ESPRESSO SCHOOL

BARISTA TRAINING

ESPRESSO SCHOOL
www.espressoschool.com

WWW.PASCUCCI.IT


PASCUCCI
CAFFÈ PASCUCCI

This manual is a collection of useful information for those people who want to enter a profession in the coffee industry.

The information contained in this manual is of no use if it is not supported by the professional skills, training and creativity of the user.

The operator must continue to present a positive image to customers at all times so as to make them feel at ease when making their purchase.

Drinking Italian espresso coffee is a custom that is spreading throughout the world. Today, our methods of transformation from the bean to the cup are trending in all the best bars.

It's true that if the rest of the world's coffee is fashionable, in Italy it is unfairly underrated. The espresso needs many of the little touches that have made it great: from careful extraction to creative r renewal when it comes to service.

It is our job to communicate our knowledge and inspire the barista when it comes to the culture of coffee, of coffee-based drinks, espresso and espresso derivatives

1 - The history of coffee

Many legends are connected to the discovery of coffee; the most widely told and also the most reliable, tells the story of how Ethiopian shepherds noticed their goats became more restless after eating the berries of a certain bush.
The shepherds brought these strange fruits to the Muslim monks of the Sheodet convent. The monks, after many experiments, began to roast the seeds of the fruit to make a drink for their nights of prayer.
The coffee certainly found a space in the Muslim world as an alternative to wine and alcoholic beverages.
The first valid scientific descriptions, which appeared back in 1582, were written by the Italian botanist, Prospero Alpino. He black drink began to be more widely drunk in the early 1600s. It was in Venice, the capital of world trade at the time, that this new product began to be sold in pharmacies: small quantities, arriving on ships, leading to the opening of over 200 stores! The historic Caffè Florian in St. Mark's Square dates back to 1720.
Coffee arrived in Vienna in 1683, with the invasion of the Turks, who, once defeated left 500 bags of coffee abandoned in the camp. A Pole named Kolschitzky, for the honours of war, received the 500 bags as a reward. Kolschitzky, who knew the Turkish way to drink coffee, worked to create a filter for the residues and sweetened the coffee with honey. Being very clever, he had a baker named Wendler create a type of crescent-shaped cake (kipfel) and he also had another baker (Krapf) create a round cake (which later became the doughnut or Krapfen).
With Kolschitzky the coffee shops were a great success, and from here they spread all over northern Europe, in spite of the obstructionism of the governments that were suspicious of the drink that awakened consciousness and enlightenment in those places where revolutionary thinkers would gather. It was not by chance that in France the 'café' was a meeting and working place for the great writers of the era: Diderot, Voltaire, and Balzac are those who boasted of drinking many cups of that precious, strange drink.
The first 'roaster' in Italy appeared in the end of 1800. Until that moment, coffee was purchased green and roasted in private houses. Since then, roasters have progressively removed this burden in families, professionally creating blends for more consistent products that are calibrated for the price.
At the beginning of the 20th century, the long evolution of Italian coffee roasting was bravely joined by a dealer from a small remote village of the Apennines, Antonio Pascucci, head of a family and a company that will write an important chapter in this history.
Those were difficult times_ the 'Montefeltro' region was a long way from the richness and the industrial revolutions started in the cities, but coffee trading, either raw or roasted in pioneering tin pots, supported the optimism of Antonio Pascucci, ideas that passed to his son Mario with a good dose of optimism and innovation in processing and marketing of the drink.
With Mario the food company grew, he was

the first in the area to buy a motor vehicle and the first to create a permanent commercial network reaching as far as the large cities of the north. Coffee played a leading role in this stage that only the events of the Second World War brought to a halt. It was immediately afterwards that Alberto took over the family business.

Alberto had to reorganize and re-launch the company that grew and consolidated year after year. Until the day when the big decision was finally made during the 1970's and 1980's.
In Italy, coffee was still mainly drunk at home, while "espresso" was a low-cost and rather rudimentary tradition. Alberto's intuition and determination, however, was to base the company on excellence through high quality, delicacy and research into increasingly prized aromas, long before the styles of today. It was a courageous decision that was to prove highly successful over time.

2 - Geographical location

As already mentioned, the homeland of coffee was Ethiopia; from here, it was transferred to the Arabian peninsula and Yemen. Coffee plants were taken to the Americas after 1720.
The coffee plant requires plentiful rainfall and a very warm climate (never below 20°C). This is why it can only be successfully grown between the Tropic of Cancer and the Tropic of Capricorn. The ideal environment for the Arabica plant is at an altitude of between 1300 and 1900 metres, while the Robusta plant grows best in hillside plantations (2/300 metres).

The main production areas today are South and Central America (Mexico, Antilles, Brazil, Costa Rica, Panama, Puerto Rico, Venezuela, Peru, San Salvador, etc.) Western and Eastern Africa (Ivory Coast, Uganda, Cameroon, Madagascar, Kenya, Tanzania), India, Indonesia and Vietnam.
Decades of tradition hallmarked by scrupulous decisions, and continual and constant assessment, have helped Pascucci Coffee to select certain geographical reference areas where it purchases the coffee necessary for its products. Costa Rica, Haiti, Brazil, Columbia and India are among the 18 countries where Pascucci Coffee operates. Yet the company is always ready to analyse new samples and eventually change plantations if product assessments show there is other coffee more worthy of joining our team!

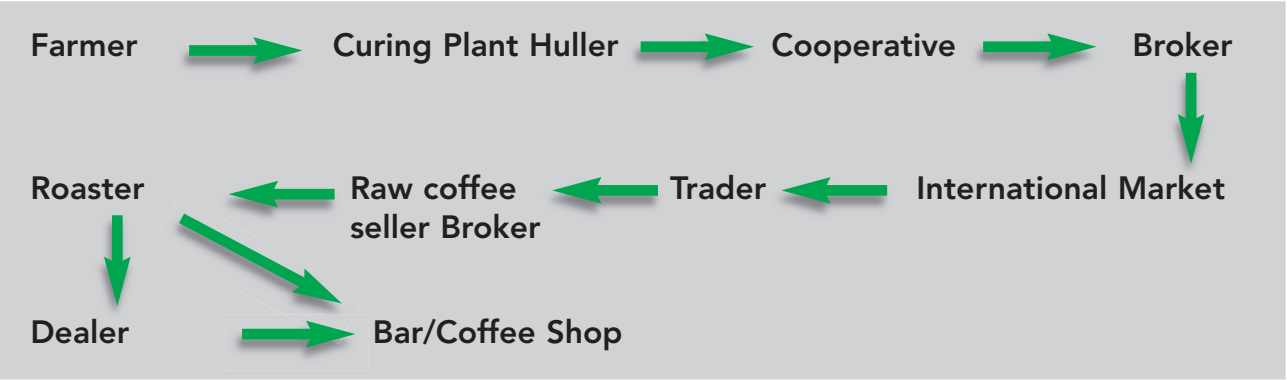
2.1 - Pascucci and its commitment to organic growing and fair trade

To date. 'Torrefazione Pascucci' selects over 18 types of green coffee from all over the world, from national and international traders and directly on plantations, with a particular attention to the specialty organically grown coffee that is for fair trade sale.
The project was born in 2007 when the Congolese agronomist Diane moved to Haiti for a period, on behalf of Pascucci, in search of families of growers to join into a new growing project.

Coffee is the most drunk beverage in the world after water, with 824 billion cups spread in the following type of consumption:

50% Soluble
30% Filter Coffee
10% Turkish, French Press or Moka
10% Espresso

The market for this drink is complex and delicate, as are the dozens of 'actors' that revolve around it. 'Actors and markets that often increase the prices of the final product, often penalizing those who are at the source of this 'carousel'. Let's analyze the supply chain in this diagram:



This chain, called CGVC (Coffee Global Value Chain), ends in a division that needs to be observed carefully, of the 90 cents (average Italian price) of a cup of espresso:

1.5% Farmer
4% Raw coffee seller
15% Roaster
80% Bar/Coffee Shop

The most worrying fact is undoubtedly the first.

The opening of customs boarders and free trade among many coffee producing countries and consumers has, however, allowed the development of a type of trade that helps farmers, the stake-

holders at the beginning of the chain.

Back to our Haitian adventure, after analysing the coffee market, after one year of hard work, 'Torrefazione Pascucci' was able to conclude trade agreements directly with Cocano Cooperative, that today produces its high quality coffee exclusively for the Monte Cerignone factory, bypassing all the other stakeholders in the chain. This allows the cooperative to receive a better price per sack and the 'Torrefazione' is able to save on costs. With the positive price difference for plantation growers, it has been possible to develop construction projects for schools and new homes, expansion of farm land, and improvement of production quality. This means employment of life quality on plantation for our farmers and workers. This is what "Fair Trade" means to Pascucci, which has created its special brand for its Pascucci Fair trade products: Jute Bio.

If we are talking about coffee and coffee culture, we are talking about a natural and raw material that could not grow and ripen in excessively polluted environments. Pascucci is committed and wants every barista to do the same, to encourage customers to consume natural products grown without the use of chemical pesticides and manmade fertilizers. These are organic products, grown that way by the Cocano Cooperative and favoured by Pascucci. Of the 18 types of coffee selected from all over the world, most have the organic certification.

Not only that but to ensure the future quality of the product in Haiti, in 2009 15000 coffee trees were planted and in three years, these will produce their first fruits. These trees use photosynthesis to take the carbon dioxide from the air and convert it into oxygen. In this way, Pascucci has reduced its carbon footprint: an important project for a more 'breathable' future. All of the people involved in ''Caffè Pascucci,'' from production, to roasters, sales agents, commercial department, baristas, and naturally, our customers, are all a part of this project and we are proud of it!

3 - The Plant and chemical structure

In actual fact, coffee is a shrub belonging to the *Rubiaceae* family, *Coffea* genus, which includes many species - but only two are generally of interest to the coffee production world: *Arabica* and *Robusta* (other species include *Liberica* and *Excelsa*). The shrub may grow more than 10 metres in height (Robusta) but is generally pruned to no more than 3 metres; it bears fruits once a year and is harvested every 7/8 months depending on cultivation conditions.
Generally, Robusta is more able to withstand the diseases typical of the plant and has a slightly higher yield per plant than Arabica (up to 2 kg of beans).

coffee plant

coffee flowers

unripe fruit

ripe fruit

The elements contained in coffee include mineral substances (potassium, calcium, magnesium…) in constant quantities; caffeine (alkaloid) found in higher percentages in Robusta beans (more than double) compared with Arabica beans (since it is a very soluble substance, also in higher percentages when coffee is extracted for a longer time, in "long" espresso coffee and American-style coffee.
Caffeine is an alkaloid or **TRIMETILXANTINA** (nitrogenous organic matter that can be extracted by heat or sublimation, containing medicinal substances or toxic substances) naturally present in plants: Chocolate, Tea, Coffee, Mate.

It has a stimulant action on the central nervous system, acting on the synapses. It has a mild diuretic action, creates a slight vasodilatation and can irritate the mucosa in the stomach. The popularity of beverages containing this alkaloid makes it the most widely consumed psycho-active substance in the world.
It 'important to recognize that caffeine does not replace sleep, but increases the level of attention in the circadian rhythm, and its prolonged use leads to tolerance, cancelling out the negative effects but also the positive ones! It is completely absorbed in the stomach and at the beginning of intestines in the first 45 minutes after consumption and converted by liver enzymes into three parts:

Paraxanthine: carries a higher concentration of fatty acids in the blood

Theobromine: dilates blood vessels, the alkaloid of the cocoa

Theophylline: relaxes the mucus membranes of the bronchi, the main active ingredient of drugs for the treatment of asthma.

Coffea Arabica
60% total world production

Grown from 800 to 2200 metres above sea level

Needs temperatures from 15 to 30°C

Blooms every 3/5 months, according to area

Harvested every 4/6 months

From 0.8% to 1.7% caffeine

18% essential oils

Grain elongated and flattened at the sides

Central cut not regular

Organoleptic: slightly astringent, bitter, sour, medium body, creamy texture and persistent-mesh, round and moderately persistent flavour.

Main characteristics: chocolate, almond, peanut, fruit pulp, citrus fruits, cereals, bread crust (if overly fresh)

Coffea Canephora (robusta)
40% total world production

Grown from 0 to 800 metres above sea level

From 1.8% to 2.8% caffeine

8/9% essential oils

Bean flat shape with upper and lower ends, more rounded

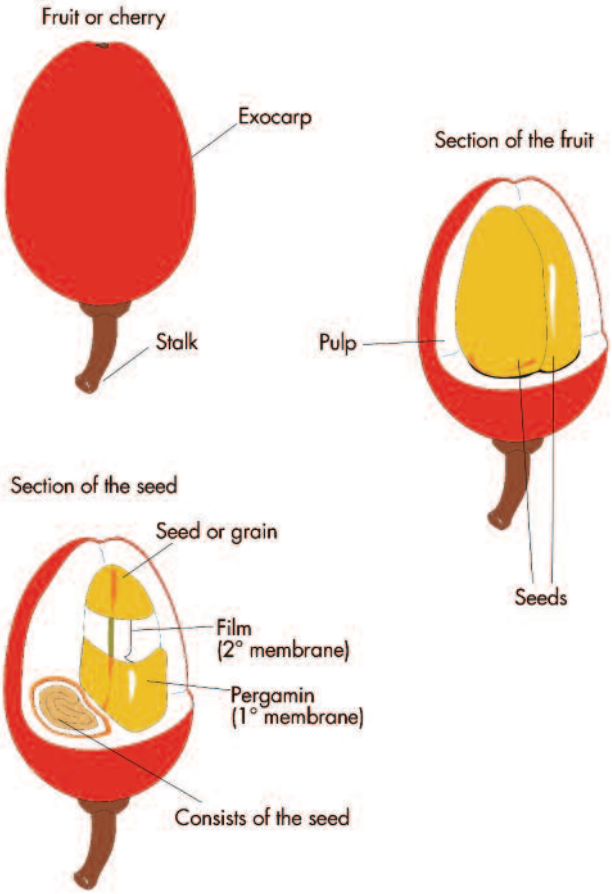
Regular shape

Organoleptic: astringent, bitter enveloping and persistent, with little acidity, full body, creamy coarse, thick and not too persistent. The aroma is full and persistent, sometimes aggressive, not sweet.

Main characteristics: herbaceous (if fresh), earthy, woody, spicy, pure cocoa, walnut, gall, straw

Lipids are another important element, mainly because they retain aromas and allow roasted coffee to release the perfumes we know so well. The Arabica species has 25% more lipids than the Robusta species.

Coffee: the section of the fruit and seed



4 - Cultivation and initial processing stages

The ripe fruit resembles a red-brown cherry, with an outer skin, a layer of pulp and a parchment-like film containing the seeds - two grains of coffee. Harvesting can be done by hand (more expensive and slower) or mechanically by stripping all the berries from the branches without selection, a quicker process but detrimental to precision and quality.

After initial cleaning, the coffee beans must be separated from the berry by means of one of the two systems currently used:

▪ **dry.** This method involves first spreading the coffee over large drying areas in the sun and then processing it in boiler dryers in order to definitively eliminate the water content. Lastly, the beans are mechanically separated from the dry "cherry". This system produces so-called natural coffees

▪ **washed.** With this system, the berries are first split and then placed in fermentation tanks where the pulp decomposes; simple washing then separates the grains from the rest. They must then be immediately dried (in the sun or artificially). This process gives rise to coffee without the parchment - so-called *washed coffee*.

▪ **semi-washed.** This is the most advanced procedure that is rapidly gaining a foothold in Brazil, where the' excessive rainfall during the harvest period may compromise the 'drying of dry processed coffee.
The freshly harvested fruits are put into a machine that separates the green and red fruits from the black ones (the Boja) with water. The more mature red fruit passes through a cylinder that has them out already shrunken to go directly to 'drying process, while the green ones are treated with the natural system, but, being now covered by only a slight mucilage and parchment, only takes 3 days to dry against the 10/15 of the natural system. There is no production of acetic acid but the product is homogeneous, without fermented beans and a touch more acidity than naturally dried beans.

▪ **decaffeinated coffee.** Decaffeinated coffee involves a special process that may even be performed in importer countries. During this operation, the coffee is vaporized to swell the beans and make the caffeine extraction process easier; solvents are then used to dissolve the caffeine, while a third stage recovers and eliminates the solvent; lastly, the decaffeinated coffee is dried. The solvents used can be: water (enjoys an excellent "image" but yield is far from perfect since it also tends to remove many other desirable substances as well as caffeine), ethyl acetate (a natural product, found in fruit, but it has the drawback of being explosive and also leaves its own odours in the product), carbon dioxide (requires very expensive technology) and dichloromethane (currently the most used, thanks to its low cost and constantly good results; it acts directly on the caffeine and is volatile at just 38°C).

5 - Classification, tasting and evaluation

Every coffee has its own identity that can be recognized through various parameters, such as: ***Origin***, which includes the production area, port of embarkation and the producer.
The proportion of ***Defects*** (unripe, spoilt or broken beans, foreign bodies, etc.) present in a 300 g sample varies from a minimum score of 1 (without defects) to a maximum of 8.

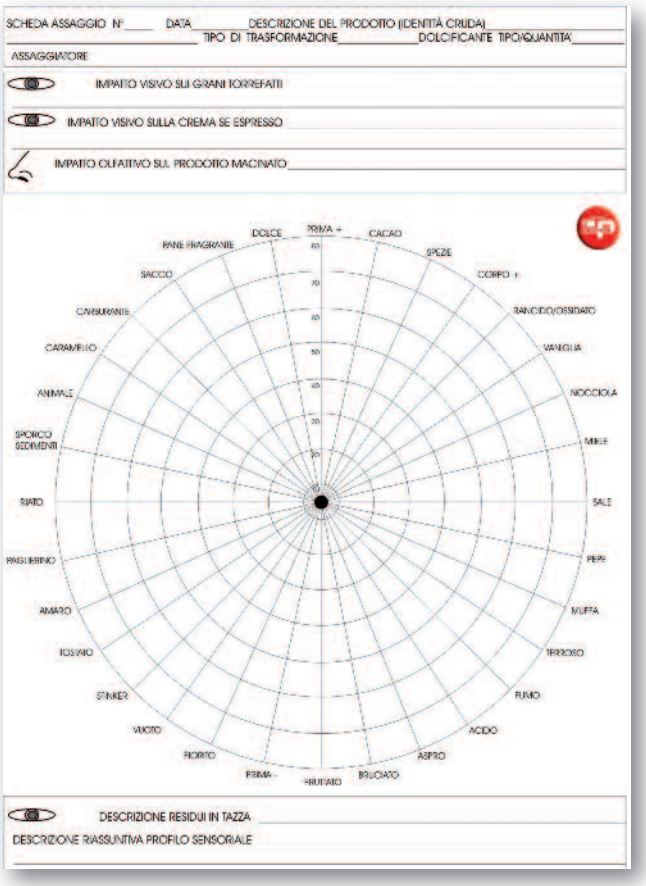
Tasting involves two different approaches:

- by infusion, after slight roasting (very light), the roughly ground coffee is added to boiling water for a few minutes and the resulting drink (without adding sweeteners) is then assessed. This is a widespread system, although it does not provide information about body and only permits approximate secondary taste and aroma indications

Grain-size is also important. This is expressed in ***Crivelli*** and is generally measured from 13 to 20 c. Other characteristics are the ***Year of the harvest*** (old, new, current…), ***Colour***; ***Species***; the type of ***Processing*** (natural or washed); the ***Shape*** of the bean (flat, bourbon (rounded and convex), caracolyte (round and small) and maragogype (very large).
The combination of these features makes up the "identity card" of the product at its origin and the general characteristics that enable buyers to identify the product most suited to their requirements. However, including a new coffee in a perfectly balanced blend requires a further test to be performed: **tasting**.

- "espresso", prepared in the classic Italian style. The drink is tasted with or without sweetening, in a small cup. This method provides clear indications about the body of the product and, since it is a "concentrate" of all secondary taste and aroma features, it ensures a more complete tasting result.

Assessment by means of tasting must consider the fact that sensorial qualities are involved.
As these are often subjective, assessments and standards are not always uniform. However, there are certain common concepts that can be summarized as follows.
After preparation, the first parameters to be



assessed are *Colour* (this provides indications about roasting and extraction), *Aroma* (with positive characteristics such as chocolate, roasting, flowers,
aromatic fruit, etc. and any negative features such as straw, grass, smoke, cork, rancid, jute, stagnant water etc.), *Uniform Appearance* and *Creaminess*.
The drink can now be tasted and analysis involves three stages: *First Impressions* indicates whether the drink is pleasant, together with the intensity of taste and body. The *second stage* analyses taste sensations on the tongue and palate: bitter, sweet or acid, and consistency, such as earthy, astringent or soft. The *third and final stage* analyses *aftertaste* and the perception of all aromas and any defects in what is the most important and longest stage.
It must be emphasized that Arabica coffee usually has more marked characteristics in terms of positive aromas and taste, while Robusta has characteristics such as strong body, intensity and persistent taste, although there may also be less pleasing variants.

At this stage, all the information needed to assess whether the coffee is suitable for joining the "roasting team" is available
The entire procedure is undoubtedly very demanding and involves considerable responsibilities. It must be repeated frequently to ensure that only the best coffee is selected.
In this case, the human element is fundamental.

Only tasters with considerable experience and – above all, passion for this job are able to grasp the imperceptible differences that may enhance a fine espresso coffee.
Only those who can grasp the soul of a coffee bean, behind mere facts and figures, the colours and types sent to roasting, can proudly claim to work with the utmost skill.
These sensorial analysis, selection and correction operations at Pascucci are personally coordinated by Alberto and Mario Pascucci.

6 - Loading, shipment and arrival in Italy

These are the lesser-known stages in the process from the plantation to the coffee cup but they are nevertheless very important. The harvested coffee is packed in sacks. Depending on their origin, there are differences in the materials and the size of the packaging used. The most common sacks are made from jute and contain 60 kg of product (they may also be in sisal, plastic, wood barrels, etc.). The packed coffee is loaded into containers in the ports of origin (always documented) and
shipped on large freighters, increasingly large

numbers of which are especially designed to carry coffee.
The coffee may even travel for several weeks before arriving at the ports of destination that, in Italy, are mainly Trieste, Genoa and Gioia Tauro in that order.
On arrival at destination, the coffee is unloaded and goes through customs. The most important aspect, however, concerns the scrupulous control and analysis performed by specialist personnel and institutes to certify the quality grade of the coffee, that the product delivered matches the declared freight documents and that health and hygiene requirements have been observed. Since coffee is such a popular and important product, these operations provide assurances for both the buyer and the consumer.
Such controls are also necessary to ensure transparency in the unroasted coffee trade - a business that involves various stages and intermediaries.

The unroasted coffee trade value chain begins with the producer, followed by the exporter (that in many producing countries is the State), the broker (managing contacts between exporters and importers all over the world), the importer (also known as the "raw coffee dealer") and - lastly - the final buyer (who roasts the coffee).

It must be pointed out that, despite involving all these figures, the entire coffee trade chain has minimal impact on sales prices: since coffee is a raw material of worldwide importance, prices are always negotiated and linked with dealings on commodity exchanges where assessments reflect various kinds of influences (such as growth forecasts for the economy and weather phenomena in production areas). The commodity exchanges which fix international prices are London for Robusta coffee and New York for Arabica coffee.

Worldwide coffee consumption	Kilos per head per year
Luxembourg	16,65
Finland	12,01
Norway	9,85
Denmark	8,75
Holland	8,38
Sweden	8,19
Switzerland	7,93
Canada	6,45
Belgium	6,33
Germany	6,26
Italy	5,97
Slovenia	5,85
France	5,47
Austria	4,94
Ciprus	4,89
Estonia	4,53
Spain	4,33
Portugal	4,28
Usa	4,13

ICO, Coffe Market Report 2008

7 - Acceptance, roasting and blending characteristics

Once coffee has been purchased, it must be roasted and stored. First of all, the product undergoes further analysis to check conformity with required characteristics and to provide the "roaster" with all the information necessary for the following and decisive "roasting" stage. In the meantime, the batch of unprocessed coffee is stocked in suitable warehouses offering good air circulation and minimal temperature variations in order to prevent the formation of mould and the possibility that the characteristics of a natural "living" product such as coffee may be altered through exposure to sources of extraneous

odours, gas, etc. Humidity, that is, the amount of water contained in the coffee beans, plays an important role. If humidity is too high, deterioration and mould may easily occur with consequently difficult storage and complicated upkeep of quality standards over time; if it is too low, the beans become fragile.

At this stage, the coffee is ready to be roasted. This process involves complete, very delicate conversion and a huge number of variants.

Here we are at our own 'baptism of fire'. Have you ever wondered why the seed of a fruit must be cooked before being consumed?

In the case of our grain simply to enhance its aromatic properties.

It passes from 250 aromatic components of green beans to 800 after roasting, and there's more ... with the 'espresso' method, they're going to double again, if we are baristas, with a capital 'B'. During roasting, the inside of the bean reaches 20 sulphured atmospheres, like the insides of a volcano. Toasting by hand with direct flame, the difference d 'error does not go beyond 3 seconds ... this man is now flanked by the machines, for this task that many can do .... But not all!

Before we look at roasting machines, there are three key points for perfect roasting':

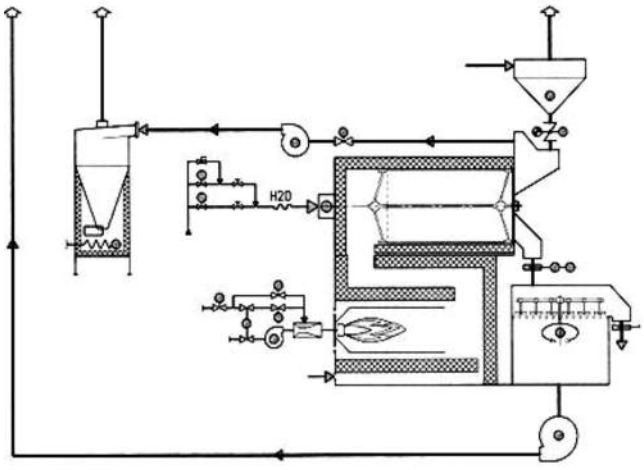
- A wise application of heat
- A final point of roasting adjusted for the different quality roasted
- A quick and appropriate method of cooling

There are two types of machinery used for the **'roasting'** of green coffee:

- A **rotating drum**, used for the coffee intended for espresso, Turkish or instant coffee. Cooking time 12 to 24 minutes roasting *Medium Dark, Dark and Very Dark*.
- A **fluid or fluidized bed**, which is used for coffee consumption of Filter Coffee. Shorter cooking times from 6 to 8 minutes, browning *Light City Roast, City Roast, Full City Roast.*

We analyze the first best, as we are concerned directly. In Italy all companies adopt this type of roaster, consisting of a **rotating drum** fitted with an internal system of paddle which ensures homogeneous mixing and heat exposure of all the coffee beans.

Heat is all 'inside of a combustion chamber heated by a burner with a fuel gas.



There are two ways to get heat to the green coffee to 'inside of these drums

By conduction: heat is transferred to grain contacting metal walls of the cylinder, heated by an underlying form of heat. This method, however does not give a perfect control system of roasting. The problem of scorching often occurs, which burns the coffee bean, taking off small strips. The roasting is not homogeneous and the grain has two different cooking levels from outside to inside.

Modern and still in use, is the **hybrid' system**. The furnace works with gas and is placed under the rotating cylinder, but separated from it by refractory material. The drum is perforated in the rear, and the beans are roasted not just by contact with the walls but also by hot air flow.

The convection or induction, method used today by all major companies. Thermal energy is directed into the drum in the form of hot air. The heat is produced in a separate combustion chamber. Roasting is therefore not by 'contact' with the cylinder. This system avoids the phenomenon of scorching and ensures homogeneous and uniform roasting. These machines are very flexible; you can control the volume of hot air, the drum rotation speed, and the power of the burner, then convey the temperature gradually and 'gently'.

The cooking temperature varies, depending on your choice, from 190 to 220 degrees Celsius in times ranging from 8 to 20 minutes.

The system of **fluid bed** or **turbo roasters** is a continuous cycle, roasting larger quantities of coffee in less time, which saves labour and fuel.

The cooking process is by hot air convection: the mass of beans floats above the hot air, like in a popcorn machine. This method is not suitable for roasting blends with high aromatic quality: the sheer volume of hot air and very short roasting time lead to an increase in volume of the grain, resulting in loss of aroma. For this reason, the system mentioned is used in countries where roasting for light extraction is used, such as for filter coffee in the United States and northern Europe.

The bean comes out of the roasting machine at a temperature ranging from 190 to 220 °C, so it is necessary to initiate a rapid **cooling** process that prevents it from continuing to cook by auto-combustion.

There are two cooling methods:

- **Forced fresh air:** cooling via a large amount of cold air fed into the cylinder first then in a cooling tank. This method should take the roasted coffee to room temperature in a maximum of ¾ minute to prevent loss of aroma. There are great advantages to this sys-

tem, with the sole problem being a negligible weight loss.

- **Water:** water is sprayed into the roasting cylinder just before it is discharged into the cooling tank. This causes the formation of water vapour which drastically reduces the temperature. This delicate operation must be carried out as soon as possible and using a quantity of water spray of no more than 10% of the total weight of the coffee. It restores the weight lost through roasting and there is a lower risk that the beans will continue to cook. Degassing times to discharge CO2 are shortened but conversely, if the transaction is not precise and carefully controlled, the result is excessive loss of flavour, volatile compounds and essential oils which, moreover, dirty the drum and the cooling tank leading to greater maintenance requirements.

Artisan roasters, small and medium-sized enterprises, use air cooling. Larger roasters use both systems to cool consecutively larger quantities of coffee as soon as possible.

During the 15-20 minute roasting time, the beans undergo important modifications that can be summarized as follows:

- the residual film around the beans is dried and removed by suction,
- water content is reduced from 10% to 1%;
- sugars are also reduced from 10% to 2%. They are converted into caramel and give coffee its typical colour and bitter-sweet flavour, depending on the degree of roasting (carbonizing of cellulose is also involved in this context);
- fats and proteins are somewhat reduced and converted into particular features that characterise the aroma of the coffee;
- acids and volatile substances generally disappear and dissolve, especially at higher roasting temperatures;
- the weight of the coffee bean drops to 20% while its mass increases by up to 60%;
- the caffeine content, that at 170° should be volatile, actually drops as temperatures increase, albeit to a limited extent since at such temperatures the coffee bean becomes more or less impermeable.

All these modifications clearly highlight the importance and care that this operation requires and its impact on the final outcome. By way of example: roasting at higher temperatures exalts features such as bitterness, while more delicate roasting enhances features such as fruit, acidity, "grass", etc.

Blending is a separate issue - the art of mixing coffees of different origins and characteristics in a complete final product. This is especially a characteristic of traditional Italian "espresso" coffee.

Blends may involve two, ten and even more types of different coffee. This depends on the style required for the coffee served. Blending several coffee varieties does not necessarily mean improving quality. Quality mainly depends on the types of coffee used and their balance and harmony.

Blending in any case is based on an important principle: optimize all positive features and minimize defects by exploiting the most important properties of both Robusta and Arabica coffee. The objective for an "espresso" blend is to combine the strength, body and cream of Robusta with the perfumes, delicate flavour and aroma of Arabica. The more this delicate equilibrium is based on higher proportions of Arabica (which equally reduces caffeine content), thus improving aro-

ma, the higher the quality of the blend.
Today, blending various coffees involves two equally valid approaches. The first theory suggests that blending all or at least an initial selection of the coffee beans must take place during roasting,
so that in this already important stage they can interact and merge – something that undoubtedly happens. The other approach suggests that coffee beans should be roasted separately and then blended afterwards, since simultaneously roasting several products would risk processing certain beans optimally but not those with different characteristics, thereby not achieving ideal results. In any case, all blends must be left to "rest" for several days so that all the various coffees used can “breathe” together and share their qualities. What may initially seem to be a competitive disadvantage has actually always been one of the strong points of the Torrefazione Pascucci company: its location in Montecerignone, Montefeltro (PU).
It is by no means easy for a company to be so far from major production areas. It is by no means easy to be so far from the most important communication routes. It is by no means easy since each everyday routine involves extra drawbacks, effort and costs.
However, this is hugely compensated by two other specific advantages.
1 - The microclimate of Montecerignone, set in the valley of the River Conca at an altitude of 600 metres, ensures low and constant humidity all year round so that coffee processing takes place in ideal conditions all year round. The purity of the hillside, country air means that coffee being roasted or stored is exclusively exposed to the natural aromas of our countryside and its fruits. The climate and mineral composition of the soil in Montecerignone, where coffee ripening and processing take place, supremely enhance product quality. As the raw coffee ripens, this climate helps sweeten it and improve its natural taste characteristics. After roasting, very low spontaneous humidity levels in the air mean that the beans are stable and retain all their aroma.

2 - the people-friendly dimension of a small town; where lifestyle and human relationships are dictated by a tradition of genuineness, familiarity and harmony between people and the land. The company is the offshoot and expression of its local community, so that positive, human values are part of the company's approach to its business relationships with clients, staff and suppliers.

These are the real reasons that have encourage Pascucci to undertake a new and demanding challenge once again in Montecerignone: a new production site capable of sustaining new and growing requirements. New head offices with advanced technology that nevertheless keeps faith with our roots, background and people-friendly dimension.

8 - Technology is worthless without experience

One probe may measure the temperature of the coffee during a roasting stage, another may measure its temperature at the end of this process. These probes are pointless unless they are used by experts. Probes can measure what they are asked to measure but they can never understand when it is exactly the right time to terminate the roasting process.

As the coffee beans roll around inside the hot roasting drum, they begin to "crackle" slightly at just the right moment - and only a coffee expert is able to perceive this "language". Every coffee roaster characterizes its products by the degree of roasting and the type of blend. Correct blending of different coffees is the outcome of years of experimentation.

9 - Distribution

Essentially, there are three kinds of coffee consumer and relative distribution channels

● ***home consumption***, that generally prepares coffee in "moka" stove top coffee pots and family espresso coffee machines. Products include classic vacuum-packed ground coffee (250 g) for "moka" coffee pots and 1 kg packs of roasted beans for "espresso" coffee. Despite lower demand, cans and medium-sized packs (500 g) are also available. There is a wide offer and every company proposes various quality levels often identified by different colours: red for lower quality, gold for medium-

high quality and black for 100% Arabica. In truth, the type of consumption (simple equipment) and the format (ground) enable companies to supply this channel with blends of inferior quality compared with coffee bars and this is proportionally reflected in much lower prices. This channel also includes soluble products and blends with surrogates, albeit to a minimal extent. Large-scale distribution is the dominant outlet for this type of sale, that over time has significantly redimensioned the traditional retail market (local food stores)

• ***catering (bars, restaurants)*** - the most highly qualified sector in the coffee consumption world which, consequently, demands higher quality products. Coffee is supplied in bags of 1 or 3 kg (not vacuum-packed - although at times a so-called vacuum-pack valve is included). Prices are aligned to the quality of the blends which is generally higher than in other channels. This sector demands a very close relationship between producers and catering outlets that must work together day after day to convince consumers. This is why the company also offers a consulting service: from product promotion to equipment verification and professional training. This means that distribution should be as direct as possible and to this end, specialist sales agents are involved, as well as sales promotions.

• ***vending channel*** - this sector is experiencing continual expansion thanks to the versatility of the vending machines used and the ease with which automatic distribution reaches otherwise distant consumers. However, low-quality coffee is generally used since the only feature required by such automatic preparation is compact cream and easy extraction. The major innovation in this sector is the new market for pod machines. Even easier to manage, pod machines are penetrating both markets, such as workplaces and social centres, as well as families: the important innovation of this product is that it is more similar to bar coffee than vending machine drinks.

Pascucci offers its own range of products for all sales outlets with precise and original positioning. Historical emphasis on excellent quality could by no means give way to the easy logic of mere numbers. The guideline for all production focuses on the "horeca" channel and high quality blends. This means that the same three blends - Golden Sack, Mild and Classic - used in the most important coffee bars are also available for moka coffee pots or "espresso" machines in cans or vacuum-packs. Such a high-quality product is unlikely to be found in large-scale distribution outlets but only through authorized Pascucci retailers and bars.

The same approach has been used for the coffee pod market. Distribution of this product is enjoying excellent growth - and again offers the same three blends as for bars.

Anyone drinking Pascucci products - at bars and restaurants, at home or in the office - is assured of the same excellent coffee in all our ranges.

10 - Extraction systems and "espresso" coffee

There are different ways of drinking coffee and this variety indicates the versatility of this product and how it has been enjoyed in different periods.

- The most simple preparation system is *infusion*: a dose of ground coffee is added to boiling water in a jug. Infusion takes about 3-5 minutes and the coffee is then filtered through a strainer.

- *Turkish-style*: a special pot called "ibrik" is used to boil the water and then add very fine-ground coffee and sugar. This is then left to boil again. This method produces very particular coffee: strong, dense and (despite the sugar) rather bitter.

- *Neapolitan:* the special coffee pot has a removable filter that is filled with finely ground and highly roasted coffee; the base is filled with water and left to boil, with the top part (with a pouring beak) tightly closed. Once the water boils, the pot is turned upside down so that it can flow into the other section, filtering through the coffee.

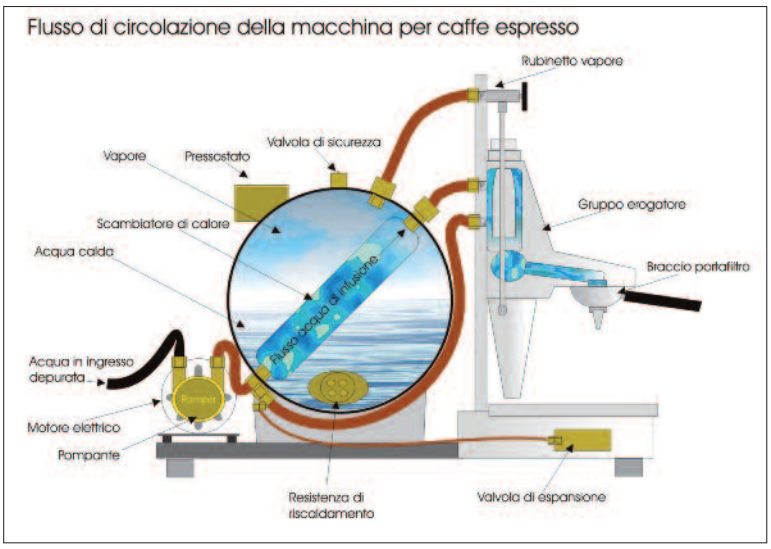
- *Moka:* a very popular system comprising a stove top coffee pot in three sections: a boiler to boil the water, a filter with a dose of about 6 g of fairly well ground coffee and a third section to collect the drink. The special feature is that the water has no escape route other than the steam pressure that rises into the second recipient filtering through the coffee in about one minute. The drink has a distinct flavour and an intense aroma.

- *Filter.* Perhaps the most common system in the world. Rough ground coffee is used - from 5/6 g of light roasted in North America up to 10 g of medium roasted coffee in France. Boiling water is simply poured over the coffee placed in special paper or fabric filters and then percolates by gravity into a pot underneath - the resulting coffee is delicate and not too strong for frequent consumption. This system only exploits about 20% of the coffee components in 150/200 ml cups.

- *Soluble.* Not widely used in Italy but popular abroad. Preparation is extremely easy: simply dissolve the product in hot water using about 2/3 g of coffee for 150/200ml cups. Processing of this kind of coffee involves differences such as freeze-dried (better and more expensive) or spray-dried.

- an Italian tradition becoming increasingly popular abroad: *"espresso" coffee*: specific equipment prepares a very concentrated, fully-flavoured drink with an intense body and aroma.

This equipment involves an espresso-coffee machine, a pump, a water softener and a grinding-dosing unit. The vital technical elements for making good espresso coffee have remained unchanged for decades, despite the refinements and ease of use offered by certain electronic components. These elements include high-quality materials (copper, brass, steel) in a series of fundamental components such as the boiler, the heat exchanger, solenoids, infusion units and filter-holders, the pressure switch used to set boiler pressure and the pressure gauge indicating pump and boiler pressure.



The history of espresso machine began in 1901, when an engineer from Milan, Luigi Bezzera, patented the first monumental espresso machine, the basis for today's machines, which sublimate the soluble part of the roasted grain into a strong, dark hot drink and the inner part into a short-lasting golden disc, called 'cream'. Desiderio Pavoni purchased the patent in 1906, starting to building in his garage, now a company, one machine per day. It was the super-elegant 'column' machine with upright boiler, all encased in copper and brass. The coffee was extracted by steam produced from water in the boiler connected to a gas cylinder. In the forties the design was completed by creating 'piston' or 'lever' to allow the total exclusion of steam using only hot water powered by a spring to a pressure of 14 bar.

The drink it made was revolutionary: thicker and creamier and highly aromatic: the mother of the modern espresso. The famous 'Coffee Cream', from the patented design by Achille Gaggia and Rosetta Scorza (who inherited the patent rights from her Milanese engineer). However, war once again halted development of this great invention; indeed, in Italy the state imposed high duties on imports of coffee, but also on the production of espresso machines, for which there was high market demand on the 'enemy' markets of Britain, France and the United States.

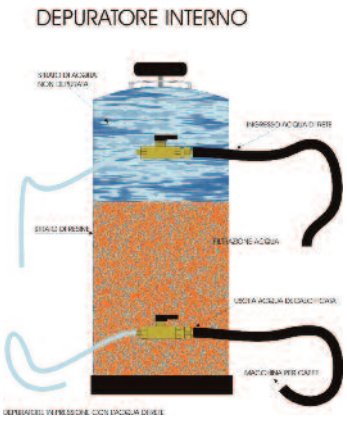
After this, during the greatest period of social and economic recovery in our country, came a model to change the way coffee is made, introducing the design standard design still in use today. It came from the Faema factory in Milan: an invention by Ernesto Valente, Gaggia engineer until 1950, the E-61 and E-61 Legend, This was the first machine with a thermosyphon circuit with heat exchangers in the boiler, which took water directly from water mains through an electric motor pump set at 9 bar pressure. A revolution… and one that is still ongoing!

A decade earlier Pavoni, inspired by the famous designer Gio Ponti, had put the boiler in a ver-

Collezione Enrico Maltoni (www.espressomadeinitaly.com)

tical position to allow the bartender to interact with the customer. The machines were placed on the bar, as beautiful decorative icons.

To make coffee, the flow of water is softened to 2°, pumped at a pressure of 9 bar into the heat exchangers, where it is heated to 88/92° and - at this pressure and temperature - reaches the infusion units in contact with a dose of 7 g of coffee and then the cup. Infusion must last 20/25 seconds and deliver the coffee into a warm cup (but not more than 65°C).



Grinding is an important stage. There are two types of commercial grinding-dosing units:

- *flat grinders* are the most common and, as their name suggests, they have flat grinding blades rotating at 1400 rpm. They need to be checked every 300 kg coffee;
- *conical grinders* with blades rotating at 4/500 rpm (much more expensive). They need to be checked every 600 kg of coffee.

The objective of both systems is to grind coffee beans into an even powder, suitable for infusion, which is neither too fine nor too coarse, bearing in mind the humidity that affects yield (the distance between the blades can be set for finer or coarser grinding as required). The operating temperature of the grinding-dosing unit must never exceed 40/50° to avoid affecting coffee yield. This, essentially, is the difference between flat and conical blade grinding-dosing units: the former rotate more rapidly and risk overheating more quickly and are thus unsuitable for heavy-duty espresso coffee service.

The "espresso" system produces a very particular drink, with a layer of cream - the foam produced by the emulsion of particles of air and coffee oils - a distinct body and an extraordinarily intense aroma thanks to very efficient extraction; the creamy layer itself also prevents all the finer qualities of good quality coffee from evaporating.

11 - Some secrets for a good cup of coffee

The previous section describes the typical way that water and coffee combine to become Italian "espresso". However, this "process" should

by no means be viewed exclusively in mechanical terms - it also requires care and attention to details to make it “live” and considered specialized. A great many elements must be controlled and taken into consideration as regards the entire process to make true and genuine Italian espresso coffee. Traditionally, the secret behind fine espresso coffee can be summed up in **5 rules: coffee-making machine, grinding-dosing unit, skill, maintenance** and - naturally - **a good blend**. Obviously, these rules involve a great deal of work. Let's try to list some of them, well aware in any case that coffee-making skills largely depend on direct experience of coffee machines and true passion.

- Coffee packs should be opened even two hours prior to use so that the coffee itself can adapt to the surrounding environment.
- The grinding-dosing unit should be thoroughly cleaned at regular intervals, since coffee releases oils that over time may become rancid and spoil even a high-quality product.
- A dose of coffee should be around 7 g (6.8-7.2) to ensure optimal infusion.
- Avoid overheating the grinding-dosing unit - at over 40/50°C, it may compromise the integrity of the product.
- The dose of coffee should be firmly pressed into the filter with decisive, horizontal and regular pressure so that the infusion water uses the entire dose within the time limit.
- If the coffee does not pour "on time", modify the grinding settings (not the compression!). If the coffee pours too slowly (more than 25 seconds, with the risk of remaining in contact with the very hot filter-holder too long and thus burning), then it should be more coarsely ground. On the contrary, if the coffee pours too quickly (less than 20 seconds with fast and incomplete infusion) it should be ground more finely. Generally speaking, the grinding unit can be set 1 or 2 notches up or down as required.
- The usual cause of such changes is the degree of humidity in the air absorbed by the coffee powder. It is therefore advisable to grind coffee only as required and avoid leaving it in contact with the air for too long. It is a good rule to finish previously ground coffee in the evening so that in the morning and during the day it is always freshly ground. Coffee, especially when already ground, is a “live” product that breathes!
- Always check blade wear and replace the blades after 400 kg for flat blades and 1000 kg for conical blades. The coffee must be finely ground and not crushed by blunt blades.
- Always use fresh, decalcified water - hard

water makes heavy, creamless coffee.

- The temperature of the water must be about 120°C in the boiler and about 88° at the pouring spout; the pump should ensure a pressure of 9 bar; minor variants depend on the type of machine used.
- It is of fundamental importance to keep espresso machines clean. The gaskets, pouring spouts (that must ensure free flow of water) and filters should be cleaned thoroughly every day with a special blind filter. Filters and filter-holders must also be cleaned, since - like the spouts. they tend to accumulate burnt coffee (and thus spoil good "espresso"). Deposits of milk on the steam jets should be frequently removed to prevent them going rancid. The drip tray underneath the machine should be cleaned to avoid blockages caused by deposits of coffee grounds. All these rules of cleanliness must be scrupulously and regularly observed, accompanied by frequent checks of the entire system by specialist personnel.
- Always use warm cups; cold cups "block" espresso coffee and spoil its body, while if they are too hot (over 65°) they overheat and tend to "burn" it.
- Constantly verify infusion and delivery times. This short time-scale (20/25 seconds) involves a very delicate process: the boiling water initially wets, swells and mixes with the coffee powder, absorbing all its aromatic properties; it then passes through the dose of coffee and is poured into the cup.

If the coffee is properly regulated and flows in a thin and continual line (the so-called *"mouse tail"*) with the colour of a *"friar's habit"* into the cup with concentrated perfumes and aromas enclosed in a thick, hazel-coloured cream... we can proudly say we have achieved our objective.

Perfect Espresso Features

'Hazelnut-reddish' cream, sometimes with a kind of 'tiger stripe' effect.

Good consistency with 3-4 mm thick, uniform mesh.

Round body, perfect, perfectly balanced taste and aroma, very persistent taste.

Why?:
Dose around 7.5 - 8 grams
Water temperature 90°C
Water pressure at 9 bar
Right fine grinding
Pressed at 20 kg
25 cc volume in cup
25/30 sec. pouring

Over-extracted Features

Dark cream with a lighter spot.

Low consistency and thickness, with hole in the middle.

Hard taste, bitter and astringent, low aroma, lingering taste.

Causes:
Ground coffee dose **over** 7 grams
Water temperature above 92°C
Water pressure less than 9 bar
Overly fine grinding
Pressed at over 20 kg
More than 30 cc in cup
More than 30 sec. pouring

Under-extracted Features

Beige, very pale cream.

Low cream consistency, with large bubbles.

Cream not very persistent, fading (less than 1 min.)

Little body, watery, with little taste which does not linger and little aroma.

The causes may be:
Dose **less** than 6 grams
Water temperature less than 88°c
Water pressure more than 9 bar
Coarser grinding
Excessively light pressing
Less than 25 cc in cup
Less than 20 sec. pouring

"Espresso" coffee is an Italian tradition, style and taste. For decades, it has been one of the most highly appreciated and characteristic Italian products abroad. This is truer today than ever before.
In Italy, espresso coffee is a daily custom, an important moment of pleasure, a ritual - perhaps excessively so.
Every tradition is a link between past and future and espresso coffee must always keep pace with the times to ensure its future. It must be kept up-to-date and made important even for generations with different lifestyles and stimuli from those who created and developed the espresso coffee tradition.

Pascucci has always focused clearly on the objective of capitalizing on its traditional espresso coffee, seeking solutions that will keep it "alive" even in the future.
It began by developing sweeter blends, ideal for consumers with more "educated" tastes, including women and young people, between 1970 and 1980.
Pascucci was the first company to develop the typical wide cup, emphasizing extraction, optimizing all the aromas of coffee over a larger contact surface, unlike the typical pear-shaped cups that encouraged a thick cream but also partly dis-

guised the advantages and defects of the product. These are all important and less important ideas for valorizing a traditional product by keeping it up-to-date.

Today, the challenge is even greater, since the aim is to give coffee the value of a complete personal experience: it is no longer enough to drink espresso coffee - people should enjoy a unique product, together with the best complementary items, in a perfect setting with ideal colours, convenience and scents. All this is done to ensure that drinking a Pascucci espresso in a setting in line with the spirit of Pascucci becomes a personal experience of true pleasure, of total harmony. We are determined to achieve this goal.

12 - Coffee and health

Since coffee is so popular, studies have always been conducted into its effects on the human body. A decisive period in the medical study of coffee was from 1970 to 1972, when the bio-pharmacological coffee symposium was held. During this three year period, scientific data and analyses were gathered on an international scale, sweeping aside many of the beliefs then held to be valid. Since then, updates in the field have perfected scientific-medical knowledge as regards several definitive aspects:

Coffee is by no means essential in human nutrition - but many of its substances have beneficial effects on the organism. It is considered a nervine product since the most active substance is an alkaloid universally known as caffeine. A cup of espresso coffee contains 60/100 mg of caffeine, caffeine-free coffee 2/5 mg, a 150 cc cup of infusion coffee 90/130 mg and soluble coffee 40/100 mg. First and foremost, coffee is not addictive - although excessive consumption is unadvisable.

It has beneficial effects - beginning with the heart - improving arterial tone and coronary circulation without altering pressure. The lungs also benefit from coffee as it improves bronchial dilation and helps combat asthma. It helps overcome muscle tiredness and improves the coordination of movements. It also stimulates vasomotor nerves to help and facilitate digestion (so a cup of coffee after a meal is always pleasurable and healthy). Coffee stimulates the production of bile in the liver and the contraction of the gall bladder.

Yet the most important effect of a cup of coffee is in the brain and nervous system, since it stimulates mental faculties, wards off sleepiness, boredom and tiredness – both physical and psychological - and enhances memory capacity, learning and concentration - as well as soothing headaches and migraines.

Coffee especially stimulates the most important of our senses: the zest for life…

A stimulating passion

It may seem excessive to link "passion" with "work" - but how else other than through "passion" could one describe the background of sentiments that encourage the members of the family and all the staff at Pascucci to dedicate so much effort in all company sectors? Our bond with coffee and our brand stimulates us to dedicate even more time and effort to our quest for excellence. Pascucci has always communicated this "Passion", this enthusiasm, this desire for improvement to all in the industry. At Pascucci, we have learnt that there are two ways of working: the first is "well" and the second is "well and passionately". We know that the result of these two approaches is only apparently identical.

Encouraging everyone to follow this "philosophy" is by no means easy. Fortunately, the human resources at Pascucci are its mainstay.

Our "added value" in the coffee field.

13 - The milk, production, structure and Cappuccino

For a barista, milk, is a key element. The milk-coffee association has now 400 years of history (which we will look at later) and is the vehicle that brought many people who do not like to drink coffee to start. Today in Italy the total consumption of coffee is considered:

- 80% espresso
- 20% cappuccino and coffee-milk drinks

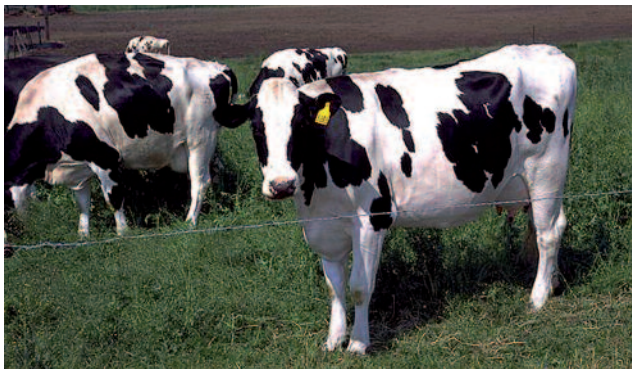
In the other countries is exactly the opposite! For this we must, to be complete, study this material, establishing the real differences and learn how to use it.
A great cappuccino should change the beginning of the day!

Structure

The milk is a white liquid secretion of the mammary gland of terrestrial and marine mammals. It is generated during the gestation period and serves as the basis of nutritional weaning of pups. The first liquid of the female breast as soon after delivery is called colostrum and is intended to give, from vitamins and other components, the physical basis of the young's immune system.
Two days later, on average, will have formed. The species that interests us now is of course the cow:
There are different breeds of cow that produce milk for the market:

- Friesian – 30/35 lt milk/day
- Jersey – 25 lt milk/day
- Dutch – 50 lt milk/day
- Buffalo – 15 lt milk/day (only for cheese)

Each of these cows produces, depending on the area and food, a different product in terms of nutritional values.
The quality of the milk supply is directly proportional to the animal's diet.



Typical composition of milk from farmed animals

Type	% water	% proteins	% lactose	% fats	% minerals	energy
Cow	87,47	3,51	4,92	3,68	0,74	729 kcal/kg
Goat	82,70	6,10	4,60	5,80	0,80	980 kcal/kg
Sheep	85,50	4,00	5,00	4,80	0,70	790 kcal/kg

Industrial processes of milk

COOLING

The first treatment takes place in the milking parlour. Here the milk, which comes from the udders of cows at a temperature of 37 °C, is conveyed in closed tanks where milk is cooled and stored at 4 °C. With this temperature, bacteria reproduce more slowly. Then the milk is transferred to the tankers, which transport it to dairies for processing into finished product.

PASTEURIZATION

Thanks to the discoveries of the French chemist, Louis Pasteur, concerning the killing of Brucella by heat, it is customary now pasteurize or heat the milk to temperatures capable of killing microbes. The treatment reduces the bacterial load, resulting in minimal sensory changes. All treatments end with cooling to 4 °C: at this temperature fresh milk will keep for 4-5 days, through the cold chain (refrigerated trucks for distribution in the city, the cold counter in the store and finally, the home refrigerator).

Low pasteurization

This treatment, which is no longer in use, is only for milk with minimum contamination risk, which is taken to 65°C for 30 minutes. The genetic evolution of some bacteria has led to this treatment becoming mainly ineffective for direct food use.

Quick Pasteurization HTST
(High Temperature Short Time)

The milk, after preheating, is heated to a temperature of 72 °C for at least 15 seconds. This pasteurization is made possible through a reduction in a thin layer of milk that is passed between heated plates ('stassanizzazione' in Italian). This process also exploits the phenomenon of bacterial cells attracted to the surface of the plate which presents an uneven surface: this causes a turbulent flow of liquid. This temperature kills about 96% of bacteria (of primary importance is the reduction of bacterial vegetative forms represented by the bacteria Mycobacterium tuberculosis and brucellosis), while 5% is composed of the spores, that is, bacteria in a form that has become very resistant to heat.

To slow the growth of bacteria remaining, the milk is immediately cooled to 4° C. Pasteurized milk can be stored at 4° C for six days.

UHT PROCESS
(Ultra High Temperature)

This is a particular sterilization technique that consists of treating homogenized milk preheated to least 135 °C, through the use of superheated steam for not less than one second. A UHT indirect system is where the milk is sterilized through heat exchangers, while direct UHT sterilization of milk is when it is in direct contact with the heating fluid that is steam from water. Subsequently it cools to 15-20 ° C (the direct system means that the milk is slightly watered down by the steam) and then it is aseptically packaged in tetra-brik containers.

The UHT process does not guarantee total destruction of the most resistant spores, UHT milk is considered a "long life" milk and you can keep it for about 3 months at room temperature. The packaging of various types of UHT sterilized milk must indicate the date of minimum durability "best before ... " (day, month, year).

STERILIZATION

This is the most energic heat treatment and guarantees complete elimination of all bacteria, in-

cluding spores. The most used method is ultra-heat treatment, taking the milk to very high temperature (140-170°C), using steam, for a few seconds. The sterilized milk lasts for a long time at room temperature (180 days), however, once open, it needs to be kept in the refrigerator and used within a few days. In fact, it can come into contact with the micro organisms in the environment which, finding no other bacteria to compete with, would be free to spread.

Sterilized milk is significantly safer than UHT milk from a bacteriological viewpoint, but it has lost the majority of its nutritional value and some doubt its suitability as a food on account of its reduced vitamins and altered calcium. As well as its nutritional content, the flavour too is different and therefore, sterilized milk is mainly used as an export to poor countries. Milk that is to be sterilized must test negative for phosphatase and peroxidase.

MICROFILTRATION

Microfiltration of milk is a part mechanical and part heat treatment.

It separates the lipid fraction of milk with centrifugation because it cannot be filtered: this is then treated at 120-140 ° C. The skimmed milk is micro-filtered through a porous membrane. The two fractions are then blended and pasteurized at 72-80 ° C. The result is milk with characteristics similar to fresh, but that can be stored for up to ten days after treatment.

OTHER PROCESSES

In addition to thermal pasteurization and sterilization procedures, there are other processes, depending on the particular product needed. Among the many include:

- skimming
- homogenization
- HD milk

Skimming

The treatment is done to decrease the percentage of fat in milk. It is done by centrifuging the liquid until the fat (cream) is separated. The more intense and longer the centrifugation, the more fat is separated.

Semi-skimmed milk, in fact, contains fat percentage of 1.5 to 1.8%, and low-fat milk, which is more centrifuged, has a percentage of 0.5% max.

Homogenization

After being pasteurized or sterilized, milk can be homogenized. This is a process frequently used by the milk production centres. It is passed under pressure through a special valve (homogenized) able to reduce all the fat globules into particles with a diameter 20 times smaller, thus forming a stable emulsion, and also avoiding the problem of fats surfacing. The product becomes easier to digest. It is particularly suitable for infants in the weaning period, and for the elderly with digestive problems. In Italy, it is a mandatory procedure.

HD Milk

The various milk products called HD, high digestibility, and their different trade names, are recommended for those who do not have the enzyme lactase and can not break down the lactose in its constituents. Therefore, the lactose in milk is converted to the two simple sugars of disaccharide: glucose and galactose, or sugar is removed. Intolerance to milk but not the true allergy, which is less frequent, is usually caused by lactose, which is not split and therefore not absorbed leaving it to recall fluids in the digestive tract via osmosis, leading to digestive disorders.

Now, let's take a closer look at the composition of milk:

MILK { FATS, PROTEINS, LACTOSE, WATER

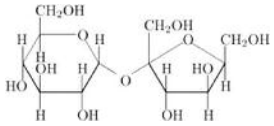
Fats: Fats are present in whole, skimmed or semi-skimmed milk, but in different percentages, which is why knowing the percentage allows us to choose the best milk, depending on usage.

- Whole Milk: 3 - 4 % fat
- Semi-skimmed: 1.5 % fat
- Skimmed: 0.5 % fat

These types of milk are all good to make the 'foam' but it should be borne in mind that if there is more fat, the cream will be thick and elastic, so whole milk is the best choice. For cold drinks, skimmed or semi skimmed milk is better, because with cold drinks we can feel the fat in our mouth more and which builds up on the sides, leaving an 'annoying taste.

Proteins: without protein you cannot make foam, and without foam, there is no cappuccino.
Proteins are very fragile and become ruined as temperature increases; *already at 50 ° C, they become heavily damaged and therefore, this is the ideal overheating point, although it is also true that this is not the ideal temperature for a cappuccino: too little time for emulsion and too cold! The compromise between maintaining the protein and satisfying the customer means not exceeding 80/85°C and not falling below 50/55°C.*
In fact, at 85/90°C, the protein breaks down and releases unpleasant-smelling gases. That is why, UHT Milk, which is treated at 140/150°C does not have a pleasant smell!
When foaming milk, *we stop at a temperature which is around 70/75°C in order to avoid the breakdown of proteins, but not burning tongue and palate of the customer.*

Lattosio: About 1 / 3 of the adult population worldwide is allergic to lactose, with the exception of Asian people that do not include in their diet - by adults - consumption of milk if not for the weaning period. It is easy to see why Westerners are so intolerant to lactose as an adult, if you think that nowhere in the world is there any kind of carnivore that feeds on milk after weaning.
More specifically: our body's digestive system is a kind of lock for the input of certain foods. Lactose is composed of two molecules: one of glucose and galactose:



When there is milk intolerance, it means that the lactose molecule is too large for the lock of the digestive organs.
This is why (in HD milk) enzymes are used that are able to separate the lactose molecule into two smaller ones: one glucose and one of galactose.
These two smaller molecules are able now to pass through the lock.
These types of milk appear to be slightly sweet as glucose alone is able to release most of its properties.
In recent years, the companies producing milk are studying a milk best suited to cappuccino, some are adding more protein and fat.

Sometimes, at work, the milk, which is always the same type, never foams. Why?

The problem is usually at the base, i.e., the cow, which at certain times of the year does not eat certain foods. This means that the milk fat is lacking and therefore, it is added. But these fats are not the same as the natural products from the cow, unfortunately.
Other times may be due to a simple human error, leaving the milk just one more day in the tank where separation occurs. The best cows to produce milk for cappuccino are those of Jersey cows because of their diet.
Good coffee roasters in Denmark have been doing research for years with various milk producers to find the best level characteristics to match with their coffee, so that they can advise their clients how to better enhance the coffee's characteristics, even when served in the form, for example, of cappuccino.

Cappuccino, History, Evolution and Composition

An urban myth (or maybe not), says that in 1683, after the 'Battle of Vienna', when the Prussian Empire drove the Ottoman threat from Europe, the monk Marco d'Aviano (now Blessed) collected a large amount of the bags of coffee left by the fleeing Turks.
In Europe we already knew the charm of this drink, that had tonic 'powers' on attention and wakefulness, but few nutritional qualities. The 'Capuchin monk' thought to add these nutritional qualities with milk and thus he contributed to the birth of one of the most drunk 'cocktails' in the world.
The name 'cappuccino' is due to several reasons:

- The drink is the colour of a monk's tunic.
- Its invention by a Capuchin monk.
- The light cream milk around with the 'halo' of black coffee is reminiscent of the shaved tonsure of the friars.

With the birth, 200 years later, of the espresso machine, this drink (which was basically the first 'lattè') acquired charm by using the steam wand of the machine to heat the milk, varying the proteins to form a sort of cream on the surface. In fact, we should attribute the birth of real cappuccino we know it today to the birth of the espresso machine. Years after, a famous 'caffettaro' from Naples called Piero Merlo saw that pouring from different distances and with different movements, the cream would develop strange shapes in the cup. This was the birth of 'latte art', now a huge marketing technique studied and represented in international competitions.

How is Cappuccino made?

Today, wanting to give a correct definition of a cappuccino, we can say that is 'the drink served in a large 170cc cup, with 125cc of foamed milk, steam heated to a temperature that does not go above 75 degrees C and 25cc of espresso'
Now let's look at a few more features:

- The milk should be whole and fresh, because it is closest to the original drink. It has a high amount of fat and protein. *Proteins make the cream; fats keep it supple and persistent.*
- Initially, the milk must be at a temperature of 4°C.
- To get a perfect cappuccino, we need a perfect espresso.
- Milk must be foamed on a wand that takes its steam from the boiler, which inside has 70% water and 30% steam.

- We cannot bring the milk to above 75°C; else proteins would break down, causing odour and a making the milk difficult to digest.
- The drink called Cappuccino must contain the right amount of cream and the right amount of milk (almost identical proportions).

Equipment, Foaming and the right visual

For a perfect cappuccino, you need the correct equipment.
Needless to say you need an espresso machine. We have already spoken about the quality of milk, now we can look at the rest:

The Milk Jug:

- Single cappuccino
- Half Litre for 2 cappuccinos
- ¾ Litre for 3 cappuccinos
- 1 Litre for 4 cappuccinos

The milk jug for foaming must have the following features:

- Stainless steel for fewer problems with temperature control.
- Cone-shaped to facilitate the rotation of the milk inside.
- The nozzle is only important for decorated cappuccinos
- The milk cannot be foamed more than once since the milk proteins used have already been opened.

As for the steam nozzle is concerned, the ideal flow is powerful and dry, with the right angle and position of the holes to allow the milk to turn to break large bubbles into smaller bubbles on the walls of pitcher.
The steam needs to be tested with the hand; it should neither burn nor wet. In these cases,

holes need to be closer together.
The pitcher should be filled to just halfway to have the right dose of milk for requested cappuccino.
This is very important, because we cannot steam the same milk twice.

How to foam the milk:

- First flush the steam from the wand
- Make the wand touch the milk, open to maximum flow and rotate the milk around the edge of the wand, while the wand foams it with air.
- Immerse the wand slightly, still rotating the milk in the jug, to warm it up (check the temperature with your hand on the jug - around 70/75 degrees to be perfect, there are also thermometers to help you).
- Once the steam is off, wipe the wand with a sponge and always flush it through right after!
- Leave the milk to stand, while proceeding with the preparation of the espresso in cappuccino cups.
- Homogenizing the cream with the liquid in a circular motion until it becomes reflective (not too fast and not too long or it will lose body).
- Always clean the bottom of the cup with a sponge and proceed with the preparation of the two cappuccinos (the first always regular, filling the cup halfway, while the second can serve to practise latte art; fill the first with the remainder in the jug).
- Both cappuccinos must have the same amount of foam.

If we pour near the cup, the cream will sit on the espresso creating a white base. If we pour from away from the cup, the cream will go under the espresso creating a 'hazelnut' base.

Latte Art consists of playing with these two pouring methods.

The emulsion of milk is important. It is the main goal, because if it is carried out properly, then it is "controllable".
When talking about cappuccino we mean 'traditional' or a cappuccino with latte art.

For two "traditional" cappuccinos:

- Foam the milk
- Prepare two espresso
- Emulsify the cream in the pitcher
- Clean the bottom of the cup with the right towel
- Incline the first cup until the cream of the espresso touches the edge.
- Pour well mixed foam into the centre of the espresso cream (remember that it is still at an angle) and slowly straighten the cup, which we will fill only halfway
- Repeat on the second cup, however, filling it all the way.
- Choose a point on the first cappuccino and fill without moving

Remind that the cappuccino is the world's most popular espresso-based drink; it must maintain its 'caffettosità', and the balance between milk and coffee is the first thing to look for.
Even more professional baristas decide to propose different blends and mono-origin than regularly served for the cappuccino!

WWW.PASCUCCI.IT

CAFFE PASCUCCI TORREFAZIONE SPA
Via Circonvallazione 16/A - 61010 Monte Cerignone (PU) Italia
tel 0541 978524 e-mail: info@pascucci.it


CAFFE
PASCUCCI

WWW.PASCUCCI.IT