



The private cellars of Château Margaux, Bordeaux

2. The Secrets of All Great Cellars

Six steps to perfect conditions

 When I bring a plant home from the nursery, I check the tag for the conditions that the plant appreciates, and accordingly choose the best location in the garden. I would not expect it to survive if I left it in the harshest corner of my yard and neglected to water and fertilise it.

Regrettably, this is just what some people do with their wines. The wine rack in the dining room and the cupboard above the refrigerator are not friendly environments for cellaring wines. A friend recently showed me a very attractive wine rack that he had built in his new kitchen. The only problem was that, after only a few weeks, many of his wines were showing signs of leaking around the corks. It is important to distinguish at this point between ‘cellaring’ and merely ‘storing’ wines. If they are stored for consumption within a number of months, such locations are probably quite satisfactory. But if wines are cellared for the purpose of developing maturity, then the right conditions are very important. Wine is in many ways a living and breathing thing and will respond to the conditions in which it is placed.

Sharing great old wines with like-minded wine enthusiasts must rank among life’s most enjoyable experiences. I meet with a group of such friends for theme tastings throughout the year. We recently had the privilege of sharing a bottle of the rare 1969 Lake’s Folly Hunter Valley Estate Dry Red. It was provided by one of our number as a mystery wine to supplement a vertical tasting of 1992–1998 Lake’s Folly Cabernets, the more recent version of the same wine. The 1969 was quite superb, displaying layers of complexity and intensity of which its younger siblings showed mere reflections. It was a smooth but intense wine, perfectly integrated and balanced, simultaneously exuding hints of sweet fruit, chocolate, honey, coffee, leather and smoke, as well as some gamey and medicinal characters. Before it was unveiled, the group decided that it must be no more than a decade older than our 1990s line up. The extraordinary quality of this wine after more than three decades must, in part, be attributed to the cellaring conditions that it enjoyed in Lake’s Folly’s cellar during this time.

These conditions are common to all great cellars. Let's take a look at exactly what they are.

1. *Stable temperature*

A constant temperature is the single most important prerequisite for cellaring wines long-term.

Consider an unfortunate bottle of wine in my friend's kitchen wine rack. On an average day the wine might be stable at, say, 24°C, but in summer, the room may heat up to 30°C. At the same time, the wine in the bottle is likely to warm up to at least 27°C. In doing so, the liquid naturally expands, possibly even pushing the cork out slightly or causing a small amount of wine to be expelled around the cork. (This will quickly evaporate but may leave a slight residue under the capsule.) This movement has also weakened the seal of the cork. When the temperature drops again, the wine cools, contracts and may consequently draw a small amount of air into the bottle around the cork. It is here that the biggest problem lies. This can occur even if the wine does not leak past the cork. (Leakage can easily be identified by stiff capsules that resist rotation.)

Throughout the bottling procedure, the winemaker works hard to very carefully limit any contact the wine has with oxygen. Excessive contact results in oxidation, a chemical reaction that causes the wine to age prematurely, ultimately making it flat and lifeless. Colour deteriorates, aroma and fruit flavour diminish quickly and the wine may become bitter. Such avoidance of oxidation is even more important during the cellaring process. If oxygen is allowed to pass into the bottle around the cork, the quality of the wine will slowly deteriorate.

While stable temperature is the most important factor in cellaring wine, it can also be one of the most difficult to achieve. Australia is hardly renowned for its mild climate and gentle temperature variations! Cellaring of wine in most parts of our country therefore requires the deliberate provision of a stable temperature. At my home in Brisbane, the annual room temperature varies from around 9°C to 38°C. A bottle of wine stored under such conditions will fluctuate from about 14°C to 32°C. Even a 10°C annual variation, as is common in many Australian cellars, is said to be too

large for reliable long-term cellaring.

More of a problem, however, is that of rapid temperature change. Seasonal variations aside, the daily temperature variation in our house is often in the order of 10°C. This results in a fluctuation of some 2–3°C in the temperature of wine in the bottle during an average day. Such conditions will cause a wine to deteriorate rapidly.

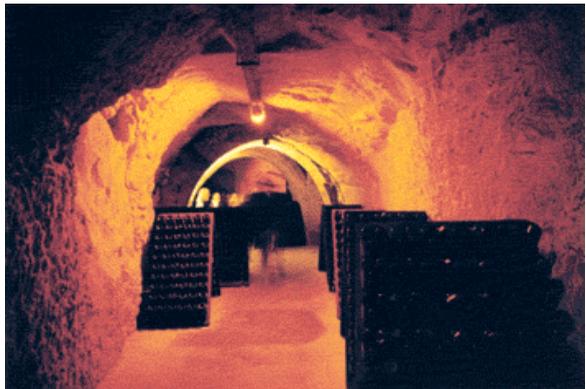
So what is ideal? The smaller the variation, the better. Although it is difficult to pinpoint exact numerical standards, I propose that excellent results would be achieved if one could maintain a daily bottle temperature variation of less than 0.5°C, a weekly variation of less than 1°C, and a yearly variation of not more than 5°C.

Hugel is a one of the most significant wine producers in the Alsace region of north-eastern France. Under its Riquewihr premises, it cellars its Rieslings and Gewurztraminers for up to ten years before releasing them. The temperatures in this cellar vary annually from around 12°C to 14°C. Such fluctuation is quite satisfactory, even for these very delicate varieties.

2. *Low temperature*

It is a common misconception that low temperature is the most important characteristic of a good cellar. It is not. It must take second place to a stable temperature. Nonetheless, it is an important second place.

The chemical reactions that occur in a wine as it ages are incredibly complex, and in fact not fully understood. However, as with most chemical reactions, their rate is dependent upon the ambient (surrounding) temperature. At



Fourth century chalk mines, now Champagne cellars at Tattinger, Reims. At 12m below the surface the temperature plummets to 10°C, at 18m it drops to 8°C.

high temperatures, say 25°C, these reactions will progress at such a rate as to develop the wine very quickly, effectively ‘cooking’ it. At low temperatures, below 10°C, the wine will develop very slowly indeed, virtually freezing into immobility. Somewhere between these extremes lies an ideal compromise, a temperature at which the wine ages slowly and elegantly, but still quickly enough that it does not need to be set aside for one’s grandchildren. This temperature is commonly accepted to be 15°C. In reality, any constant temperature between about 12°C and 17°C is satisfactory.

White wines tend to prefer a slightly lower temperature and sparkling wines even more so. In the ancient old chalk caverns under Champagne, temperatures are usually between 10°C and 14°C. As one descends to eighteen metres below the surface, the thermometer drops to 8°C. Here the greatest of all sparkling wines mature very slowly indeed.

3. Adequate humidity

Fussy little creatures, these wines! Once we have achieved a stable temperature of 15°C, the next thing to look at is the relative humidity. In order to understand this we need to consider how the wine is sealed.



The ‘inner sanctum’ of Marc Bredif’s tenth century rock cellars in the Loire Valley, France. Here, 13°C and 90% humidity sustain 128-year-old bottles.

Wine bottles are traditionally closed with the humble old cork, and although we are now seeing a number of better alternatives, alas, corks will still be with us for a long time to come. Being a natural substance, corks are somewhat prone to deterioration. They will not remain effective for long unless they are looked after. The easiest way to kill a cork is to dry it out. It will then shrivel, lose its seal, and the wine may begin to leak out of the bottle.

The cork can easily be kept moist on the inside by laying the bottle on its side to maintain contact between the cork and the wine. Keeping the outside from drying out requires a little more attention, and is best achieved by maintaining adequate humidity. Relative humidity around 70–80% is considered ideal. If the humidity is consistently below 60%, the cork will dry out.

Humidity throughout the ancient cellars of the old-world wine regions is regularly in the 80–100% range. At Marc Bredif in the Loire Valley in France, the innermost room of the cellar maintains a dead stable temperature of 13°C and a humidity of 90%. Vintages all the way back to 1874 lie perfectly preserved to this day. Well, almost perfectly. (I told you these bottles were fussy!) Bredif has recently constructed a very sterile climate-controlled warehouse to protect its new wines from excess moisture. Humidity above about 85% can cause labels to peel, cartons to rot and bottles to develop mould.

Château de Pommard has a different approach in its Burgundy cellars. At 14°C and very high humidity, the mould is apparent even on one-year-old bottles. By the time they are ready for release at ten years of age, a thick jacket makes it difficult to even distinguish one bottle from the next. But this is of little



Mould growing on a gate within the cellars of Château de Pommard

concern, as they are quickly washed, labelled and dispatched, looking just like new — and, incidentally, also tasting just like new. At twelve years of age, the 1989 Château de Pommard was a vibrant red-purple with hardly any browning in the colour whatsoever. The fresh raspberry fruit of the palate was more reminiscent of a two-year-old wine than a twelve-year-old. Ideal conditions can facilitate exceptional longevity.

At home we are not so fortunate as to be able to relabel every mouldy bottle. If you want that prized wine that you've been cellaring for years to look its best when it finally reaches the dinner table, keep it below 80% humidity. Otherwise the label may emerge at best unattractive, and at worst, unreadable.

4. Darkness

The very best underground cellars are cold, incredibly stable, moist and dank, and of course, very dark. Wines are creatures of the night, emerging from their long hibernation for just one moment of glory. But that moment will be less than glorious if the wine has spent its hibernation continually on display.

It has been verified that exposure to light produces chemical reactions in wine that cause it to deteriorate. In particular, ultraviolet light has the greatest effect, and white wines and champagnes are the most vulnerable. Amber-coloured bottles provide very good protection, but regrettably these have long ago fallen out of fashion to their much less protective clear and green counterparts. Consequently, the best solution is to keep the cellar in complete darkness whenever it is unattended. Intermittent artificial light will have minimal effect, but daylight should be avoided.

5. No vibration

If you are able to satisfy the demands of the first four conditions for cellaring wines, you are doing very well indeed. The last two are of lower consequence, but are worth considering for the best results. The first of these is the avoidance of disruption to the wines, both in the form of movement of the bottles and of vibration.



Guigal's impressive new cellar under Ampuis is fully temperature controlled, and insulated from the vibration of the main road above

Guigal is the most important producer in the famous Côte-Rôtie region of France's Rhone Valley. Outgrowing its 300-year-old cellars in Ampuis, it recently embarked on an enormous construction project. The result is almost two hectares of cellar caverns, climate controlled to 13°C and 80% relative humidity. This proved to be something of an engineering nightmare, with the facility sandwiched between the mighty Rhone river and a train line on one side, and a main road on the other. The finished product not only supports the road, but also Guigal's production facility, with a mass of some five tonnes per square metre!

Traffic rumbling across the top of the cellar is detrimental to the wine. Understanding this requires a little insight into the way in which wine develops. Put simply, the chemical processes in the wine produce larger and more complex molecules that eventually fall out of the solution as sediment. Under stable conditions, these are able to settle along the bottom of the bottle or barrel, allowing the wine to develop fully. Movement disrupts this process, stirring the sediment and mixing it throughout the wine.

The solution at Guigal was to construct an advanced anti-vibration system throughout the entire cellar structure. While most of us do not have the problem of trucks rumbling over our wine collection at home, vibration can

still pose a threat. Mechanical cooling units are prime culprits.

Further to this problem, there are extreme phenomena such as ‘travel shock’, which the wine can experience after extended transportation. It may take weeks or even months to settle before it is again at its best. Closely related is ‘bottle shock’, where the wine takes some time to recover from the bottling process.

6. Low ventilation

Ventilation can be damaging to wines because it can upset the delicate temperature balance in the cellar. While gentle air currents in themselves are of little consequence, the danger arises when these currents vary the temperature in all or part of the cellar. In particular, artificial cooling units have a tendency to introduce cold air currents.

There needs to be a compromise here. On the one hand, moving air can be a necessity in maintaining a stable temperature throughout the cellar. In doing so, however, the air should not be of such a temperature, or moved so quickly, as to cause rapid fluctuations in bottle temperature. This naturally presupposes that the temperature can vary in different parts of the cellar, and this in itself should be avoided if possible. Where absolute perfection cannot be attained, it is sufficient to ensure that stiff breezes directed at the bottles are avoided, particularly if they have the potential to change the bottle temperature.

There will always be sceptics who challenge the significance of a good cellar. The evidence presented will be anecdotal and subjective. Invariably, a particular old bottle will be cited, having been stored under imperfect conditions, consumed at a ripe old age, and praised wholeheartedly. My response is simple: These critics may never know just how much better that bottle could have been.

It was a Barossa winemaker who first suggested to me that the best investment a wine collector can ever make is to establish ideal conditions in his or her cellar. At first impression it may appear that this is an impossible task for the hobby wine collector with a small collection and an even smaller budget. For those who are better endowed financially, there are numerous options available:

- Underground cellar (~\$10 000)
- Aboveground cellar with a commercial cooling unit (~\$8000)
- Commercial wine storage cabinet (\$3000–\$8000)
- Commercial control unit attached to a domestic refrigerator (>\$500)
- Polystyrene wine boxes (~\$60 per dozen bottles)
- Professional wine storage (~\$700 for 100 bottles over five years)

I have many friends who successfully make use of such solutions, and I thoroughly recommend them for those who can afford them. But for those of us who cannot justify this expense, there has in the past been little alternative but to put up with grossly imperfect storage conditions. This is no longer the case. Across Australia, wine consumers are beginning to utilise cellaring solutions that are not only practical and ingeniously simple, but are at the same time as effective, and in some cases more effective, than many commercial alternatives. The following chapters detail four such solutions that have been successful for me.

Cellaring Wine is available from wine retailers and book stores. See www.cellaringwine.com for an up-to-date listing of stockists.

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