

Beer & Wood – JAB Presentation

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November 14, 2008

1. Beer & Wood – History

- a. Originally, beer put in wood barrels, (usually oak) primarily because it was the most convenient storage container, not necessarily for its effect on flavor of the beer.
- b. Other beverages in barrels – wine, scotch, bourbon, rum, molasses, etc.
- c. Because wood is porous, it can be dried to low moisture content, and staves bent around iron hoops over a fire into a barrel shape.
- d. The liquid inside the barrel would then swell the wood, sealing the barrel.
- e. This shape allowed a large volume of liquid to be stored and you could roll it about, which was a large advantage for shipping and transport.
- f. Also very sturdy, resistant to rough handling, unlike wineskins.
- g. It's been said that the barrel is the most highly regarded Western invention by the Chinese.
- h. In old England, barrels usually lined with pitch to protect beer from the wood. (i.e. the cypress barrels at Schell's)
- i. In Belgium they discovered that smaller barrels (unlined, of course) helped in the addition of bacteria, wild yeasts to beer and less of the wood itself. Belgians, to no surprise wanted the funky flavors from the wood that brewers in other countries tried to avoid or minimize.
- j. In America, barrels used for whiskey, rye and rum.
- k. American law written (and still in use today) that bourbon barrels can only be used once for American Bourbon. Law was primarily to protect the cooperage industry and not so much for the product itself. Many bourbon barrels were then shipped to Scotland for use in Scotch whisky production.
- l. Wide availability of barrels, along with craft brew revolution led to resurgence of barrel aged beers in US. One of first was Goose Island in early 1990's.

2. What do barrels do to beer?

- a. Since sanitation is so key to brewing, why put beer in a vessel that can't be sanitized?
- b. With the right beer and a creative brewer, the "problems" that wood brings to beer, can be used to create wonderful, complex beers.
- c. Wood is porous – beer in barrels gets some amount of oxidation.
- d. Beer can take on flavor of the wood – oak, vanilla, tannins, smoke.
- e. Beer can take on flavor of what was in barrel before beer, i.e. wine, bourbon, etc.
- f. Also wood harbors bacteria, which in some cases is desirable for its effects on aroma and taste of beer. (sometimes not) This usually takes longer to extract develop these bacterial characteristics than those from the wood.

3. Commercial examples

- a. Barrel aged beers becoming more available, almost trendy. (I for one have grown tired of over the top, 15%, bourbon barrel stouts, but love barrel aged Belgian styles or beers that are strictly about the wood and not the bourbon and/or alcohol.)
- b. Roundtable discussion in January 2008 BYO: with brewers from
 - i. Stone
 - ii. Avery
 - iii. Left Hand
 - iv. Russian River
 - v. Captain Lawrence
 - vi. Jolly Pumpkin
- c. Usually bigger beers, but not always.
- d. Local breweries doing it as well, Town Hall, Barley John's, Fitgers
- e. Note: Budweiser's famed "Exclusive Beech wood Aging" is not exclusive, is not aging (3 weeks), and has nothing to do with flavor, but has to do with aiding the process of clarification and removing the yeast from the beer. Beech wood chosen for is neutral, nearly non-existent flavors.
- f. Other uses of wood in brewing:

- i. Smoked malt – Alaskan Smoked Porter uses smoked Alder, Bamberg beers from Germany
- ii. Old wood vats – Traquair House, so old, little wood gets into beer

4. Home brewing with wood

- a. Oak aging (barrel) vs. Oak flavoring (alternatives): oxidation.
- b. Types of beers: usually bigger, darker, stronger beers, but not always.
- c. Most home brewers don't use barrels (some do), usually because of
 - i. Expense – a five gallon barrel costs upwards of \$200
 - ii. Maintenance – barrel maintenance is time consuming, barrel must be kept moist or wood will dry out. If wood cracks, repair can be difficult, expensive or impossible.
 - iii. Sanitation – once something gets in your barrel you don't want, very difficult to get it out.
 - iv. Smaller barrels have thinner staves, which accelerate oxidation.
- d. Most use wood alternatives (usually oak)
 - i. Essence and Powder
 - 1. Easy to use (add to carboy)
 - 2. Works quickly
 - 3. Can add a little, and if more wanted, just add more.
 - 4. Quality, character limited
 - 5. Amount to use: varies, but an ounce or 2 per 5 gallons
 - ii. Chips
 - 1. Most common, high surface area
 - 2. Many varieties (American, French, Hungarian) and toast levels
 - 3. Extraction takes 2 to 6 weeks
 - 4. Amount to use: varies, but anywhere from 0.5 to 2.5 oz per 5 gallons.

iii. Cubes

1. Some feel a step up from chips: volatile compounds in oak can evaporate from chips, but are maintained in cubes. (smell fresh cut wood from old surfaces)
2. Wood penetrates about 6mm into staves of a barrel, and most cubes are cut at about 6mm.
 - a. Light toast – surface only
 - b. Medium toast – 2mm
 - c. Heavy toast – 3-4mm
 - d. Intentionally varied toast for broader spectrum of flavor.
3. Amount used is same as chips, but extraction takes longer, at least 6 weeks.

iv. Staves & Spirals

1. Staves are sides of barrels, spirals are specially cut
2. These methods add more wood by weight, but effect of wood is controlled by contact time.
3. Meant to be reused, so maintenance is an issue, but far less complicated than barrels.
4. Around 20 weeks to full extract characteristics and will be less noticeable with each use.

e. Do NOT use oak lumber

- i. Has additives to reduce cracking and warping during the drying process that you don't want in your beer.

5. Process for home brewers

- a. Wood usually added to secondary, although some add to primary.
- b. Sanitation
 - i. Some (including me) do nothing, just toss it in.

- ii. Can soak in hot water (160-170) for 15 minutes. Don't boil the wood. (I found out the hard way.)
 - iii. Soak in a spirit like bourbon, wine, and vodka for a week or two.
- c. Add to vessel and wait amount of time depending on type of wood and type of beer. Don't rush!
- d. Start small. You can add more, but you can't take it out.
- e. Take samples after a few weeks, and adjust (up) if desired.
- f. If your beer is strong and you intend to age for a year or more, don't be scared off by intense oak flavor right away. Oakiness mellows over time.
- g. Split your beer and leave some with no oak for blending. This worked very well with a Scotch Ale I did last year.
- h. If you aren't satisfied with it, be creative. (Blend with another beer, wait, use in cooking, etc.)
- i. Use chips/cubes once and throw away. Or not. The brewer from Russian River talks about his "dimebag" of oak chips full of funky critters and bacteria that he uses over and over.