

Straight from the Rack

A Barrel of Fun

By Mike Lang



A few weeks ago I had the privilege of sitting down to taste wines produced by a California winemaker. The wines had great extraction and excellent quality at a very attractive price point. What made this particular episode so interesting was that this winemaker's family owns property in Hungary which is an oak forest. He travels back and forth between Hungary and the United States making barrels in Hungary and then wine from his vineyards in California.

I was fascinated by the concept that at his cooperage (a place where barrels are made from staves of milled oak), he makes the decisions as to the size, quality and flavor profiles of the barrels. What I mean by flavor profiling is that once a barrel has been made, the cooper places it upside down over a bed of coals to "char" the inside of the barrel. This process imparts flavors in the fermented juice as it is fined (allowing particulate matter in the wine to settle and be filtered out of the final product) and aged. Specifically, the compounds of note within the oak are volatile phenols containing:

- vanillin which imparts a vanilla component,
- carbohydrate degradation products containing furfural which yields a sweet and toasty aroma,
- oak lactones adding a woody aroma to the wine,
- terpenes which add a tea and tobacco tone, and
- hydrolysable tannins which are important to the body and aging of the wine.

When we talk about tannins in wine, most of us assume it comes from the grape skins during the fermentation process. While it is true that tannins do come from the grape skins, a lot of tannins are found within the wood of the oak itself. Since eight percent of the mass of French oaks are tannins, and one percent of the mass of American oaks are tannins, any wines aged in French oak will contain more tannins than wines aged in American oak.

While there are over 400 species of oak around the world, only a few are used to make barrels for aging wine. The *Quercus Robur* is a type of oak tree found in central and eastern France. These oak trees are grown in government-owned and government-managed forests. Because of the cool climate, these trees grow at a slow rate, producing a tighter grain. The close spacing of the oaks in these forests promotes tree growth with a straight grain and no knots. The cooper selects only mature oak trees that are at least 100 years old to be made into barrels. Only the bottom portion of the tree from the first branches down to the bottom of the trunk are milled. The trunk is split by hand because a sawed cut releases too much tannin into the wine making it astringent. After splitting the oak, the cooper dries it for three to five years in the open air. Open air drying decreases the possibility of barrel leakage and leeches more tannin from the wood resulting in a softer finished wine. {The yield of wood from a one 100-year-old tree produces two to four barrels which can hold about 60 gallons of juice. At the current market price, each barrel fetches from \$600 to \$1,200. Sad to say, the barrels have a short life expectancy. They are used only a few times before they lose their ability to add to the complexity of the wine.} A barrel has two purposes: it imparts the characters of the wood into the wine and it allows a slow introduction of oxygen into the wine. The capability of the barrel to do those two things diminishes with use. As a rule of thumb, we would expect to get 50% of the flavor a barrel has to offer after its first use, 25% after its second use, and less with each use until the barrel adds no quality whatsoever after its fifth or sixth season.

{The history of the barrel is vast indeed. For obvious reasons one then would investigate the origin of the barrel makers themselves. The proper term for a barrel maker is a cooper. The word cooper originates from

Gaul where wine was stored in wooden vessels called "cupals." The vessel's maker was called a "cuparius." If your last name is Cooper or Hooper it is a pretty solid bet that somewhere in your family tree an ancestor built barrels. The art of the cooper dates all the way back to ancient Egypt as early as 2690 BC (before the Christian era) where straight sided open wooden buckets were built. Fully closed wooden barrels were being developed around 800 to 900 BC. By the first century BC, barrels were used for storage of beer, wine, milk, water and olive oil. As trade and transportation began to grow throughout the world it was obvious that the wooden barrels were far superior for transport than clay or glass vessels. One could roll the barrels easily from dock to ship, and from ship to dock. Thus, the occupation of the cooper was lucrative and in high demand. Currently, a cooper still endures a seven year apprenticeship before she/he can take the title of cooper. The tools and procedures used to create a barrel have changed very little in three thousand years. Pretty cool huh?}

About a year ago, I was involved in an unusual wine tasting experiment. We were seated at a table and each sommelier had six glasses of red wine on a blank sheet of paper. Our task was to write descriptions of the individual wines and then rank them from best to worst. When we finished, we were surprised to learn that not only was the same grape varietal from the same vineyard in each glass, but they were selected from the same row of vines. The only difference in each selection was that each had been aged in different oak barrels. Some of the barrels were made with American oak and some with French oak. Each barrel had been "charred" over a fire for a different amount of time at different temperatures. As it dawned on the tasters that we had been misled, we took the opportunity to look back at our notes to see what characteristics the oak imparted on the individual wines. What we discovered was that the wine aged in American oak was sweeter and tasted of vanilla. The wine that had been aged in French oak was spicy with hints of cinnamon and clove. Toasted almonds and vanilla were the pronounced flavors on the wines aged in barrels with more char. Our conclusion to this experiment was that even though the grapes used to make the wine were exactly the same, the characteristics of the wines aged in a variety of barrels were vastly different.

Now, let's go back to my opening story about the Hungarian wine maker who is also a cooper. The influence he has over the end product in the bottle is amazing! He has complete control of his wine making process from growing his grapes in California to building his barrels from his own oak trees in Hungary. In my opinion, he also produces an excellent glass of wine. So, the next time you crack open a Cabernet Sauvignon and snuggle up in front of a nice fire, note the characteristic flavors expressed in your glass. You should be able to decipher the flavors of the oak barrel aging.

Cheers!