platform at a certain working height.

Sawhorses, in general, create a skinny platform – the edge of a 2x4 is typical – that's at table height, somewhere about 30" from the ground. Sawhorses are ideal for power-tool work. A couple sawhorses and a hollow-core door create a makeshift workbench. You can use circular saws, jigsaws and other power tools on top of sawhorses with ease.

Sawbenches, however, are a horse of a different height. They are used



Saw-somethings. All these forms are made for sawing. The sawbenches are for hand-saws. The taller sawhorse is for electric saws.

with handsaws and mortising chisels in traditional work. They offer a platform that is about 7" wide and knee-high to the worker. This height is ideal for hand operations – ripping, crosscutting, mortising and sandwich-eating.

Most 20th-century sawbenches are built with dimensional softwood 2x4s and 2x8s. They are comprised of a top, legs and stretchers – like a sawhorse but lower and with a wider top. These sawbenches are nailed or screwed together like a modern job-site sawhorse.

But if you look at old drawings of shops, from the 16th century on, you see a different sort of sawbench. These are made from a slab of wood that's pierced by four angled legs; many times the legs look like they curve out a bit.

Why do they curve? We don't know. Jennie Alexander has suggested that it is because the legs were rived from wood at the bottom of the trunk, which is usually unsuitable for high-class furniture.

These sawbenches are, without a doubt, staked furniture. The legs are angled to make the sawbench's top as stable as possible. The legs are

Der Zimmermann.



They're everywhere. Staked sawbenches – look to the left by the axe – are in many early illustrations of carpenters and joiners. This one has straight legs. From “The Book of Trades” by Jost Amman and Hans Sachs (1568).



Side, rake; front, splay. Chair geometry is like saw geometry. From the side of a saw or chair (left), the teeth or legs are raked, either forward or back. Looking at the front of the saw or the chair (right), the teeth or legs are splayed out; we call this “set” in a saw and “splay” in a chair.

joined to the top with some sort of mortise-and-tenon joint. This joint could be as simple as a plain old hole in the top or as complex as a conical tenon that has been wedged.

The legs are angled out to stabilize the top but also to stay out of the way of the worker. You don’t want to nick a sawbench leg with your saw, and you don’t want to trip over its legs when you walk around the shop. I have found that the rake and splay of sawbench legs are similar to the rake and splay of the rear legs of a Windsor chair.

Introduction to Leg Angles

Oh sorry. I introduced some chairmaking terms without lubrication. “Rake” and “splay” are terms chairmakers use to describe the compound angles of chair legs. If you look at the front of a chair (the elevation), the angle that the legs project out is called the splay. If you look at a chair from the side (the profile), the angle of the legs is the rake. (These angles are usually pretty low numbers – 5° to 15° – in typical work.)

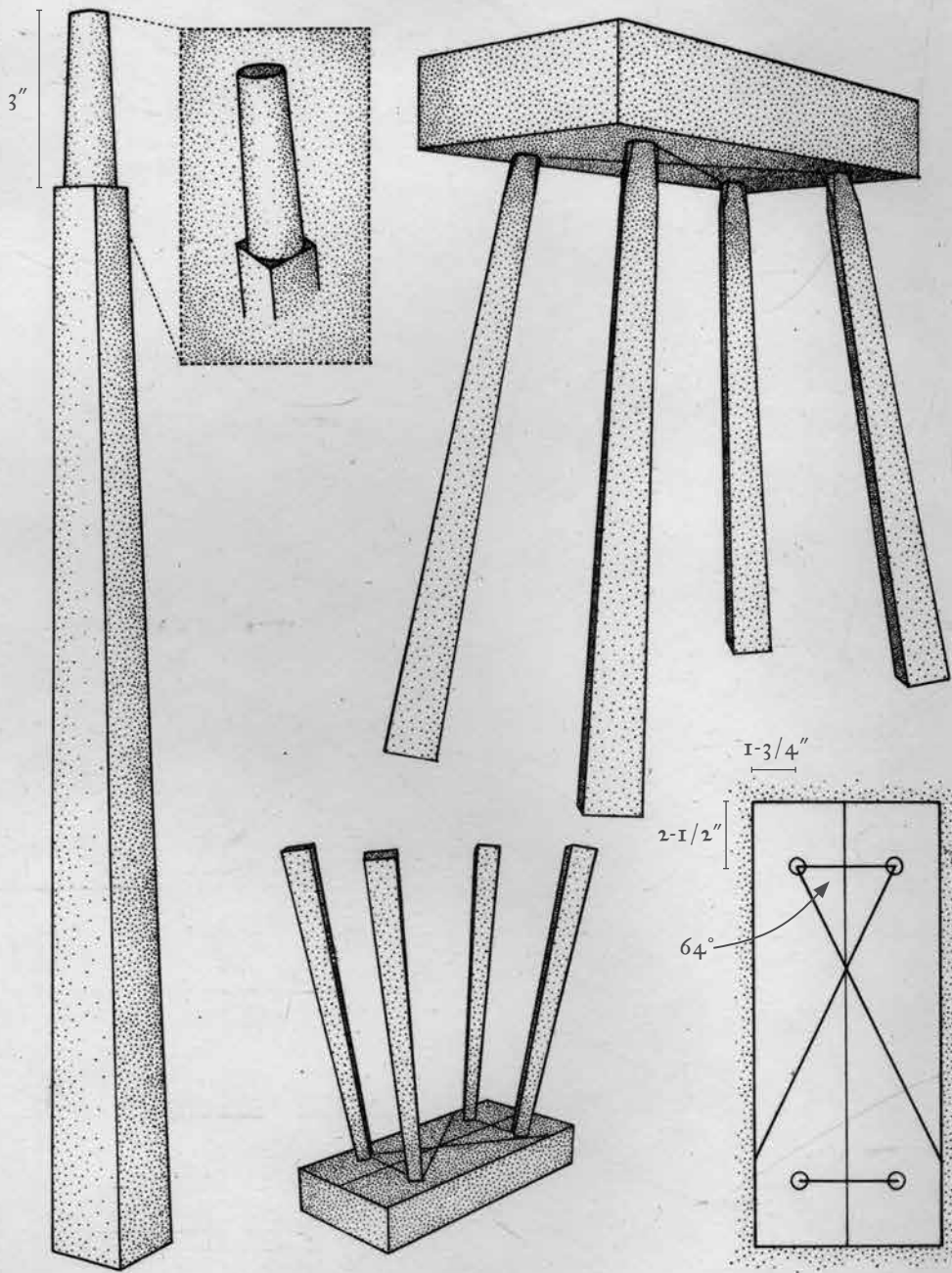
I’ve built chairs for more than a decade, and I don’t mess around with describing or measuring rake and splay much, except to explain it to

*“(Chairs) are too hard.
Chairmakers are
doomed to poverty.”*

*— Gary Bennett
(1934–) furniture
maker and artist*



One angle. The bevel gauge is set to 15° and has been placed on the sightline on the underside of this sawbench. This “resultant” angle allows you to drill the holes for your legs with one line and one setting of your bevel gauge.



other builders.

Instead, I use the “resultant angle” – one angle that describes both the rake and splay – and “sightline” – a line where the leg appears to the eye to be dead vertical. You can calculate this angle with trigonometry, but there is a simpler way to think about compound leg angles for those of us who consider math a cruel mistress.

First you need to find the resultant angle and its sightline. You find this by locating the point at which a single leg appears to be perfectly vertical.

If I’ve lost you, try this: Sit on the floor with a chair in your house. (Make sure you are alone or are listening to Yes’s 1973 “Tales from Topographic Oceans.”) Rotate the chair until the leg closest to you looks to be perfectly 90°. Imagine that one of your eyes has a laser in it and can shoot a line through the leg and onto the seat. That laser line is what chairmakers call a “sightline” – an imaginary line through the leg and onto the seat. Put a single bevel gauge on that imaginary line and you can position a leg in space with a single setting on a bevel gauge. That setting is the “resultant angle.”

Most plans for Windsor chairs include instructions for laying out the sightlines and the resultant angles for setting your bevel gauge. But what if you want to design your own chair? Or you want to build a table, desk or footstool using the same joinery?

So put away the scientific calculator and fetch some scrap pine, a wire clothes hanger and needlenose pliers. We’re going to design and build a simple sawbench with five pieces of wood and compound angles. This model will give us all the information we need to build the sawbench.

Build a Model

When I design a piece of staked furniture, I make a simple half-scale model using scrap wood and bendable wire. This method helps me visualize how the parts will look when I walk around the finished object. The model also gives me all my resultant angles and sightlines without a single math equation.

I first learned this technique from Drew Langsner’s “The Chairmaker’s Workshop.” I then adapted his method a bit to remove the math. Let’s use it to design a sawbench.

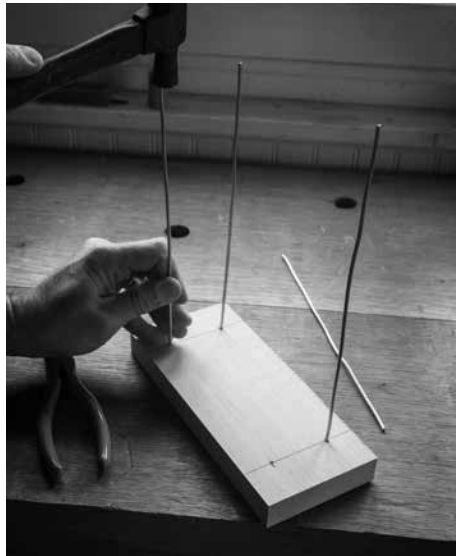
Take a piece of 3/4" pine and cut it to half the size of the finished sawbench. The finished top will be 2-1/2" x 7-1/4" x 17", so make the top of your model 3/4" x 3-5/8" x 8-1/2". Next decide where you want

“Technique alone is never enough. You have to have passion. Technique alone is just an embroidered potholder.”

— Raymond
Chandler
(1888–1959)



Leg layout. Here I've laid out the leg locations in this half-scale model of my sawbench.



Guided by wire. The wire should be strong enough that you can tap it into its hole on the underside of the model.



Make the rake. Use the pliers at the base of the legs to bend them to 14° to match your bevel gauge.

the legs to be and lay out their locations on the model. Each of my legs is located 1-1/4" from the end of the model and 7/8" from the edge. A lot of this is "by eye" so don't worry too much.

Now snip four pieces of wire from a clothes hanger to 10" long. This wire will represent the legs of the sawbench. Drill a snug through-hole for each "leg" on your model. Put a little epoxy into the hole and tap the wire in.

Now comes the fun. Set your bevel gauge to 7° using a plastic protractor. Look at the model directly from the end of the board. Let's call this the front of the sawbench. Use needle-nose pliers to bend the wire legs so they all splay out 7° from the top. Try not to manipulate the rake.

When they all match your bevel gauge, change the setting of the bevel gauge to 14°. This will be the rake. Look at the sawbench directly from its side and use your pliers to bend the legs to 14°. You might have to tweak things a bit so all the legs look the same.

Turn the model on its feet and look at the result. You will be surprised by how easy it is to spot angles that look wrong. Adjust the wires until they all look the same and the sawbench looks stable.

"We find industrial organisation ever screwing down and screwing down, we find the drive severer, the competition keener, we find industrial democracy ever closing in ... the levelling and uniformity more necessary, more terrible. What becomes of the individual, of what weight is the little human soul upon this dark archangel's scale?"

— C.R. Ashbee
(1863-1942)

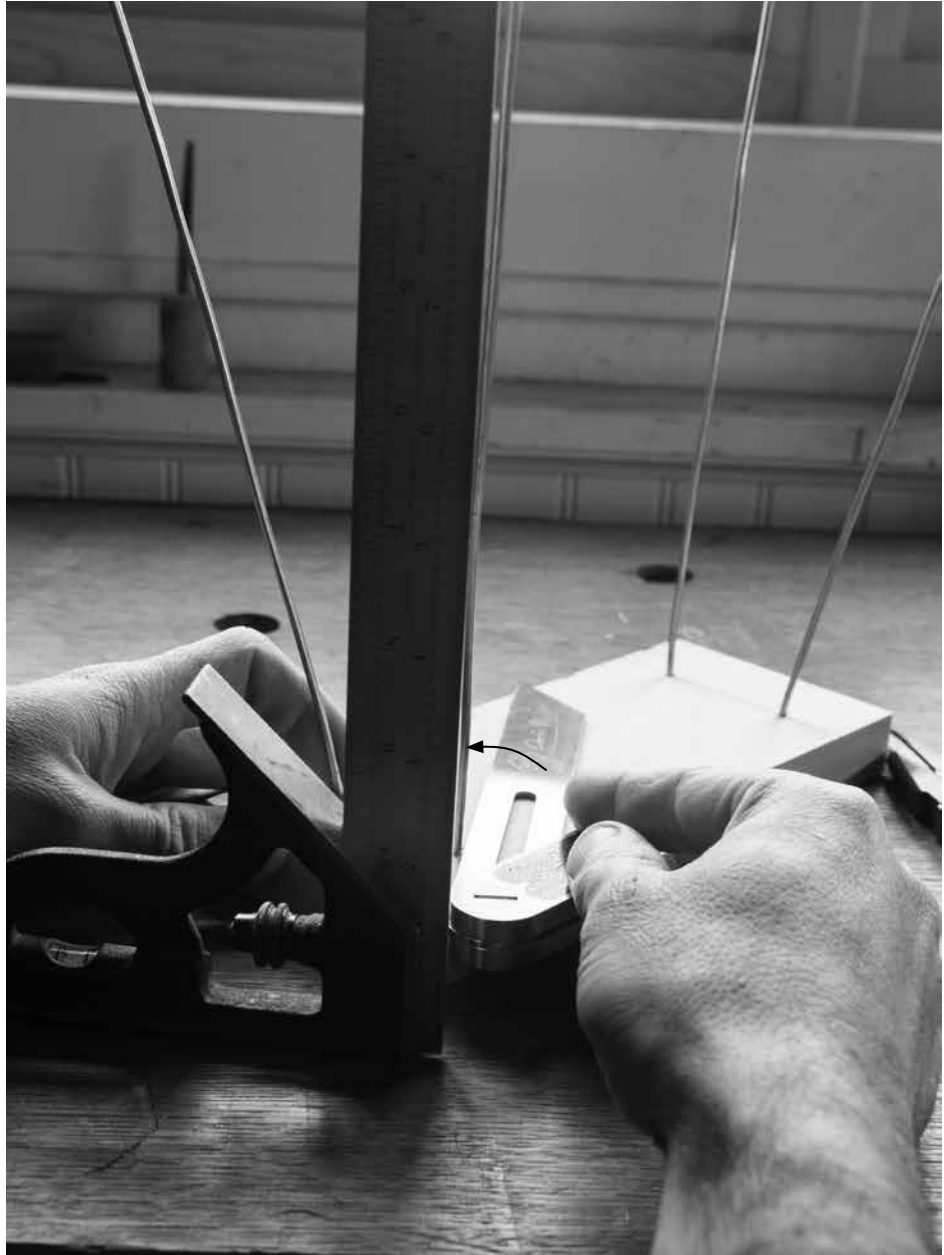
Find the Sightline & Resultant Angle

Turn the model back over. Place a square on the bench with the blade pointing to the ceiling. Rotate the model until one of the legs appears to be 90° in relation to the square. Place the handle of your bevel gauge against the long edge of the model and push the blade of the bevel gauge until it appears to line up with both the leg and the blade of your try square. (Hold your head still.)

Lock the bevel gauge. This is your sightline. Place the bevel gauge on the underside of the model. Butt it against one of the legs and draw a line. You have now marked the sightline. (By the way, it's about 64°.)

Now find the resultant angle. Unlock the bevel gauge and place the tool's handle on the sightline. Lean the blade until it matches the angle of the leg. Lock the gauge. That is your resultant angle – about 15°.

If your head hurts, don't worry. It's not a stroke – it's geometry. Once you perform this operation a single time, it will be tattooed to your brain. This chapter will explain how to lay out the resultant angle for your sawbench – you'll have nothing to calculate. But the act of marking out the sightlines will – I hope – make the concept clear and remove your fear of compound angles in chairs.



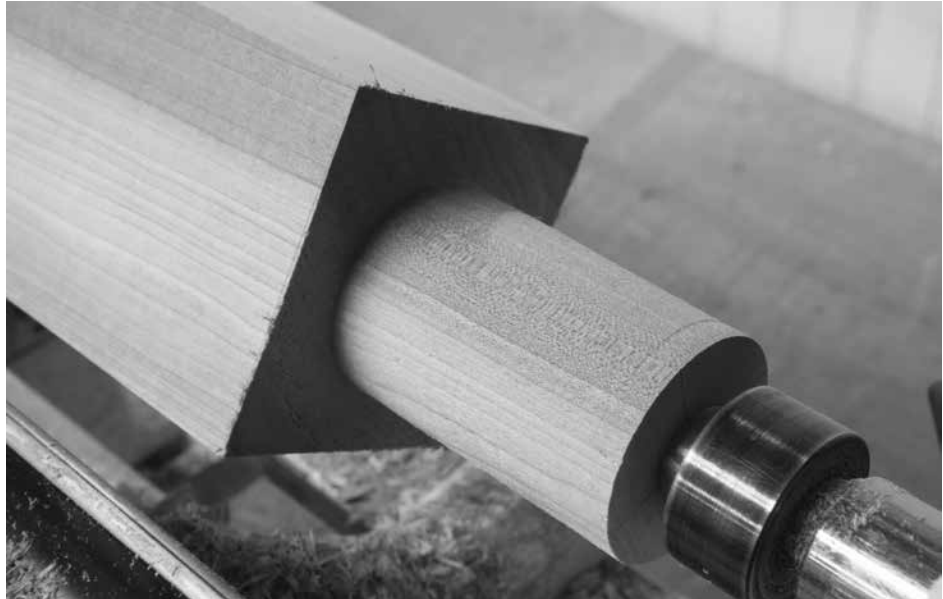
When the tools align. Rotate the sawbench until the leg looks vertical compared to your square. Adjust the bevel gauge until its blade aligns with the leg and square. In the photo I am pushing the blade toward the vertical line made by the leg.



Mark the sightline. Use your bevel gauge to draw in your sightlines on the underside of the model. You are almost done. Unlock the bevel gauge.



The result. Put the handle of your bevel gauge on the sightline. Set the blade to match the leg. That's the resultant angle – you just did a good thing.



It's a dowel. A cylindrical tenon has all the hallmarks of dowel joinery. It is simple to make but weak in service. Chairs made using dowels are doomed from birth.

Sidebar: Two Kinds of Joinery

There are two common ways to fasten the legs to the top in a sawbench. One method is to turn or shave the top of the leg to a cylinder – like a dowel. Then you can drill a hole in the top. Glue the leg in the hole. Done.

The primary problem with this approach is the joint can fall apart because there is a lot of end grain in the joint and the glue fails. Just like in cheap store-bought chairs. This might take a few years or 100. But it will happen – usually on Thanksgiving Day for some reason.

The historical solution is to make both the tenon and the mortise cone-shaped. So the more you press down on the top, the tighter the joint becomes. Though it is theoretically possible to split the top, this rarely occurs. And it's even more rare for the leg to fall out. Why? The joint is also wedged from above to help keep the top fixed.

Chairs, stools and sawbenches made using this technique can survive hundreds of years of hard use. And the joint doesn't require a lot of expensive tools to execute.