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THE MYRIAD COMPLEXITIES OF A SIMPLE OAK BARREL

'NO WOOD no good' was an old saying in the Australian wine industry, but in recent decades there has been a shift in preference to light, aromatic white wines such as sauvignon blanc and the Spanish joven style of red, where the wines are bottled fresh and young for immediate enjoyment and spend very minimal, if any, time in oak.

But oak has the ability to enhance and improve a wine's aroma and flavours considerably and oak remains an integral part of the winemaking process. We are very skilled in oak maturation. Australia's initial overseas success was forged on a practice of producing heavily oaked wines badged cheekily, and derogatively as, 'Dolly Parton' wines by some. Chardonnay and shiraz were two of the most popular victims.

There are a number of reasons to mature a wine in oak. While in barrel it undergoes natural fining and stabilisation that allows the winemaker to bottle the wine with limited intervention and 'cleaning up'. The colour grows deeper and stabilises and changes

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occur in the phenol structure, due to gentle oxidation, which results in a softening of tannins. It is thought this oxidation occurs in a number of ways, either through the wood, or between the staves and through the bunghole, depending on its position.

Producers have their favourite coopers, but tend not to put all their eggs into one basket. When you walk into a winery you are often confronted with a variety of barrels from different coopers which represent oak from various forests in France, such as Limousin, Vosges, Nevers, Tronçais or Alliers. Alternatively, the oak may come from America, which is a different species (*Quercus alba*) to French oak. It can be a lengthy process of trial and error to get the right balance of oak in a wine.

Consider the journey that talented winemaker Conor van der Reest from Moorilla in Tasmania

went through to select his oak. "It started in 2008 when I decided to readdress the use of oak in the winery. I wanted to get wood that would complement the fruit rather than dominate it as our wines are quite delicate in nature. To address that issue I had three main questions that I wanted to investigate in designing my barrel trial. Firstly, I wanted to look at cooperages. Secondly, I wanted to look at toasting and coopering techniques. Thirdly, I wanted to look at the size of barrels."

Conor went about selecting barrels from 16 cooperages, all with the same toasting levels, and after his wine spent six months in oak he evaluated the barrels individually and, more importantly, to see whether they complemented each other. "Over the last three vintages I've culled a number of cooperages for either being too intensely aromatic, too dominant in one aroma or flavour or being uncomplementary to the style of my preferred cooperages," he says. "I'm now using 12 oak suppliers and continuing my work."

The second part of the trial was then to look at different toasting levels, grain tightness and which forest the oak came from. "Trial results for our wines have showed that lower toasting temperatures and longer wood seasoning don't necessarily mean more integrated wood. My preference now is for a long and slow or deep fire-bent barrel for reds and a mix of fire and water-bent barrels for whites."

Staves (planks) of the best oak undergo two or three years of air drying, as opposed to oven-drying. This seasoning process is when the staves are stacked in an open yard and allowed to dry, which reduces the moisture content and removes bitter polyphenols, leaving more desirable vanillin and eugenol flavour compounds that give vanilla and clove aromas. In addition, longer seasoning increases the *cis* and *trans* oak lactones. The *cis* lactone produces

earthy, herbaceous and coconut flavours. The more tightly grained the oak the more subtle the flavours will be. The grain is a measurement involving the width of the annual growth rings. The narrower the rings, the tighter the grain. Tight-grain oak matures the wine more slowly and time achieves better integration. Toasting (slightly charring the inside of the barrel over an open fire) achieves less oak lactones pick-up, fewer tannins, and higher smoky aromas. But Conor has found that extended seasoning of the oak doesn't necessarily meet his needs. "Excess green characters have not been an issue in my retained cooperages so in order to keep the flavours that I think work for my wines I'm seasoning for only 24 rather than 36 months. This seems to extend the time that they are more intensely influencing the flavour and aroma of the wine."

There are two types of oak commonly used in France. *Quercus petraea* is found in the cooler northern and eastern parts, such as Vosges, has a tight grain and adds complexity and spice. *Quercus robur* is found in the south-central area of Limousin, which gives more recognisable robust vanilla notes.

Alister Purbrick at Tahbilk in the Nagambie Lakes region, uses oak completely differently. "We mature our red wines in century-old oval vats, as distinct from new oak," he says. "The wines ferment in old oak vats, which allow the extraction of colour, flavour and tannin as well as the development of a rich middle palate structure. The open vats are then drained to the century-old (plus) oval oak barrels to complete fermentation, and the wine remains in these barrels for about 20 months before blending and bottling. No oak flavour is imparted to the wine from the old barrels but slow oxidation of the flavours and tannins does occur, which results in a more integrated, complex, fruit-driven style. Using old oak in this way is almost unique to Tahbilk in Australia and the resultant wines are a true reflection of the estate's terroir."

Unlike the *Quercus suber* (cork oak tree), the *Quercus petraea* and *robur* oak is here to stay and continues to play an integral part in the artistry of wine.