Winery case study in oak selection and use

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This paper defines the principles, philosophy and policies developed by Orlando Wyndham in the complex process of deciding which barrels to buy, the purpose and reason for buying them, and whether they target the company's style of wine.

Why buy oak barrels?
Quality oak barrels still deliver a significant quality edge over non-barrel oak treatments, for example toasted oak planks and toasted oak chips. Conversely, non-barrel oak treatments deliver significantly better oak flavour contribution than poor quality barrels. Orlando Wyndham's policy is to buy only quality barrels that deliver superior aroma and flavour contribution, linked with the unique controlled oxidation characteristics critical for premium red maturation.

What is a poor quality barrel?

Cooperage faults
- Occasionally barrels can have production faults during assembly due to poor workmanship, or porous timber, which can result in wine leakage
- Incorrect sizing/shaping of staves and heading can result in wine leakage
- Wine leakage in turn results in expensive wine loss, risk of microbial spoilage and oxidation

Poor seasoning
- Adequate seasoning of merrain is now recognised as a critical quality step in oak barrel production
- Insufficient seasoning delivers an aggressive character, resinous in nature with inferior aroma and flavour profile which, at worst, can significantly reduce wine quality
- Ideally French oak is best seasoned for two years minimum, in France, to take advantage of the higher summer rainfall. This means a full cycle over two summers and two winters
- A merican oak, due to high density and open grain nature, improves dramatically with extended seasoning, i.e. three to four years. A merican oak requires a greater leaching environment, either naturally or manipulated, e.g. by water irrigation

Contamination
- Barrels can be contaminated with off characters, for example, TCA or chemical taints. TCA contaminated barrels can and do occur, although generally are not common
- Contaminated barrels are devastating to wine quality
- Without quality assurance checks, low level contamination may be blamed on the wine rather than the contaminating barrel
- TCA is partly diminished by toasting and is one reason for toasting heads
- For interest, at least two serious TCA incidences occurred this year (1999) from different barrel suppliers

Wrong oak/grain selection
- Too open or coarse grain can deliver lower aromatic qualities and higher phenolic/tannic flavours
- For example Quercus robur (Q. pedunculata) versus Quercus petrea (Q. sessilis), the two main oak species in France deliver different qualities. Q. robur (e.g. Limousine) is lower in desirable aromatics (oak lactones and eugenol) and higher in phenolic/tannic extract due partly to the very coarse/open grain of this species. Q. sessilis is the fine grained oak used for making quality wine barrels

Incorrect/inconsistent toasting
- Barrel toasting is the most important single factor determining the aroma and flavour characteristics of barrels for wine maturation. This view is shared by both winemakers and cooperers
- Too rapid toasting and/or inconsistent toasting from one barrel to the next leads to barrels with inferior flavour profiles
- Slow heat penetration during toasting is now widely practised as best practice, but is still rather subjective and varies from cooper to cooper

Commonly, toasting comprises:
- Bending stage—20 minutes
- Toasting stage—40–60 minutes (toasting 40–50 minutes, light to medium; toasting 50–60 minutes, medium to heavy)

What makes a quality barrel?
Firstly, quality barrels share none of the above faults. Secondly, the barrels must be consistent in form and general aroma/flavour profile from one year to the next. Thirdly, quality barrels deliver a particular and sometimes unique ‘house’ style. This house style evolves from the particular combination of a number of cooperage practices. For example, Dargaud and Jaegle hot-water bend prior to toasting. The defined house style is also used for specific wine styles, e.g. Barossa Shiraz demands different oak from Coonawarra Shiraz.

Quality assurance procedures
A series of quality assurance procedures has been in use by Orlando Wyndham for several years now to check the quality of all oak receivals. The specific procedures for barrels are as follows:

Visual inspection: a qualified cooper, employed by Orlando Wyndham, checks the standard of barrel assembly prior to acceptance. Quality of workmanship and in particular any signs of excessive oak shrinkage are noted.

Moisture check: oak moisture levels on the inside and outside of the barrels are measured. High moisture content (>20%)
is a concern as it may result in subsequent shrinkage, and may hint at poor seasoning. Most French cooperers now dehumidify their merrain after natural seasoning, and prior to barrel assembly, and this is accepted as an important quality assurance procedure.

Tasting: 6% of oak barrels received have their heads removed and oak scrapings are taken from heads and staves. These scrapings are taken for wine soakage prior to tasting by winemakers (48 hours contact). During tasting, the oak is checked for TCA and other taints, and general integrity of seasoning and toasting of the barrels.

The quality assurance procedures are critical with large volume barrel orders. Serious failure during a quality assurance check can lead to rejection of the barrels.

Quality barrel selection
Quality barrels:
- are free from faults
- are consistent from one year to the next
- deliver a particular/unique house style

House styles by French Oak cooperers
Following the demise of the kiln-drying fiasco of the 1980s, seasoning is now a well-understood and methodical process carried out by French cooperers. House styles have evolved, and I refer now to Tonnellerie Francois Freres, Seguin Moreau, Dargaud & Jaeglé and Boutes as examples of producers of quality barrels.

Seguin Moreau
Seguin Moreau is a large cooperage based in Cognac and is characterised by:
- a methodical grain selection process with emphasis on fine grain selection for wine barrels
- a multi-forest, multi-regional approach when selecting grain
- a modified seasoning process which involves a period of water irrigation after merrain production
- a strict toasting programme, which ensures optimum toastiness

The resultant Seguin Moreau style is:
- the most consistent of the French cooperers in flavour profile from one year to the next
- elegant in style with classic French oak aromas
- aromatic, yet soft on the palate
- excellent for cool climate Chardonnay and elegant Bordeaux red varieties

Francois Freres
Francois Freres, based in St. Romain, Burgundy is a large cooperage and is characterised by:
- a traditional approach to oak selection with emphasis on region, for example Allier and Vosges
- fine grain in style, with grain more variable and slightly more open
- natural seasoning, with a reliance on good Burgundy summer rains
- a strict toasting programme is practiced, as it is believed to be the most critical stage of barrel production

The resultant Francois Freres style is:
- consistent from year to year
- the most pungent, aromatic and phenolic French oak style on taste
- classic French oak notes and is very ‘up front’
- slightly tannic
- Francois Freres gives value for money, considering the cost of French oak barrels
- good for Bordeaux red varieties, and good only for a percentage of Chardonnay use
- excellent blending style.

Dargaud & Jaeglé
Dargaud & Jaeglé is situated at Romaneche Thorins, near the Maconnais Region. Its cooperage is characterised by:
- a traditional oak selection process from the forest with emphasis on region, e.g. Allier and Vosges
- a natural seasoning process
- a modified bending process before toasting
- this bending process involves dipping the cask shells for twenty minutes in boiling water to allow for quick and easy bending with less stave breakages.
- a strict toasting programme to ensure optimum toastiness

The resultant Dargaud & Jaeglé style is:
- relatively consistent
- sweet in oak aroma profile and flavour
- low in phenolic/tannic taste
- soft on the finish
- used successfully in Australia on Chardonnay and soft red styles

Boutes
Tonnellerie Boutes is situated at Vaynes near Bordeaux and is characterised by:
- a traditional approach to oak selection from forest, with emphasis on region and fine grain, with Allier and Vosges as examples.
- a modified seasoning process where the green merrain is soaked for approximately one month in water using a total submersion process with regular water change
- a controlled slow fire toasting programme to yield optimum toastiness

The resultant Boutes barrel style:
- has a high degree of consistency
- is aromatic in profile yet lower in phenolic/tannic taste
- is soft on the finish
- has a degree of elegance
- is useful for soft finish wines

Conclusion
The cooper’s style largely influences Orlando Wyndham’s selection and use of oak barrels, assuming most importantly that all the quality parameters are met. Once defined, it is important that the cooper’s style is maintained so that the winemaker can plan requirements and make purchases based on that style from one year to the next.

Barrels from different cooperers can be blended when wine is pumped out to fine-tune a particular product, but, conversely, some wines benefit from maturation in barrels from a single cooper, although when using a single cooper consistency is paramount.