Turnings from Segments
First: Rings versus Staves

- There is a difference
- Rings of segments
  - What we’re doing here!
- Stave construction
  - Similar but different
- They can be combined with care.
Segmented and Staved

**Stave Vessel**

**Segment/Stave Mix**

**Straight Staves**
Stave Construction
Stave Construction

Grain Direction
A Ring of 16 Segments
Segments & Staves

Watch for weak glue joints

Tilted Staves
Examples of Segments
The Process

- Design – Shape, Size, Features
- Detailing – Create the Cut List
- Collect and Mill the Lumber
- Cut Segments
- Make Rings
- Assemble Rings into Stacks
- Turn the Stacks
Understanding Segments

Critical Parameters

Ca == Cut Angle  SL == Segment Length
The ‘not so critical’ parameters
W == Width
T == Thickness
Ca = 15 deg.

If 1/2 SL = R Tan Ca
Then
SL = 2 R Tan Ca
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Mixing Segments

As a general rule:

- Segments are in **even** multiples
  - Mix 4 segment rings with 8, 16, 32 segment rings
  - Mix 6 segment rings with 12 or 24 segment rings
  - Mix 10 segment rings with 20 or 40 segment rings
- Segments need not be even numbers though
  - Mix 9 segment rings with 18 segment rings
  - Mix 7 segment rings with 14 segment rings
- Don’t let rules inhibit your creativity
Collect and Mill the Lumber

- This is not your wood scraps
- Select lumber to accomplish your design
- Cut to length and width and mill just like for Furniture
- Straight and true / edges square with faces
- Mark each piece for its intended ring
Workpiece must be straight, true, and edges parallel
One edge must be straight and true
Always use that edge as reference
Dry Fit
Sanding Review

- Key is flat and parallel sides
- Drum Sander (~100 grit)
- Sanding on the Lathe with Flat Board
- Tooling on the Lathe (Advanced Skill)
Sanding Alternate
Attach Disks into stacks

- Pairs
- Then 2 pairs
- Etc.
- Match glue joints to center of next ring
Strike 4 Chords overlapping the Segments with the Tic Marks.
Draw lines at right angles through the Intersections of your Chords.
Lap over the Edges if Necessary.
Chord method thanks to Karen Kerce
Browning
Stacking Rings
The Feature Ring

- Usually at the Waist of the Vessel
- Sometimes Multiples
- Sometimes at the Top or Base
- Fancy
Always use tailstock
Turning reviewed – Typical Approach

- First: Turn rough outside shape on sections
- Next: Join sections with double stick tape – between centers
- Then: A second round of roughing the joined pieces
- Break them apart
- Remove inside of each section
  - Care for thickness
  - Leave ample gluing surface to join
- Glue sections together and let cure
- Final turning/sanding/parting
- There will be variations to this process depending on the item
The END

Basic Segmented Vessels
The END

Basic Segmented Vessels
http://www.tnvalleywoodclub.org/articles/PDFs/basic%20seg%20vessel%20calc%20with%20filler.xls