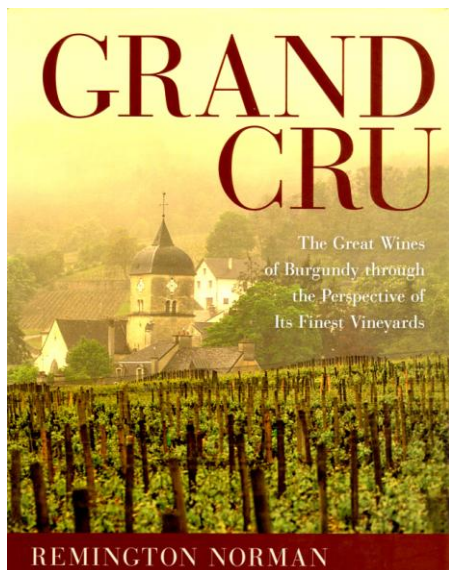


Notes from Remington Norman's *Grand Cru*

I can't imagine that there is anyone alive today who knows more about contemporary Burgundy than Remington Norman, and though his books look like coffee-table crowd pleasers they contain a surprising amount of detailed viticulture and wine making information. Maybe I like his writing because he asks the wine growers in Burgundy the same questions I would if I had the privilege to visit them at their domaines. I would wish to know about the soils, clones, rootstocks, canopy and crop management, harvest parameters, grape processing, fermentation, etc. He gives us a window into the philosophy and practices of many of the great names in our business, and we don't even need to get on a plane. The book has outstanding photographs which will help to transport you to the Cote d'Or.

I quote and paraphrase what I feel are the most interesting viticulture and enology contents of his new book, *Grand Cru: The Great Wines of Burgundy through the Perspective of Its Finest Vineyards* (Sterling Epicure. 2011), and sprinkle in my own commentary since I know only the most devoted Pinotphiles among you will actually read it. I don't agree with everything Mr. Remington presents, especially the tendency for wine writers to drift towards the over-romanticized allure of organic and bio-dynamic wine making, but I feel certain that he is making an honest, journalistic attempt to report his findings. I would guess that much of what he is told is empirical in nature, which is a French tradition and especially powerful in Burgundy, but in my mind, at the level that many of these wine growers are operating, it makes their methodology no less valid. Someday, research may be done that either validates or discredits their beliefs and practices. I tend to judge success by the quality of the wine, which, in Mr. Norman's words: weak Pinot is undrinkable; mediocre Pinot is insipid; great Pinot transcends everything. Having grown Pinot in the Willamette Valley, I'll say that there is a bit of "if you can grow Pinot, you can grow anything" in me. That's why I think it's an interesting grape to learn more about.

His first sentence about Pinot is about how it frustrates and fascinates producers and consumers alike. It is a fickle grape capable of incomparable elegance. There are a little over 6000 ha of Pinot in Burgundy, and over two and a half times as many in the US. Other wine regions with significant Pinot plantings include Germany, New Zealand, Austria and Switzerland. Pinot fin (fine) is the most widely planted variant, along with Pinot droit (straight), known for its productivity and upright growth habit. Pinot is genetically unstable which is why there are so many clones, although commercial wines focus on only a few, including the 50 or so French

(Dijon) clones which have been selected for their quality features. When I was in Oregon in the '80s David Adelsheim was working with Dr. Raymond Bernard to import the Dijon clones to the US. They came through Oregon State University, which at the time had a USDA-APHIS import license, and, while Pommard and Wedenswil were then, and remain to this day, the workhorse clones in the Willamette Valley, the Dijon clones certainly added a fresh dimension to Oregon Pinots. The early clones of Pinot fin came from Domaine Ponsot's section of the great Clos de la Roche vineyard in Morey-St Denis. The selection emphasis was on small berry size and open cluster architecture that would reduce rot problems. The clonal world is a maddening mish-mash of names and numbers: here are some of the clones that Norman highlights:

- Dijon 114: vigorous but with good phenolics, high sugar, strong color and good aromatics
- Dijon 115: small and tight clusters yielding ripe fruit (blackberry and black cherry flavors), low in natural acidity and high in tannin and pigment with strong varietal character. (It's no wonder this is a favorite among wine makers)
- Dijon 667: Below average yields, fine color with elegant aromatics, tannin and fruit purity. Rich Blair said this was the most durable clone of Pinot in his vineyard under the rain pressure of 2011.
- Dijon 777: A quality clone planted around the world on high quality sites. Early budding and ripening (this could be an advantage for us). Low yields, intense color, round tannins, good texture; a feminine and elegant character of Pinot.
- FPS 4, 5, and 6: 4 is the original Pommard clone from Chateau de Pommard and is the original and foundation clone in Oregon. It thrives in the Willamette Valley yet has met with mixed reviews elsewhere (e.g. Finger Lakes). 5 and 6 are heat treated clones from the same source material. Small, tight clusters, berries with thick skins, intensely colored wine, ripe and plush tannins and concentrated black fruit flavors, also leather and spice.
- 828: from Maconnais with small berries and intense color, low pH and bright acidity. Sometimes confused with AS2 from Archery Summit Vineyard in Oregon.
- California clones: Some of the best heritage clones of Pinot are:
 - Swan (97): bright fruit with good weight and length
 - Calera: spicy, red fruit, good body and color, suitcase clone from the '70s
 - Mt Eden: introduced in 1890s from Louis Latour Corton vineyards, similar to Pommard

Other notable California clones include: Chalone (from Chambertin, 90), Hanzell (E), and two Martini clones (75 and 66).

A natural feature of Pinot is its color deficiency; a feature unique among red varieties is the absence of procyanidins, which encourages the formation of coloration compounds. Pinot is known to have a thin and fragile skin that is difficult to fully ripen, often yielding wines deficient in color. The thin skin also makes Pinot susceptible to fruit rot diseases such as botrytis and the late season rots (bitter, ripe and sour). I have a suspicion that diffuse powdery mildew, as described in recent years by Wayne Wilcox, Cornell's outstanding grape pathologist, has its hand in causing rot problems in rainy years. Pinot is also afflicted by fan leaf and leaf roll viruses, although some wine makers claim that this may actually improve wine quality by limiting yields, not a practice I would subscribe to.

The French are all about soils, and Burgundy may be the epicenter of terroir. This may be partly due to the ill-treatment of their soils after WWII, when prodigious amounts of fertilizers and pesticides were used in the vineyards, which had the effect of sterilizing the soil. In recent decades a conscious effort has been made to reverse that condition. To state, however, that the impoverishment of the soil can be (or not) tasted in the wines of that time is, in my mind, highly debatable, especially given the dramatic changes in viticulture and winemaking tools and practices. Pinot performs best in predominantly calcareous (limestone) soils with moderate nitrogen and clay content. Volcanic and gravel bed soils may cause hydrogen sulfide problems, which he says increase as vines get older and more nitrogen is available. Pinot's minimum requirements are low to moderate vigor, well-drained soils and good exposure (thumbs up). Roots need care and vines have two types, laterals which spread near the soil surface and the tap roots which nourish the vine from deeper sources: best vineyard practices encourage deep vine roots. Bernard says that Pinot must grow on limestone to be truly expressive but this may be more a matter of style interpretation than scientific reality. Pinot is naturally vigorous on its own roots and restraint is imposed by severe pruning and rootstock selection.

The acid composition of Pinot is important to color development. It typically has much higher malate than tartaric, and it's the latter that helps to stabilize color. Acid, pH and color interact to influence anthocyanins and the wine's color hue and density. It is necessary in the vineyard to achieve full maturity of tannins to preserve Pinot's color.

All new wine regions begin with light color and body Pinots. At the Steamboat conference in Oregon we saw that in the early New Zealand and German wines. However, as growers learned how to achieve ideal ripeness (not too little or too much), and the proper fermentation and extraction processes, the color and density of Pinot can be realized.

If soil is paramount to the essence of Pinot, then climate is needed to extract the essence. The Cote is on the 47th parallel, so it's way up there (Willamette Valley is at 45 – although latitude matters little in comparing wine regions). As a general rule, the best wines occupy the outer fringes of climate conditions that will achieve optimal grape maturity. There are hazards associated with this relationship. He describes the Pinot conundrum well: in years when grapes do ripen fully the resulting wines are elegant, seductively perfumed, well-structured and long-lived but in less propitious years a lack of heat or light or an excess of rain delivers fruit deficient in the constituents of balance. In these circumstances the *vigneron* must work hard to produce something attractive and typifying its origin. Climate is therefore a major driver of quality in Burgundy, which is very complex from the macro- and meso-climate conditions of the vineyards. Slope, elevation, aspect, topographical features, and man-made elements all contribute to the *terroir* effect in the wines. Vineyards are between 100-395m in absolute elevation. Higher ground is cooler and the best vineyards prefer mid to lower slope. Aspects vary from east to southwest, which places row direction (up and down the slope) often east-west, which is not considered the best orientation here. The importance of diurnal temperature difference is emphasized here as elsewhere and is assumed to increase complexity (this popular notion is at odds with Gladstones diurnal shift effects on wine). The *combes* that laterally bisect the Cote act as conduits for rain, humidity and wind. La Romanee-Conti and Le Montrachet are between two *combes* which influence fruit ripening through the movement of air. Different soil types and clones respond in different ways to heat and rainfall, so how a grower conducts his

vineyards influences balance and ripeness in fruit: skillful canopy management can amortise excesses of heat and provide additional light and aeration in cooler, wetter years; plowing soil allows heat to be retained and reflected back onto the vines and promotes drainage. The vagaries of weather should be addressed in the vineyard and not the cellar, and with modern techniques, the talented *vigneron* can produce something worthy, if not profound, even in a “poor” vintage.

The Cote is in a sweet spot at the macro-climate level with the Vosges protecting to the east and the Morvan hills in the west. Because climate is so important to wine quality, it makes sense to seek the places where grapes can succeed. The amount of sun during the month prior to harvest is a critical factor for the vintage and in the Cote 200 hours is considered ideal, 180-200 acceptable and anything less than 170 capable of only modest wines. In fact, Norman claims that sunshine trumps yields when it comes to flavor development as a function of ripeness. He lays down these quantities as necessary for ripe fruit: 1400 hours of sunshine from budburst to harvest, 685mm of rain, an average temperature of 15°C during flowering, 22°C during summer, 3°C during winter and an average of 10.7 – 10.9°C. Moderate winds help to dry fruit after rains and sanitize vineyards but can also disrupt pollination and spread mildew spores.

Frost is an annual threat and a freeze event is occasional. The vines can tolerate temperatures to -25°C (-13°F) but not for prolonged periods, so Pinot, if grown smartly, can endure most of our winters in the East. Critical phenology events that are weather dependent include bud burst, flowering, fruit set, veraison and ripening during harvest. Two flowering problems are *coulure* and *millerandage*, the first aborts the flowers and the second leads to shot berries (hens and chicks). The smaller berries may actually improve quality with more concentrated juice and higher skin:juice balance. Hail is always a threat in Burgundy and some areas are particularly vulnerable. Rain at harvest is a major threat and grape dilution or rot is not easy to remedy. In considering weather and climate, what matters is how the variables affect the building blocks of wine quality – the development of sugars, acids and enzymes, and of tannins, pigments, flavor and aroma compounds. These processes depend on a mix of actors. Research shows that the optimal temperature for enzymatic systems is 20-22°C and around 25°C for the growth and retention of volatile compounds. However, the chemical messengers (cytokinins) which play an important role at various stages of vine growth appear to require much cooler temperatures while the vine root zone needs an average temperature in excess of 30°C (could this be?) to function optimally. Temperature (heat, or cooling, depending on your perspective) is the key to biological and bio-chemical processes in nature that synthesize the compounds that we find luscious in wines. Ideally, the vine is grown within these temperature boundaries.

Unfortunately, there is not one unique temperature that optimally drives these processes so the vine functions in a range of temperatures. Too hot or cold is never preferred, plenty of sunlight without scorching temperatures is desirable. All of this changeability leads to vintage variation. Cooler vintages have a longer, slower ripening profile which produces wines with more elegance, higher acidities, brighter tannins and often a more attractive balance of natural constituents. Such conditions preserve aroma and flavor nuances which readily burn off in great heat. Alcohols are more moderate and can, if necessary be fine-tuned by chaptalisation. In less ripe vintages, when it's simply too cool or there is excess rainfall during the harvest season, Pinot's thin skin fails to deliver the necessary concentration without the risk of excessive extraction.

All growers of fine wines can agree that yields as part of a balanced vine formula, plays a large but not decisive role in quality. It used to be thought that there was an invariably inverse relationship between yield and quality – the greater the quantity the lesser the quality, but this article of faith has been exploded by many fine vintages which combined high volume and quality. What appears to matter is the optimum amount of grapes that vines, or a block of vines or vineyard, has the capacity to ripen from one year to the next. 30-40 hl/ha appears to be the range for mature Pinot in Grand Cru vineyards.

In Burgundy the typical wine cellar does not offer the drama and flair that is so much a part of wine culture in Bordeaux. The emphasis is on the vineyard, in fact, the best *vigneron* in the Cote show little interest to spend time with a guest in the cellar: so if you go to tour Burgundy, bring your boots. Producing *vin de terroir* imposes the requirement on the *vigneron* to “read” their land, observe how vines grow and behave on it in order to understand and respect its individuality and thus enable the vine to best express its origins through its fruit. This sentence is a mouthful and highlights what I have referred to as empirical viticulture, which is widely practiced in Europe but less so in the US, where a form of technological, almost formulaic making of wine dominates. Perhaps this kind of sensitivity to the land can only be derived from generations of connection to a vineyard. It is certainly not the only way to make a great wine. The approach in the Cote is less interventionist: where the prophylactic approach sought to dominate the land, this listens to it, not at the exclusion of technology but using it only when it improves traditional practices. It is an intimate relationship between grower and a small plot of land, which is not unlike how we farm our vineyards in the Eastern US.

What to plant is always an important question, of course it needs to be the healthiest plants possible. Clones are still the latest fashion but I sense they are diminishing in their domination of Pinot quality. Selection massale is once again popular, taking choice cuttings from a vineyard block and propagating them, thus maintaining the genetic uniqueness of the mother vineyard.

Rootstocks are very important, primarily for their *phylloxera* resistance, and secondarily for other vine attributes such as lime tolerance, vegetative growth, bud break dates, tolerance to drought, and diseases. Currently, the preferred rootstocks are 3309, 161-49, Riparia, 5BB, and 125AA. In the US, 420A is now considered a desirable rootstock for Pinot.

Vine density is where we go our separate ways. The depleted soil, small vine viticulture in Burgundy squeezes 10,000 vines per hectare (4000/ac) on meter x meter spacing and some new vineyards are pushing 13,000 vines. The claim is that the higher densities produce root competition that forces roots deeper, and that the trace elements there somehow make better wine. I have yet to encounter any scientific literature to validate this age-old myth, but it like a pit bull in its persistence. Yet this push to ever higher densities is common to many fine wine regions, including Bordeaux and Piedmont. The development expense is astronomical yet those who are doing it must believe that the cost justifies the investment, and that it can be recouped in the price of the wine.

The contribution of old vines to wine quality is not unique to the French but certainly a well-tended claim. Norman states that old vines are more resilient and lower yielding; age also brings greater flavor concentration and complexity, better structures and an indefinable dimension of

“old-vineyness” (my quotes). In Burgundy even 20-30 years old vines are considered young, an apprentice fruit provider which has not yet reached maturity. 30-130 year old vines are considered old, and the essential component to any great wine. It is not known why vines age to produce wines of character and expressiveness. Whether a vine is good because it is old or old because it is intrinsically good (survival of the fittest) is in question. Older vines often have smaller berries which impart greater concentration of aroma and flavor. The superior quality of older vines may simply reflect their better adaptation to the site.

Yield and quality is always the topic for a good debate. Domaine Leroy is known for its great wines and severely low yields, around 20 hl/ha. A contrary view comes from Dominique Lafon, who wants to keep each vine in balance with its environment where it will naturally ripen the right amount of fruit. His wonderful Chardonnays average 40 hl/ha. It can be stated in general that great Pinot is incompatible with yields over 35 hl/ha in any circumstances and Chardonnay in excess of 45 hl/ha; and this 10 hl difference is maintained over many years. What growers strive for is balanced fruit: in reds this means two-thirds liquid to one-third solids, with sufficient sugar to produce 12 to 13.5 percent alcohol, and tannins that are ripe, not green and bitter. At 10,000 vines per hectare this equates to 5-7 small bunches of fruit per vine. Improved fruit quality means not just better overall ripeness, but more consistent, even ripeness and , with reds, finer tannins.

Pruning is the first step towards creating a balanced vine and on such high densities the pruning is severe. No extra buds are left on the vine leaving it at risk of frost, hail and other hazards. The vine has two cycles – the first, vegetative, lasts until around the end of July and accumulates sugar in leaf development; the second, after the grapes change color at veraison directs energy away from leaves into seed maturation and berry growth.

The author does not talk very much about pests and diseases, other than to say there is a recent disaffection with synthetic products and that by stimulating the vine’s natural defenses this will keep it from harm’s way. This is not a realistic approach to winegrowing in any non-arid wine growing region. We know from our own experience that the pest complex is difficult to master and takes many tools, and not always the most desirable ones.

Biodynamic viticulture is worth some discussion if only because great estates such as Lafon, Leflaive, Leroy, DRC and others subscribe fully to it. Norman claims that in blind tastings, biodynamic wines are frequently singled out against their conventional counterparts as having more energy, finer acidity, fruit aroma that are better defined and more profound minerality. I hardly know how to address this kind of statement other than to say it is probably true for those tasters, and that these great domaines are able to make the biodynamic farming method work. There is a lot more to their success than the controversial preparations and astrology, and obviously it’s not for everyone.

Harvest is when all elements of *terroir* converge at a single point, as if the tip of a needle. Many of the elements of harvest are beyond the control of the grower, but he or she still has to make the most critical decisions of the growing season, and there is a lot of pressure. The overriding aim is to pick properly ripe fruit, but determining ripeness is far from an exact science. Underripe or overripe fruit produce inherently unbalanced wines. The enigma of fruit ripeness lies in

understanding two important propositions: first, that analytically equally ripe fruit may disguise completely different patterns of development and thus produce completely different wines; second, that even within a single bunch of grapes ripeness is often far from homogenous. It is likely that vines are programmed not to ripen their fruit simultaneously – an extended ripening period has obvious survival benefits. What the grower seeks is uniformity, within a vine and vineyard that will be expressed as *terroir* in the wine. The common problem with Pinot in Burgundy is achieving physiological ripeness, which occurs when enough sugar has accumulated in the grapes at the same time as the skins and tannins are fully ripe. If underripe, color, flavor, aroma and tannins will suffer. The *vigneron's* dilemma is often whether to wait for sugars to catch up, or pick under-ripe fruit and attempt to rebalance before the next big storm arrives. Some will harvest early to avoid acid loss and rot and rely on technology for solutions. These wines are often pleasant but lack *terroir* definition, and may be further marked by vegetal flavors and lack the warmth and opulent flesh of a riper wine.

This pretty much covers the viticulture portion of *Grand Cru*. The wine making may be even more informative, and I would highly recommend it to wine makers. He covers sorting, concentration vs. extract, stems, crushing, dealing with dilution, cold soaking, yeast, fermentation, time on skins, chaptalisation, acidification, sulfur management, pressing, malolactic, racking, oak and elevage, fining and filtration, bottling, wine faults and more. There are no secrets or tricks to making fine Pinot in Burgundy, just the proper treatment of high-quality raw material. He supposes that most mediocre wines are the result of deficient fruit rather than inept wine making. He makes a point that I have come to believe since I was a wine grower in Oregon: that Pinot demands the *vigneron's* full and undivided attention, especially during the steep learning curve of a new vineyard or novice grower and/or winemaker. Understanding a site's characteristics is slow and intellect-consuming; it takes years to assimilate a vineyard's subtleties and to work out how to best vinify its produce. In Burgundy, the winemaker does not "produce" a wine but more accurately he "interprets" the fruit and wine into actions that best reflect and cultivate the vintage. Even so, there are some winemakers in Burgundy who insist that a formulaic approach, especially in the cellar, is the best way to make wines of *terroir* because the vintage conditions are the lone variable from one year to the next.

It is pretty much agreed that really good fruit needs very careful and minimal intervention and handling in order to translate it into a fine wine. From Aubert de Villaine, proprietor of Domaine de la Romanee-Conti, "You must be rigorous, exigent, and allow yourself not even the slightest diversion to this rule, of which the key words are restraint, selection, mastery of methods, care for the detail, minutiae, patience, and above... humility." Nothing great can come from Burgundy without this rigor. He also famously said that 'the ideal is to do nothing.' The late Henri Jayer said that one of the most difficult challenges for a wine maker is not to intervene, that the 'winemaker must learn how to be lazy.' This is not always true and the 2011 vintages is evidence enough for us. But when the conditions are right, the vineyard is the voice, so the wine grower has to find the right site, then design and manage it well. The preservation of subtlety is infinitely harder to achieve than destruction. Pinot's fragile aromas and flavors are easily submerged under excessive oak, tannin and alcohol. Fine-tuning structure and establishing a satisfactory acid and tannin balance are the hardest things to achieve in any wine.

Two items of wine processing worthy of mention are the necessity of sorting and the difference between concentration and extract in a red wine. Best practices start with a rigorous triage in the vineyard and cellar – sloppiness here invariably punishes the wine. One Burgundy wine maker explained that heavy extraction merely produces extract of Pinot, not of the *terroir*. Real concentration comes from the vineyard, not manipulation in the cellar. As Einstein put it, ‘any fool can make things bigger, more complex and more violent. It takes a touch of genius, and lots of courage, to move in the opposite direction.’

I think we can grow really good Pinot Noir in the Lehigh Valley, Finger Lakes and Ontario, and probably other specific areas of soil and climate that suit this delicate grape. Pinot is advanced winemaking and you really have to want it bad because it will put up a fight. Maybe that’s why the best of the grape is so rare and so revered. If we can figure out the ripeness and rot problems, and get some cooperation from the weather in August and September, the possibilities are thrilling.

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December, 2011