

## **Science and Nature Part IV: How Great Wine is Made, the Second Half of the Equation**

***To my readers:*** As we release the most important work of our career, Chateau Marie LaRose and Oentrepid Cabernet wines, these articles, "How Great Wine is Made", dealing with Genetics and Precision Farming become crucial to the public understanding of the wines' significance.

Genetics are almost the raison d'etre for both wines: Chateau Marie came to be because of new Cabernet genetics from France which had not been seen in the U.S. historically. These new clones brought an authentic pepper spice not common to the traditional fruit forward American versions. As the project developed, we realized immediately the profound implications of these uncommon phenolic profiles and used the opportunity to spin off this exciting new brand. It is our version of the true French style.

Oentrepid also is dependent on Cabernet clones, but applied in a different way. Working with 9 different sets of Cabernet genetics, we are able to custom farm each one for it's dominant properties and then assemble them in rigorous tasting and focus group settings to achieve the most "complete" Cabernet possible. Oentrepid is our version of a cult-style West Coast Cabernet, with no "holes" or "missing" pieces.

This article is divided into two Sections, A & B. Section A is oriented to consumers and "upline" wine trade folks, presenting examples of why and how grape genetics account for attributes commonly thought to be "terroir". Section B is geared toward producers, growers and winemakers, and deals with the enormous costs and pitfalls of how false beliefs about "terroir" can wreck financial havoc by encouraging selections of inferior vines instead of superior strains, even by academic institutions.

**Brief:** In Science and Nature, Part III, we dealt with the impact that Precision Farming, especially controlled yields, can have on wine quality overall, with a special focus on shorter growing seasons. We established the Great Wine Equation as repeated below:

### **Genetics + Precision Farming = Great Wine**

Part IV takes up the subject of Genetics, how the specific genetics of a vine in question depends not only on the variety, but also on the clone, and encourages readers to think in terms of both and not just variety alone. Having learned about the Polyphenol Matrix in Part III, we now see that the genome controls the content of the Matrix and ultimately determines the specific flavor attributes the wine can possess.

This is seen in contrast to the importance of Precision Farming, which controls how much of those flavor attributes will be available. We can therefore expand our Great Wine Equation as such:

### **Genetics (quality of flavor attributes) + Precision Farming (quantity of flavor attributes) = Great Wine**

Both quality and quantity of the Polyphenol Matrix must be HIGH to achieve Great Wine, or HIGH wine quality overall. This is roughly analogous to the concept of sound, where frequency and amplitude determine the sound wave. In many ways, frequency determines WHAT you hear versus amplitude which determines HOW MUCH of it you hear.

By any estimation,

**Great Wine must have BOTH.** It is possible to plant genetically superior vines, but through poor farming, end up with wine that is thin and diluted such that the greatness of the genetics is never perceived. Alternatively, it is possible to achieve concentration of flavor through excellent farming practices, but have a mediocre wine product due to genetics which never had the capacity to perform and excel.

The contrast between Genetics and Precision Farming reflects the theme of this entire series of articles and why they are titled "Science and Nature". It is a contrast between that which Humans can control (farming) and that which is "given" by Nature (genetics). Whereas, most wine "experts" would consider "terroir" as a "given", which cannot be controlled, I disagree with the premise. We have seen in Part III that the old concept

***of "terroir" can be mitigated with knowledge and expertise, and is therefore irrelevant to the future of wine quality, IF Humans are properly educated. Indeed, "terroir" has become increasingly irrelevant globally for the last 40 years, as seemingly limitless streams of high quality product emerge from every corner of the Earth. Therefore, the only Element Which Cannot Be Controlled is reduced to the only one which is truly dependent on Mother Nature: Genetics.***

***Even in this case, however, Humans can still help themselves: simply never plant, or limit planting, inferior genetics. It costs the same amount of money to grow a great vine as an inferior vine. Hopefully, this article will help prevent those mistakes in the future, especially in Texas.***

## **Science and Nature, Part IV: Genetics**

### **Section A: For Consumers and the Wine Trade**

#### ***Well Doc, it all started when....***

I think life goes off the rails for all of us at some point. Maybe it's that, "We're not in Kansas anymore" moment when you realize that you're not perceiving things the same way everyone else does. You're not sure if you should say something about it because you might regret it, or if you would later regret not saying something about it.

*[Lord, I cannot believe I'm about to write these words].* When I worked as a wine buyer beginning some **43 years ago** *[Ugh, I am feeling old!]*, I had the incredible fortune of gaining access to the highest halls of wine elitism that exist on this planet. At least I can say that their impression was not lost on me, if that's anything. The experience inspired me to spend my life in pursuit of their same passion, for better or worse. (When people ask me today if I would do it all again I say, "Hell NO, I would take all the money I wasted on this crazy business and buy Apple. Are you kidding?")

But the seeds of heresy were surely planted in me when standing on the border of famous wine estates. Everything produced on one side of the fence was \$1200 (in today's dollars) and everything produced on the other side of the fence was \$40 (in today's dollars). And you could ask the folks why on earth the disparity in price was so great, and with a perfectly straight face and normal tone of voice, they would reply that the soil and climate was different.

Now that may seem OK to you sitting at home in your easy chair reading this, but in today's digital age with science everywhere we look, this is an absurd claim. Even if soil and climate had something to do with it (it does not), they could not possibly change in 25 feet anyway. This subject often dominated our conversations when I would occasionally travel with other people in my position, or in other parts of the industry. We would eat together, visit together, hang out. Long discussions about wine geek stuff would break out routinely. Some folks just loved the romance of terroir, even if it was total mythology....it had an almost inspirational appeal. Others in our circles argued for a more rational explanation: that maybe somehow the famous properties were not using the same raw materials as everybody else. Little did we know how important this would become over the next 40 years.

I always thought this might be the case. I was never surprised when, in subsequent years, the eternal promoters of "terroir" spent obscene sums of money funding research to "prove terroir" by finding some magical layer of soil deep in the ground, or some special atmospheric condition, or some harmonic convergence or other "fairy dust", all to no avail. In fact, today these "terroir" research projects have failed miserably so many times that what remains of them revolves around subject matter so obscure and obtuse that even an academic victory at this point would have no meaningful impact on the practical wine industry.

#### ***How It Works***

Grapevines mutate. They mutate on their own, especially after age 40. These are not cross-breeds or human engineered. Their DNA is not particularly stable, although some seem to be more stable than others. Touriga, for example, is known to be particularly unstable, and the number of different Tourigas out there are thought to be innumerable.

Specifically, these are not different varieties, but are different genetic versions of the same variety. They can look the same, or look different. Mutations can have visual symptoms or not. Very often their growing culture is different, and some can be extremely different. Even more important, their flavor profiles can be very, very different presenting

completely opposite Polyphenol Matrices when compared one to another. These various mutations are known as "Clones". I am constantly confronted with examples where wine professionals attribute differences in wines to "terroir" where, in reality and truth, they are clearly just different clones.

### ***Down Through Time***

So let's take the example of the famous wine estate above. In many cases, these estates have been in operation for hundreds of years. In a few cases, they have remained under consistent ownership. In other cases, ownership has passed, but always in the same family. Further, let's say I am the winemaker at one of the famous properties around 180 years ago. Imagine harvests of Cabernet coming in on horse drawn wagons. Imagine the huge manpower it would take to process fruit by hand, without the benefit of machines, much less electricity.

Imagine further that each of these "batches" of Cabernet are in various stages of fermentation during the harvest season, when one batch *clearly stands out* beyond all the rest. What do I, as winemaker, do next? I go find the vineyard manager and ask him where on the estate did *THAT* come from? He proceeds to tell me that it came from some block, somewhere, on some corner of the property. *Then I say*, "The next time you need cuttings to replant, **GO GET THE CUTTINGS FROM THAT BLOCK.**"

So, in a weird confluence of Natural Selection working in concert with Humans functioning as quality control gatekeepers, mutations which are deemed an "improvement" are captured and propagated. Others are discarded. If this process continues unabated for several centuries through generations of assiduous winegrowing, an estate can be upgraded and upgraded over and over again until today's product is unique to them, proprietary, one of a kind, something nobody else has. The value of these wines can be enormous, but not for the reasons of soil and climate previously thought.

I know it seems like a small thing, but it's not. Even without a formal knowledge of genetics, humans have always been aware of wide disparities in Nature. Obviously, the horses in the Kentucky Derby are not the same as the horses in the pasture next door in Fredericksburg. Likewise, I was obviously never destined to be a world-class Olympic sprinter. As humorous as that image might be, the differences in the best grape genetics and the worst grape genetics are just as wide as watching me run a 100-meter race against an Olympic contender. It's pretty funny to think of, but it's not funny when winegrowers waste valuable resources on inferior grapes and come up short.

### ***The Differences Become Obvious***

In the 43 year timespan of my career, the first major breakthrough with clear confirmation of genetic superiority was in Chardonnay. For years, American Chardonnay was dominated by Clone 4, Wente Clones, and others which had checkered origins, some unknown. It was green apple, often vinified to oakey/buttery for wider markets. But what it was NOT was Montrachet. Real Burgundian flavors were high in lemon citrus phenolics which seemed elusive and thus, were *assumed*, wrongly, to have something to do with the soil and climate of the Cote de Beaune especially.

A project which originated in the 1970s, but was mostly developed in the 1980s, sought to bring key specimens of Chardonnay DNA directly from Burgundy to insure clear knowledge of origin rather than the speculation about existing clones from earlier times all the way back to the 1800s. These new clones became known as the "Dijon Clones", and were specified as Chardonnay 76, 95 and 96. They entered my world in the 1990s and their impact on American product everywhere was dramatic.

For the first time, American Chardonnay began to taste like Burgundy. The elusive lemon citrus aromatic was now on American soil. The results were impressive, and a severe blow to the "terroir" theory. It got a fair amount of coverage, but not near enough for the level of historical significance it represented. Because so many of the famous producer's businesses depend on the "terroir" theory for marketing and real estate values, tremendous pressure exists to shame those who might speak out against it or even point out obvious inconsistencies and posit better, more scientific explanations regarding wine flavor.

Still, the success was enough foster similar efforts with Cabernet. These efforts have only begun to pay off, and Chateau Marie LaRose is one of the first products to make it to market with these new Cabernet clones. After a bit of a slow start, the Californians have now caught the enthusiasm for these new vines, and I have boldly predicted that

when they come to widespread fruition in their market, the California Cabernet industry will be dramatically changed to look a lot more like the French industry.

### **Chateau Marie LaRose: a Closer Look**

Inwood produces a Bordeaux blend which is an emulation of the Margaux style called Magdalena. It contains the familiar components: Cabernet, Cab Franc, Petit Verdot and off and on, depending on vintage, some Malbec. All of the origins of these grapes are our usual vineyard sources in Texas, but the real origins of the vines are from certified nurseries in the U.S., which is properly legal. The genetic question addresses the origins of the genetic material of these vines before that and the history of these varieties and clones is quite murky. In Cabernet, for example, there is no guarantee that they all came from Bordeaux. We know that Cabernet existed everywhere from the Loire to Italy and Spain. Same with the others, especially Cab Franc.

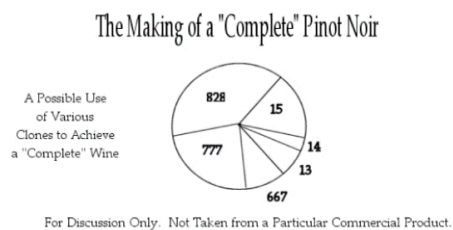
By the way, you can't just go to France, get some vines and stuff them in your suitcase. For years, rumors have persisted, sometimes more than rumors, that folks have stolen cuttings from vines in famous French vineyards only to stow them away in their suitcases and smuggle them back to America or wherever. This is a highly illegal practice, by the way, which I DO NOT recommend unless you want to spend lots of time with unsavory people in small spaces. Vines from Europe must be quarantined in America by the government for as much as 10 years to be certified disease-free. It takes even longer to propagate them after that, so it would not be unusual for the whole process to take 12 or more years to reach growers like me.

Chateau Marie fixes this problem. It deploys 2 Cabernets, 2 Petit Verdots, and 1 Cab Franc...a 5 component wine in reality, although only 3 varieties. In this case, we know exactly where the original specimens for all 5 components were taken. We know they came from authentic sources, and are current enough to know that there have been no further mutations in the interim, making them *current* material in use in France. Now the playing field has been leveled.

The result is a dramatically more authentic wine...no surprise there. Finally, the pepper spices and rose petal and orchid/lilac fragrances emerge in force. Anti-oxidant levels tend to run higher as well, giving the final edition excellent age-ability, although through custom farming, each clone achieves HIGH levels of polyphenols using correct cluster counts (See Part 3: Precision Farming.) Although Magdalena is a very good wine and one of our most popular Cabernet based products, Chateau Marie rings true to what real French wine is all about, not just stylistically, but through what it contains genetically.

### **Oentrepid: A Closer Look**

The Oregon Pinot producers will tell you that one clone of Pinot is not a "complete" wine. What they mean is that one genetic version of Pinot Noir only contains part of the overall flavor profile of a finished product. It's like a pie chart, where each slice is one clone, but it takes ALL the slices to make a whole pie. A clonal blend which achieves a more "complete" product might be proposed below:



It wasn't long before the California Cabernet producers were doing the same thing. Many of the "cult" type Cabs are being made this way. Each component custom farmed, each custom vinified, each custom aged before "assembly" into the most "complete" Cabernet possible. All of this provides a great opportunity to focus group and perfect the final product with a level of control not previously common. It also allows for the use of specific technologies which can be tailored for use depending on the needs of each component.

Oentrepid is our version of this same process. It all starts with the farming, and that remains the most important part by a wide margin. The growth habits and harvest intervals of the various Cabernet clones are wildly different. For example, I have Cabernet clones that come fully mature and are harvested ONE FULL MONTH before others in the same vineyard. While we will examine this in detail in Section B, for now you can see how dramatic the agricultural parameters need to be to accommodate these huge disparities.

Therefore, I have some clones that can support 16 clusters per vine, while others are farmed at 12 clusters per vine. The slowest ripening versions are farmed at only 8 clusters to achieve perfect ripeness. Some of the first Cabernets harvested are through fermentation while others are still in the field. Getting everything in the winery and through fermentation on time is an exacting process. Any mistakes or mishaps here and quality is severely compromised.

Here again, like Chardonnay, we see the unique properties each of the Cabernets bring to the table, things that wine professionals almost always attribute to "terroir" and are clearly in the genome. In Cab 43 for example, we see high concentrations of phenethyl which results in strong scents of rose petal. In other Cabs, we see other polyphenols at work which provide blackberry and cassis aromas, while yet in others we have very diverse methoxypyrazines which provide complex pepper aromatics, from green to white to black. In one clone especially, we see high concentrations of the elusive yet highly valuable lilac/orchid aromatic, most likely farnesol, and one of the rarer elements. All of these are controlled by the genome, not "terroir", and "assembled" for "completeness".

Even foregoing the discussion of individual vinification, it's almost 2 years later before we are in blending trials. The final product is a more "complete" Cabernet than the other Inwood products. Although Inwood Mericana is our most sought-after wine, it is a single vineyard, single clone Cabernet. Oentrepid, therefore, picks up where Mericana leaves off. It is a multi-clone, multi-vineyard, custom farmed product designed to fill every hole and gap, leaving nothing lacking.

We certainly have had, over time, much chatter about the expense of our wines. I'm not sure these folks qualify as critics, since the vast majority have had no direct experience with us or our products. So, to my many "commenters" regarding the expense of our wines, I can only say "Yes" these wines are expensive. Hopefully, the thorough explanation offered here, and taken together with Part 3 previously, will help folks understand the level of detail deployed to produce these results. I have never expected or implied that everyone should be in the market for such wines. Indeed, most folks are not. Thankfully, however, there are plentiful and ample numbers of those who are, and a clear understanding of what they are getting for their money is critically important to their purchasing decisions.

## **Section B: For Growers, Winemakers and Producers**

About once a week, somebody traipses through my door and arrogantly exclaims, "I just don't understand why Texas is not growing \_\_\_\_\_." You can fill in the blank with either some Mediterranean variety or some obscure, out-of-nowhere, wacky variety universally rejected by the world of wine.

Their air of superiority is always justified by some magazine they read, or a book by some sommelier somewhere, or worse yet, an academic "expert". We all know that a few letters after your name ALWAYS ensures brilliance, even if you have never DONE anything, in this case, grown a grape, made a wine or sold a wine that you personally grew and made.

Armed with this tiny sliver of knowledge, they are now going to "school" me on the failure of Texas wine. If I engage them, I often find out that they either are contemplating or have contemplated grapegrowing. They are thinking that maybe THEY are the gifted ones that will show us the way. Often they have had another successful career, which they think entitles them to their "preferred status" opinions. And besides, everybody knows that rich and successful people can make world-class wines in their sleep, because it's so easy!

After they rattle off the name of this miracle grape variety, they usually bolster, "It's so obvious that the soil and climate are perfect! I just don't know why nobody else has thought of it!"

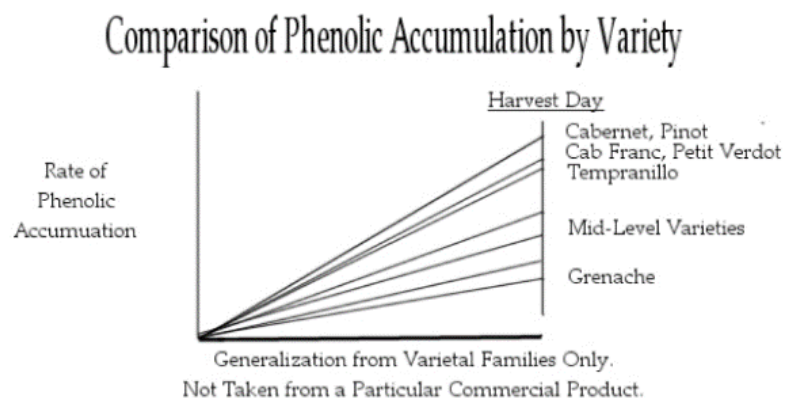
Now, if you've been with me this long, and have read my quite lengthy (yes I know) treatises on the fallacies of "terroir", you know that I am going to do one of two things: either I engage them and risk going postal, or ignore them. I rarely engage them anymore. It doesn't do any good. My experience shows only one result: they are ripe, ready and primed to create their own personal disaster. And nobody with 39 years grapegrowing experience is going to stand in their way.

### **Committing "Terroir" Hari-Kari Does Not Bring Honor**

I am not an expert on horse racing. In truth, I am not even a fan, except for the occasional brunch buffet. But I have been enough times for charity events such that I think I have the basic idea: bet on the winner, or pretty close anyway. There is one thing, however, that I have NEVER observed during these excursions. Nobody ever says, "*I want to place a bet on a horse, and I want to pick a really SLOW one.*" Doesn't happen unless somebody has been at the bar way too long.

Even though I am no horse racing fan, the analogy to selecting grape varieties is pretty accurate and very descriptive. Grape DNA is not equal. There are thoroughbreds and there are nags (that's what they call the slow, losing horses). There are life's winners of the DNA lottery and life's losers of the DNA lottery. The moral of the story is simple: pick a winner.

Now various genetics develop flavor at different rates. I don't want to get too deep into the weeds on this, but more research needs to develop to define whether we're dealing with total flavor or only certain sub-categories of flavor which are most significant relative to human perception of fine wine. I point this out mainly just for the science folks since this is a quantification issue and is somewhat tangential to the primary goals of us who are trying to make and sell the best wine possible. But regardless how the science unfolds, the end result is the same: every specific set of genetics, being variety and specific clone, develops flavor at different rates ranging from fast to slow.



The graph above illustrates the obvious. The higher trajectories represent the faster accumulation of flavor resulting in higher phenolic concentrations. The lower trajectories represent the slower accumulation of flavor resulting in lower phenolic concentrations, being thinner, less fragrant wine worth less money in the marketplace.

This graph represents the performance of the genome *ON AVERAGE* only. Other factors can and do alter the final performance. In Part 3, we showed, in detail, how the trajectory can be altered by the practices of the humans. We also have covered the importance of clones.

In fact, I have been very clear that one cannot consider only variety when analyzing flavor in wine, rather that we must be very specific about variety and clone to be accurate. For example, a variety that has a stellar reputation for developing flavor quickly, like Cabernet Sauvignon, may have some clones in the family that are laggards, like Cab 216. In comparison, a variety with a lesser reputation overall, like Merlot, may have clones that are rapid flavor producers, like Mer 181, and will vastly outperform some clones of Cabernet. This is a great example of how Merlot can suffer in the marketplace (forget the movie), and turn around and produce Petrus. (Bear in mind, nobody knows what genetics make up Petrus, but their greatness is undisputed).

Therefore, when we talk about varieties below, please understand that we are referring only to the *varietal family as a whole*, and not *all* the vines in that family. Nobody's family is perfect. Everybody's families have high achievers and low achievers. It is unfair to judge an entire family by one data point. Likewise, in the discussion below, we are still referring only to varietal families *on average*.

Finally, after going to such great lengths to be as clear as possible, we can proceed to the main point:

***If you are a producer, STOP choosing terrible, inferior genetics to grow and vinify. DO NOT let anyone tell you that you MUST grow inferior varieties because of "terroir". This is financial disaster.***

Terroir does not exist. Terroir is an elitist notion which dissuades producers from attempting to produce the best wine they can. Terroir deceives producers into believing they cannot produce great wine, so they must be relegated to produce anything they can, try anything they can, even if it means varieties that are so obscure and obtuse they would be almost impossible to market. Not to mention that the world of wine has already rejected those varieties again and again for centuries.

Terroir deceives even the academics. Terroir rings fear in the hearts and minds of everyone who worries about losing credibility in the eyes of the wine elites. Terroir even rings fear in the hearts and minds of academics worried about losing funding for their budgets. Terroir rings fear in the hearts and minds of everyone worried about being criticized in the media, even when it comes to one wine writer being criticized by another wine writer.

***In fact, everyone is so fearful about disavowing the terroir religion that they are willing to make bad decisions with their money and time and careers rather than embrace success. It never stops shocking me to watch it. They prefer to fail and save face to avoid criticism and peer pressure.***

### ***So Do the Right Thing...Make Great Wine...Be Happy***

Doing the right thing starts with choosing the right varieties. Choose varieties that make flavor at the fastest possible rate. Cabernet and Pinot Noir are the thoroughbreds of our industry. They make flavor at the fastest possible rate. On harvest day, pound for pound, vine for vine, they will accumulate more flavor than everything else. Remember: it costs exactly the same to grow a great variety as it does a terrible variety. I would put Cabernet and Pinot in the 100-percentile. They are the A+ students, ***on average***.

Cab Franc and Petit Verdot are almost as good. They are silly easy-to-grow, harvest early, mostly likely to avoid rain damage (our number 1 risk factor), and produce incredible flavor. There are good and bad clones of both. But I would put the best ones in the 90-percentile group.

I am personally invested heavily in Tempranillo, as you know. I would put Tempranillo in the 85-percentile. It is certainly better than most, clocking in just slightly below the Bordeaux varieties listed, ***on average***.

I am not going to list every variety here, just cite a few more to shed light on what the rest of the discussion would look like if we were to keep going. After 39 years of grapegrowing, and 44 varieties grown, I have a pretty good feel for a whole lot of them, but this is *my opinion*, both from a grower, and a winemaker, and as a consumer and wine lover. It

is somewhat subjective, but it is subjectivity honed by experience, success and failure, coupled with economic reality and science. It is offered for discussion, it is not an edict.

## The Case of Sangiovese

The case of Sangiovese vividly illustrates the problem. For a number of years, Sangio was the go-to darling of the wannabe grape expert crowd that traipses through my door as I mentioned above. They would swear up and down that Sangio was *the answer* to Texas' grape growing woes. Well, as you know, the history of Texas Sangio has been dismal. Thin, poorly concentrated wines have been the order of the day. Yes, a great deal of the problem can be attributed to the humans' overproduction as we saw in Part 3, but the problem was compounded by the variety genetics, which I would rate in the 65-percentile.

To wit: the Italians have carried the water for Sangiovese for centuries. In recent decades, both with and without the evolution of Super Tuscans, the increasing production of Cabernet and other Bordeaux varieties have severely fractured the House of Sangio. Italian producers would vigorously take me to task over this, but I can't help but believe that over time the reality set in: the genetics of Sangio, the essential stuff of everything it has to give, is simply less than they hoped. Even the best of the best Sangio, with the most human talent applied, doesn't reach the levels that the best of the best Bordeaux varieties can achieve. It just isn't there. Hence, Super Tuscans were born.

True confession: I speak from experience. I've been down that road. I know the feeling personally. Even though I would assert that Tempranillo is a better variety than Sangio, at some point it came clear to me that there simply is not the same amount of *The Right Stuff* to work with as there is in Cabernet. Now I have to be very careful here: Certainly, the Colos and Magnus we have made at 1 to 1.5 clusters per vine far exceeds the 99.999% of all Cabernet in the marketplace in concentrations of flavor, color and texture. But that's not the topic here. We are not comparing one wine to another, we are comparing one grape family to other grape families. The topic is, which genetics, *ON AVERAGE*, have the most to give. A better comparison would be: If you can make \$250 bottles of Tempranillo at 1 cluster per vine, think what you can make with the best strains of Cabernet at super low rates. (?...Just asking). Obviously we are undertaking to find out.

## "Terroir" Rears Its Ugly Head Again

But the worst thing about the history of Sangiovese in Texas is how it shows the sheer delusionary seduction of "terroir". It shows how humans become perfectly willing to sacrifice their money, their time, their physical labor, their administrative resources, and everything else to appease the "terroir" gods by foregoing the planting of vines with obviously great potential in exchange for vines of inferior capacity prone to economic failure, all to be "accepted" by the wine world elites. I did it. I was wrong. Don't follow in my mistakes. Make great wine. Make money. Be happy. Don't worry what everyone else says.

Don't listen to them when they say, "Hey, Stupid, don't you know you can't do Cabernet in Texas? What are you, some kind of idiot?" They will say it. They will say it about other Bordeaux varieties too. But they don't know what they are talking about. Their experience is limited to poorly grown and poorly made examples, (really amateur examples if the truth be known), which are not representative of the broader science. There are many paths to failure here and everything they think they know is based on those common paths. But there is a pathway to greatness, even though it's difficult. Some things have to go right to be sure, but the probabilities of success can be hugely increased with the skill of correctly applied science and selection of correct genetics.

At the extreme other end of the grape scale, we find life's losers of the genetic lottery. I always pick on Grenache. I hate Grenache. I don't hide it. Grenache is the corn meal filler material of wine. Can you severely cut production to super low clusters per vine and make a good Grenache? Yes, of course. Does it make any economic sense? No. If you're going to cut clusters, you still **MUST** pick a great variety so that the price will justify the sacrifice, not just make a "decent, drinkable" wine. Some will retort, "But it can be rose!". Sure, rose is a different discussion and not this topic. Obviously, we are dealing only with the capacity to make great reds herein.

In the end, any way you consider it: physiological, vinicultural, economic, marketability, whatever... The answer is clear: **Don't commit Terroir Hari-Kari.**



### ***Can You Do Cabernet in Texas?***

Yes! End of Paragraph. Enough said.

### ***Are You Sure?***

Hell, Yes! End of Paragraph. Enough said.

### ***Why do the Wizards of Smart say you can't do Cabernet in Texas?***

OK, fair question. Answer: the history of Cabernet in Texas has been plagued by so many human blunders and deployed with so little accuracy that misinformation and disinformation have become the order of the day.

Yet, in different ways, many of the sources of the problem can be traced to clonal issues, the subject of this treatise. Remember when I said I had clones of Cabernet that harvested 4 weeks apart? Can you imagine the mess a winemaker would have with a "field blend" of clones? Trust me, it's happened. If you harvested when the early clone was ripe, you would also pull in berries that were still hard and needed another month. If you harvested when the late clone was ready, the first berries would be raisins and full of bacteria. If you tried to split the difference, none of the berries would be perfectly ripe and two wrongs don't make a right. People walked away and said, "Forget it. Cabernet ripens unevenly." No, it doesn't. It's simply that different sets of genetics ripen at widely different times.

### ***Does Cabernet "Stall"?***

This is a widely held belief that is similar to the Buddhist parable about the Blind Men and the Elephant. People observing the same data often form different interpretations.

Recently a representative from a large California wine laboratory was visiting Spencer and I when this subject came up. He pointed out that phenolic analyses at various intervals during ripening showed this phenomenon. I, of course, being the painfully old person that I am, knew the history of this and engaged the topic.

For decades, Cabernet Clone 7 (and/or 8, same thing) was and still is, the "workhorse" version of Cabernet in California. So much so, that almost everything growers, winemakers and consumers associate with Cabernet Sauvignon was Clone 7. When you ordered vines from nurseries, they automatically sent Clone 7. When you bought California Cabernet in the grocery store it was Clone 7. Cabernet and Clone 7 were synonymous.

But they are not synonymous in the wider world. Clone 7 is a very, very slow ripener. I would suggest that Clone 7 does not "stall", it just ripens very, very slowly. Frankly, Cab 169 is just as slow or slower. In places like Texas where rain during harvest is a problem, these crops can be lost, because they are still in the field. Clone 7 worked in California because October is usually a dry month. But in Texas, like France, these slow ripening clones that go in fits and starts can be both risky and deceiving.

There are many easy solutions. Cab 43, for example, is one of my favorites. It is a "straight-line", linear ripener with zero fits and starts. As mentioned previously, it is rich in rose petal fragrances and I have grown it all over Texas with flawless performance. If you are stuck on Cab 7 for some reason, no problem. You produce it at 8-12 clusters per vine on a VSP trellis oriented east-west with good canopy management and it ripens on time. Problem solved.

### **Conclusion**

If you are a grapegrower, winemaker or winery owner, never forget that a bad decision on genetics will plague your project forever, likely end up costing you millions of dollars, and cause you to blame everything and everybody in your universe for your failure. It's happened so many times in Texas, and cost so many millions of dollars, that it's really hard for me to comprehend. Just think where we could have been if all that valuable money and resources had been channeled into premium varieties!

If you are a sommelier, a distributor or a retailer, please learn your chemistry, and especially: Please, please, please stop telling people that "terroir" is causing flavors in your wines that we now know without question are produced by the genome. This is a tragic mistake, and perpetuates ridiculous, ignorant myths that have no place in the modern lexicon of wine. Even more, they will *absolutely have no place in the wine world of the future*. Get current, stay current.

If you are a wine writer or wine media person, **be fearless**. Fear rules the wine media. Folks in that space would often rather say nothing or perpetuate lies and myths than print controversial truths. When you encounter wines that are truly outstanding, yet conflict with the "terroir" theory, you will have to make a choice: either bury the story and print nothing about the wines, or have the courage to say that the "terroir" theory is wrong. The story gets buried 99% of the time for fear of criticism and loss of credibility. The Army used to advertise, "We are looking for a Few Good Men." That's not politically correct today, but I can say this: "We *are* looking for a Few Good Wine Writers!"

Hopefully, you have enjoyed Part 3 and Part 4. Taken together, these two parts comprise a small book for everyone interested in the future of wine. I have had a few submissions for Q&A. I may try to address these in an Addendum soon. However, harvest is inching closer at this time, so it may be a while. Until then...D