

Processing Green Wood for Wood Turning

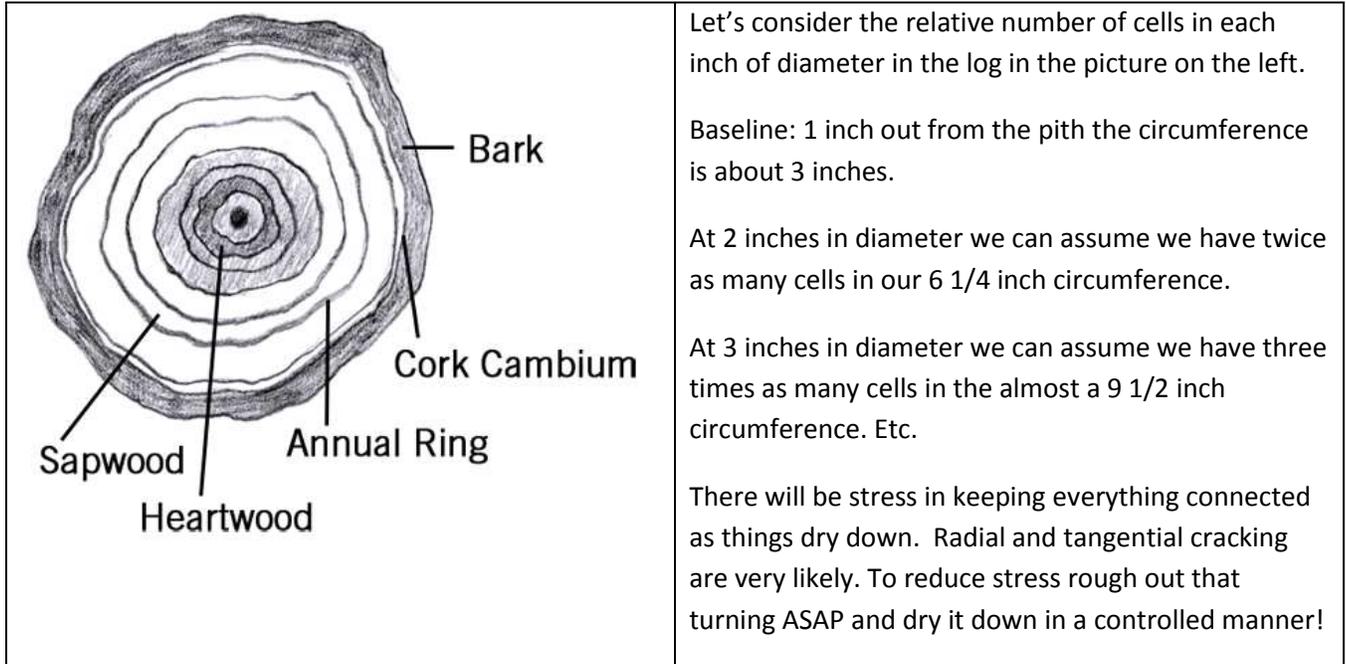
John Jordan, professional wood turner, AAW Lifetime Member– “Life is too short to turn crappy wood.”

We can make good use of an abundance of ‘free’ wood by harvesting it ourselves and processing it with a bit of care OR we can turn it into ‘crap’ unsuitable for creating much of anything from.

Tree rings - each ‘ring’ in the tree represents one year of growth and is composed of two parts:

Early wood – The wider band of wood that grows rapidly in the spring. The cells of the the early wood band are larger and have thinner walls than those produced later in the season. In general this wood is less dense and not as strong as late wood.

Late wood – The narrow darker band of wood that grows in the late summer and fall. Narrow cell vessels, more dense, in general stronger and less prone to rot than early wood.



Your Chainsaw

Short clip – Glenn Lucas on chainsaw maintenance... keep the chain sharp and the saw well maintained.



Planning Your Tree Harvest

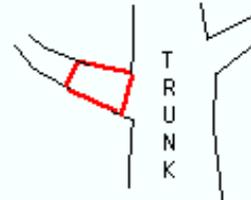
Dealing With "Reaction" Wood (part in tension and part in compression)

The following is based on a very good presentation by John Brugo of West Bay Area Woodturners given at the December '07 meeting of the Santa Clara Valley Woodturners

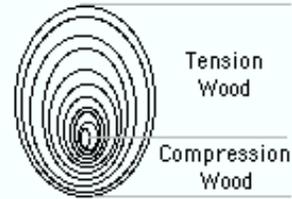
If you get into turning, at some point you'll start thinking "There's plenty of FREE wood available around here. If I had a chainsaw . . ."

After you get the chainsaw, and you're faced with your first "log", here are some things to be aware of.

You've cut a nice fat cherry branch from the trunk of the tree. You cut it so it's length is equal to the thickest part of the log PLUS FOUR INCHES. The extra two inches on either end allow for cracks and splits - even though you'll seal the ends ASAP - right?



Looking at the end grain, notice that the pith isn't centered in your logette. Also notice that the growth rings are closer together BELOW the pith than above the pith. Think of the growth rings as rubber bands with the pith ideally centered in concentric rings.



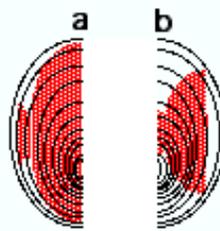
Now look at how the branch was oriented. Its weight wants to make it bend towards the ground. The growth rings want to keep it from doing that. The growth rings above the pith are stretched, trying to pull the branch up. The growth rings below the pith are being squeezed by the weight of the branch. The wood ABOVE the pith is in TENSION. BELOW the pith it's in COMPRESSION.

If you're going to try to get a pair of bowl blanks out of this chunk of wood you need to keep this information in mind. You also don't want the pith in your finished piece - it's often a crack generator.

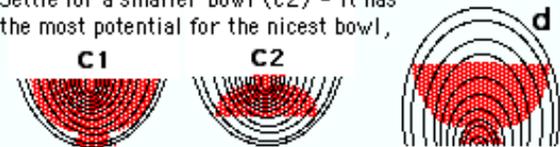
SO - as the first step in creating a bowl blank - do you cut your log like "A" or like "B"?



If you cut the log in half like "A" you could get the largest bowl out of each half if you go with "a". But you'd lose all of the heartwood. You'd keep more of the heartwood with "b".

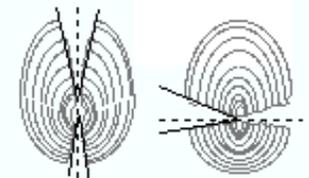


If you cut it like "B" you can get a taller bowl out of "d" - with plenty of heartwood AND a fair sized bowl out of "c1" but you'd lose the heartwood. Settle for a smaller bowl (c2) - it has the most potential for the nicest bowl,

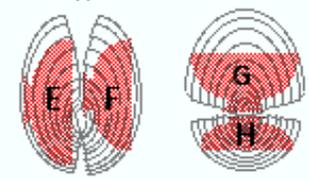


BUT - and there always seems to be a "but" - BEFORE you decide on how you'll cut the log or decide how to orient your bowl idea, keep in mind that, as the wood dries, it will change dimensions

Here's what the alternatives will look like when they dry. Note that the Tension wood will shrink more than the compression wood and deform more



Of the four possible choices E, F, G & H shown at right
 - E would have no heartwood in the finished bowl AND the bowl would warp quite a bit.
 - F, G & H would have more heartwood and wouldn't warp as much as E



The nicest bowl, with the most heartwood and probably the least likely to warp and deform badly is most likely going to be - H.

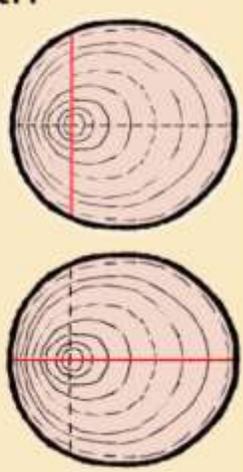
Jim Sannerud on tree processing for wood turnings – balanced grain is a visual design factor and a good way to reduce cracking as your piece dries down!

White board discussion of tree harvest...

Cut Layout, offcenter pith

1. Pith will be centered in the blanks. Yields one deep and one shallow bowl.
2. Pith will be offcenter in the blanks. Yields two blanks of equal size.

— = cut line



Dealing with Defects in the Log

Two types of damage that will radically affect your harvest plans:

- 1) A 'ring, cup or heart shake' is due to damage from wind or bacterial attack. This type of damage will in general cover many feet in length of the log.
- 2) A 'star shake' is usually seen in dead trees left standing for a long period of time and is due to the wood shrinkage related to drying down and it is hard to predict to what depth the damage goes.

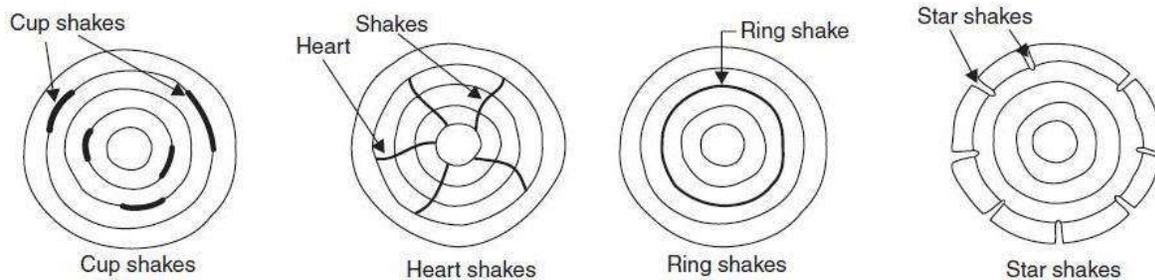


Fig. 1.10. Shakes

Other damage that may look bad may not be so bad at all. When the log is left exposed to air it will begin to check in the end grain but if you cut it back 6 inches or so you may find the wood undamaged.



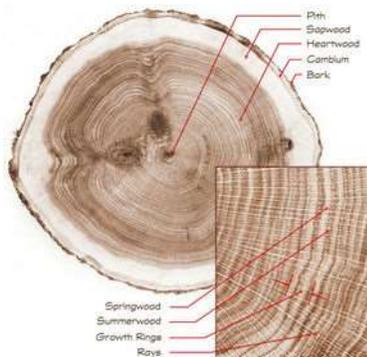
Short clip – Glenn Lucas processing a log... eliminate the pith, create platters or plates from the quarter sawn sections on either side of the pit, use a sharp chain in order to cut straight.

Eliminating the pith... why bother?

In its early years the challenge for the tree is to claim its share of sunlight, its whole future depends on this early growth. For this reason the pith of a tree is usually the weakest and least stable part of the log as well as being a focal point for all stress that the wood grain will impose as your turning dries down.

Do we care about sapwood versus heartwood as wood turners?

http://workshopcompanion.com/KnowHow/Design/Nature_of_Wood/1_Wood_Grain/1_Wood_Grain.htm



http://northernwoodlands.org/articles/article/what_is_the_difference_between_sapwood_and_heartwood

“All wood starts as sapwood. It is formed just under the bark by a thin layer of living cells known as the cambium, which produces bark cells to the outside and wood cells to the inside. Tree stems increase in girth during each year of growth because a new layer of wood cells is added inside the cambium. In good growing years, this new layer of wood can be many cells thick, and in poor years, it is relatively thin. Regardless of thickness, when any such growth occurs, the cambium moves outward to accommodate

the new layers of wood forming inside. Sapwood – this newly formed, outermost region of wood – contains a variety of cell types, most of which are living and physiologically active. This sapwood is where water and dissolved minerals are transported between the roots and the crown of the tree and, to a lesser extent, where energy reserves are stored.

In young trees and young parts of older trees, all of the wood in the stem is sapwood. But as the tree gets older and its trunk increases in diameter, things change. No longer is the entire cross-section of the trunk needed for conducting sap. This, combined with an increased need for structural support, causes significant changes in the wood. The cells nearest the center of the trunk die, but they remain mostly intact. As these older sapwood cells age and die, they become heartwood. That is, they are altered to accommodate a shift in function. As residues of the once-living cells and additional chemical compounds from elsewhere in the plant accumulate in the heartwood, those cells cease to transport water or store energy reserves.

These compounds (including resins, phenols, and terpenes, sometimes referred to as extractives) not only help make heartwood more resistant to attack by insects and decay organisms but also tend to give this inner portion of the stem a distinctive darker color. For example, the famous dark brown of black walnut lumber and the striking red hues of black cherry boards occur only in the heartwoods of these trees, and both owe their characteristic colors to these chemicals.”

Safely Cutting Your Blanks

Keep all objects away from the chainsaw chain including all parts of your body at all times! Use protective clothing as well as hand, eye, ear and other safety equipment.



This is not my sawbuck but a design I plan on building for myself this winter

<http://www.docgreenwoodturner.com/sawbucks.html>



Drying Down Your Roughed Out Turnings

Key Point: Never assume the wood in your rough outs will **stretch** as it dries down for you!

Short clip – Glenn Lucas preparing rough turnings for drying... always seal the end grain on the outside of your bowls and then dry the turning down in a controlled manner.

Air Drying – a slow and controlled method of letting the wood dry naturally

The first two months of what is usually a six to twelve month process are when you will usually see the 10% loss average most people report for this method. After this point you will usually only lose a turning to cracking if you 'push it' too fast to dry down to the final 8% to 10% moisture content goal.



<http://www.woodturningvideosplus.com/paper-bag-drying.html>



<http://www.woodturningvideosplus.com/air-drying-wood.html>



If you are going to use the method where you weigh the rough-out periodically make sure to bring it indoors after it stops losing weight. Weigh it again in a month after bringing it indoors to make sure it has reached its final stable state of dryness. A moisture meter is a \$30 (and up) investment but it takes the guesswork out of the drying process.

Hurrying things along a bit... this topic covers a wide variety of methods, some that other club members can talk about with more knowledge than we will open this up for general discussion.



<http://www.woodturningvideosplus.com/boiling-green-wood.html>



<http://woodshopmike.com/denatured-alcohol-drying/>



http://www.cindyrozda.com/handouts_Pdfs/handouts/demo%20handouts/drying_kiln.pdf