A few years ago, I decided to take an early retirement package that would have me working halftime starting in the spring of 2018. As part of my long-range planning, I knew I wanted to start a long-term furniture project and eventually settled on making a Windsor chair for each of my two adult sons. This is the story of that project, of the teachers who made it possible, of the accessories I built to complete the chairs, and of lessons learned along the way.

In 2011, I made my first sack back Windsor in a week-long course at Mike Dunbar’s Windsor Institute in Hampton NH. Mike had a time-tested method to lead 15 students through 4-1/2 days and graduate with a chair to take home. During that time, we used the tools of the chairmaker’s trade to shape parts, work with compound angles, tapered mortises, and steam bending. I also came to appreciate the ingenuity and beauty of the lightweight, strong, and flexible design as well as the woodworking challenges that they present.

Nearly each joint is unique. There are no 90-degree angles, some of the round mortises are tapered, some are not. Sometimes you are drilling into the flat surface of the seat and sometimes into a tapered leg. Some round parts are turned, and some are shaved by hand. Some glue-ups are leisurely, but others are frantic, such as fitting nine joints simultaneously involving a bentwood round bow under tension. I can attest that both the bow and the chairmaker get pretty tense at that stage of the process.

Sackbacks use three species: In Dunbar’s design, the seat is pine; the legs, stretchers, and front arm supports (“stumps”) are hard maple; and the spindles, bow, and arm are white oak. The characteristics of each species suit them for their different roles in the chair. Each species presents its own joys and challenges. In short, there are plenty of learning opportunities.

Part of Mike’s methodology was to supply all the turned components and the split rough stock for the spindles, bow, and arm rail. He circulated a tool list in advance, but we also used his tools for some of the rarer items. I already owned some of the needed items, purchased a few more before the course.
We also used his benches, steam box, and bending forms, not to mention his helpful and able sidekicks, as well as daily instructional handouts. So, while each student made a chair, we were very well supported by the Windsor Institute. Following the course, I bought an updated edition of Mike’s book, which is listed in the references at the end of this article.

Two years later, with considerable help from local master Chris Nassise, I made a second chair. Chris runs the Green Woodshop in North Easton, conveniently located between my home and Stonehill College where I taught for many years. He also now is the resident cabinetmaker at Old Sturbridge Village. Some of you may remember Chris’ presentation to the Guild at Woodcraft in Walpole in October 2019.

For this 2013 chair, I bought the turnings online from Dunbar, the 8/4 pine from a local lumber supplier, and worked with Chris to rive oak from his log pile. Compared to the week in NH, this chair took considerably longer to complete. Between weekly visits to Chris’ shop, I did much of the spindle and seat preparation at home refining my skills with drawknife, spokeshaves, scorp, travisher, and compass plane.

Chris supplied the expertise, shave horse (for shaping spindles, bow, and arm), steam box, and bending form. He guided me through some of the trickier tasks and we produced a second chair over a few months.

For my glidepath into retirement, I wanted to make these chairs largely by myself, from the floor up, so to speak. Rather than purchase turnings I wanted to make my own from green maple. In the early fall of 2016, a neighbor was having a mature maple removed. The arborist was glad to drop the trunk into my yard, and I gradually cut it into 2-foot sections and split out billets for the turnings. After some practice and study of videos and written explanations, I turned enough legs to harvest 8 that were pretty good matches. If you have done some turning, but never with green wood, do yourself a favor and give it a whirl. With sharp gouges, you’ll soon find your arms and shoulders covered with long, linguini-like shavings. It’s a blast.
After a few months, I produced the turned parts, and they spent some time drying in my shop-built kiln. The kiln began life as a storage chest that my father built in the 1950’s. I added some insulation, ventilated shelving, and a light bulb.

Honestly, the turnings were not perfectly matched, but they were mine. I also had it on good authority that minor differences vanish once they are in the chair, so I turned my attention to riving, whittling, and bending some oak. Unfortunately, neither I nor my neighbors were cutting down any white oaks, so I called Chris Nassise and for guidance.

As luck would have it, Chris had just taken delivery of several nice straight trees and we spent a fun morning together selecting, cutting, and splitting stock for all of the white oak parts, including surplus material for practice, mistakes, and unruly grain. With the chain saw, we pulled out one 4-foot and a couple of 2-foot logs, which we then split with wedges and a froe. After some vigorous negotiation, I persuaded Chris to let me pay him a reasonable price for the wood and his time.
Each chair needed 7 roughed-out spindles approximately 24” long, a 45” bow, and a 45” arm rail. These are dimensioned and shaped with the drawknife, bench plane, spokeshaves, and – for the bow, which is circular in diameter – a hollow plane to bring it to final shape. Although Dunbar vehemently opposes the use of a shave horse, Chris taught me to use one and I find that I have more control of the work riding the horse. Besides, since I never realized my childhood dream of becoming a cowboy, the shave horse is as close as I get.

After many meditative hours, and large piles of oak curls, not to mention plenty of time at the sharpening station, the oak stock was transformed. Spindles went into the kiln, and the longer curved parts into the shop-made steam box and bending form. This project definitely improved my sharpening techniques, as well as my confidence in attaining a sharp edge.

For an earlier project, I had built a steam box from 4” PVC pipe and a used Wagner wallpaper steamer (yay eBay). As with so many shop projects, there are dozens of designs available on-line. This design was a bit of a hybrid, but it does the job inexpensively and safely. A steam box can remind you that sharp tools are not the only injury risk in the shop.

Following the directions in Mike Dunbar’s book, I built a bending form from some scrap plywood, 2 x 12 pine, and lengths of dowel. Having done a small amount of bending in the past, I anticipated some breakage and had prepared 3 bows and 3 arm rails. Sure enough, I busted 1 of each, but with a little CA glue I ended up with a pair of each. To preserve the bends while the pieces air-dried, I tied them off and hung them up to air dry before starting on the seats.
The oval seats are made from nearly clear pine from Barney & Carey Co. in Avon, MA, edge glued into a blank approximately 16” x 21”. The seats are carved with a sequence of tools and eventually drilled to accept the undercarriage and the spindles. The reigning Windsor chairmaking authorities differ on the optimal sequence of drilling and carving. Mike Dunbar had us dish out the seat prior to drilling the compound-angled holes for the legs as does Curtis Buchanan (sometimes), while Peter Galbert, and Greg Pennington drill first and carve after. At this point I had some momentary paralysis from conflicting multiple sources. Then I concluded that both sequences must work, and that I was more comfortable drilling into a horizontal, flat surface.

At this point, I might also mention that in Dunbar’s shop we used cordless drills, but in the hope of making my mistakes more slowly, I chose to use a brace and bit. With limited success, I also used spoon bits as well as the more common auger bits. Spoon bits make round bottomed holes, and they allow easy adjustment of the angle of attack. Plus, you don’t have to worry about the lead screw poking through the far side of a leg. However, I still have not mastered the art of starting a spoon bit in a precise location. So, I cheated and started some holes with an Irwin augur before switching to the spoon bit. More practice with spoon bits is on my to-do list, but I’m getting ahead of myself.

Just as there are different acceptable sequences of drilling and dishing a seat, there are basically two ways to achieve consistent and accurate compound angle mortises. One uses a pair of bevel squares set to the desired front-to-back and side-to-side (rake and splay) angles. You set these bevel squares perpendicular to one another along the principal axes of the seat. As you drill, you pause frequently to compare the angle of your bit to the two squares.

The second approach relies on some computation or published tables to identify a sighting angle on the surface of the wood and a resultant angle at which you set one bevel square. Aiming along the sighting angle while holding the bit at the resultant angle achieves the exact same rake and splay, but you only need to match one bevel square. This is simple and less prone to error than using two squares.

Always willing to make a new tool or jig to complicate a simple task, I just had to try Greg Pennington’s method of using two cheap laser levels instead of the pair of bevel squares. Rather than frequently comparing the shank of an auger to the bevel gauge, you simply keep the intersecting red laser lines on the drill. If both lines are on the brace and bit, you are dead on, as shown in the picture below (working with a test piece).
After boring the through-holes for the legs, the holes need to be reamed at the same angle to accept the tapered legs. I used a Veritas Pro Taper Reamer, which fits into a bit brace, once again guided by the Pennington laser set up. It worked beautifully.

With leg holes drilled, I began shaping and carving the seats. The edges are formed with a drawknife, smoothing plane, and spokeshaves. Ideally, dishing the surface begins with an adze. Not owning one, I jumped ahead to the scorp, which made short work of establishing the rough concave shape out the seat. By the way, you’d be surprised by the number of guys (always guys) who volunteered their bottoms as models for the ideal seat shape. I declined those offers politely.

After the scorp, the dish is refined with a compass plane, travisher, scrapers, and sandpaper. As with any carving operation, this is an exercise in reading grain direction and adapting frequently. One seat had a buried pitch pocket, which I excavated and inset a bowtie Dutchman. After fussing with the carving, I eventually confronted the frightening reality that it was now time to assemble the chairs.
The process of more drilling, reaming, fitting, fine-tuning, and (gasp) gluing the parts together is too complex and lengthy for this article, but there are plenty of good books and videos on the subject. It is a test of patience and persistence and was aided considerably by having a finished chair (Dunbar #1) in the shop for comparison. The pictures below show some key moments in assembly.

The flexibility of the oak introduces allows for some last-minute adjustment, but maple is more demanding. Thanks to Jim Russell’s encouragement, I opted for hot hide glue—it’s traditional, forgiving, reversible, and refreshable. This was another first for me, and I’m sold. As a first timer, I found that a hair wax warmer (under $35) was sufficient for preparing small batches of glue. It made a huge difference in mounting the bow, where I needed to step back, remove all of the glue, and start again.
The project was tremendously satisfying, and my sons are very happy with these gifts. As a transition from a full schedule of college teaching and advising students, this hand-tool intensive, long-term woodworking project was just the ticket.

Annotated References
Buchanan, Curtis. “Make a Continuous Arm Windsor Chair.” YouTube playlist, 2014. Available at https://www.youtube.com/playlist?list=PLL_KlogKd1xf9UJX8hAKniXGubxYKbYI. Curtis has several free playlists demonstrating the construction of several Windsor varieties.


Dunbar, Mike. “Make a Sack Back Windsor”. YouTube playlist, 2019. Available at https://www.youtube.com/playlist?list=PLtL0GJIVbd5Eof17cJEfMpzo5AZysN1k. This is a free series that essentially reproduces the course that Mike taught for many years. Think of it as Windsor 101.

Dunbar, Mike. Make a Windsor Chair with Mike Dunbar. Popular Woodworking Books, 2013. The print version of the sackback course, plus instructions for a continuous arm Windsor.

