

WDWK 2459 Advanced Woodworking Overview

- 1) Machine tuning & set up. Check machine output for sharp, square, accurate readout of indicators
- 2) Tools
 - a) Square
 - b) Measuring Tape ½ x 12'
 - c) Chisel(s) by 3rd week (3/8 or ½)
 - d) Sanding block
 - e) Sanding mat or old towels for bench top
 - f) Safety glasses
 - g) Ear protection
- 3) Furniture Design
 - a) Utility: What is the function of the piece?
 - b) Aesthetics: What does it look like? **Proportion**: Are the parts in scale to each other? To its purpose?
 - c) Drawings:
 - i) Working out the design through elevations: Front, Side Top (plan)
 - ii) Graph paper
 - iii) Generating cut list
- 4) Joinery
 - a) Mortise & Tenon
 - b) Dovetail
 - c) Tongue & groove
 - d) Half lap
 - e) Biscuits
 - f) Dowels
 - g) Screws (Sam Maloof calls them Spiral dowels!)
- 5) Wood
 - a) Calculating Board Footage: 1" x 1' x 1' (*length in inches x width in inches x thickness in inches divided by 144= board feet*)
 - i) Adding waste factor (30%)
 - b) Moisture Content:
 - i) Hardwood from the kiln is dried to 6%
 - ii) In our area stabilizes around 10-12%
 - c) Grain orientation: quartered, rift, plain
 - d) Storage & care: Allow **air flow** under parts, do not leave wood (especially panels) laying on a flat surface for a long period of time (more than two hours)
- 6) Working properties of different woods
 - a) Hardness, workability, stability
 - b) Radial to tangential shrink differential affects stability
- 7) Cut Lists: Note important visual pieces
- 8) Wood Selection (checking at ends), different values of individual parts: Visual vs. secondary
 - a) Begin with the most important visual parts, the secondary parts are what is left over
 - b) In general, work from largest to smallest
 - c) Harmony, support, contrast

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- d) **Include extra material to set up and test for tenoning**
- 9) Cataloging of parts
 - a) Label the end of the part and its orientation
 - b) Catalog marks will need to be transferred as part is dimensioned
- 10) Stages of milling (*Sequence is very important to achieve consistent results*)
 - a) Rough length (*catalog*)
 - b) Rough width
 - c) Rough thickness
 - d) Resting period
 - e) Flatten part by **face planing** on joiner
 - f) Bring to **Finished thickness** using Planer (*a multi-step process taking 1/32 per pass, turning the piece end for end with each pass and checking for flatness at each pass*)
 - g) **Edge Join** one edge **square** to the face (*check with square and back-light*)
 - h) Plane in planer to **Finished Width**
 - i) Final length (except in case of legs, leave extra length) (*re-catalog*) **Note that all parts of same length are cut using the same set up**
 - j) Joinery (*there are many ways to achieve the same result, we will all use one*)
 - k) Detailing: *This is where things get tapered, carved, shaped, routed, rounded over, slotted, inlaid, etc.*
 - l) Sanding to final grit (*with some exceptions such as surfaces that will flush to other surfaces. They are sanded after glue up*)
- 11) Sanding
 - a) Milled **surface quality** is affected by several things: **grain direction**, type of wood, sharpness and tuning of milling equipment (*what part of machine may be sharper than another?*)
 - b) Progression of grit size: 80, 120, 180, 240, 320
- 12) Pre-finishing
 - a) Panels
 - b) Backs
 - c) Hard to get to places
- 13) Glue
 - a) Choices: Aliphatic resin, Epoxy, plastic resin
 - b) Thin on both surfaces (exceptions: through tenons)
 - c) Cleanup: immediate
 - i) Tapered wood
 - ii) Toothbrush
 - iii) Chisel (dedicated)
- 14) Sub-assemblies
 - a) Sanding and pre-finishing
- 15) Final glue up
- 16) Final Finish
- 17) Final assembly