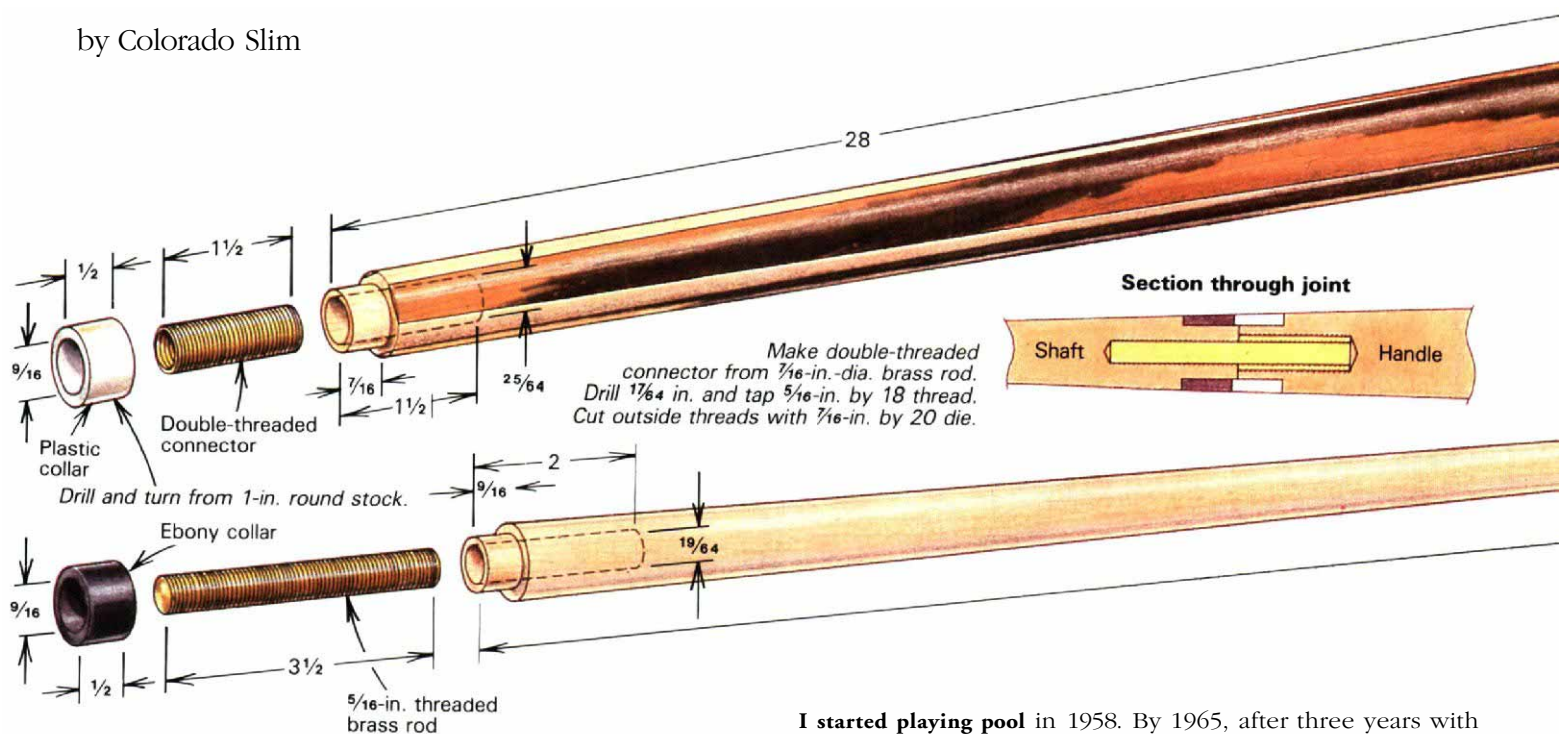


Turning a Pool Cue

A hustler shares his secrets

by Colorado Slim



It was a hot, dry August day, and we were shooting nine-ball for dollars at The Wheel, a little cowboy bar in Estes Park, Colorado. The three of us were definitely in our stride by mid-afternoon when a new guy walked in, saddled up to the bar and ordered a beer and a shot. After a while, he just seemed to fade into the crowd.

Jimmy caught the guy's side glance at the pool table. "Hey, Slim," he said under his breath, "I think maybe we got ourselves some action here. How do you want to play it?" If I turned around I'd play my hand, so I waited for my turn on the table to get a better look. Cody was on a roll, and I began to wonder if he was going to scare this fellow off before we'd had a chance to see his dance. Cody wowed the crowd with a three-rail slice into the corner and calmly asked if we'd like to up the stakes. "Nice shot, cowboy," I said as I got up to rack the balls.

The new guy was a real sleeper. He looked good from a distance; almost indifferent, but confident. He was laying back just checking things out. One thing for sure, he was learning more about us than we were about him and that didn't sit good with me at all. Got to get him off that stool before the stakes get too high and he runs. Got to see him bridge that cue—just once—then I'd know for sure. It was time to put on the squeeze.

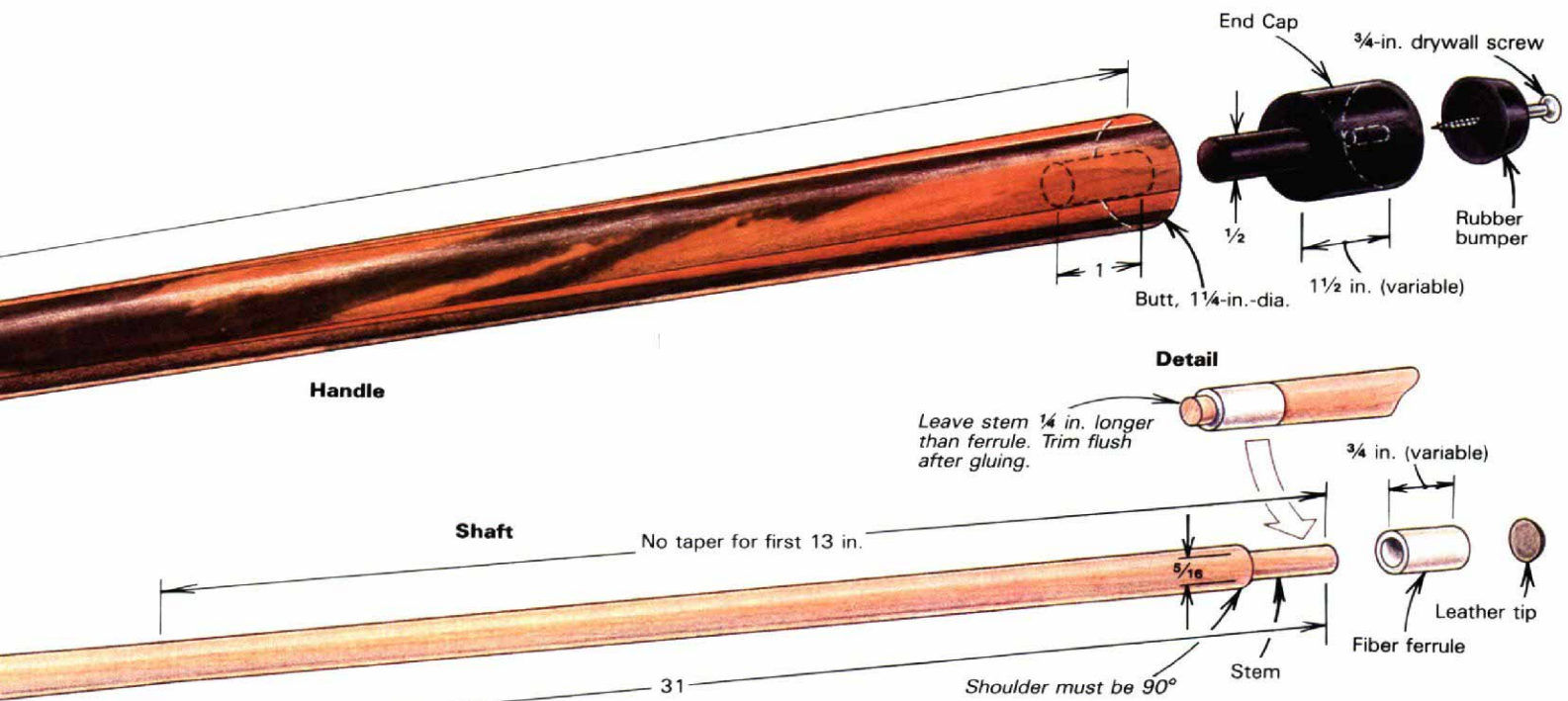
I slipped Jimmy a twenty that I'd folded around a dime and whispered, "You're out." (The twenty was for beer. . . the dime let him know he'd get ten percent of the take.) "OK, Cody, \$5 and \$5, with re-spots only on the nine." I said. If I lost, it was on my shoulders. Cody was ready to flip for the break when the new guy finally opened up. . . "You fellows want a third?"

I started playing pool in 1958. By 1965, after three years with Uncle Sam, I was hot stuff. I made my first cue stick in 1970. It was a beauty—rosewood, maple, ebony, purpleheart, mother-of-pearl inlays in the handle—everything I'd seen in other cues, and more. The shaft was the best part; bright red padauk. When I walked into a hall with that stick it was "eyes RIGHT!" It didn't matter if I was good or not; this was a lesson in intimidation. Unfortunately, the first time I opened up a full rack there was a sickening sound of splintering timbers, and there I stood with toothpicks all over the table and a large red spike lodged in my left forearm. Red wood, red blood and a red face. Like most other lessons in the game of pool, this was a hard one to learn.

My second cue had two straight-grained sugar maple shafts—one with a tip diameter of 15mm for 3-cushion billiards, and a thinner shaft with a 13mm tip for snooker and the standard money games of 9-ball and one-pocket. By this time I'd worked out this slick design for a self-aligning and self-tightening connecting joint. What I hadn't worked out was how to make that "star joint" in the handle of commercial sticks. I had soaked open an old cue in my parents' bathtub to check out how that joint was made and concluded that some frustrated engineer had mis-spent his youth hunched over a drawing board. The star joint was out.

Unlike my first cue, this one was a real "lady," perfectly balanced and, best of all, it practically shot by itself. The acid test came with a rack of 15 little red snooker balls and a billiard ball used as a shooter. I spent an hour one afternoon splattering those little devils all over the poolroom and never once did that stick buckle or split.

Over the years, I've made a number of sticks for different shooters. The easiest part is the turning, which can be done by any decent spindle turner. The hard part is trying to figure out



what the client wants, or thinks he wants, in a stick.

The sticks I make have a "European taper," meaning that the diameter of the shaft remains equal for a distance of 13 inches back from the point of the tip. Then the diameter expands in a straight line directly to the butt of the handle. This way the shooter experiences no increase in shaft diameter as he is stroking through his shot. With an "American taper" the cue tapers in a straight line from the tip to the butt. The shaft gets larger in diameter as it passes through the bridge hand, and this draws the shooter's attention to the stick instead of his game.

Threaded brass connectors—a double-threaded connector in the handle and a threaded rod in the shaft—fasten the shaft and handle together. I make these from brass rod using standard taps and dies. With the aid of the "dummy bar" and "dummy rod" driving jigs shown on the following page, I can chuck up the connectors without damaging the threads. I don't glue the connectors into the cue so, as the joint "settles" with use, it tightens by virtue of the direction of the threads in each element.

A good cue joint should act like a shock absorber to dampen the impact of the cue and the ball. I use a collar of ebony at the end of the shaft which butts up against a plastic collar at the receiving end of the handle, as shown on p. 69. The plastic simply rebounds with the impact of each shot. Using a skew, I turn the plastic collar from a length of 1-in.-dia. Delrin Acetal rod (available from AIN Plastics, 249 E. Sandford Blvd., P.O. Box 151, Mt. Vernon, NY 10550).

The key to a well-balanced cue is equal distribution of weight (mass) throughout the stick. The total weight of the cue (between 15 oz. and 21 oz.) is a matter of preference, but a lighter stick is usually used for snooker, a heavier one for 3-cushion billiards. I've seen big guys use light sticks and little fellows use heavy ones. If the balance is correct, it really doesn't matter. I use a 3/4-in.-square maple core for the handle of sticks in the 15 oz. to 18 oz. range, but will switch to a rosewood core for those in the 18 oz. to 21 oz. range. If weights must be added, they should

be placed in both ends of the handle, not just in the butt end. Weight holes can be drilled into the handle just below the double-threaded brass connector, and into the butt end just ahead of the end cap. Each hole receives half the amount of lead to be used, resulting in equal distribution of the added mass throughout the handle. The weights must be glued in place, but don't get any glue on the threads of the brass connector.

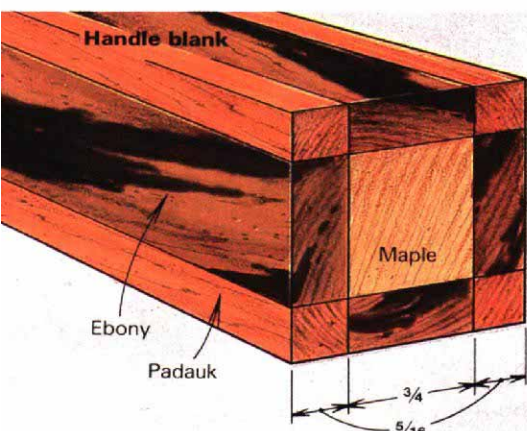
The handle design shown here reflects the influence of the star joint. Starting at the butt, the padauk laminates taper to a point near the middle of the handle, where they finally disappear. At this same point, the edge of the square maple core piece begins to emerge from beneath the ebony, creating a mirror image of the padauk as the maple extends toward the joint. Laminated handles can easily become more elaborate. I don't mind a few inlays for glitz, but I've seen some cues that look like rejects from a tattoo parlor and I was not impressed.

The drawing on the next page shows how to glue up the handle blank. After jointing the pieces, I smooth up the mating surfaces with a cabinet scraper before gluing. I use Hot Stuff cyanoacrylate glue (available from Craft Supplies USA, 1644 S. State St., Provo, Utah 84601) as it bonds well with exotic woods, but epoxy may be just as good. Make sure that clamping pressure is distributed evenly along the length of the blank.

By means of a jackshaft setup, I can reduce the speed of my lathe down to 36 RPM or 50 RPM so that I can drill and thread the brass parts on the lathe with the aid of a 3-jaw engineers' chuck and a drill-press chuck in the tailstock. I cut outside threads with the die chucked in the 3-jaw and the brass rod in the tailstock chuck. The inside threads on the handle insert are cut with the tap in the tailstock chuck. If you don't want to gear down your lathe, drill the brass at your lathe's slowest speed then rotate the 3-jaw chuck by hand to cut the threads.

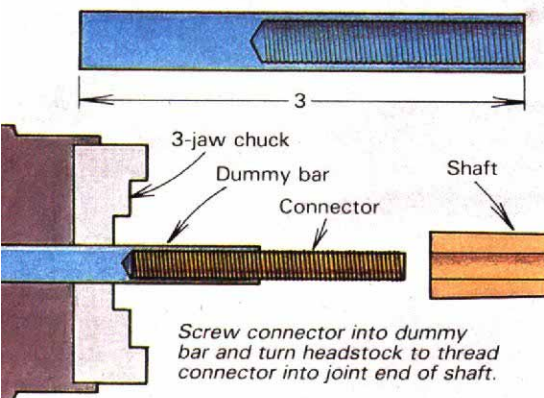
To keep the turning from whipping around as it gets thinner, I've rigged up a steady rest made from a pillow-block bearing, shown in the photo on p. 69. I turned maple sleeves to fit the inside of the bearing. Each sleeve has a different sized hole in the center to fit over different diameters along the tapered shaft and handle.

As with any spindle turning, I work from specific lengths and



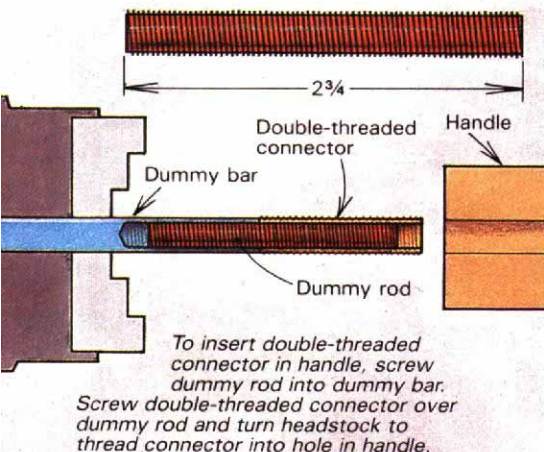
Dummy-bar driving jig

Make dummy bar from $\frac{7}{16}$ -in.-dia. brass rod. Drill with $\frac{1}{8}$ -in. twist drill. Thread with $\frac{5}{16}$ -in. by 18 tap.



Dummy rod

Make dummy rod from $\frac{5}{16}$ -in.-dia. brass rod. Thread with $\frac{5}{16}$ -in. by 18 die.



Turning the handle

Glue up the blank as shown in the drawing at left. Glue and clamp the ebony strips to the maple core two at a time, then glue the padauk strips in the corners. Next, drill the connector hole in the joint end. Chuck a $\frac{3}{8}$ -in. drill in the 3-jaw chuck, hold the joint end of the blank with one hand and bring the tailstock center up against the butt end. Turn the tailstock handwheel to advance the handle blank into the drill. Chuck up the dummy bar, dummy rod and the double-threaded connector as shown in the drawing (bottom, left), and thread the connector into the handle at a very slow speed (top, right). Chuck the handle by the connector and turn the handle to size. For final cuts, draw the skew toward you for a more accurate taper (below). Turn down the joint end (right) and glue on the plastic collar. Replace the tailstock center with a Jacobs chuck and drill the butt for the end-cap tenon. Glue on the end cap and trim with a skew. Sand with the grain using 320-grit paper and apply finish.





The shaft and handle join with a self-aligning, self-tightening joint which consists of a threaded brass connector in the shaft that screws into a female brass connector in the handle. The $\frac{1}{8}$ -in. maple shoulder on the end of the shaft (right) fits into a corresponding recess on the end of the handle.



Turning the shaft

Support the rough-turned shaft blank with the steady rest (shown at left) and bore a $\frac{1}{8}$ -in.-dia. hole for the connector. Next, chuck up the dummy bar and connector, as shown in the drawing on the preceding page (left, center), and thread the connector into shaft. Turn the shaft, then fit the ebony collar. Sand with the grain and apply the finish, then turn the tip for the ferrule (right).



diameters in the critical areas of the cue's parts. I then use a straightedge as a guide in the roughing stages, but the final turning is done by eye. I rough out the shaft and handle with a $1\frac{1}{2}$ -in. spindle gouge at about 600 RPM, then finish turn with a $\frac{1}{2}$ -in. skew at 2,000 RPM. In the final stages, I draw the skew toward me instead of pushing it away. With the palm of my left hand I can feel all the imperfections on the surface before they reach the edge of the skew. Also, I'm less likely to make mistakes with my hands moving toward my body than if they were extending away to the outer limits of my reach.

I turn the shaft in progressive stages between centers, allowing the wood to dry and settle out between each stage. Several weeks may go by before the wood is ready to be re-turned, depending on how soon it reaches moisture equilibrium. To compensate for warp between stages, I sometimes have to relocate the center points slightly when I remount the spindle. When the shaft is straight, about $\frac{3}{8}$ in. dia., and doesn't deflect or buckle when struck solidly on the tip end with a rubber mallet, I drill the hole for, and install, the brass connector. With the connector (protected by the dummy bar) in the chuck, I finish turning the shaft.

Care must be taken that the holes in the shaft and handle for the threaded brass connectors are exactly centered. This can be done by using the steady rest to begin the initial boring operations. The ebony and plastic collars, as well as the end cap, can also be turned and drilled from longer stock in the same manner. All these parts must fit so exactly that they "slip" into position. If they must be press-fit they are too tight and the collars will eventually split. Glue should be used, but not to fill gaps from a sloppy fit.

The end cap of the handle may be made from a variety of exotic woods, depending on personal taste and whether you wish to add or subtract a little weight in balancing the cue. The actual amount of weight involved will probably be no more than $\frac{1}{2}$ oz. The end cap is turned with a post about 1 in. long, which is later glued into a hole drilled in the butt end of the handle. Again, proper centering is essential.

Turning the end of the shaft to receive the ferrule is something

I always save for last, and it must be done with absolute perfection. I use a fiber ferrule that comes pre-drilled to $\frac{5}{16}$ in. (Ferrules, tips and rubber bumpers are available from Penn-Ray Sutra Corp., P.O. Box 1088, Bensalem, Pa. 19020.) Turn the maple stem with the skew to the exact diameter of the hole in the ferrule and $\frac{1}{4}$ in. longer than the ferrule itself. Slip on the ferrule and turn the exposed end off flat with the point of the skew. Then reverse the ferrule and check that it fits perfectly square to the shaft. If it doesn't, the ferrule will split with use. Glue it in place and turn down with the skew to match the shaft diameter. True up the end to receive the leather tip and trim off the $\frac{1}{4}$ in. of maple protruding from the center. The tip can now be glued on with contact cement. Score the surfaces of tip and ferrule with a sharp knife for additional traction, coat each surface, let dry, then attach. Beat the tip down with several strikes of a hammer to ensure a perfect bond. I always use an oversized tip and then turn off the excess with the skew by remounting the shaft on the lathe using the brass dummy-bar in the 3-jaw chuck and a cup center against the tip in the ball-bearing center. This avoids sanding the leather tip and can be repeated whenever a new tip is needed.

The finish on any pool cue probably relates more to the desires of the shooter than to any prescribed formula. Most people want the pores of the wood to be sealed so that the wood won't discolor from use. Any hard urethane sealer will work, but be sure to remove the high gloss with 0000 steel wool so that a sweaty hand won't stick to the shaft. Waterlox is another good product which I cut with 50% naphtha, applying many coats. My original stick (the 2nd one) has no finish at all on the shaft—just sweat, grime and a slight greenish hue from years of chalking the tip. It has a beautiful patina and still feels like satin. I don't know if that makes it a better finish than others, but for all the nerves I've rattled with it over the years, who cares? □

Colorado Slim is the pool-hall alias of a retired hustler who now turns wood for a living.