THE ANARCHIST'S DESIGN BOOK
THE ANARCHIST’S
DESIGN BOOK

By Christopher Schwarz
Plates by Briony Morrow-Cribbs
# TABLE OF CONTENTS

Preface viii

1: Don't Make the Furniture of your Gaoler 1
2: A Guide to Uncivil Engineering 6

## STAKED FURNITURE

3: An Introduction to Staked Furniture 28
4: Staked Sawbench *Plate 1, 46* 40
5: Extrude This 80
6: Staked Backstool *Plate 2, 88* 84
7: Staked Chair *Plate 3, 114* 110
8: Drinking Tables *Plate 4, 136* 130
9: Heavy Buddhist Feedback 152
10: Worktable *Plate 5, 164* 156
11: Staked Bed *Plate 6, 182* 178
12: Trestle Tables *Plate 7, 200* 194
13: Seeing Red 238

## BOARDED FURNITURE

14: Bare Bones Basics of Nail Technology 246
15: Boarded Tool Chest *Plate 8, 266* 264
16: To Make Anything 286
17: 6-board Chest *Plate 9, 294* 290
18: Boarded Bookshelf *Plate 10, 324* 322
19: Aumbry *Plate 11, 340* 338
20: Fear Not 360
21: Coffin *Plate 12, 368* 364

Afterword 382

## APPENDICES

A: Tools You Need 384  D: On Milk Paint 416
B: On Hide Glue 400  E: Tenons by Hand 420
C: On Soap Finish 404  F: Machine Tapers 426

Acknowledgments & Supplies 432
Index 438
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 newly-wed 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,
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.
“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
Too much. A table leg from “The Cabinet Maker’s Assistant: Original Designs for Furniture” (Blackie & Son, 1867).
Photo by Narayan Nayar.
Three-legged tables are a common sight in English pubs and in paintings from the Middle Ages. While most examples of drinking tables—sometimes called cricket tables—that I’ve inspected were made using square mortise-and-tenon joinery, the early ones were clearly staked.

The other curious thing about the artwork from the Middle Ages is that many times these tables are shown outdoors with trees in the background. That caused me to wonder: Did these tables break down so that the round top could be rolled to the party and assembled?

It would make some sense and there is precedent: Early trestle tables (they’re later on in the book) broke down quickly to pieces to make them easy to move.

So this particular table knocks down. The legs are friction-fit into the mortises. The wood-on-wood friction, angled legs and gravity keep them from falling out when you pick up the assembled table to move it. But it’s also a simple thing to twist each leg and pull it out.

And if three legs isn’t enough, stay tuned for one with six legs.

**How the Table Goes Together**

There are two circular tops that are face-glued together—one that’s 1” thick and one that’s 1-3/8” thick but a smaller diameter. The smaller top thickens the areas around the joints to add meat around the tenon.
Photo by Narayan Nayar.
Unlike the previous staked joints shown in this book, the tenons and mortises are not conical, simply because I couldn’t find a reamer big enough for the 2”-diameter mortises. While I prefer a conical joint in all cases, I think these cylindrical joints will be fine because they are so big.

Like many staked pieces, the legs are tapered octagons. These legs taper smaller toward the tip of the foot. Other early pieces had the taper reversed – the foot starts thick at the floor and tapers up to the tenon.

**Begin With the Thin Top**

To make the top look its best, I recommend you try to get all the pieces for the tabletop cut from one long board. That strategy will ensure consistent color and grain, creating a 1" x 40"-diameter top that does not look jarring.

Joint the edges and glue up the top. When the glue is dry, get your
“Warning: If you are reading this then this warning is for you. Every word you read of this useless fine print is another second off your life.

Don’t you have other things to do?
Is your life so empty that you honestly can’t think of a better way to spend these moments?

Or are you so impressed with authority that you give respect and credence to all that claim it? Do you read everything you’re supposed to read? Do you think everything you’re supposed to think? Buy what you’re told to want?

Get out of your apartment. Meet a member of the opposite sex. Stop the excessive shopping and masturbation. Quit your job. Start a fight. Prove you’re alive. If you don’t claim your humanity you will become a statistic. You have been warned.”

— Tyler Durden, “Fight Club”

Three is not enough. Some early tables are shown with as many as six legs. This one, an adaptation of a Middle Ages painting, shows a typical monkey party gone bad.
trammel points and set them to 20” – the radius of the top. Mark the radius, cut the top (I used a band saw) and clean it up with a spokeshave.

Flatten the top and the underside of the top using a jointer plane. Save the final finish planing of the tabletop’s surface until right before assembly – parts can get beat up in the shop during construction.

**Now the Thick Subtop**

The subtop gives you more meat for your mortises. And because it is smaller in diameter than the top, the overall table won’t look like an enormous poker chip with three toothpicks for legs.

The edge of the subtop is beveled. It’s a simple detail, but it makes the whole table visually lighter and reflects the angle of the staked legs.

Just like the top, you’ll need to glue up boards into a panel then cut them round. But unlike the top, the boards for the subtop don’t have to

*Shaved round. A sharp spokeshave makes short work of the sawblade marks. The standard shave with a flat bottom will work fine.*
Drinking Table

![Diagram of a drinking table with dimensions: 2" x 2-1/4" and angles of 120°.]

B. Morrow-Cribbs Ing. Del. et Sculp
match one another for grain or color because they’re not highly visible.

The edge of the subtop is cut at a 14° bevel. I made the cut on a band saw by tilting the table 14°. You’ll want to lay out the circle’s shape on both faces of the subtop so you can work to both lines with a spokeshave to get a consistent bevel.

The layout is easy. Using trammels, scribe the finished diameter –
30-1/2" – on one face of the subtop. The radius is 15-1/4". Flip the subtop over and lay out a second circle that is 1-1/4" smaller in diameter. The radius of the second circle is 14-5/8". The difference in diameter between the two circles creates an edge that is 14°.

Now you can cut the bevel on the edge of the subtop by following the circumference of the larger circle with the sawblade of the band saw.

Clean up the sawn edge with a spokeshave, working to the lines left by the trammel points on both faces of the subtop.

**Lay Out the Mortises**

The mortises are cut on a drill press with a 2"-diameter Forstner bit. To make the parts a lot easier to handle by yourself, it’s best to bore the mortises all the way through the subtop first. Then glue the subtop and top together. Finally, deepen the three mortises with the Forstner bit.
in a drill. The mortises in the subtop will act like a doweling jig.

To lay out the locations of the mortises, fetch your trammel points and open your mind for a bit of geometry insertion. Set the trammels so they scribe a radius that is 2" smaller than the small diameter of the subtop (12-5/8" in my instance).

Do not change the setting of the trammels.

Now decide where one of the legs will go on this circle. It’s fairly arbitrary, but I don’t want a mortise to intersect a glue joint. Once you decide where the first leg will go, mark that position on the circle with an awl.

Now for the geometry lesson. We need to take our first point on the circle and lay out an equilateral triangle inside the circle to get the other two mortise locations. Lucky for us, the radius of a circle equals one-sixth its circumference.

Take your trammels and walk around the circumference of the circle, making a prick at six points on the circle and ending up where you start-
ed. Circle every other prick on the circle and join the points. You have created an equilateral triangle and laid out the joinery for the table.

To complete the layout, use a straightedge to join the mortise locations with the centerpoint of your circle. These lines are the all-important sightlines for boring the mortises.

**Bore the Mortises**

Set the banjo drill press jig (see Chapter 4 – I told you not to skip it) so it slopes to 12° compared to the quill of the machine. Design note: I also made prototypes with 14° legs that looked really good. I settled on 12° because 12 matches my mental age.

Now line up the sightline on the subtop so it is – via eyeball accuracy – in line with both the spur of the 2”-diameter Forstner bit and the iron post of your drill press. Clamp the subtop to the banjo jig and bore the mortise all the way through the subtop.
If you take it slow, you'll avoid the rim of the Forstner grabbing the rim of your mortise and ripping out a chunk.

Unclamp the subtop and repeat this process for the other mortises.

To finish up the subtop, plane away the layout lines and any scarring from the Forstner bit. I used a jack plane with an iron ground to a 10" radius. I planed with the grain, which created a nicely furrowed texture.
Scraps for stops. Clamp the scraps from cutting your top to your bench and use those as stops to restrain the subtop while planing it.
Join the Top & Subtop

The top and subtop are merely face-glued to each other. The only difficult part of this operation is getting clamp pressure in the right place – we’re going to use flexible wooden cauls (a.k.a. scrap) to do the job.

The first order of business is to scribe the shape of the subtop on the underside of the top so you can position the subtop in the middle of top. Set your trammels to a 15-1/4" radius and scribe this circle.

Paint a thin layer of hide glue on the subtop and flip it over onto the underside of the top. Important note: You want the grain of the subtop and the top to be dead parallel. This will ensure the two pieces will expand and contract sympathetically without cracking up your glue joints.

Gluing the top and subtop together is easy with six clamps and three scraps that are about 36" long. These scraps act as cauls to press the subtop against the top. Array the scraps across the subtop and clamp the...
Deeper for strength. To deepen the mortises into the top, insert the Forstner into the existing hole and run your drill up to full speed before pushing the bit into the top. Take it slow and the results will be crisp.
scraps down. You don’t need massive amounts of pressure, just enough to keep the pieces together while the glue cures.

After the glue dries, deepen the mortises by chucking your Forstner bit in an electric drill and running it into the mortise in the subtop. The overall depth of the mortise should be about 2”. Measure from the long surface of the joint – you’ll know what I mean when you get there. Any deeper than that and you’ll bore through the top.

**Make Legs**

The three legs for this table are made just like the octagonal legs for the previous projects, except that the tenon is a cylinder, not a cone. The legs taper from 2-1/2" at the tenon shoulder to 1-1/2" at the floor. Cut each leg to a rough octagon then plane the eight faces so they taper to 1-1/2".

I cut the tenon on the lathe – it’s 2" in diameter and 2-1/4" long. If you don’t have a lathe, you can cut the tenon with a spokeshave and refine the cylinder with a scraper. Chamfer the top edge of each tenon to make it easier to insert it into its mortise.

Finish the tenons with #120-grit sandpaper. Here’s how: Insert the tenon into the mortise. When it sticks, pull it out and use the sandpaper to remove the burnished high marks. Repeat until the tenon seats all the way and can be removed by judicious twisting.

**Finish**

As this table is mahogany, it demands a little color. I applied two coats of garnet shellac then rubbed on some black wax to fill the pores of the wood.

<table>
<thead>
<tr>
<th>NO.</th>
<th>PART</th>
<th>T</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Top</td>
<td>1</td>
<td>40 dia.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Subtop</td>
<td>1-3/8</td>
<td>30-1/2 dia.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Legs</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>30</td>
</tr>
</tbody>
</table>
A Different Drinking Table

Some of the early drinking tables I encountered had six (!) legs and a single thick top. And the legs were square and reverse-tapered: thick at the floor and thin at the tenon.

Paintings of these tables offer no instructions for how to use them, so we must be creative and make some (perhaps incorrect) assumptions. My following thoughts are guesses. I’ll leave it to scholars of the Middle Ages to set the record straight from original Latin or Arabic sources.

Why six legs? While the table at left has six legs, other drinking tables are shown with anywhere between three and six legs. Six legs seem ungainly, but when you set the table on an uneven floor, at least three legs – sometimes four – find the ground, and the table is stable.

On soft ground, all six legs press into the soil, presenting a remarkably solid tabletop.

Can you sit at a six-legged table? Yes. Try sitting at the table with one of the wooden legs between your meat legs. Though I have yet to find a painting that shows this seating arrangement, it could provide advantages to those wishing to protect their reproductive organs during benders.

Is the table easy to move? With the legs fixed into the top, the table is awkward to move, especially for one person. I propose, with zero evidence, that these tables could have been knocked down. The legs and top might have been separate. One person rolled the top to the party’s location. A second person carried the legs. When you arrived, you drove the legs in place with a mallet (or tankard) and flipped the table over.

I made one of these to see how it looked and worked.

Here are some specs:

The top is 2-1/2"-thick x 38" diameter oak. In our area, it’s easy to find 12/4 white oak (Quercus alba) that has been surfaced to 2-1/2" thick for less than $3 a board foot. This stock is used to make fireplace mantles. Tulip poplar (Liriodendron tulipifera) is also readily available in thicknesses up to 4". It’s more expensive than the oak (yes, that’s odd), but thick pieces look right and are actually easier to deal with in a shop with basic tools.

The six legs are red oak: 1-3/4" x 2-5/8" x 30". The legs taper to 1-1/4" square up at the tenon. The tenon is a tapered cone that begins at 1-1/16" in diameter and tapers to 5/8" over 3". The legs are laid out on the underside of the top in the same manner as the other drinking table. The only difference is that you have six legs instead of three.

---

“Given the teeming riches of the whole earth to play with, brought to us by the modern enterprise of science and commerce, we tend to leave neglected the possibilities of our own hands and brains. It is so easy not to use them when so much is done for us. But the more we develop our own powers of doing and creating, of training our hands and our minds, the more sturdily do we set our faces against being mere ciphers and not men.

We may not have a success that can be measured in terms of money, but we shall find our own fulfillment in terms of living.”

— The Woodworker, Chips from the Chisel, 1937, page 255
The sightline is the line from the mortise location to the centerpoint of the top. The resultant angle is a mere 5°.

The mortises are created with a 5/8”-diameter auger bit and a tapered reamer. The tenons are finished with a tapered tenon cutter. You can wedge and glue the legs in place, or skip the adhesive and make the table knock down for travel.

As I finished up the top I decided to add a butterfly key to help keep a check in the top in place.

Sidebar: Stabilize a Split with a Wooden Key

Most repairs to furniture during the construction process are a drag because I am kicking myself for making an error in the first place. But that’s not so when adding wooden keys to a slab tabletop. Thick wood such as this oak tends to split. And left unchecked, the
split can continue to open during the seasonal expansion and contraction cycle. The traditional fix is a wooden key that looks like two dovetails kissing. Or a butterfly. Or a unicorn sparring with its sacred mate.

While I am sure someone has written rules and regulations regarding wooden keys, I have yet to read and obey them. I make mine so they have the same slope as my dovetails, and they are thick enough to reinforce the slab.

How thick? I'm patching a split in some 12/4 oak in this example. My key is about 1/2” thick. Depending on how I feel, I might put a key on the underside as well.

Note that there are less traditional ways to keep a split in check. Try countertop connectors – sometimes called “dog bones” in the trade – or

Room to chop. Bore out some waste to make the chopping easier. The holes also act as depth stops.
pocket-hole screws that span the split. These metallic fixes have the advantage of being adjustable. I know, I know; fetch your torch and pitchforks.

Saw out the key from a stout wood. I used a scrap of bog oak for this repair. Clean up the sawblade marks with a chisel and ensure all the key’s edges are 90° to the faces.

Clamp the key across the work with the narrow neck right over the split. Then trace the shape of the key using a marking knife or a sharp pencil. Remove the key.

Root out the waste. I like to bore a couple holes with an auger to get the process started. Then I chop out the rest of the waste with a chisel. Stay away from the knife lines until the end. Resharpen your chisel and pare to the knife lines. This mortise took about 15 minutes to bore and chop.

Check the walls of the mortise with a small square. They should be 90° or slightly, slightly undercut. Clean up the bottom of the mortise.

Clean the floor. The bottom of the mortise is where the patch gets its strength. So get it mostly flat. I always leave a couple low spots for excess glue, however.
with a router plane if your chiseling left it rough.

Then put some glue in the mortise and tap the key in. Plane it flush. It shouldn’t require clamping (but clamp it if it does).

I try to keep the process simple. There are lots of variants on this procedure – you can bevel the edge of the key to create a cork effect, but you better practice that first before jumping in.

Finished. As you can see, the fit isn’t perfect. One knife line got a little rounded over. And a tiny speck of grain popped out. The slab can shift around when you insert the key. However, after some planing, some finish and a little black wax, it will look seamless.