Taming Wild Wood
A three-prong attack for sanding less

By Craig Godsey and Joe Hurst-Wajszczuk

Curls, stripes, flecks, and eyes in wood can be attributed to many factors, but they have at least three things in common. First, most are difficult to machine without tearing out large chunks. Second, woodworkers will pay more for the pleasure (or pain) of working with them. Last, but not least, any frustration disappears the instant you apply the first coat of finish.

A drum sander can help big-time, but there are other ways to achieve the same smooth surfaces for less money, and with less dust. The secret: a combination of becoming more proficient with tools you already own, and making a few minor investments to tackle the major troublemakers.

Following is a simple three-pronged approach (Plans A, B, and C). The benefit to these lies in their simplicity and flexibility. Wild wood will always be a wild card; what works on one board may not apply to another. In most cases start with Plan A before B or C, but you can adjust the plan to suit. Should you encounter figure that fights back, you can always fall back to the last resort—sanding.

Bird’s-Eye, Curly, and Crotch, Oh My!
Meet the cantankerous culprits commonly found in some native American hardwoods.

**Bird’s-Eye**—Localized indentations of growth rings running perpendicular to the surface. Prone to popping out.

**Curly**—Grain that undulates at right angles to the wood’s surface. A thickness planer’s favorite chew toy.

**Crotch**—Where limbs branch out on a trunk, creating a flame-like appearance. Diverging grain creates surfacing and jointing issues.
Plan A: Master your machines

Following an initial flattening on the jointer (where some tear-out is acceptable) most boards are then fed through a planer. This is where figured woods start fighting back. Adding a back-bevel to your knives, or upgrading to a spiral cutterhead jointer, can help but these easier and less expensive alternatives can improve your equipment while achieving more satisfactory results.

Start with a fresh set of sharp planer knives. Next, set the cutterhead to make super-light cuts, between \( \frac{1}{32} \)" and \( \frac{1}{64} \)". Feed the stock into the planer so that the grain runs downhill, but if you encounter major tear-out, try feeding the “wrong” end first. With figured boards, all bets are off. You can also try feeding narrow boards in at an angle. Skewing a board effectively lowers the cutting angle, like walking diagonally up a hill. This is the opposite approach to back-beveling which actually increases the cutting angle (see Figure 1: Angle of Attack on page 66), but in some cases, it works.

Wetting the stock is a cheap and surprisingly effective solution as well. A basic 50/50 mix of fabric softener and water helps soften and swell the wood’s surface fibers so that they cut more easily and tear less, as shown in the bottom photo below. Simply spray then wait a few minutes for the water to sink in before planing.

These tips will reduce tear-out you would otherwise expect from a thickness planer, but may not eliminate it completely. From here, you can use Plans B or C to do localized cleanups, or spend some quality time with your sander and resulting dust.

Power Planing Summary
Speed: Fast.
Skill: Easy.
Surface Quality: Great to gosh-awful.
Notes: With sharp knives, light cuts, and a little luck, you can usually keep tear-out to a correctable level.

Smother Sawn Edges

Tear-out at the jointer isn’t always a major problem when flattening face-grain, but it can be troublesome when preparing edges for a glue-up. Back-beveled knives and/or skewing the stock can tame some tear-out, but a simpler solution is to stick with your saw. With a good blade, like Freud’s Glue Line Rip (Woodcraft #825271) and a carrier board like the one shown above, you can achieve a glue-ready joint regardless of grain.

To make this jig, you’ll need a carrier board slightly wider than your stock, a straight scrapwood fence, and a few hold-downs. Screw the fence to your carrier board so that the stock hangs over the edge. Once you obtain one straight edge, you can rip the board without the jig to “joint” the opposite edge.

Misting tough boards with a water and fabric softener solution softens surface fibers so that knives do more slicing than tearing.
Plan B: Break out the block plane

There will come a time when you’ll need to pull the plug. Hand-planes are more than a nostalgic return to the good old days. Hand tools shift your perception from your eyes to your fingertips; you’ll feel changes in grain direction long before you tear too much. The plane’s blade is narrower than your planer’s knives, which means more work for you, but, due to the blade’s width, you can switch directions several times across the width of a board to deal with gnarly grain reversals.

A suitable smoothing solution may already be in your apron or toolbox. Any well-tuned block plane offers flexibility that you won’t get from a bench plane. The difference rests in the orientation of the blade. Bevel-up planes, such as one-handed blocks and specialty planes such as the Lie-Nielsen’s low-angle jack, support the blade right down to the surface of the wood. This minimizes vibration, or chatter, that can occur when slicing through dense stock. But, the most significant advantage to the bevel-up design is that you can regrind the blade to change the tool to suit your stock.

You don’t need a degree in wood science to appreciate the basic principles behind cutting angles. Lower angles slice but sometimes split; higher angles slice and scrape. To see the relationship between bevel and pitch, refer to Figure 1, above, right. Invest in a few extra blades, and you’ll discover how a few degrees can make a big difference.

Straight out of the box, most block planes start with a 25° grind. This angle is good for slicing cuts, end grain and most long grain work, but can tear out figured stock. Closing the mouth controls some tear-out by holding down fibers until they reach the blade, but grinding a different bevel changes everything. As shown, grinding a 35° bevel changes the pitch to 47°. This angle is similar to a standard bevel-down bench plane. Add another 5° to the bevel and you now have a high-angle plane that’s capable of cutting through most woods with very little tear-out. You can try even steeper bevels (or grind off the bevel entirely to create a scraper plane), but as your pitch approaches 60°, the blade becomes a real pain to push. Considering the effort and the loss of surface clarity, your best bet is switching in a toothed blade (below) or going to Plan C.

Figure 1
ANGLE OF ATTACK (AoA)

<table>
<thead>
<tr>
<th>Bed Angle + Blade Angle = AoA</th>
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<tbody>
<tr>
<td>25.0</td>
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37° AoA: Good for End Grain
47° AoA: One-handed Bench Plane
52° (to 57°) AoA: High Angle Tough Grain Tackler
62° AoA: Quasi-Scraper Plane

Toothed Blades Slice Through It All

A Lie-Nielsen toothed blade looks like a step in the wrong direction, but for fighting really difficult grain, it’s one of the fastest and most controllable ways to obtain a smooth, tear-out-free surface. The back edge of the blade has a series of parallel grooves that create sharp, square teeth that cut the fibers before they have a chance to lift or tear. A toothed blade is especially useful for working past damage left by other tools. Plane diagonally across the grain from one direction and then repeat from the opposite diagonal. The blade works like a depth-controlled rasp, leaving a lightly checkered surface that’s surprisingly easy to smooth with a scraper or 120-grit sandpaper.
Plan C: Scrape then sand

The term “scraper” is a misnomer. The burred, or sometimes square-honed edge, performs like a high-angle cutting tool; and, because the wood fibers are sheared off at the edge of the blade, tear-out is almost nonexistent. While scrapers cost less than thickness planers or hand planes and are a cinch to set up, scraping is slow, and maintaining flatness a challenge, so tackling a tabletop may be asking too much. Cabinet and card scrapers prove handy to touch up tear-out left from Plans A or B.

Don’t let the fluffy shavings lull you into a false sense of security; focus on one spot for too long and you can create a divot that will show up after finishing. To avoid that problem, consider using a card scraper for small spots and a cabinet scraper for heavier chores. The cast-iron body holds the blade at a constant angle while the sole lets the blade shave down bumps and ride over valleys, like a plane. There are several versions now available, but the simple fixed-blade body models, such as older Stanley No. 80 or WoodRiver (Woodcraft #149157), are both good tools to start with.

The only trick to using scrapers is preparing the edge. Preparing a cabinet scraper is a simple three-step process. First file and hone the edge at 45° as shown in Photo 1. Next, clamp the blade into your vise, wipe a drop of oil along the bevel, and use a burnisher to turn the sharpened edge away from the bevel by about 5°, as shown in Photo 2.

After a few passes, you should be able to feel a metal lip on the back side of the blade. Slip the blade in so that you don’t damage the burr. Next, rest the front of the scraper on top of a piece of paper and tighten the screws as shown in Photo 3. Use the thumb screw to flex the center of the blade for very finely controlled shavings. Cabinet scrapers are usually easier to push than pull. (Pulling works, but it’s more difficult to apply the pressure needed for consistent cutting.)

You’ll still need to reach for the random-orbit sander to finish the surface. But the time saved from having to sand, and the stock you saved from terrible tear-outs, will give you confidence to add more figure in future projects.

Scraper Summary

Speed: Faster than a belt sander, not as fast as a drum.
Skill: Looks tougher than it is.
Surface Quality: Nothing a little sanding can’t clear up.
Notes: Don’t underestimate the basic burr. Scrapers can smooth out grain from any direction.

Prepare Your Scraper

1. Use a beveled wood block to file and hone the blade to 45°. The angle isn’t critical, but the block helps keep things consistent.
2. Rest one hand on the bench to control the burnishing angle. You should feel the burr after three to five passes.
3. Position the front edge of the scraper on a folded sheet of paper to allow the blade to project more for a deeper cut.
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