

# Turning

## Green Wood Finished Edge

### Bowls

Student Handout

V1.2

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## Introduction

There are many methods and processes for turning bowls and in this case finished edge, green bowls. The process described below is the process that I teach in my beginning bowls course. Starting between centers allows for some positional adjustment for better grain alignment. Much of good bowl design and completion starts with the selection of the wood, its rough and finished cuttings as well as mounting. While these points are beyond the scope of this basic process, they are discussed in detail in the Bowls II classes which also addresses thinner walls and natural edges.

The following process describes only the “what” and not the “how to” portion of turning a bowl. How to make cuts, etc. is briefly referred to at the end of this outline.

For more information on “how to” please contact the author.

### 1. Basic requirements

- i. Lathe
  - a. Multispeed
  - b. Well secured
  - c. Spur drive/live center
  - d. Four-jaw scroll chuck
    1. prefer configured (serrated toothed) jaws

### 2. Required tools

- i. Bowls gouge ½” finger nail profile
- ii. Parting tool (for preparation of tendon)
- iii. Large bowl scraper (for competing the interior)
- iv. Spindle gouge (for completing the bowl foot)
- v. Cut off saw (for shortening the tendon stub)
- vi. Carving tool (for removing tendon stub)
- vii. Sharpening system
  - a. Suitable for consistently reproducing finger nail profile grind on bowl gouge
- viii. Optional
  - a. larger/small bowl gouges

### 3. Other items needed

- i. Bowl calipers (for judging wall thickness)
- ii. Calipers (for determining tendon diameter)
- iii. Grease pencil, ruler
- iv. Wood for a jam chuck
- v. Blue painter's tape
- vi. Personal safety gear
  - a. Face shield
  - b. Dust mask

#### **4. Preparing the turning blank**

- i. Log
  - a. Select diameter suitable for lathe swing
  - b. Band saw/chainsaw log through the pith
    1. Remove the pith completely
    2. Goal is to select the best potential bowl shape
  - c. Saw half log to length (diameter plus 20 %)
  - d. Seal end grain with wax to prevent checking
- ii. Bowl blank
  - a. Recut blank to proper width and length for your lathe
  - b. Cut off comers
  - c. Mark center on both sides removing bark on outside if necessary

#### **5. Roughing out finished edge bowl**

- i. Mount blank between centers with bark face toward tail stock
  - a. Drive spur into center with mallet before mounting on your lathe
  - b. Mount securely with a tightly positioned tailstock
  - c. Check for adequate clearance to lathe bed and tool rest
  - d. Set speed low as bowl blank will be out of balance for some time
- ii. Shape exterior of bowl
  - a. Use larger bowl gouge to shape the exterior
  - b. Start at tail stock end and work toward head stock end
  - c. Work off protruding comers first then extend cut further toward head stock rough shaping the bowl exterior
  - d. Increase lathe speed as work balance improves
- iii. Complete a tendon
  - a. As bark end is shaped, mark with grease pencil the length of the tendon
  - b. Use a parting tool to complete tendon
    1. Use calipers to test the diameter
    2. Assure that the shoulder of the tendon is flat and square
- iv. Finish exterior surface
  - a. Shear scrape with bowl gouge to remove small imperfections

#### **6. Turning bowl interior**

- i. Prepare for reverse turning
  - a. Remove tail stock
  - b. Mount chuck
  - c. Reduce speed setting
  - d. Reverse bowl blank into a mounted four jaw chuck
    1. Rest the TOP of the tendon shoulder on the chuck jaws and tighten
- ii. Turning interior, Part I
  - a. Reduce interior to approximately 1" wall thickness
    1. Work from lip of bowl toward bowl center
    2. Work in small increments increasing diameter of cut slowly
    3. Work in increments of 1" depth
      - a. Blend to next increment
      - b. Don't go back after an upper section is completed

- b. Increase lathe speed as appropriate
- c. Complete smoothing interior
  - 1. Use bowl scraper working from bottom center to top edge
- iii. *For later completion only (drying the rough bowl)*
  - a. *Remove rough turned bowl and store*
    - 1. *Seal all end grain areas with wax interior and exterior*
    - 2. *Store in brown paper bag tightly close in cool dry location*
    - 3. *Check for dryness*
      - a. *Mark date and weight on bag*
      - b. *Periodically reweigh*
  - b. *When weight stable bowl may be completed*

## 7. Turning interior

- i. Part IIa (completion of wet bowl in single session)
  - a. Reduce interior to a constant wall thickness
    - 1. Starting at rim work carefully toward center
    - 2. Complete with bowl scraper
    - 3. Use bowl caliper repeatedly to measure progress
- ii. *Turning interior, Part IIb (completion after drying period)*
  - a. *Remount, re-true rough turned bowl*
    - 1. *Remount blank between centers using a jam chuck to drive the bowl*
    - 2. *True up the tendon*
    - 3. *Remount bowl into chuck and complete as in Part IIa*

## 8. Turning the foot

- i. Create a jam chuck
  - a. Between center true up a piece of scrap wood approximately 1/2 to 1/3 the diameter of the bowl interior
  - b. Turn a tendon on tail stock end to fit our chuck (complete as done earlier with the bowl tendon)
- ii. Determine interior bowl depth
  - a. Measure depth and transfer information to a piece of blue painter's tape affixed to bowl exterior
- iii. Mount bowl between centers using the jam chuck and a non-slip pad
  - a. Position the bowl carefully to center
  - b. Use tailstock to recenter
- iv. Shape foot
  - a. Using a spindle gouge reduce tendon
    - 1. Assure sufficient support for bowl by maintaining a minimum of 1/2" diameter tendon stub
  - b. Shape foot with a concave (undercut) bottom
    - 1. Refer to tape mark to assure that the bottom thickness is adequate
  - c. Remove tendon stub
    - 1. Remove bowl from lathe
    - 2. Cut off tendon stub
    - 3. Carve/sand away any remnants of tendon stub

## General considerations for bowl turning

- Always work safely
  - Use face shield
  - Select appropriate lathe speeds
  - Keep tools sharp, sharpen frequently
- Cutting techniques
  - Goals
    - Be safe
    - Remove wood efficiently
      - Always try to cut down hill to the grain direction Exterior, cut from tailstock towards head stock. Interior, cut from rim toward center
    - Achieve a good design ('fair' curve or 'crisp' detail)
    - Achieve a smooth surface requiring little sanding
- Using a bowl gouge
  - Engaging the cutting edge
    - Anchor tool to tool rest
    - Touch bevel (area behind cutting edge) to wood
    - Raise tool handle to engage the cutting edge
  - Making the cut
    - Face the flute of the tool toward the direction of the cut
    - Create a shoulder first, then engage the edge

## Role of the Lathe

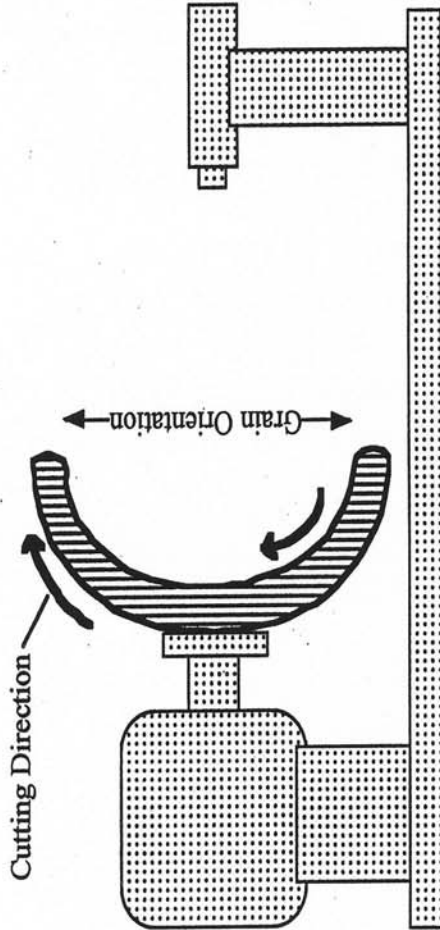
- The lathe does all of the hard physical work. It holds the wood and provides the cutting force.

## Your Role

- **General**
  - You guide the cutting tool through the wood with a sure, but light touch. Woodturning should not physically hard work. It's about coordination.
- **Feet and Hands**
  - 'Dance with your lathe' captures how we want to feel when turning. Like dancing, woodturning is about making graceful body moves. As much as possible, guide the tool through the wood using your whole body and not just your hands. Using your whole body gives you more stability and is less tiring.
  - Role of the feet. Spread your feet about shoulder width apart. Keep your elbows close to your side. Start a cut with your weight on your right foot and gradually shift your weight to the left foot. Try the motion first with the lathe stopped to see if it feels comfortable. Don't over reach. If the cut is too long to easily keep your balance, then make two separate cuts and reposition your feet before the second cut. Moving with the legs is less tiring than using your arms. It will be necessary to use your arms for some cuts, but try to minimize this. (See note below about learning to reverse turn, in which case the roles of the right and left feet are reversed).

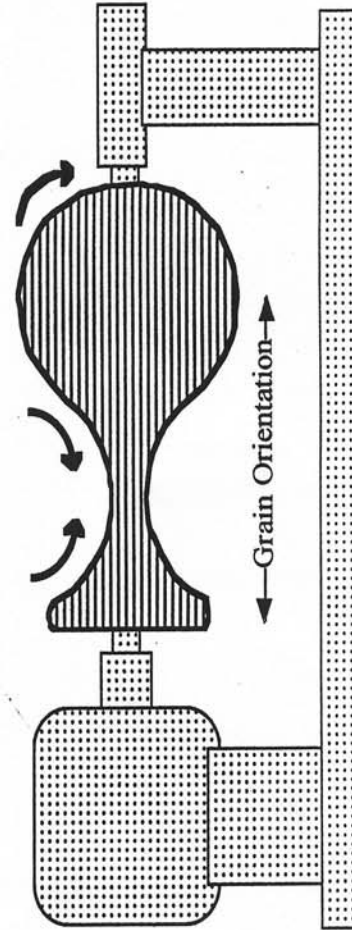
- Role of the hands. Left hand is the dumb one, right hand is the smart one. The left hand holds the tool on the tool rest (keeping it from vibrating) and aids in moving the tool forward. The great majority of the work is done by the right hand, which guides the tool and determines the depth and direction of the cut. (It's a good idea to eventually learn to turn reverse handed, in which case the roles of the hands are switched.)
- **Making a Cut**
  - Anchor. With the tool handle low, place the gouge on the tool rest with the flute pointing upward at a 45° angle and in the direction of the cut. Place your left hand on top of the gouge and contacting the tool rest. All three: gouge, tool rest and your hand, must all be in contact with each other.
  - Bevel. Raise your right hand until the heel of the bevel contacts the wood. This action will not cut, but will tell you exactly where the wood is relative to the tool,
  - Continue raising-your right hand until the bevel is parallel with the wood surface and the cutting edge engages the wood. The tool should be cutting between '11 and 12 O' clock' as you look down on the tool. Slowly advance the tool with the left hand, remembering to steer the bevel with the right hand.
- **Cutting Feedback**
  - The lathe, tool and wood all give you feedback on how well you are cutting. Learn to 'listen' to the following.
  - **Shape.** You can best see the shape that you are cutting by looking at the upper profile of the piece against a contrasting background
  - Shavings. If you are producing long shavings, you are shearing the fibers. Chips or saw dust means that you are scraping and will have a rougher surface.
  - **Vibration.** Vibration should be avoided. Excessive vibration may mean a loose piece of wood is ready to fly off the lathe. Vibration can also be caused by excessive lathe speed (imbalance) and the wood being out of round.
  - **Sound.** A rhythmic clicking may indicate a knot, crack or other defect that should be inspected immediately. A good cut will 'sing'.
  - **Surface smoothness.** Stop the lathe and inspect the surface of the wood frequently. A good shear cut will leave a smooth surface free of tear out and ridges. Tightly grouped ridges usually means you were not cutting on the bevel (no depth support). Tear out often comes from a dull tool. Use your fingers to test the smoothness. They are more sensitive than your eyes.

**HANDOUT #4**  
**GRAIN ORIENTATION and CUTTING DIRECTION**  
*"Always cut downhill"*



**SIDE GRAIN  
MOUNTED**  
(Face Plate Turning)

Note: You are cutting side grain twice and end grain twice with each rotation.



**END GRAIN  
MOUNTED**  
(Spindle Turning)

Note: You are cutting side grain for the full 360° of rotation.