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Return to Schomer's Table

On The Table #3

ESPRESSO COFFEE: Shape Changer

Dear cyber reader, The wizards in Hollywood California have a special effect called morphing. It was made famous in Terminator 2, starring Arnold, but featuring a villain that with a shimmering surface resembling mercury who could change any part of its anatomy at will. It happened before your eyes, the surface changing in a liquid manner into steel, wood, or weapons, and a new word was born, to morph: to melt imperceptibly into something else. It is a seriously cool special effect, thanks Hollywood, we love you.

Colorful aside comment: If the coffee is melting into something else, a state of continuos change, mathematics tells us that there are an infinite number of intermediate states. Therefore we are dealing with something that cannot be defined. We are only able to draw a probability cloud referenced to elapsed time.

So it is with espresso coffee, she is a shape changer, morphing continuously from the moment that you stop brewing with a period of especially rapid change in the first two minutes of "life".

What is it doing and why?

At its aromatic potential it is a polyphasic foam trapping the finest flavors/aromas in its colloidal web of gases, liquids and particles of roasted bean. Then, as with any foam it begins to coalesce, or collapse as its tiny bubbles burst and gases carry away the aromas with them. To clarify, as the structure of the foam breaks down, these wildly unstable aromatic compounds break free of their tiny gaseous "prisons" and flee, willy-nilly into the surrounding air. (A bit like the rush of the lemmings, no?) Along with the degradation of the total brew due to escaping flavors you are also losing texture as the foam, or crema, dissipates. Texture is featured throughout the cuisine and I prefer silky, buttery textures to my espresso and cappuccino.

The crema also protects the delicate aromatic flavors from acids which are also present in the brew. All roasted coffee has a acidic compounds in it. During brewing, as you make a liquid from the roasted coffee,

acids are allowed to mix with flavor compounds, which they instantly attack and shatter the frail bonds holding these compounds together. To repeat, the acids if allowed to mix with coffee flavors alter the molecular structure of the flavor, breaking it down. And guess what? This process never improves the flavor molecules, it only degrades them into what we detect as bitterness.

So crema, which acts like a semi-solid protects aromatic flavors from acidic compounds by holding them suspended and away from the bully acids. Like a referee keeping the combatants apart. But, just for a few moments... Using an all Arabica blend for espresso, which us American roasters feel offers better flavor, crema will dissipate in about one or two minutes. Using 10% to 40% robusta coffee in an espresso blend, such as virtually all traditional Italian roasters do, crema will last much longer. The crema will protect the flavors in the cup, as I have explained. So the game for us Americans is to start hunting for quality Robustas that do not degrade the Arabica flavors. For a espresso blender this is the primary challenge in creating a world class espresso blend.

What else is going on, as if this is not enough? The brew is cooling off. Flavor compounds so delicate can only exist at, or very close to their ideal brewing temperature. As the temperature drops their fragile molecular bonds give way and they shatter. And guess what? They never transform into flavors more noble and refined, such as caramel or chocolate, they only become bitter. It is the only trick they know.

So in caffe espresso you are seduced by the smell of the fresh ground coffee, a culinary nymph suggesting flavors of unparalleled beauty. Truly we just want a cup of coffee that tastes exactly like fresh ground coffee smells, don't we? (It is possible). But just as she is tempting you she is already morphing into the old hag with the poison apple. (Yes, dear cyber reader she is morphing as you grind it, oxygen is breaking apart delicate molecular bonds through the process of oxidation.)

All this delicate fragility is really quite exciting in a culinary art. It is the ultimate virtuosity for a conjurer of flavors don't you think?. It is no wonder that each shot you make, try as you might, is a little different than the last. All you can do is go through the factors affecting the process and control them as best as you can. Perfection is always just around the next corner.

Parting shots: The worst coffee is always made by the "scientists". Those that would, with elaborate chemical formulations try to pin down and define espresso and the brewing reaction in terms of Chemistry. It is the old Anthropological problem: the subject is altered by the act of measurement. When hundreds of flavor molecules are all morphing at the same time how can you possibly define what is in the cup? It is ridiculous, you cannot. Try to tell a French Chef you are going to analyze his best sauce and reproduce it through chemistry-he

will laugh you out of his kitchen.

Espresso is a culinary art, and so it shall always be.

END