

Duplicating turnings

In this issue, **Kurt Hertzog** looks at the subject of duplicating turnings and what to do when you have to make a replacement part

There will come a time in every amateur woodturner's career when they will be asked to make something as a replacement part. It might be as simple as a few Shaker pegs to replace the broken ones or as complex as a large historical replication. Regardless of your woodturning speciality, your requestor will assume that since you can turn wood, your turning skills are directly transferrable to their turned part needs. Pen turners might find it a stretch to be working on porch columns but depending on your skill sets and equipment availability, making 'parts to print' can be a lot of fun and certainly a skill builder.

While the production turner gets a part print or a pattern to work from, let's take on the task that it is a replication from a picture. That will allow us to cover creating sketches and doing some scaling. In the examples for this issue, we'll use two different scenarios. One is simply a pepper mill that was long ago sold that now needs to be replicated for that adamant buyer who won't take 'it's gone' for an answer and also wants their own wood. The other is a woodworker in need of some turned pieces for a historical replica cabinet being built. We have a sketch available of the desired end goal. If you had a physical part, you certainly could take a photo to follow the process and make it easier.

KURT HERTZOG



About the author:

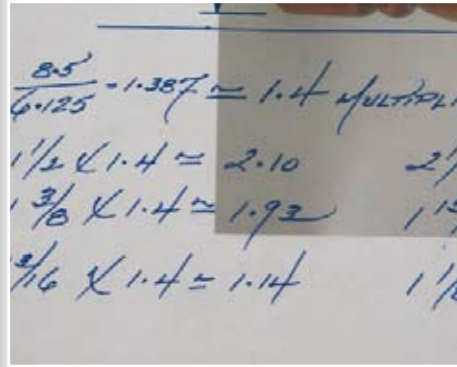
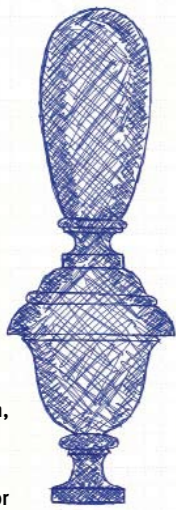
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He is on the Pen Makers' Guild Council and is a member of the Board of Directors of the American Association of Woodturners (AAW).

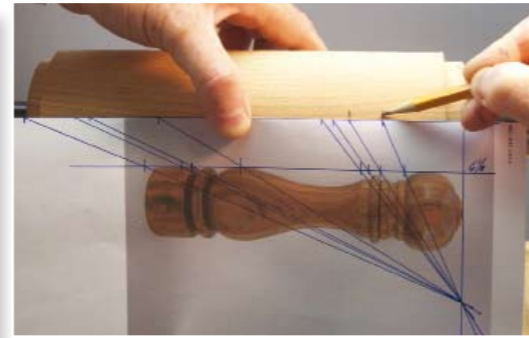
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Whether you cut and paste, sketch, photocopy enlarge/reduce, or print a photograph, creating a pattern is the basis for duplicating turnings



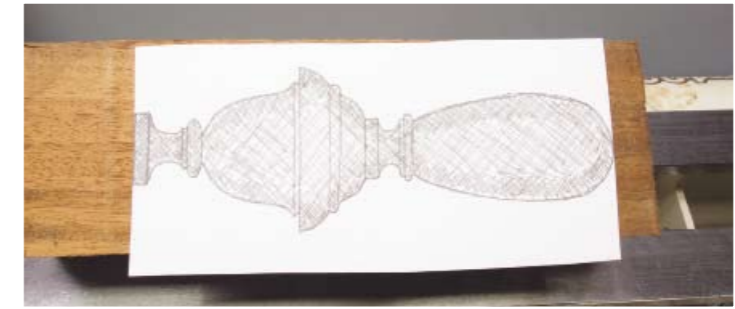
If you have to, you can measure on the image and mathematically create your scaling to arrive at the desired end point sizing



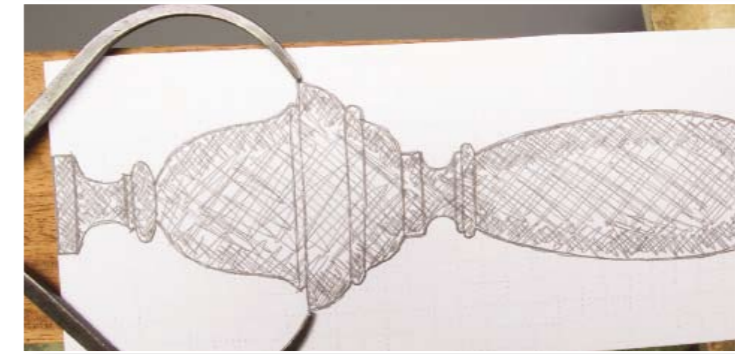
A less tedious method of scaling by hand requires you to use your image and scale it up or down graphically. A straightedge and a marker will let you scale and layout your markings on your blank

PREPARING THE BLANK (CONT.)

steps. While it doesn't matter much in our finial example, it might in other applications. The ability to lay up your pattern against selected pieces of potential stock would allow for best selection and orientation for figure. Much like cutting a pen blank, the excess material is often waste so why not use the prettiest portions for the turning and scrap the lesser looking material. You also might be looking for the portions of the stock with the most amenable grain orientation. The material selected, mounted, and turned to the maximum diameter, conveniently directly measured from the pattern. Good practices of woodturning still hold true. Tailcentre in place for as long as possible. Notice that my frugal nature has me wasting very little with the mounting block left full size for a future use. Even though the block is longer than needed, all is stable and secure based on the size, the chuck mounting, and the tailcentre being used continuously until the very end.



No tape measure or scale necessary. The pattern is used to select stock and also to help place the turning in the most advantageous position for material economy or for aesthetics



No numbers needed anywhere in the process. Dimensions are taken directly from the pattern. A future topic will be measuring methods and tips and tricks



Once I've created my pattern, I reproduce from that 'master' as needed to have working copies and images to create templates. Manila file folder stock is more than adequate

CREATING A PATTERN

Locate the best source of a pattern that you can find. It can be an image from the web, a digital photo sent to you or taken of an example, or from a reference book. Once you have the image of the desired end goal, create a pattern to work from. While it is certainly doable to scale patterns and do manual layouts, I think you'll be far more successful scaling your image up or down as needed in a photocopier to create a 1:1 pattern. Scaling, whether graphically or mathematically, is not only cumbersome but not nearly as accurate. With today's modern photocopiers, you should be able to scale your

original as needed to create a full size image for a pattern. You certainly can do it on the computer as well if you have those skills. There are many advantages to having a 1:1 pattern. Two of the most obvious are the ability to take measurements directly from the pattern and the creation of a full size template from the pattern. Turning from a picture or pattern is a special skill that not all woodturners possess. If the project is important enough, especially if there may be more than one now or in the future, I'd rather cut functional full size templates. Templates can be as simple as a photocopy spray adhesively bonded

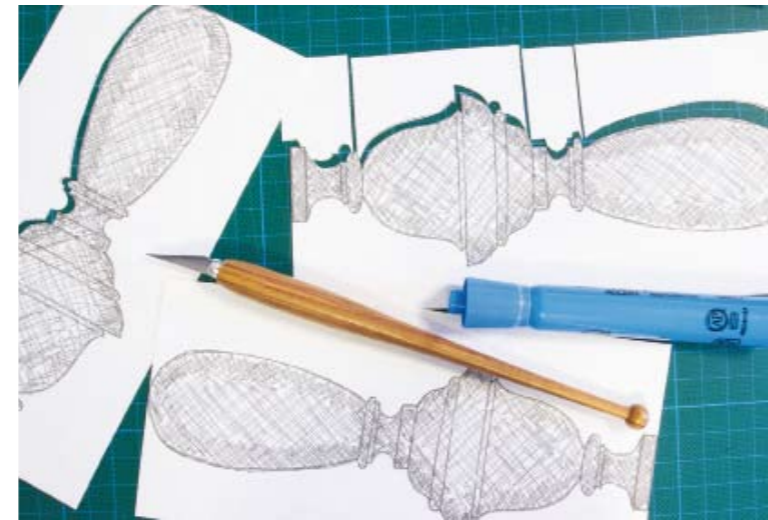
to a manilla file folder or a piece of card stock. A sharp craft knife will make short work of things and you'll have a durable template usable for layout, trial and error, and final check. Another advantage of using a photocopy and template method is for long term storage. A file folder can contain all that is needed to be stored for the task should it be needed in the future. It can be an 'original' photocopy that is always used as the master, extra copies, photos of the finished work, and the templates used for the project. The beauty it is these are thin, compact, and easily stored for future reference.

PREPARING THE BLANK

In the last issue, we spoke of thinking through the part and considering assembly. Nothing presented in this issue precludes that from happening here. Your pattern and templates can certainly help you plan a multi-piece assembly. It can be based on

equipment size, stock availability or cost, or simply convenience. Our pepper mill example is obviously a two-piece assembly by nature but our cabinet finial could certainly be a multi-piece assembly since the mahogany (*Khaya ivorensis*) will blend nicely and there

are some wonderful joint locations that aid in the turning ease considerably. For no other reason than demonstration, we'll do it as a one piece turning. It readily shows the ability to lay out your stock with the full sized drawing as well as performing the process in small



One to one scale templates, both in complete turning and in sections, make the turning and comparing extremely easy. Colour code if this is helpful



One of the advantages of this method is that everything is visual. Sizes, shapes, positions and progress are all visual in nature



Virtually no waste. The stock is turned to the maximum OD dimension for only as far as needed. The rest of this mahogany will find use in a future project

TURNING THE PART

With the blank turned to the maximum diameter needed and the size marked off well, it is time to turn the part. A quick look at where I am going doesn't hurt as the key diameter points will be marked. Rather than tackle too many areas at once, I focus on each segment working from the tailstock towards the strength of the mount and the headstock. Since there are no extremely thin sections, this progression from tailstock towards headstock will work nicely. If there were thin weak sections in the turning area, the sequence of areas to be turned might need modification. Having made several templates both complete full size and various sections in full size, it is easy to work on each area independently. Remember to put things into perspective. When you are examining the work from inches away comparing it to a 1:1 template, you are going to be far more critical than needed. The flame finial, after carving and installation on the cabinet, will be seen from many feet away looking up at it in a shaded area. I am not saying to be sloppy or do poor workmanship but only to remind you that we aren't making rocket parts either. Do quality work but don't be fanatical.



All is in order and ready to go. The final full size finished piece template is a good double check prior to committing. Templates are inexpensive, easy to work with, reusable, and easily filed away to be stored for future use

◀ TURNING THE PART (CONT.)



The minimum dimension for my flame carving block is transferred to the blank so I'll have that finish point to work to. Step-by-step from the tailstock forward is the plan



Working between centres, even though the headstock end is in a chuck, provides plenty of support and stability. Section by section work areas allow for focus and no defects forward mentality



Having both complete and section templates makes easy work of this approach. Taking each section to completion as you progress towards the headstock. It is easy to be too critical when looking and working this close



I like the modular approach to cutting to completion section by section. It helps me with the blending of areas and keeping things in the proper perspective

THE HOME STRETCH

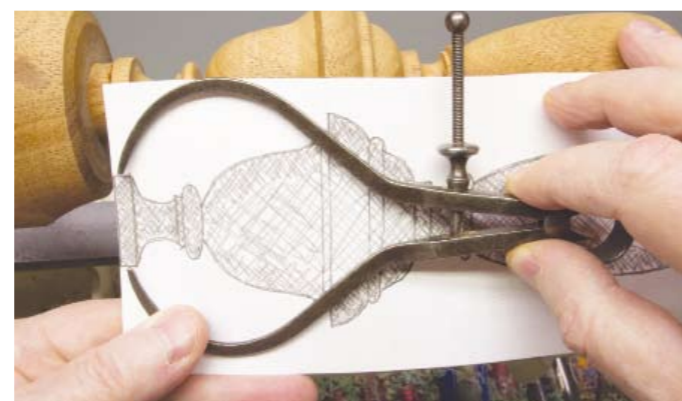
Your order of completion is your call. Many will progress getting the entire turning close to dimension and then proceed to fine tune each dimension as needed. I am the opposite preferring to complete each section as I go so that I never will be back except for final sanding of the

item. While I have a template for each section, an occasional look at the overall while in process tends to keep things blending properly. Any deviations from the overall flow can be made as needed. Once things are in good shape and the form is looking as it should, the last cuts can be made and finishing details can

be touched up. Once the turning is completed, a last final check is in order prior to sanding the piece. With all in order, sanding can be done easily while the tailcentre is in place providing plenty of support. The last item to be attended to is the clean up of the very end and a light sanding there.

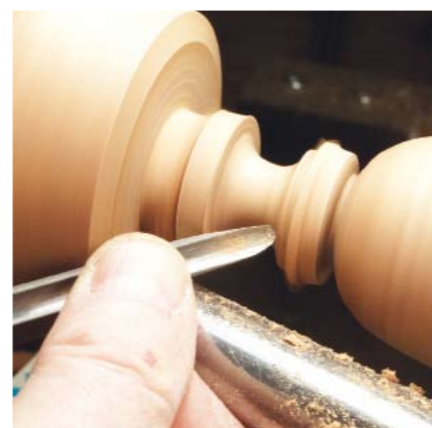


A spot check of the overall periodically will allow for any small flow problems to be corrected. If things go too far before being brought back into line, there is a tendency to lose smoothness and be abrupt



The lack of any kind of measuring other than transferring from the pattern to the work with callipers makes errors difficult to make. With the graphic in front of the work, you are continuously being kept honest

THE HOME STRETCH (CONT.)



When all is said and done, it is time to put those last touches in place to crisp up the details. With minimal sanding, the sharp detail cuts will really stand out



A final check prior to a quick sanding of the curves and removal of the end markings. While only making one in this instance, can you see where multiples become more doable with this technique?



Even though it will ultimately be carved into the 'flame' portion of the finial, cleaning up the end marks from the tailcentre – with the pin removed – is good form

ONE OF ANYTHING IS EASY!

As a woodturner, you've probably come to know that turning one of anything is far easier than a matched set. A matched set is easier than a lot of 'identical' pieces. Identical is relative. Four table legs can be identical enough to pass scrutiny since they are never closer than three feet apart and usually seen only two at a time. Stairwell balusters can be far more challenging considering they traverse at least one flight and seen many at a time at 200mm apart. A chess set with 16 pawns that all sit within inches of each other is a real challenge.

Since we have only one of each, we have it pretty easy. When you get into any form of replication, you'll want to consider how many, how close, and how exacting you are expected to be. Our finial will only be seen from arms length away with nothing to compare to except an image or memory. We need only to be pretty similar.

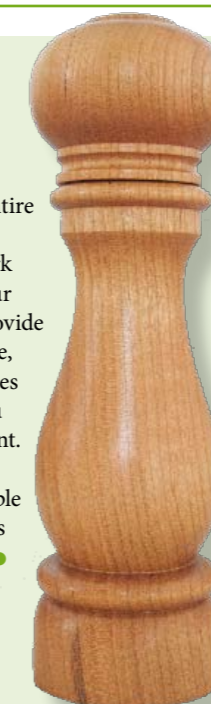
Done from a website image, a long gone peppermill shape is replicated for the customer in the desired cherry (*Prunus serotina*) sourced from her local area. She was pleased with the result



“As a woodturner, you’ve probably come to know that turning one of anything is far easier than a matched set”

CONCLUSION

Creating and using patterns and templates can be a very powerful tool in your woodturning bag of tricks. With the web at your fingertips and the entire world in a headlong rush into communicating visually, there is no end to the source of materials for you to work with. Ideas you see that you take a snapshot of with your mobile phone or books published centuries ago can provide all that you need. The ability to mix, match, alter, upsize, downsize, or otherwise integrate sizes, shapes, and scales into precise and reproducible turnings should keep you creating for years to come. Don't be afraid to experiment. Marry the duplicating turnings with the design and assembly concepts from last issue. You now have a simple and low cost method to produce things from the past as well as things you haven't even finished sketching yet. ●



Your ability to go from an image to a pretty accurate likeness is easily done following this method. No expensive tools or equipment needed

Not a bad likeness from a sketch depicting this flame finial carving blank from hundreds year old furniture. Ready for carving, it easily passes the eyeball test for size, shape and 'design authenticity'

