THE BIRTH OF WINE

Wine making is really a unique activity reaching its pinnacle when the opposite elements of nature and “nurture” are properly balanced so that they can withstand, and even be enhanced by, the challenge of time.It has been said that a bottle of wine is a “bottle of history” comprising geological, cultural, atmospheric and technological factors to be enjoyed when their time is past and the soul is ready.Wine making can be explained as the complex interplay of the following factors:

1. Type of grape (example: Chardonnay, Cabernet Sauvignon or Nebbiolo), also called varietal; the grape is the “raw material” supplying the sugar, the pulp the skin, the stems, the seeds, the natural yeast and hundreds of other organic compounds which will become wine after a long a and fascinating journey.

2. Soil: in a broad sense, it is the drainage, the temperature, the general fertility, the strength of the root system, the chemistry and organic matters present in the soil where the vine is growing.

3. Climate: the so called “macro climate” (weather patterns in the region), Micro climate (level of humidity and moist, temperature of the vine in the local area), and Mesoclimate (type of exposure of the vine, i.e. North or South, East or West sun exposure, winds, etc). The above factors 2 and 3 are sometime referred to as “terroir”.

4. Cru (Growth): it means literally “growth” and indicates the specific properties of a vine and its ‘terroir’. For example a “Grand Cru Classé Château Lafitte” is the wine grown at the Estate from a specific vine planted probably 400 years ago in a vineyard located near the town of Puillac, in the Bordeaux region, and listed in the 1855 Puillac Bersac classification. The cru is therefore the actual name of the vineyard or the domain the vine is planted in.

5. Vine and canopy management: the vine has to be constantly maintained and several vine operations take place thorough the year, like pruning, constraining the vine branches, treating the vine for parasites and moulds, replanting etc. The vegetative cycle of the vine must be controlled and directed. The vine density must be decided so that the roots are forced to compete for nourishment penetrating deep into the soil. The main objective of a quality vine management is to limit the yield so that the grape can concentrate flavour and taste.

6. Harvesting: the choice of the time of harvesting and therefore the degree of ripeness of the raisins, is a fundamental decision the entire community around the vineyard contributes to take. The harvesting techniques are also important (manual or mechanical, for example) because the integrity (and selection) of the raisins depends on it. To harvest to early could limit the sugar and flavour concentration whereas harvesting too late could expose the vineyard to frost and bad weather. Factors 4 and 5 are usually referred to as “viticulture”.

7. Separation and light pressing: the harvest must be separated (the raisins are selected and foreign matter rejected) before entering the rolling-press which eliminates the stems (de-stemming) and prepares the must to be pumped into the fermentation vat. For white wines obtained from red grapes, the skin has to be quickly separated from the pulp to avoid tannic and colour contamination.

8. Sugar fermentation: the must undergoes the fermentation process (sugars are converted into alcohol and CO_2, thanks to the yeast, naturally present or added on). After about 14 days, during which the must extracts colour and tannins from the skin and pips, the fermentation is complete and the first “vin de goutte” can be put aside. The denser wine juice (containing a large amount of particulates) is pressed again obtaining the so called “vin de presse” which may be later blended with the ‘vin de goutte’.

The leftover of this second pressing (the “Marc”) could be either used as vine fertilizer or distilled to obtain the Grappa (or its equivalent in France, “Le marc”). The fermentation process is affected by the temperature and its variations; temperature must be therefore controlled and kept around 15 degrees Celsius. Too much heat or cold may prevent the yeast reproducing (and therefore the fermentation cannot complete).
The fermentation can take place in a wooden barrel, conferring to the wine a more “woody” aromas, if needed and desired (barrel fermentation is more common with white wines).

9. Less contact, stirring and maceration: the dead yeast cells (lees) can be left in contact or stirred with the must for a certain period of time. The “chapeau” (hat), so called because it tends to form on the must surface, is dense with solid matter, rich in tannins, flavours and aromas, and may enhance the wine structure and texture.

10. Malolactic fermentation: when the fermentation is complete the wine is transferred into smaller barrels or tanks and may need the malolactic fermentation to act. The malolactic fermentation transforms the malic acid into lactic acid, reducing the overall level of acidity of the wine, if needed. The malolactic fermentation is indispensable for white wine, which is normally high in acidity. When the process is completed, some sulphites are added to protect the wine from oxidation and from the adverse action of other bacteria.

11. Blending (Assemblage): the "vin de goutte" (first drop) and the "vin de presse" (second press), as well as different grapes or cuvées, may be assembled at this stage with the purpose of reaching the desired balance between grapes of different aromatic and organoleptic structures. The "assemblage" is typical of the Bordeaux region where most of the "Grand Crus" are blends of different grapes.

12. Maturation and ageing (Elevage): wine, especially red wine, needs a period of maturation which takes place in barrels (of various sizes, the smallest one of which is the famous "Barrique" with a capacity of 225 lt.). Barrel maturation allows a deeper evolution of the wine, and imparts special aromas, flavour and structure. Wood contains the so called "sweet tannins" which may soften the harshness of the wine tannin through time. The barrel ageing may be protracted over a long period of time, sometimes up to 3 or 4 years, dependant upon the type of grape, the vinification process and the intended results.

Throughout the aging period oxygen contact must be limited as much as possible ("reductive ageing"), which is why the barrels must always be kept "filled to the top". At the opposite end of the spectrum, there is the "cask maturation" where the container is a very large wooden cask with limited wood contact and minimal tannin exchange. The cask ageing is typical of the traditional way of maturing the great Barolos and Barbarescos in Piedmont. The chemical process taking place during ageing is not completely understood: the phenolics, the acids and hundreds of other components combine under the influence of temperature, humidity, barrel materials and oxygen (which is always present although in minimal quantities) so that the structure of the wine reaches maturity and balance at the end of the process.

Different molecules combine into larger ones to precipitate, leaving sediment on the bottom and a new and refined "tertiary aroma" in the wine. Ageing is not always successful: excess of wood flavours or, more gravely, decay and "off-taste", can be the unfortunate outcome. Ageing can continue after bottling, sometimes for a very long period of time, as it is the case for Barolo or Barbarsco and all the great red wines.

13. Clarification, racking, filtration and fining: Before bottling wine is often "clarified", i.e. the sediment and the suspended material formed during ageing is removed to obtain a clear, deposit-free wine. Clarification can be obtained by pumping the wine away from the sediment and then transferred it into an other container ("racking"), by filtering it (a controversial operation because it may deprive the wine of some of its components) or fining. Fining, if given enough time, does take place naturally (the sediment deposits at the bottom of the barrel and the wine above becomes "clear") but sometimes requires external help, obtained by adding egg's yolk to the barrel to "coagulate" the sediment on its bottom.

14. New wine technologies: the process of vinification has introduced in the last decade or so, several innovations, technologically driven, that have radically changed (some times for the better, others for the worse) the way wine is made.

The main purpose of these innovations is, in a certain way, to circumvent the limitation that nature imposes and to limit the risk that adverse incontrollable factors (like the bad whether) have on the final quality of the wine we drink. For example, many producers use now to subject wine to 'reverse osmosis', to 'micro-oxygenation', 'micro-filtration' and 'flavour concentration': these intervention basically aim at removing the excess of water from the wine (which would be the case when the grapes have not fully matured), concentrate the tannins and enhance the wine's body and flavours.

If these intervention could be in part justified, there is the risk that, by altering too much the intrinsic and natural characteristics of the wine, we would standardize its taste and loose its character. Another important (and somehow troublesome) option is now represented by genetic engineering applied to viticulture: although the so called 'clone selection' (selection and manipulation of different roots and clones of the vine) has been long know and widely practised for centuries, it is now possible to carry out a more precise clone manipulation, by modifying directly the genetic make up of the plant and, for example, have a vine resistant to diseases, with high yields and concentration of flavours, normally in negative trade-off.