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On The Table #4

The Keys to the Church: How to Unlock Espresso's Aromatic Secrets

Dear cyber reader, As you know, if you have read my book or perused the [Factors](#) section on line here at **Lucidcafé**, I approach the complex art of espresso by identifying the factors that affect the process of brewing caffè espresso. I have also made a religion of espresso's interrelated complexity. Stated simply, you can not isolate a factor until all the other factors are in your control.

I do not mean to imply that making espresso coffee is a science. It is, rather, a culinary art. I say this after eight years of daily total immersion in high volume espresso work. To capture the volatile aromatics present in ground coffee you must tease and cajole them into your cup. You must understand the coffee intuitively. Form the moment that a coffee bean is roasted, then ground, and brewed it is undergoing continuous chemical metamorphosis. The finest and most noble flavors are very delicate, fleeting compounds. This makes a chemistry approach to caffè espresso less useful. How can you define or analyze something that is in continuous change? My answer is you cannot.

Caffe espresso must be cherished and pursued tirelessly to be seduced into a cup.

Just one example of the factors hiding within one another is that stale coffee will behave exactly like fresh coffee made with dull grinder burrs. Each will produce whitish looking crema featuring higher surface tension than the beautiful red brown ooze of a perfect espresso.

So how do you enter the "church of aromatics," seducing all of coffee's wonderful flavors into your cup? Where do you start? With so many interrelated factors affecting your coffee it can be bewildering to implement improvements. Like Houdini facing a series of locks, sequencing your approach is critical.

Here is the sequence we followed at Vivace, starting in 1988. (In the space of this short article I will not have time to expand and explain each factor in detail. For detail you need my book, [Espresso Coffee:](#)



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Professional Techniques)

First we learned to hard pack the coffee. We ground each order for the customer, learned to dose and distribute the coffee evenly by volume. And, we started with good water filtration. (Eight years later I am still working on a ground coffee doser that will not expose the coffee to air.)

After working the packing, grinding and dosing into a training program we started looking at extraction rate and extraction volume. Here we arrived at the conclusion that we needed to serve only double shots. We mastered the slow and short pour and like most Americans we were surprised at how diminutive a well made espresso is. So, we served double coffee in all espresso coffees we prepared. We were pouring under two ounces of crema in 25 to 30 seconds using about 17 grams of hard packed, freshly ground coffee.

It quickly became clear that keeping the machine clean was essential. We began our schedule of cleaning every four hours and soaking the porta-filters each night in a solution of espresso detergent and water. During this phase we also learned to remove dispersion screens and clean the group heads beneath them each evening. (In 1992 I figured out to rinse the group head after each shot to release stored coffee oils trapped by brewing, and to scrub the porta-filter every 40 minutes.)

This was accomplished in the first week after opening Vivace in 1988.

From my trip to Italy I had learned that grinder burrs will become dull and must be replaced periodically. We set up a schedule to replace our parallel burrs every 500 pounds of coffee we ground on them. Conical burrs will last up to 2,000 pounds before becoming dull.

With new grinder burrs in place it became obvious that we saw a great decrease in crema if the coffee got warm during storage or was used more than ten days after roasting. We convinced our roaster to deliver twice weekly and write the roasting date on each bag we bought. (Vivace did not begin roasting until 1991.)

After controlling freshness, I noticed a lemony brightness in the espresso, particularly compared to the Northern Italian coffee I had recently had in Milano. I asked my roaster what it was and he said it was acidity. He began blending a Vivace blend with very low acidity and a mahogany brown color which I associated with the sweet espresso I had enjoyed in Italy.

By 1990 I began to focus on a sourness in some shots we prepared. The color of these sour shots was also different, a cinnamon brown, rather than red brown. Because the problem was intermittent, I suspected brewing water temperature was the culprit. I created an

espresso coffee thermometer by placing a tiny bead probe into the surface of the packed coffee and monitoring brewing temperature as we worked the bar. I found out that coffee roasted to Northern Italian color was sour when brewed between 196 and 201 degrees Fahrenheit. Below 196 it was simply flat. The ideal brewing temperature is 203 degrees F..

My thermometer and I have raised quite a fuss since then. It turns out that all espresso machines have wildly varying temperatures of brewing water as it permeates the coffee. The best machine you can go out and buy is has an eight degree range of temperature variation in the brewing water, equal to an accuracy of +/- 4 degrees. The worst machine I have seen yet displayed temperatures from 177 to 213 degrees F., over a 20 minute period of making continuous shots. All the machines feature more stable brewing water temperatures when making shots one right after another.

I am still wrestling with this factor. During the last year, using my own innovations, my machines have been made capable of a temperature accuracy of +/- 1.5 degrees F, regardless of volume served.

I know that the coffee will continue to improve right down to +/- .5 degrees accuracy. It is the final frontier at this point.

Espresso professionals should clamor for more sophisticated temperature control of brewing water from our espresso machine manufacturers. Automatic steamers are great, but how about actually helping the espresso taste good?

In 1991 I began experimenting with conical burr grinders. I noticed a strange phenomenon as my attention was directed to the grinder doser. At my busy bar, 321 Broadway, we were grinding over 30 pounds a day and the coffee would invariably become thin after being open one hour. It was great, thick and delicious when we opened. But after just one hour of production it became thin and whitish. The conical burr grinders helped, but did not eliminate the problem. I traced the problem to excess motor heat. The grinder motor was heating up the burrs and we were losing quality and value as coffee oils were degraded during grinding.

I located a belt driven grinder to eliminate motor heat from being conducted up the metal drive shaft into the burrs. To handle convected heat I fitted each grinder with a computer type silent running vent fan.

Today I have 27 staff members. We still have some trouble keeping machines clean as we work, and some staff naturally pack and dose a little differently than the others. But I now see perfect espresso oozing out of my tricked-out machines at least six shots out of ten. One year ago I saw perfect espresso one shot out of 1,000. No, dear reader, that is not a misprint. We have made our most radical progress in espresso

improvement only after eight years of seeking out and controlling the [factors](#) affecting the coffee. Only after managing all the other aspects of espresso did temperature emerge as the final vexing problem.

We still don't have perfect communion with the volatile essence of roasted coffee. In my chair the Holy Grail is each and every espresso coffee tasting exactly like the fresh ground blend smells in the hopper. My aromatic goddess is fickle, but with good ol' Kent boy tenacity, and an appreciation of her beauty approaching obsession, she is letting us into her secret heart one pain staking step at a time.

END

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