“Double Bagels”

Making Interlocking Rings
or Donuts

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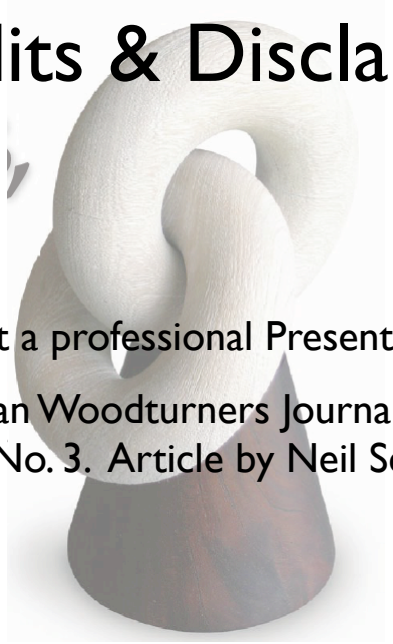
- Who knows what a bagel is in tennis?
- I confess that i like to call these “double bagels” because I am a tennis “nut” and like the double entendre for those that know what “bagel” means in tennis land.
- I am going to pass around a set I made for those who have not seen them before. What I really like the most about this particular “product” is the tactile sensation of holding (I am resisting using the word “fondle”) the piece. .

Credits & Disclaimers



- I am not a professional Presenter
- American Woodturners Journal, Fall 2008, Vol 23, No. 3. Article by Neil Scobie

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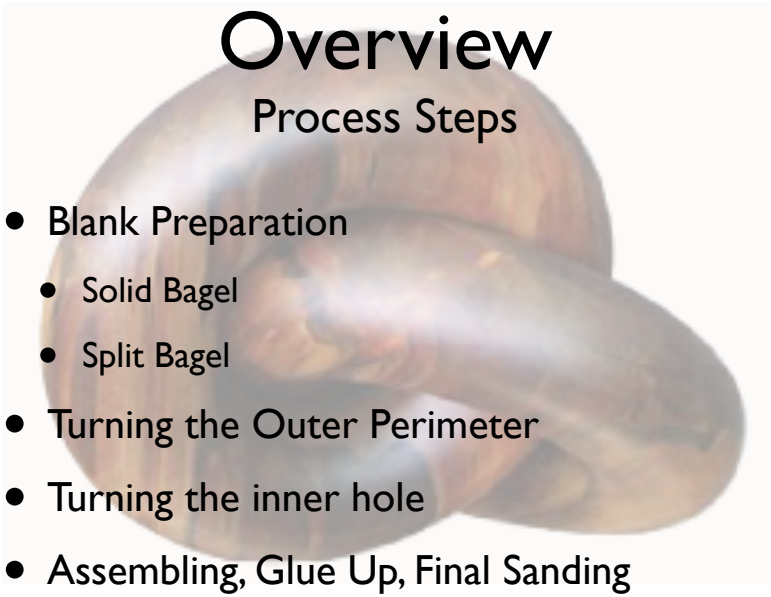
- Bad new is that i am not a professional presenter; the good news is that the presentation is relatively short.
- Of course when Bob twisted my arm to do this 4 months ago, it seemed ages away; but here we are. But Phil (and Bob) have assured me that you are all friends and want me to succeed. We will soon find out how true or not that is.
- I cannot take any credit for this material. It is pretty much derived from the article written by Neil Scobie.
- What I will say, like watching a professional demo, is that articles such as this appearing in the Journal inspire me to try new projects, hopefully learning something along the way. Also, I have borrowed (they will be returned) some of the pictures from the article rather than spend time recreating them myself. And maybe i have added a few ideas to what is found in the original article. In the Journal article it shows most pieces permanently mounted on a stand. I have resisted doing that because it prohibits exactly this activity of experiencing the shapes in your hands

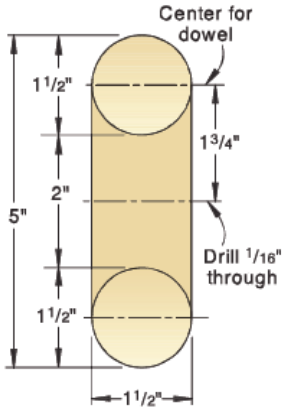


- What i thought i would do is go through the different steps I use to setup and complete the project.
- As I go along I will explain where I have deviated from the original Journal article and also where I have gained some new insights. For example, Bob came by my shop for a demonstration and point out some obvious improvements which was great because it just point out once again how much we can learn from one another - even when we think something is already simple and no improvements are possible.
- I'll even show a couple of short video clips to prove that I actually turn - once in awhile. But there is not enough time to actually do a turning demonstration.

Blank Preparation

- Design Criteria
- Layout Dimensions
- Preparation of "split" Bagel

Design Criteria



- Directly from Journal
- Form must be "Pleasing
- Form = 3 Diameters

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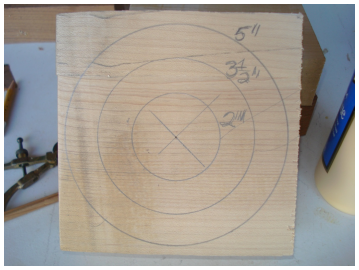
- So what does it mean to say the diameters must be pleasing? We've all seen presentations and/or watched DVD's concerning form and design, the Golden Mean, and other factors. And our eyes and senses tell us pretty quickly if a form looks and feels "right".
- In the case of these interlocking rings, there are at least 3 dependent form factors. The first is the outside diameter; 5 inches in the lefthand diagram. The second is the diameter or thickness of the solid ring, or 1 1/2 inches in the diagram. And the 3rd factor, of course, is the hole; namely 2 inches in the picture.
- If any of these dimensions were vastly different than what is shown, I would argue that the resulting work would not be pleasing. Suppose for example that the solid ring diameter were only 1/2 inch. The hole would be much larger, 4 inches in particular. and when the rings were interlocked there would be way too much space between the interlocked rings. And so forth...

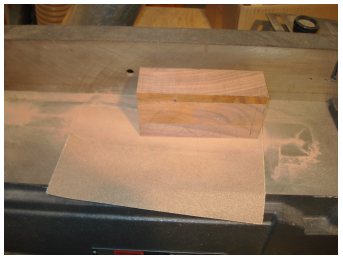
Layout Dimensions

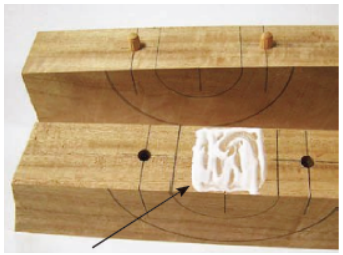


- Mark Centers
- Draw 5” and 2 1/2” Diameters
- Add Midpt Diameter @ 3 1/2”, Why?
- Draw all 3 Diameters on <u>both</u> Sides

- Show marked up blank
- Why do I provide a midpoint diameter at 3 1/2 inches? And, I continue to redraw that circumference even when it gets turned or sanded away? Because it give me a “target” for turning a bead from the high point.
- During various stages of the turning process, I may need to redraw the diameter reference lines.

Split Bagel Preparation





- Starts same as solid bagel
- Cut in Half or Draw Circles first?
- Cut w/Band Saw
- Hand sand kerfs
- Note dowel holes

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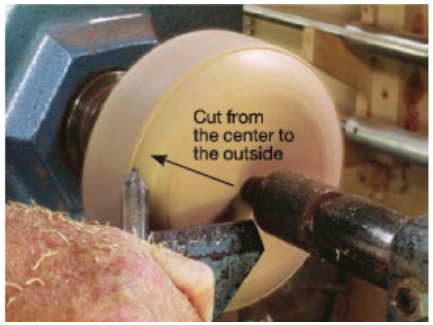
- I have gone both ways, cut first and draw, and vice versa. Doesn't seem to make a big difference
- I cut on the band saw (narrow kerf) and then hand sand on a jointer bed or table saw to get a good glue joint. Could start with a longer piece, for multiple rings, and use the jointer.
- First set, I used dowels as shown in the bottom picture. This was how it was shown on the AAW Journal article.
- But since then I don't use dowels. I have found it just as easy to align and glue without them. In fact, without dowels there is even some room to maneuver the pieces.

Turning Outer Perimeter



- Mount blank between centers
- Clean up faces
- A large bead with a final 5” diameter

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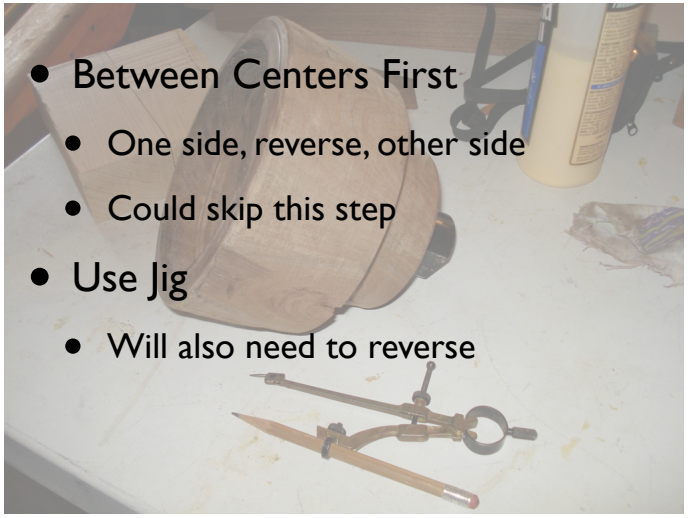
- Mount blank between centers; I use a steb center in the chuck
- I make it round using bowl gouge and then mark a center line – why?
- Then I start turning a large bead using both push and pull cuts sneaking up on the 3 1/2 diameter on the faces.
- I can only do a little on the headstock side and then I reverse faces; this is where the steb center makes it easy.
- Make it round, turn a big bead.
- As Tim Yoder says, sneak up on it. I use the reference lines as my targets. Note the article turns from center to outside!
- Note how I sneak up on the midpoint diameter that I mentioned earlier
- I do the tailstock side as well and then do final sending on the “large bead”
- Repeat for the split bagel

Turning the Inner Hole



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- I start the inner hole while between centers, on both sides
- Then I use a jig (more later)

Inner Bead

Jig

- Jam Chuck
- Limits Diameter Choices
- Shims, Tape, or both
- Size while turning Outer Bead
- Could make "Cole" jaws

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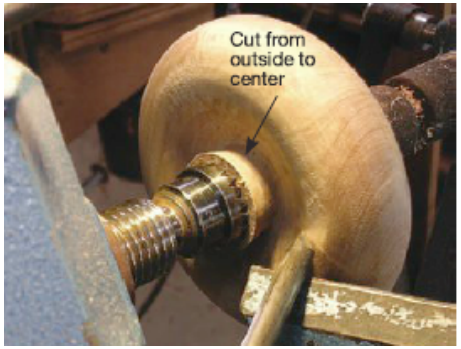
- I made the jig as described in the AAW article but this restricts me to a set diameter. I found this jig to work pretty well; you can ask Bob – he borrowed it from me.
- One of the Monta Vista HS students, where Phil, Rich & I volunteer, wanted to try this one or two years ago. Phil made a variable sized jig – sort of like cole jaws. But I do like, with the jig shown in the pictures that I can sand, if needed, most of the outer bead, certainly where the surfaces meet at the midpoint line, without worrying about fixtures encountering body parts.
- Hole is to use dowel rod from other side to help remove from jam chuck. As you will see on the next slide.

Hole: Inner Bead

Between Centers



- Convenient start
- Remove some waste?
- Not critical
- Remark midpt line

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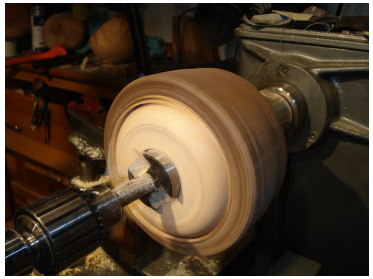
- I start turning the hole or donut between centers, while mounted, using circles as reference marks for sneaking up on apex
- I remark the midpoint line multiple times and again when it is mounted in the jig.

Inner Bead

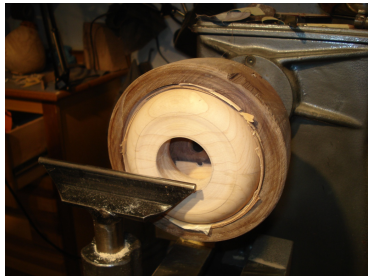
- Note Shims in left hand picture
- Washers for removal from jam chuck

- I turned insets for washers so that I can use a dowel rod to “unjam” the donut
- I cover the washers with sticky tape so they stay in place during turning
- i ended up with shims (as opposed to just some tape, if anything) because I wasn’t careful and did not size the outer diameter to the jig as I should have done.

Inner Bead



Before Drilling



After Drilling

- Don't drill all the way through on the 1st side when turning the split bagel; it is harder to reverse and place in jam chuck since it is now in 2 parts
- Also I also (not shown, mark a center line on the inner hole – again as a reference point to sneak up on the bead.

Inner Bead

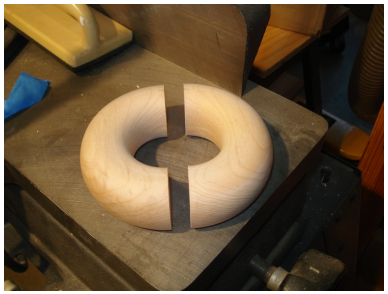
turning

Before Sanding

After Sanding

1. Success using three different cuts
   - Bead cut
   - Pull scrape
   - Push scrape

Assembling



- Glue, press split bagel together
- Clamp with *Jorgenson* clamps
- Hand sand around glue joint

- It is hard to sand around the full circumference of the joined bagel
- I was thinking of some design elements that would effectively disguise the joint line even further such as texturing, burn lines, etc But how to do that since we cannot “spin the assembled split donut?

That's All Folks