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Segmented Turning by Andy Chen (SWAT-06)

Introduction: Only closed segmented vessels will be covered. Open segmented vessels are an entirely different animal.

Planning
- Designing: Shape, decorative pattern
- Material: Wood selection

Things needed:	Things nice to have:
Saw, preferably table saw	Band saw (re-saw)
Miter gauges (or miter sled)	Drum (thickness) sander
Hose clamps	Slotted angle plate
Calculator (or preferably, computer)	Jumble jaws on scroll chuck
Caliper (preferably digital)	Live center adapter for scroll chuck
True flat surface (granite slab)	Quick Grip clamps
Veneer press	
Steady rest	
Donut chuck	
Titebond II	
Duct tape	

Construction
- Cutting segments: miter gauges vs sleds
- Sanding or no sanding
- Gluing segmented rings: Use duct tape and hose clamps. Paired segments and half-rings
- Stacking the rings: Truing up the faces and centering rings
- Turning top and bottom halves; joining two halves
- Finishing and turning the foot using a "donut chuck"

References:

Ron Hampton, Segmented Turning, 151 pp. Guild of Master Craftsman Publications, Lewes, East Sussex BN7 1XU. GB. 2003

Dale Nish, Woodturning with Ray Allen, 137 pp. Fox Chapel Publishing, East Petersburg, PA, 2004

Jim Rodgers. Segmented turning school: Part 1: Cut accurate segments. American Woodturner. 20 (4): 24-29, 2005

Jim Rodgers. Segmented turning school: Part 2: Plan a segmented vessel. American Woodturner. 21 (1): 56-59, 2006

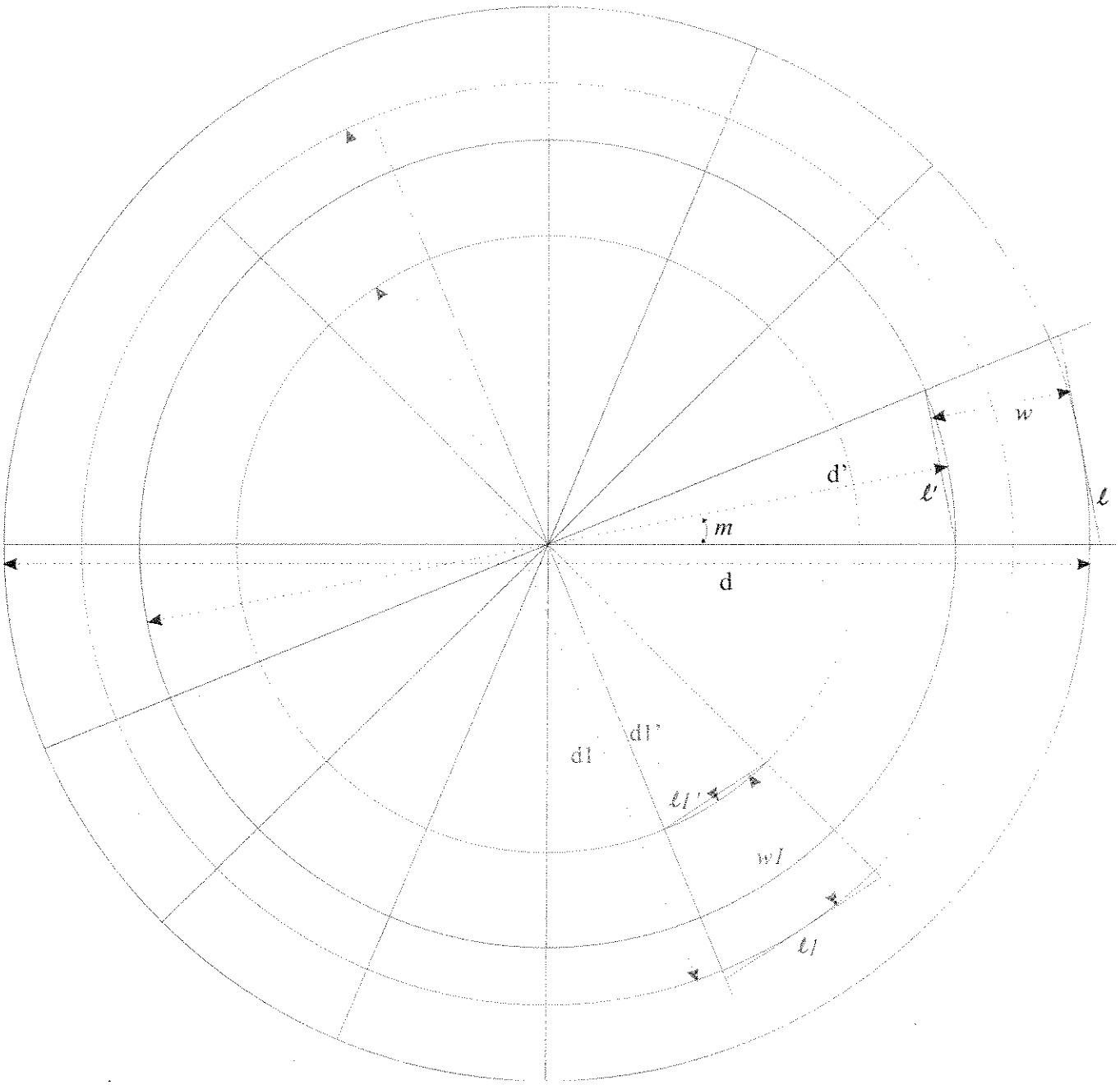
Jim Rodgers. Segmented turning school: Part 3: Sources of errors. American Woodturner. 21 (2): 44-47, 2006

Malcolm Tibbetts. The Art of Segmented Wood Turning. 184 pp. Linden Publishing. Fresno. CA. 2005

Helpful web sites:
- http://www.Turnedwood.com: Kevin Neelley
- http://budlatven.com/home/index.htm: Bud Latven

Segment calculation: Free Excel template available. E-mail Andy at andy_c_chen@yahoo.com

Calculation of segments (Andy Chen, SWAT-06)



n = Number of sides, m = miter angle, d = diameter of ring, d' = internal diameter of ring
w = width of segments, ℓ = length of segments, ℓ' = short length of segments,

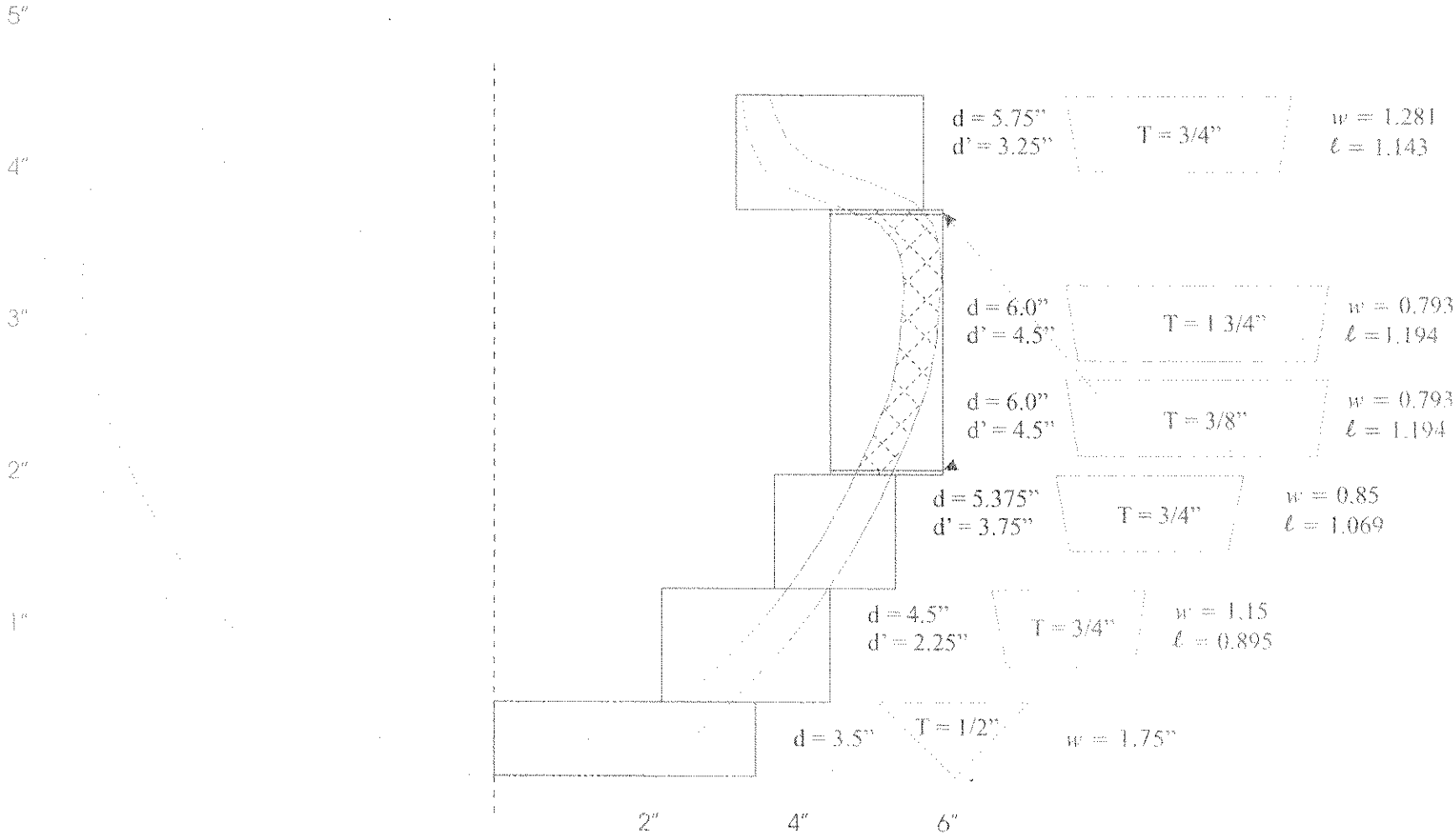
m = 360°/2n
w = 1/2(d - d' x cos m)
ℓ = d x tan m
ℓ' = d' x sin m
Total board length = (ℓ + ℓ') x (n/2) + (0.125/cos m) x n

Non-italicized are designated
Italicized are calculated

Example: For a ring with 16 segments, 6" OD, 4" ID

m = 360°/(2 x 16) = 11.25°
w = 1/2(6" - 4" x cos 11.25) = 1.038"
ℓ = 6" x tan 11.25 = 1.194"
ℓ' = 4" x sin 11.25 = 0.78"
Board length = (1.194 + 0.78) x (16/2) + (0.125/cos 11.25) x 16 = 17.75

Segment layout and dimensions (Andy Chen, SWAT-06)



Designing patterns (Andy Chen, SWAT-06)