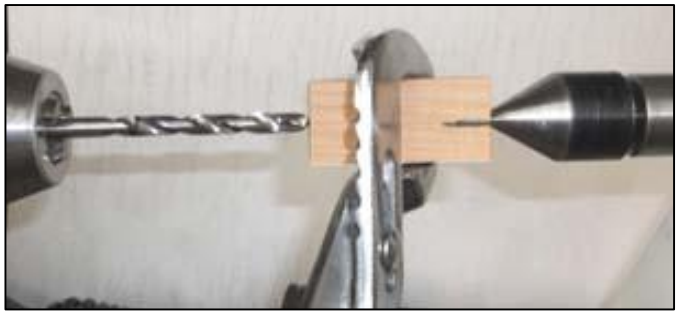
The Pen Turning Demonstration - Jon Simpson - November 2nd 2012

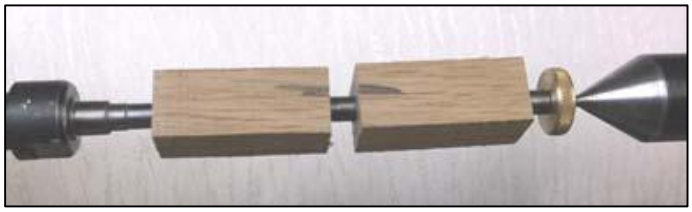
First, none of what I say is either right or wrong, it is simply my way, and it works for me. Second, a lesson taught to me by Nick Arnull, it sounds silly, but it is most important. Learn to breath calmly and deeply while you are turning, it will allow you to relax and you will always make a better job of what you are doing. The tools I use for pen turning are a pencil sharpener and a strange pointy thing, these are also known as a bevelled edge skew chisel and small point tool. Nothing else is needed. There is a myriad of pen kits available to the woodturner, the ones I use regularly all come from Axminster. The product codes are Biro (310490), Pencil (310493), Roller Ball (810116), and Fountain Pen (500171). This write-up is going to concentrate on wooden pens, and a separate section will be found at the end explaining the differences you will need to allow for when using acrylic materials.

There is almost no limit to the wood you can use. Avoid soft woods and any amount of cross or curved grain, it can easily lift out at the ends of the barrels. Block sizes need to be about 3/4" square for biro's and pencils and 1" square for roller balls and fountain pens. Allow 1/4" overall extra length for cutting and trimming. Cut the block to size, then add a witness mark across the centre BEFORE cutting in half. The witness mark is there so you can maintain the correct orientation of both parts throughout the cut and build process.



When drilling, use a Jacobs chuck with the appropriate drill bit (7 or 10mm normally) in the headstock and a live centre in the tailstock. Move the tailstock to the left, to within 2mm of the drill point. Move the tool rest banjo to the right so as to touch the tailstock and lock it in place. Move the tailstock away. Check grain alignment in the blocks, and offset if required to achieve best presentation of the grain patterns, then centre point both ends of both blocks. Use water pump pliers to hold a block between the drill point and the live centre, drill through at about 400 rpm using hand pressure on the tailstock to advance the work. Always drill from end to centre.

Glue the brass liner tubes in. Fivestar Slip-Fit super glue allows good movement time to locate the tubes in the block correctly. With superglue you need to clean and rough up the tube surfaces then apply glue to them. I prefer Titebond Polyurethane glue, it has good bond and gap filling properties and sets in the presence of moisture, an inherent constituent of wood. Also, glue goes in the hole which is a lot less messy and no pre-cleaning is needed. Before inserting a brass tube into a glued hole, insert a potato plug into both ends of the tube, it will make the cleaning up stage a lot easier. Set the glued blocks aside for 4 or 5 hours to ensure the glue is set. Clean any glue overspill from the blocks and tubes, use a 1mm undersize drill to help with this.



Mount both blocks on a pen mandrel using the correct bushes as separators. Make sure you maintain the correct block orientation, and make checking it a habit. Turn both blocks into the round and parallel. Put the witness marks back on. This step is intended to create an outside surface which is parallel to the inner tube. Mount the blocks in a regular chuck to square all 4 ends with the point tool. These need to have a concave finish, not flat or convex. Cut back the ends of the blocks until the brass tube is clean, clear and visible. Mount the blocks back on the mandrel and turn both down to the finished size and shape. Make sure the barrel ends are turned down to the same diameter as the spacer bushes.

Wooden pens need to be sanded from 240 grit to about 600 grit. After sanding a set of wood blanks you should clean the mandrel bushes with thinners. After the sanding process they will be quite dirty, and this dirt will bleed into the pen barrel ends when applying sealers if not removed first. This picture shows dirt from the bushes on a tissue alongside the turned and sanded blanks.

Apply several coats of sanding sealer, followed by either friction polish or melamine lacquer.

When you take the finished barrels off the mandrel take great care to keep both pieces in the correct orientation, the witness marks have gone now.

I assemble pens using a set of fittings made to do the work of a commercial pen press. My method uses 2

hard wood plugs tapered to fit into the 2MT head and tail stock openings, and a metal bracket with a magnet on it. The rule to observe here is very simple, working between head and tail stock, press metal with wood and wood with metal, then nothing will get chipped or scratched.

With a wood plug in the headstock and the metal bracket on the tailstock, press fit the pen nib into the bottom barrel, then, using 2 wood plugs, insert the barrel twist mechanism with the centre ring already attached. Adjust the

insertion to get the correct protrusion of the biro point through the bottom of the barrel. DO NOT insert the twister too far, once inserted you will never get it out. Using a wooden plug and the metal bracket, fit the cap and pocket clip into the top of the upper barrel.

Push the two halves of the pen together and twist to align the grain patterns correctly, clean off the ball point, and make someone happy with a surprise present.

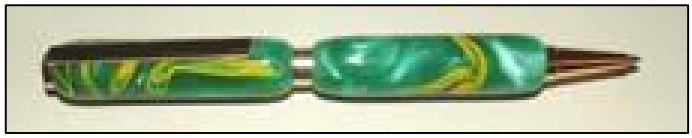
If I make an acrylic pen in the summer time, I have a fan running to help keep the work cool. Heat build up is your worst enemy. When working with acrylic blanks, the overall process I follow is very similar, with the following exceptions. For drilling I use a Jacobs chuck in the tailstock. Mark the block length on the drill flue and then mount the block in a chuck. Start drilling slowly and ensure the drill stays absolutely on centre, then drill right through taking time to clear swarfe from the drill flute frequently.
Keep an eye on the mark you put on the drill flute, and take EXTREME care at the point of break through to avoid star-burst cracking at the far end. Keep the speed low to help avoid heat build up.

Glue in tubes, round off, end mill and turn to shape all as per a wooden pen.

Before sanding an acrylic pen, use the edge of the point tool to remove all tooling marks from the blank, this will save you several hours of sanding.

I normally sand acrylic pens from 320 grit through to 12000 (twelve thousand) grit, followed by the application of burnishing cream. This may all sound a bit excessive, but the results are worth it.

Postscript - The best laid plans of mice and men often go astray: When preparing for this demonstration I knew that making 3 pens was going to be impractical unless I did some pre-turning on the blanks for the second half of the demonstration. So, I drilled, glued, rounded off, and end-milled all the blanks ready for use, except that I managed to forget the end milling bit, and this stopped me completing the acrylic demonstration.



This green and yellow acrylic pen has now been re-finished at home, and it will be given to Robert Saunders at the December meeting - why - because he was the only one in the room brave enough to raise a hand when I asked "is there anybody here who is nuts about Norwich City". C'est la vie, some you win, some you lose.

Jon Simpson