



Aging on Wood – Beyond Oak

Chris Rosemeyer

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History of Barrels

- 3000 BCE: Greeks, Egyptians, storing and transporting wine in clay amphorae
 - Heavy, fragile
- ~100 CE: Wood barrels start coming into use in the Roman Empire
 - Oak was plentiful, and soon vintners noticed the positive effect on wine
 - Oak is very nearly the only wood used to age wine today

Why Oak?

- Porosity makes for good liquid holding
- Allows some slow oxidation which is good for wine
- Tannins and vanillins add complexity to flavor
- Since winemakers almost exclusively use oak, and bourbon must by rule, there aren't a lot more food grade barrels available for brewers, and custom barrels are quite expensive

Robert Mondavi

- Brought barrel aging into California winemaking
- Studied the chemistry, added greatly to knowledge base
- Awarded the Legion d'Honneur by France for his role in establishing a relationship between French and American winemakers

Why Others?

- There are many other woods, all have unique characteristics
- Wood spirals, chips, cubes are much less expensive than barrels
- Aging on wood rather than in it eliminates the oxidation—good for wine, not as nice for many beers
- May be able to introduce sour flavors without the stress of having bacteria and brett in the brewhouse

What Kinds of Wood to Use?

- Generally hardwoods and fruit woods
 - Mahogany, apple, cherry, etc.
- Some brewers have used cedar
- Never use treated wood—most lumber products will have been treated to minimize weathering
- Find out if the wood is food grade—is it used in food or does it bear edible materials?

Some Wood Ideas

- Citrus woods like lemon or grapefruit can add some sour notes without wild yeast or bacteria
 - Won't have the barnyard funk, but takes less time
- Cherrywood may add a mild sweetness and fruitiness
- Hickory may bring strong smoky bacon notes
- Any BBQ wood—knowing the smoke profile can help give hints about what it will do to the beer as well as it's strength

Preparing the Wood

- Wood must be seasoned—aged in open air for a minimum of two months to release volatiles and reduce tannins
- Sanitize/toast in the oven at 180°F
 - Short exposure will keep more original wood characteristics
 - Longer oven time will start to break down some compounds, leading to more char flavor
- The more surface area the better—cut slits or spirals to maximize

Aging the Beer

- Add wood in the secondary, if possible add at 60-70°F
- Add a little—you can always add more
 - Usage will depend on the wood and the form
 - Surface area is the biggest factor in aging time and amount of wood needed
- For many exotic woods, you will have to experiment to determine the best method
- You can add in the keg and see how time changes the character

Aging the Beer

- For chips, start with $\frac{1}{2}$ to 1 oz. per 5 gallon batch, depending on the strength of the wood's flavor and aroma
- Chips will infuse very quickly, 1-2 weeks
- For cubes, start with 1-2 oz. and age longer, 6 months to a year or more
- For spirals, start with a couple of 6" spirals, should age quickly, similar to chips

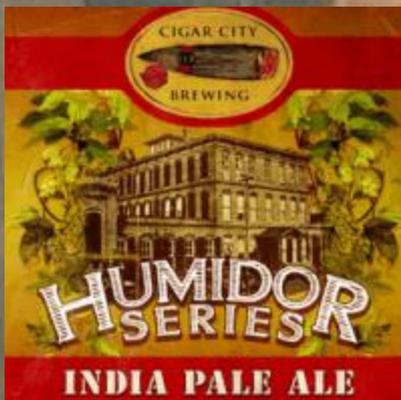
Some Commercial Examples

- Dogfish Head Palo Santo Marron
 - Paraguayan Palo Santo, an aromatic wood used in South American winemaking and perfumes
 - Aged in a 10000 gallon custom made vat
 - 11% ABV malty brown ale



Some Commercial Examples

- Cigar City Humidor Series
 - Several beers aged on Spanish Cedar spirals
 - Spanish Cedar is not cedar, but a mahogany species
- Humidor IPA
 - Usage about 2 x 6" spirals for every 5 gallons



Some Commercial Examples

- Hitachino Nest Japanese Classic Ale
 - India Pale Ale aged in cedar casks
 - Casks often used in sake making
 - Brewed with IPA recipe brought to Japan in the 19th century
 - Chinook, Fuggles, EKG



Some commercial Examples

- Cigar City/Bruery Dos Costas Oeste
 - Series on Spanish cedar, lemon, and grapefruit
- Green Flash Cedar Plank Pale
 - Seasonal pale on Spanish Cedar (Oct-Nov)
- Surly Cherrywood and Applewood Aged IPAs
- Innis & Gunn Cherrywood Finish
- Dogfish GRAIN to Glass
 - Brewed with cedar scraps from a surfboard maker

Resources

- Wayne Wambles of Cigar City's Presentation on Exotic Wood Aging from 2011 NHC:
<http://bit.ly/1p4ru3t>
- BBQ Smoking Flavor Chart
<http://bit.ly/1h4cjgB>
- Wood spiral Manufacturer
<https://www.infusionspiral.com/craftbrew>
- "Honeycomb Barrel Alternative"
<http://www.blackswanbarrels.com/>