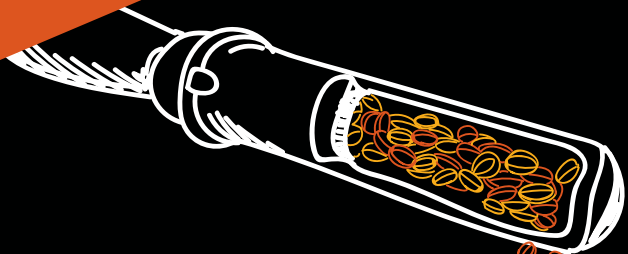


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RAIMOND FEIL

# COFFEE ROASTING

MADE SIMPLE

A GUIDE THROUGH  
PHILOSOPHY, PRINCIPLES, RECIPES  
PROFILING, SAMPLE ROASTING  
& EVERYTHING IN BETWEEN



CHAPTER ONE

APPROACH TO ROASTING:  
PHILOSOPHY  
AND THE PRINCIPLE



## YOUR ROASTING PHILOSOPHY DETERMINES HOW YOU DO IT, AND WHERE YOU'LL END UP

Once I participated in a blind cup tasting session in one of the well-known UK roasteries. I had brought my sample roasted coffees to put besides their roasts as it's always interesting to know how your roasts compare to other roasts and hear what others think of your stuff. During the tasting session, I asked them out of curiosity what their roasting philosophy was. The guys were a bit stunned by the question and told that they didn't really know they had one or maybe that they were looking for fruitiness in coffee. I thought to myself: c'mon—every coffee is fruity in its own way. They are fruity even if they're bit over- or under-roasted. When they lack aftertaste or are astringent, they can still be fruity. I was thinking—how can they know how to hit the nail on the head, flavor wise, if they don't have a clear vision of what exactly they are looking for? Maybe I was just misinformed. But either way, we want to have a clear idea of what we do and don't want regarding taste in our coffee.

Knowing what you want to have present in the final roasts helps you to more efficiently shape the taste profile and make smarter decisions during the roast profile development. Having a clear idea about what taste characteristics you don't want to have in your roasts will help you figure out what causes these unwilling characteristics and thus you'll be able to bypass them with more ease. So, you want to be clear about the specifics like aftertaste, complexity, balance, juiciness, fullness, roundness, under-development, over-development, astringency, bitterness, etc.—where they stand for you in your roast taste descriptions and in what quantities. Roasting philosophy is your personal roasting rule that help to guide you to your true flavor development goal.

Basically, in short:

Know exactly what you are looking for in your coffee.

- How do you want your coffee to taste like?
- What are the characteristics you want to find there?
- What characteristics you don't want to find there?

The better and clearer you can answer these questions, the higher is the probability you will end up nailing your goal. These three questions will help you to develop your approach and the philosophy of your roasting.

If you lack a roasting philosophy, you'll end up everywhere on the profile map and it's going to be challenging to nail your taste attributes. You will never be sure if that's the best you can get out of your coffee or if there are other ways to open the flavors even further.

When you trace fruitiness in your coffees, all your coffees will taste fruity, even the Brazils that are more creamy, chocolaty and nutty by nature. When you trace acidity in your coffees, they will end up being acidic and sharp. When you just want your coffees to be light roasted I bet they will, but their taste will most probably be under-developed with blunt unpleasant acidity and limited sweetness. Of course, if that's what you want then sure, go for it.

If you feel that you keep banging your head against the invisible wall of not getting the roasts right although you kind of are doing everything correct, change the way you approach the whole roasting process. Change your fundamentals, perspective, and philosophy. Or, if you don't have one, create it. The more precise the formulation of your roasting philosophy, the easier it will be to find the way to your taste development goal.

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*Your roasting philosophy determines how you roast your coffee!  
It's a fundamental of what you build your roasting on  
and a road map that helps to reach your goals.*

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# THE ROASTING PHILOSOPHY

This is what I am looking for in my roasted coffees:

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*A natural balance and full potential of all taste attributes  
that have been encoded by nature  
into every coffee bean.*

*The roasting process is not a manipulation tool to change  
but a means to open up the existing balance and potential  
of every particular coffee bean.*

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So what do I mean by *encoded by nature*:

- coffee variety
- coffee's growing environment
- processing

or all the processes that precede roasting and that shape the taste of the coffee.

What I mean by *natural balance and full potential of all taste attributes* I'll explain with the next example.

Imagine a strawberry.

Imagine it super ripe.

At the very peak of its ripeness.

You can recognize this very special point of ripeness by smell and touch already.

## COFFEE ROASTING: MADE SIMPLE

Now...

Imagine biting that super bright red strawberry

Can you feel how it explodes in your mouth?

How your mouth waters, in an instant.

How these tiny droplets of red juice sprinkle all over your palette and the scent is drawn from the mouth into your nasal cavity when you chew?

Can you feel it?

The aroma...

The texture...

The symphony of that marriage of sweetness and acidity.

That mind-blowing juiciness.

It's all over the place.

That fullness of mouth feel.

And the taste that lingers for a while on your palette, although there is no more strawberry in your mouth.

Maybe you didn't even notice when you swallowed the flesh of that berry as it was so perfectly balanced in taste.

And you really want some more!

Maybe you even reached for another berry without noticing already?

Now...

Imagine a peach.

Super ripe peach.

At the very peak of its ripeness.

We can go on and on and on, forever...

I don't believe anyone has ever tasted super ripe fruit that is unbalanced and tastes ugly, except maybe when one doesn't like a particular fruit. I have not yet met one human being who has said that they don't like ripe fruits or berries and instead prefers over-ripe or under-ripe fruit. Except bananas, which are the weird exception where some people like them almost green and some all the way brown.

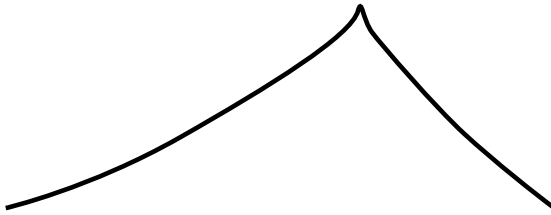
Coffee is a berry too. I believe the same principle applies to coffee roasting. It's like ripening that berry. When I roast my coffee, I want it to taste the most balanced it can be. For me, balanced means that super-ripe point of the previously mentioned strawberry, where the sweetness is married to acidity so it becomes a single sensation—juiciness.

When coffee is balanced, its taste attributes become juicy, round, full, long lasting, and fill the palette from front to back. Even the aftertaste will linger on and on. This is due to the sugars and acids reacting and vibrating in our sensory system when they're spot on. Everything just falls into place by itself. But as soon as you move away even a bit to one or other direction, for example with your profile length, you are breaking that balance. This, in turn, creates flawed sensory results in view of roundness, fullness, juiciness, long lasting flavor and complexity.

(Sweetness + acidity =) juiciness, complexity, aroma, taste at the front of the palette, taste at the back of the palette, long and pleasant aftertaste—if any of the given taste attributes are off, the profile needs to be adjusted until they aren't. Only after that, I start focusing on the individual taste nuances of the coffee. I don't worry whether the taste nuances are or are not going to be present after the overall taste balance is established. They are always going to be there if the overall balance is spot on; and they are always going to be the boldest they can be the way they are encoded into any given coffee and its origin. That's just what my experience has taught me.

# IT'S NOT ABOUT THE NUMBERS, IT'S ABOUT THE PRINCIPLES OF NATURE

## PRINCIPLE OF THE NATURAL DEVELOPMENT OF NATURE

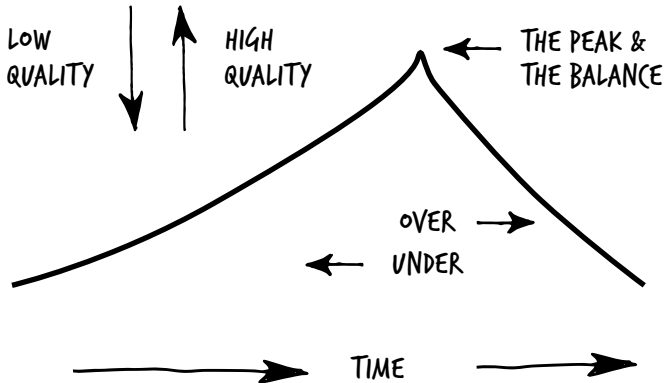


At some point on the way to figuring out how coffee works during roasting, I came across a random thought on how the roasting process affects taste development. It was a hypothesis that I started to test and wanted to confirm. Together with the hypothesis came along the tools and ways of confirming or disproving the idea. After hundreds of tests and experiments with the sample roaster and production roaster, I figured out the roasting and found that the same idea applies to coffee brewing as well. But then I didn't even realize what I had actually discovered. While writing this book, I came to the realization that the principle I had been applying to my roasting and brewing worked in a wider range. When we look around us more closely in life, any topic or area, we find that they are governed by principles. If you understand the principles, you can achieve, change and build anything you want if you put in some work. But how can I be so sure that it was a principle I had discovered? Because the principles govern a wide range of processes of similar nature, not just one as formulas do, and this is exactly what the given principle does.



## COFFEE ROASTING: MADE SIMPLE

The basis of the principle is this:



The line reaches from left to right on an invisible horizontal axis that represents time. Its pace is ruled by nature. The vertical axis is our olfactive perception of quality. (Olfaction is also a measuring tool created by nature.)

It describes perfectly how fruits develop in nature. First, they are under-ripe. The riper the fruits get, the better we perceive their sensory quality until it reaches the high peak of sensorial quality—balance and full development. This is the point that we call fully ripe. We can't get higher than that with the perceived quality. The fruits have reached their maximum levels of sweetness and acidity where they are maximally balanced. The speed of ripening is managed by nature. Each fruit has its own designated progression towards perfect ripening. When the process advances onwards from the fully ripened point, over-ripening occurs. The further we move from the fully ripe point the lower the perceived sensory quality gets.

Now, if we remove the fruit part from the explanation above, we can see that it describes any process that includes under-, peak and over-development. This principle also governs coffee production in its every single stage.

Look at the ripening of the coffee cherry. We all agree we want the coffee to be picked at its highest ripening point and we are all on the same page what that point would be.

Processing, for example, consists of many separate stages. Each of the separate stage works according to the same principle—they have under-, peak and over-development. Fermentation can't be neither too long nor too short. You have to nail the peak to get the quality. The pace at which fermentation happens is governed by nature again. In drying, we have to reach the certain moisture percentage between around 50-0%. We have to catch the peak that is somewhere in the center of the whole process. The pace of drying is again governed by nature. You probably did notice I didn't mention pulping or washing here because these are not individual stages of development. They are transition points where one process turns into another. They are the key points that lock in the development points of the preceding stage.

For example with storing the greens, beans can't be used for best results just after drying the coffee has been completed. Coffee needs some time to rest to get the fresh grass-like taste out of it. Also, when it gets too old the taste quality decreases. The same principle is at work again.

By nature, roasting is a similar process to processing. It consists of two main phases (first and second) and each of the phases needs to be handled separately as we do with fermentation and washing, although they are part of the same process. Each needs to have a certain length and development locking point. The first phase has a naturally occurring locking point—the beginning of cracking. The second phase gets locked with the roast end temperature and time. Also, both phases need to occur with their natural speed that has to be found.

What about the storage of roasted coffee? Again, you need to wait a few or more days before the coffee has degassed or calmed down and stabilized before you can get the max potential from that coffee. The so-called

quality peak of the roasted coffee lasts a certain length of time before it starts to decrease (though here it lasts longer than in any other process). These quality peaks are determined by the roasting process, equipment, and technology.

Grinding is the point that ends the storage process by locking in the freshness and quality of the bean and is also a point of transition for brewing (talking here strictly on the basis of the Specialty Coffee approach where coffee gets ground just before brewing).

All the same things apply to brewing. There are just far more variables we use to influence the ripening of the brew. The recipes of pour overs and espressos are guidelines on how to reach the ripest point of the brew.

Water, even its mineral and pH composition, is governed by the same principle. We can't have too high or too low mineral and pH content. Except that we do not have the same timeline here since the composition of water is influenced artificially most of the times.

Water brewing temperature. I'm not going to go into it but I hope you already see the correlation.

The recipes for brewing, the profiles for roasting, the proper techniques for processing, and protocols for harvesting are all recipes on how to reach the peak quality point of each process. It's basically all about the principle and well-timed lock-in points (which are harvesting, pulping, washing, end of drying, start of roast, first crack, end of roast, grinding, end of brewing).

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*The better the lock-in points are timed,  
the better is the quality of the results.*

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**This book is about practical hands-on coffee roasting.**

It will discuss profiling and how to profile sample roast, how to avoid over- and under-roasting, how different variables in roasting change flavours in the final cup, principles that govern the roasting process; and a lot more.

This book will give you all the necessary tools so you can successfully develop your own roasting profiles and edit the ones presented here.

The same tools will help you to become a better, smarter, and more consistent coffee roaster.

**It's a condensed collection of Raimond's 12 years coffee roasting experience with Specialty Coffees.**

*"This book can really push beginners in the right direction as well as provide advanced roasters with new ideas and thoughts on roasting craft."*

- Tomáš Nossek, Roastmaster and QC at Rebelbean.