

VINIFICATION AT CHATEAU DU TERTRE

*Work experience 28 Sep – 12 Oct 2006 with cellar master David Fennelly
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Introduction

An interesting work experience!

The first time I met Alexander van Beek, general manager of Château Giscours and Château du Tertre, was during the hot summer of 2003. We enjoyed dinner outside on a square in the centre of Bordeaux – I remember being it the first time eating kidneys – and I told him I would be interested in helping with the harvest at Giscours or Du Tertre. I was invited to do so. In 2006 I had the time to go. Harvesting became assisting in the cellar: a little more than two weeks I could help in the cellar of the classified growth Château du Tertre – a property belonging to the famous Margaux appellation – and really participate in all steps of the winemaking during this important phase. I am grateful to the people who made this experience possible, besides Alexander van Beek that is David Fennelly, cellar master of Du Tertre, who had the patience to even answer my questions after a long day of hard work.

Going to Du Tertre was interesting and fun for several reasons. In no particular order, first it was great to step out my daily routine in Amsterdam and dive into this totally different, very physical, world. Which automatically brings me to the next reason: I cannot remember ever having worked so hard, with the callusing and colouring of my hands as the visible proof of that. I'm glad that I didn't have to do this work for months, or years, but I wouldn't have wanted to miss this tough experience. Then: meeting all the people in and around the cellar, working with them, practicing my French etc. And of course: learning all about vinification. And that's what this story is about. If I wouldn't have written it down, I would forget most of the details. So I wrote this for myself, and furthermore for anyone who is interested in this subject, for whatever reason.

This story

This story starts at the moment that the grapes enter the winery, *le cuvier*, until after the pressing of the grapes has taken place. An important line along which the story is told is *the density of the grape juice*. The vinification starts with pure grape juice, full of sugar and without alcohol, and ends with the immature, unblended baby version of the new wine, where all sugar is transformed into alcohol. It is the density of the juice, measured daily, which indicates the stage of this transformation process.

The arrival of the grapes

The various plots of land are harvested at different times. First of all, the different grape varieties ripen at different times: merlot first, followed by cabernet franc, then petit verdot and finally cabernet sauvignon. But next to that, the one plot ripens faster than the other plot. So we were walking through the vineyards collecting random samples of

grapes. The ripeness, but also the amount of rot, is analysed, after which is decided in which order to pick, or continue picking.

The grapes arrive at the cuvier by tractor. The cuvier building is basically a big hall filled with huge fermentation tanks – vats of about 155 hl each. At Du Tertre almost all must is fermented in wooden vats. There are also some stainless steel tanks, but these are less used for fermentation, and more as a place to temporarily store must. The cuvier with the beautiful wooden vats was first used for the harvest of 1999 (it would be interesting to taste the year 1998 and 1999 next to each other). This was one of the major investments by the new owner Eric Albada Jelgersma after the property was bought from the Gasqueton-family (the owners of Saint-Estèphe based Calon-Ségur).

At Du Tertre the processing of the incoming grapes takes place as close as possible to the vats wherein these grapes will disappear: a fork-lift truck carries the pallets with grapes to the first floor of the cuvier, at the level of the tops of the fermentation tanks. As a result, the road that processed grapes follow is short and – thanks to gravity – gentle.

Often the reception of the grapes takes place at a central spot in a winery. This has a logistical reason: using a central place is easier and less labour-intensive. Du Tertre has chosen this more complex operation to maintain as much as possible the fruitiness of the grapes: the fruit doesn't get bruised by pumping it up; and the less the crushed grapes are exposed to air, the less they will lose their fruitiness. "Keeping the fruit" is especially important for Du Tertre since this château has a relatively warm terroir (an abundance of big gravels on a well drained hilltop). With 'fruit' a wine also keeps freshness. And these are among the qualities that are aimed for.

Bunches are delivered in relatively small boxes (12 piled up on each pallet). After each load of about a hundred boxes is processed there is some time to relax (in France that is: smoke a cigarette), for the rest the work of this team goes on and on, until the last grape has fallen into the vat.

Two persons empty the boxes on the conveyor belt and 6 to 8 persons work at the conveyor belt picking out unripe grapes, rotten grapes, leaves, sometimes even stones, etc. Thereafter the grapes are destemmed in the destemming machine, are sent (on a small belt) to the opening of the vat, and just before they fall in the grapes are gently crushed: opened so the juice can run out. Often the destemming & crushing are performed simultaneously by one machine, but in order to avoid oxidation as much as possible here the grapes are crushed during the very last second before they enter the vat. Along with the grapes a small amount of sulphite is sprayed into the vat, also with the aim to protect against oxidation. Next to that, any 'wild' yeasts on the grape skins are killed, which is important for being able to perfectly control, orchestrate, the fermentation process.

With the start of the fermentation also the first CO₂ is produced. This CO₂ enlarges both cap and must. It is therefore that the vat is not entirely filled up in the beginning.

In the vat: the start

Directly after the vat is filled up (also: the more it is filled up, the better, as oxygen is then left out of the vat as much as possible), we start working with the must. There are two ways to start:

1. Start with the first remontage during which the yeast is added to the must;
2. In case the quality of a year and/or vat is below standard (less ripe, or for example more or less swollen up with rain water), the must can first be concentrated. After this concentration the first remontage (where the yeast is added) follows.

The first remontage: adding the yeast

The first remontage marks the beginning of about a week of quite a number of remontages.

What is a remontage?

With a remontage we let the must flow out of the bottom of the vat, have it run into a wide tub, and then pump it up from that tub onto the top of the vat where it is then sprayed out over the cap, the top layer (about 1 metre thick) with grape skins & pips.

The hose through which the must runs out ends in a sort of wide showerhead, referred to as the Chinese Hat, this showerhead is put either in a big strainer which is laid over the edges of the tub (this is the remontage with air (R+)) or on the bottom of the tub (this is the remontage without air (R-), or actually with less air).

A remontage is performed for two reasons:

1. we give the yeast air, at the right moment, to help the fermentation
2. we have the juice run over the cap, in order to extract colour, tannins etc. from the grapes

With that comes a third reason, i.e. that during a remontage it is possible to 'work' with the wine: measuring density & temperature; adding yeast, adding "helper" enzymes, and if necessary, adding sugar (chaptalisation). Note that in the last case the juice is not sprayed over the cap, but injected under the cap through a tube (the 'plongeur', the diver). Otherwise the sugar would get stuck in the cap.

When the first remontage starts we see dark red pure grape juice flowing out of the vat, this is the sweet juice that has run out of the grapes. It tastes just like (good) grape juice, but the liquid is not clear, and little chunks such as pips are floating around in the juice. Compared to the 'wine' say one week later, this juice looks more grey-purple, more turbid. To this juice the yeast is added: 2 kg of dry (vacuum packed) yeast is dissolved in a bucket half filled with 30 – 35 °C water. With a big plastic spade we mix the yeast and the water together. The smell is the same – friendly – smell of yeast from a bakery. Next we pour the bucket into the tub and stir well to mix the dissolved yeast with the must.

This adding of yeast is referred to as 'homogenization'. After 1 or 2 days the fermentation will start. At this moment we measure a density ranging from 1090 to 1110, depending on the initial sugar level of the grapes. The temperature is around 20 – 22 °C.

In the same period the grape skins will raise to the top of the vat. Here all solid material forms the cap, which will be from 70 cm (for the merlot) to 80 or 90 (for the cabernet sauvignon). In the upcoming week of remontages we also see less and less solid material in the must, as all this is now stuck within the cap.

Concentrating the must: inverse osmosis

There are various methods for concentrating must. At Du Tertre, when this is necessary, the must is concentrated by the method of “inverse osmosis”: semi-permeable membranes let water pass, but sugar and other components of the wine are kept. This process works under high pressure.

But the run-off must that will be pushed through the noisy inverse osmosis machine, should be as clear as possible, in order not to damage the membranes. The vat that is intended to be concentrated is fully run off, and the juice is sent to a stainless steel tank that – other than the wooden vats – is equipped with a cooling mechanism. The running of and sending to another vat is called *écoulage*, which literally means drainage. During 4 to 12 hours (mostly overnight) the vat is cooled down to 12 – 13 °C which makes solid particles sink down more easily, after which the clean must is pumped into the concentration machine.

Again, in years like 2005 it was not necessary to concentrate the must, in 2006 however some vats needed to undergo this procedure.

To get an idea: from a 155 hl vat about 60 hl runs off. About 10% of water is taken out with inverse osmosis, the resulting higher sugar level will in the end produce wine with a higher percentage of alcohol: with these numbers that would be a little more than a half percent. It is expressed as follows: the potential alcohol is raised from say 12,2 to 12,8%.

Finally the concentrated must is driven back to its vat, where it is poured over the skins that have been waiting on the bottom of the vat. After this the temperature is brought up to 22 – 23 °C. Next step for this vat is the first remontage where the yeast is added.

A thought on concentration: it can (read: should) only be done with ripe and healthy fruit. If you concentrate unripe or rotten fruit, these negative characteristics will only be intensified in the end product. At Du Tertre grapes are picked at perfect ripeness, i.e. later than several years ago, and if it has rained during or just before harvest, with concentration this negative aspect of a vintage can be somewhat pushed back.

The fermentation

Before the fermentation starts we measure a density ranging from 1090 to 1110, depending on the sugar level of the must. The temperature is around 20 – 22 °C.

Once the fermentation has started, density will gradually go down (and end around 992 – 994), and temperature will go up (up to 28 °C for merlot, 29 °C for cabernet franc and 30 °C for cabernet sauvignon).

Fermentation

As one might know, with the fermentation the yeasts transform sugars into alcohol. Liquid with sugar is heavier than water; hence we look at a density above 1000. Alcohol has a lower density than water, thus we finally end up with a value below 1000. At the end we ideally look at a dry wine (meaning: there is hardly any residual sugar), so there is no food remaining for the little bits of yeasts that are possibly still alive. Most yeast has in the meanwhile killed itself by the alcohol it has produced (depending on the type of yeast, above certain percentages of alcohol these organisms cannot survive). For riper years it can happen that in the end the final alcohol level – where all yeast have died – is reached while the wine is not yet completely dry.

With the process of transforming sugar into alcohol, CO₂ is produced. A 'nice' experiment is to lift the lid from the top of the vat and stick your head inside. Do it carefully, because the carbon dioxide literally knocks you in the head. And especially in your nose.

The day after the yeast is added, we perform a remontage to figure out whether fermentation has started. First of all we can see if this has happened: on the must in the tub (*la bassine*) big bubbles form, as if washing powder was added to water. Or nicer: with the pink colour it also looks like candy floss, or in French a *barbe à papa*. Second, if we measure we can see if the density is declining. Should the fermentation not have started yet, we terminate the remontage, as it is of no use yet.

The most vigorous stage of the fermentation is from approximately 1070 to 1030 (the grey marked area in the overview below). In the '70's we still look at big bubbles, around the '30's and below the bubbles are small and finally really small, forming a truly beautiful soft pink blanket on the wine. When measuring the density, and holding up the container with juice, one really sees the wine coming into being: this liquid looks like what will later swirl in the wineglass.

Measurements (density, temperature) are done several times a day. And daily samples are taken for tasting and for analysis; in doing so the development of every vat can be followed as good as possible. From the numbers for density & temperature always a graph is made, this is always the same kind of x-shaped graph: density is diminishing while temperature is going up.

Note: depending on the grape variety, temperature naturally rises up to 28 – 30 °C, but is then regulated to remain on that level. If it were not regulated, temperature would drop again.

An overview: about one week of working, and about two week of waiting

density	days	main activities & facts	
1110			
	1	adding yeast	temp. 20 – 22 °C
1100			
1090			

1080			
1070	2		for the good vats for example: - 3 remontages per day, 1 delestage - a night pump for 2 nights - breaking the cap 2 times for the lesser vats for example: - 1 remontage per day, no delestage - a night pump for 1 night - breaking the cap 1 time
1060			
		enzymes – sugar ¹	
1050	3		
1040			
1030	4		
			just 2 remontages per day (or 1 for a lesser vat)...
1020			... or just 1 remontage per day ²
1010	5		
1000	6		<i>temp. 28 – 30 °C (attained naturally)</i>
992 – 994	7 – 10		<i>temp. 28 – 30 °C (kept on this level, regulated)</i>
992 – 994	21 – 25		écoulage
990			

These are merely indications! First of all: we deal with a natural process that may as well go faster or slower than this average. Second, per vat the decisions are made with respect to the work that is to be done with the vat. Obviously there is more variety than just the two indications “good” and “lesser”! But the rule is: the better the vat, the more we work on the wine. Because what is good, can and should be more extracted than what is not good. The most vigorous stage of the fermentation (1070 – 1030) is also the most vital stage, as it is the stage where the riper tannins are extracted.

With ‘working on the wine’ I refer to the following possible actions:

- performing remontages (explained earlier)
- doing a delestage
- inserting a night pump in the vat
- breaking the cap with nitrogen

The methods differ, but the aim is alike: the pivotal thing is to mix the juice with the grape skins, the cap.

Delestage

A delestage is a sort of grand remontage. With a delestage we empty the complete vat, at Du Tertre into an underground cellar (*la cuve souterraine*, and by the locals sometimes called *la fosse*).

A delestage is performed to make sure that all wine has left the vat, and breathed air while falling like a waterfall into the underground cellar, and to make sure all wine has

¹ only if necessary

² depending on the density that was reached on this day

been poured on top of and over the cap. You get the waterfall effect because the wine is sent through a rough sieve, widening the flood (and catching some pips).

At Du Tertre most vats underwent a *delestage*, but in fact only the good vats will undergo this treatment. At Mouton Rothschild a guide said that one *delestage* equals three *remontages*, in effect.

Night pump (pompe de nuit)

Letting down a night pump into the vat is also something that can be done during the vital stage from 1070 to 1030. The best vats will get a night pump two times, lesser vats maybe one time. The night pump provides for ongoing circulation of the juice, resulting again in interaction between the juice and the (underside of the) cap.

The night pump is a pump hanging at a long stick. From the top it is stuck through the cap. For one's back it is terrible to pull out the night pump the next morning: you're bent over, hauling at some big thing that must get its way up through the thick cap...

Breaking the cap with nitrogen

This is maybe the most fascinating thing to do. At the very bottom of the vat, from the front side one person horizontally inserts a long thin stick, like a needle that is surgically brought in. Through a hose this stick is connected to a canister with nitrogen. The nitrogen is injected into the wine, spurts up to the top, and breaks open the cap. Seen from above one looks at a thick cap of skins that slowly rises and rises, after which the wine breaks through and overflows the skins. Without this breaking of the cap, the cap becomes stiff, and sorts of river beds are shaped through which the remountaged wine seeps. Breaking the cap leads to a renewed intense skin contact. The nitrogen is just a helper; it simply escapes the vat at the top. Note that nitrogen is not some scary stuff: with 78% nitrogen is the most common gas in earth's atmosphere. Nitrogen is "inert", meaning it does not interact with its environment.

Other (possible) actions

Helper

Halfway the fermentation, in the '50's, some food for the yeast is added to the wine. This dry powder, referred to as *Helper*, is mixed with the wine. Like with adding the yeast, this mixing is done in a separate tub: about 1,5 kg of *Helper* with 2 small buckets of wine. The mix smells like dry dog food. At least it smells like it's nutritious.

Sugar

In case the must in a certain vat does not contain enough sugars, the winemaker is permitted to add sugar (chaptalisation). This adding of sugar is called chaptalisation and is, if necessary, done in the '50's. Depending on the amount of missing sugar, some 50 or 100 kgs is added to a 155 hl vat. This is done during a *remontage*, but the spray head at the top of the vat is replaced by a so-called diver (simply a stick that is stuck through the cap to make sure the sugar mixes well with the juice). In years like 2005 this adding of sugar is not necessary. In 2006 there were a few vats that needed some extra sugar in

order to raise the level of potential alcohol. The AOC law states that potential alcohol may be raised by 1% at the most.

Note: chaptalisation is not allowed together with concentration.

Cleaning

A separate thing, but it should be mentioned. Every day a frantic rinsing & cleaning is going on, especially at the end of the day.

Towards the end of the fermentation

After this stage, around day 4, we start touching the wine less and less. If the density has dropped in the '20's, a good vat might receive 2 remontages (a lesser vat maybe 1), should the density already have dropped in the region of the '10's, just one last remontage follows. From 1010 to 992 – 994 we leave the wine untouched; in doing so we prevent the harder tannins from being extracted from the skins. Also, with this we minimise the risk of oxidation. The last steps take relatively long (the end value mathematically behaves like an asymptote).

The bonde asceptive

From the moment (under 1010) that we stop working with the wine, a plastic cylinder is placed on top of the opening in the lid. In this cylinder, the *bonde asceptive*, a little bit sulphur is poured. The sulphur remains within the cylinder and protects the wine, together with the natural CO₂ above the cap, against oxidation. A really nice way to find out whether fermentation is still going on (or not), is to lift the lid of the cylinder, close the opening with your hand and leave it there for 30 seconds or more. If you lift your hand gently at one side, either nothing happens (fermentation has ended) or a CO₂-fart escapes from in between the opening and your hand, in that case fermentation is still going on.

Fighting volatile acids

It can still happen that a vat develops too many volatile acids. These are the acids that come in to being as a result of the effect of oxygen. Luckily this hardly happens, but if so, a small amount of extra sulphite is injected at the front (using the 2 taps at the front, a pump and a canister with sulphite).

The measuring continues every day, also with the 'sleeping' vats. On the side of the vats is a little tap via which the wine can be measured. It's only in this stage that we measure in halves. At a certain moment, somewhere around 992 – 994 analysis points out that the sugar level has sunk below 2 grams per litre. It is then assumed that fermentation has ended.

Ecoulage & pressing

About 2 weeks after the fermentation has finished the time has come to have the wine run off. The run-off wine is the *vin de goût*. What remains is the cap, which needs to be scooped out of the vat. This is heavy work. From the top of the vat a ladder is put into the

vat, into the mud of skins and pips, and you descend with rubber boots and a plastic shovel to scoop all the remains on a small conveyor belt which is placed in the opening at the bottom of the vat. Within the vat it is warm and still the amount of CO₂ is higher than normal. Therefore, also a wide hose is hung into the vat through which fresh air is blown. Having this cool and fresh air blow in your face during little breaks gives you shivers and goose pimples of joy. It's utter mole work, shovelling in this dark place, but you do it together, so that makes it somewhat nicer.

The conveyor belt ends above the press, in the case of Château Du Tertre a tank press with membranes. There a third person is distributing, again with a plastic shovel, the materials evenly throughout the tank. This stuff is pressed, giving the *vin de presse*. To give an idea: about 5% is *vin de presse*, 95% is *vin de goût*. In general the *vin de goût* is of higher quality than the *vin de presse*.

There are two successive pressings: the results are P1 and P2. P2 is harder, can have green tones and is in most cases not used for the first wine (2003 is an exception). The P1 and P2 wines are stored in older barrels: this collection of older barrels with different types of press wine is referred to as “the spice garden”.

The small wooden barrels

Here my story almost ends, as with the pressing my work at Du Tertre – unfortunately – ended.

Just like the *vin de goûts* of the different vats are all put in different barrels (the 225 litre barrels), the *vin de presse* is also stored separately. Around December – January the assemblage is done, after which the wine is further matured in wood.

At Du Tertre, for the first wine 50% of the barrels are new every year. The other 50% is one year old. For the 2nd wine, Les Hauts du Tertre, 50% of the barrels is one year old, and the other half is two years old. As said, for the *vin de presse* older barrels are used (the 2006 *vin de presse* was stored in barrels from 2002). The malolactic fermentation thus also takes place in separate barrels.

The end result: Du Tertre and Les Hauts du Tertre

Tertre means hill. If you visit Bordeaux and its château's, you will learn several words for hill. A hill is important: the best plots of land lay on hills and have, as a result, good drainage. Drainage is a key factor for quality. Du Tertre is situated on one of the highest hills of the Médoc, and the soil of this hill is beautiful: it is completely covered with big pebbles that were deposited here after the last ice age. These unique pebbles are an important quality factor as well: they support the drainage, they allow the ground to heat up quickly in the morning, and they continue giving warmth for quite a while after the sun has set – the best example of a warm soil.

Whatever is done in the cellar, what really counts is the base material, the *terroir*, and the way the vineyard is managed. The combination of a great *terroir* and all human efforts of which I have described a few (yes, during a crucial phase) results in beautiful wines.

What makes the *second* wine extra interesting to me is that it is not so much a second quality (younger vines, less well situated plots etc.), but merely a different one. Historically at Du Tertre a high percentage of cabernet franc was planted, and the Les Hauts du Tertre is really a cabernet franc wine. E.g. the vineyard by the name “Terre Noir”, planted mostly with cabernet franc, is up front reserved for the second wine.

On the average, about 60 – 70% of the wine is sold as Du Tertre, the rest as Les Hauts du Tertre. This is an average, and the percentages differ every year. The table below also presents averages for the used grape varieties.

	CS	M	CF	PV
1 st wine (65%)	45 – 55%	30%	15 – 23%	5%
2 nd wine (35%)	20 – 30%*	0 – 20%*	50% and more*	0 – 5%

*for Les Hauts du Tertre: CS & M together will normally be more than 30%.

CS = cabernet sauvignon CF = cabernet franc
M = merlot PV = petit verdot

Finally, the following wines are enjoyed by the harvesters during lunch:

1. *Vin de Lie de Colle*: before bottling the wine is fined in vat with (industrial) egg-whites. The sediment thrown from this fining is put in 10 hl tanks, and after a while this sediment will settle out again: after about 3 weeks clean wine is drawn off from the tank: this is the delicious Vin de Lie de Colle
2. *Rosé*: from just a few vats some juice is ran off after 24 hours.

Some tasting notes

Most of these tasting notes date from 2006, and just a few from 2007.

Château du Tertre 2000

Sweet temptation. Distinct wood. Broad wine, round and sexy. Association with chocolate. In the mouth ripe and smooth. Quite concentrated. Impressive but not as refined or elegant as the 2001.

Château du Tertre 2001

Rather dark wine. Nose neither ‘banging’ nor modest, but nicely ‘in between’. Dark scent, tension! Distinct wood but nicely interwoven. Nose very Bordeaux. Delicious mouth feeling: nice structure with some fat. Smooth wine, but firm acids make a perfect balance. Very convincing wine. Elegance & great fruit. My favourite Du Tertre vintage.

Château du Tertre 2002

Again rather dark wine. Compared to the 2001: this wine has a comparable skeleton, but lacks the flesh (the fruit) of its predecessor. Makes the result somewhat sharper. Some green tones, but not much. Nice feature: it’s a quite earthy wine, makes me think of finger-paint from elementary school. Towards inkiness almost. Acidity. A somewhat stiff wine. The tannins however are rather soft. Definitely enjoyable, but hasn’t got the balance of the 2001.

Château du Tertre 2003

Masses of fruit! Ripe and with sweetness. It seems that the alcohol can be smelled a little bit. But the red ripe fruit dominates this full wine, which tasted almost creamy. Wood. Manure. Power. Concentration. Big joy to drink this voluptuous wine. Not a typical Bordeaux, and not (yet?) complex. A seducer with lovely fruit.

Château du Tertre 2004

Closed still nose. Concentrated fruit. Tannins. Still young.

Château du Tertre 2005 Echantillon

Soft and lots of fruit. Some tannins but softness dominates. Rather concentrated. Some manure too. Very rich wine!

Les Hauts du Tertre 2002

Some greenness. Peppery, a little hard maybe but nice.

Les Hauts du Tertre 2003

Quite dark wine. The nose is treated to exuberant fruit, and manure. Quite powerful. Interesting: dark sweet-ripe tones next to some green tones. Smooth, friendly and very pleasant! Less fat than the Château du Tertre 2003. A marriage of ripeness and slenderness. Delicious wine.

Les Hauts du Tertre 2004

Purple cherish-fruit. Inclined to move to inkiness. Hint of sweetness in the nose. Dark tones, quite polished wine. Easy to drink.