2 - Creating an espresso

A good espresso should have hints of sweetness, crema, and a long developing finish, and not taste too sour or too bitter. An espresso is considered to be balanced when sours and bitters have equal strength, and one is not overwhelming the other. The core of creating a good espresso is to achieve the proper coffee extraction flow and result.

Extraction

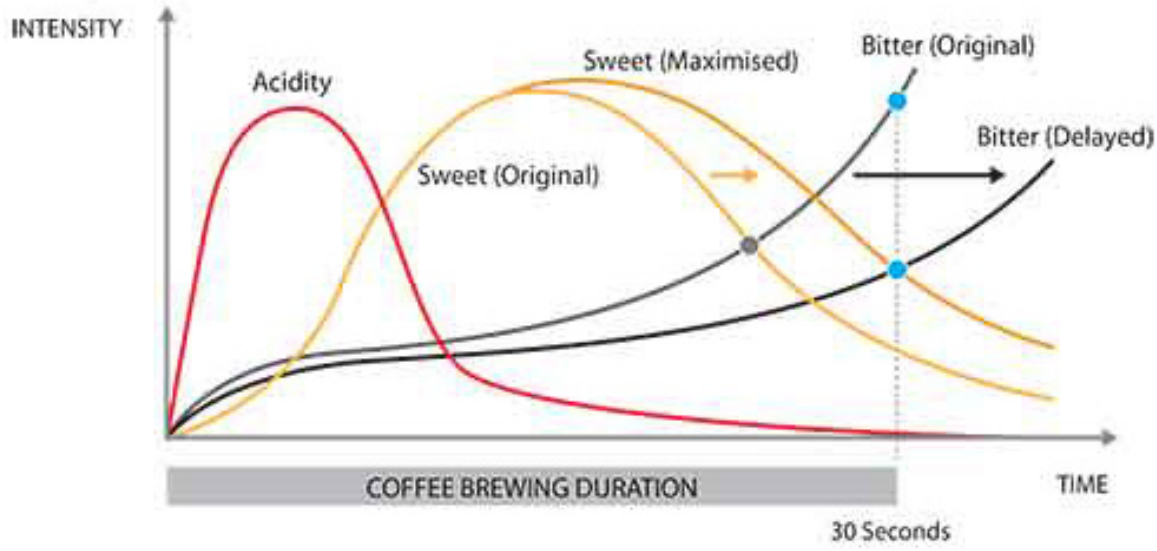
The **extraction** result is defined as the relative amount of coffee material extracted into the beverage from the dry ground coffee in the portafilter. This is accomplished at an extraction value of ~20% (solids extracted from the dry ground coffee dose into the beverage). The point where this 20% is reached can be seen from the color of the extraction flow.

Extraction Flow Color Development

When properly done, the color (and taste) of the extraction flow will change over time (see movie). The value of the optimal ~20% extraction is reached at the so-called blonding point, where the color of the coffee looses its crema and becomes watery/yellow (from foam to liquid). This is the point where the extraction should be stopped.

Extraction Flow Taste Development

The reason for the change in taste profile is that in the first stage of the extraction, the easy solvable material from the coffee grind will be extracted, which are the sour/green components. Subsequently, sweet components will emerge. In the last stage, mostly bitter components will be extracted from the coffee grind.



If you would divide one extraction into different cups, they would look and taste very different. The taste profile will move from acid, towards

sweet, and finally towards bitter (tip: taste it as an exercise).

Extractions of under 18% are "**under-extracted**", specifically acids are extracted early in the process, while sugars (sweetness) and bitter components are not extracted as they would follow later.

Extractions of over 22% are "**over-extracted**", specifically bitter, as bitter components continue to be extracted after acids and sugars have largely completed extraction. In certain situations, yields surpassing 22% can be absent of bitterness

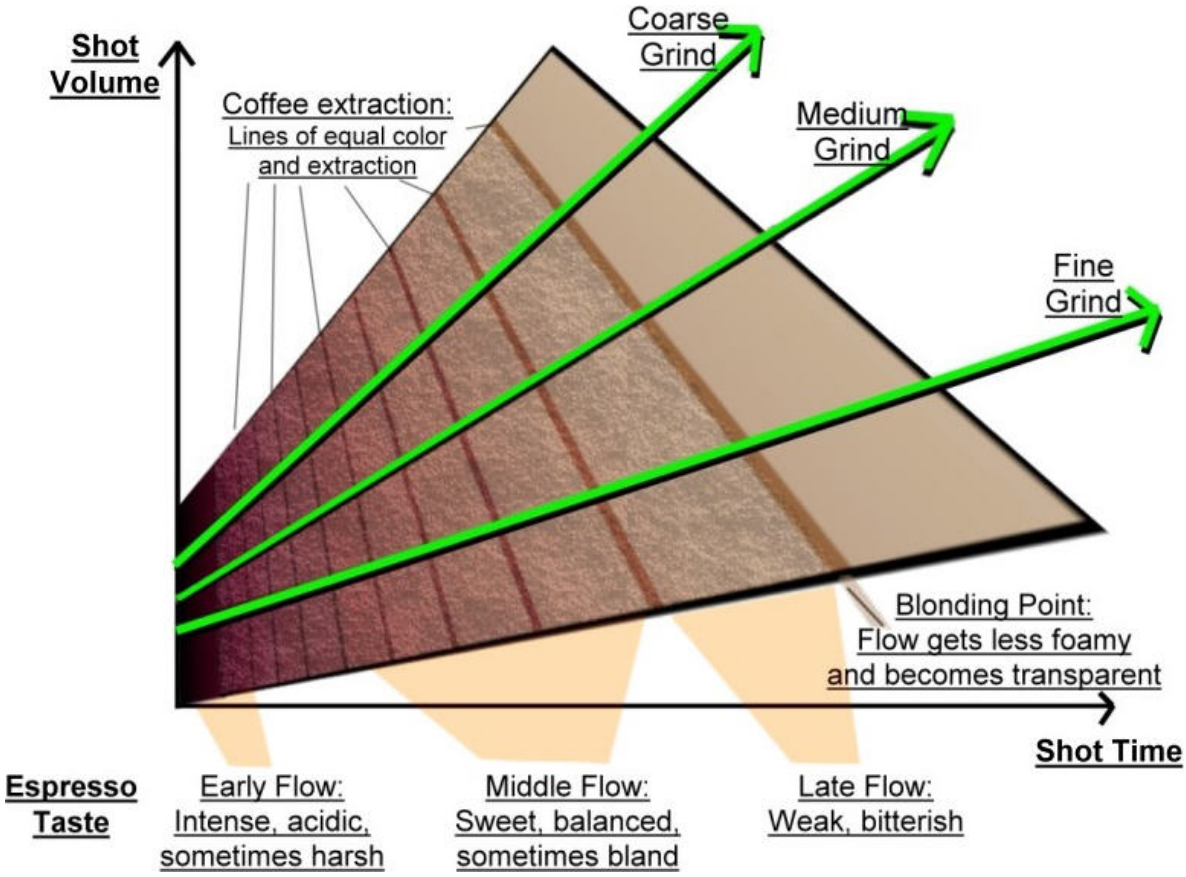
Extraction Flow Stages

The extraction flow can be partitioned into the following 4 main stages:

Stage	Colour	Flow	Taste	Intensity
Early flow	Brown-reddish with black striping	Honey-like	Sour, salty	High solids
Middle flow	Dark caramel with reddish strips	Thick creamy viscosity	Sweet, caramelized	Average solids
Late flow	Light caramel with no striping	Gradually thinning body	Bitter, smoked	Low solids
Blonding point	Tan or golden	Translucent, rippling movement	Bitter, astringent	Weak

The figure below shows the interaction between grind fineness, yield (show volume), brew time (shot time) and the flow stages up to the

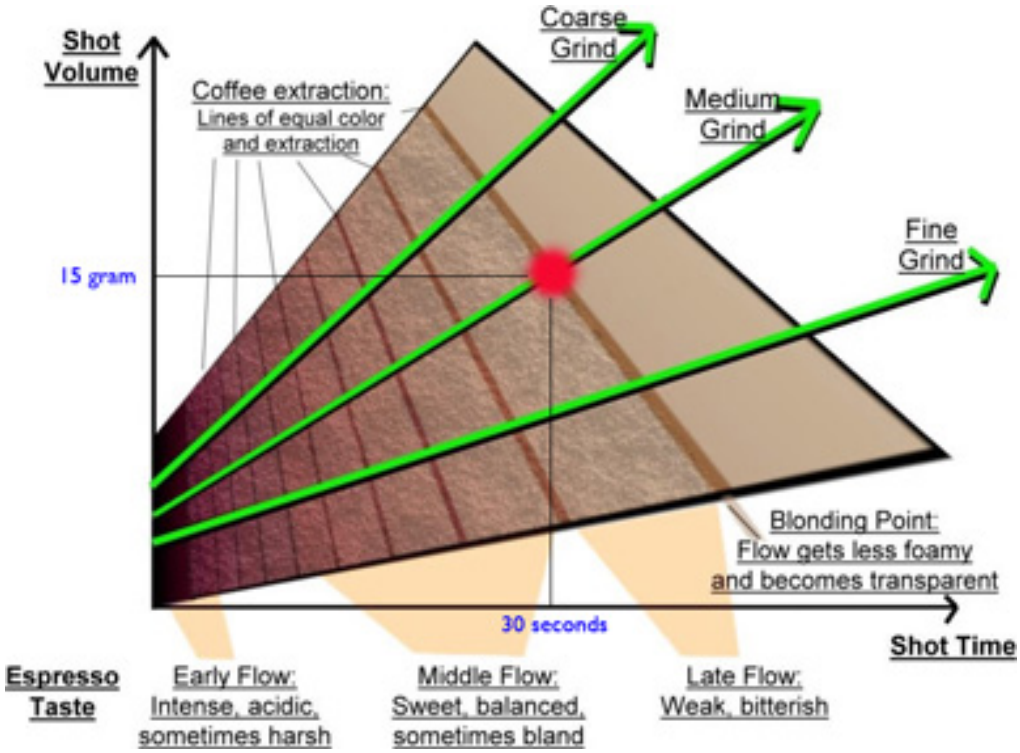
blonding point:



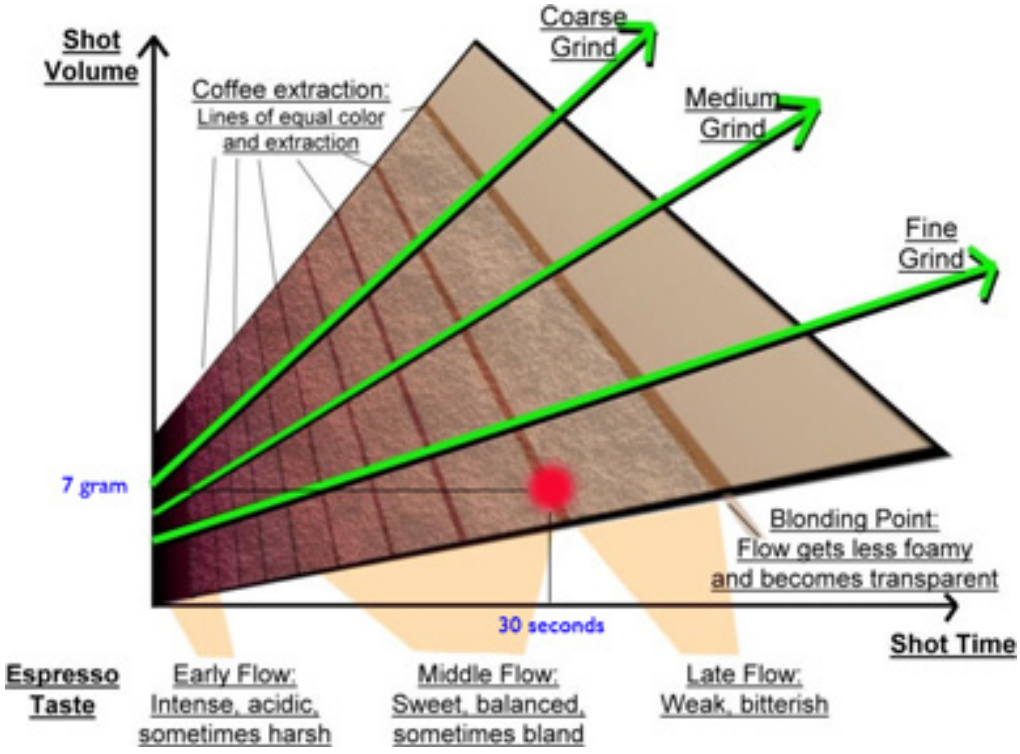
source: home-barista

Extraction Examples

Correct: Assume an espresso (15 gram with 20% extraction in 30 seconds) is accomplished with a medium grind, stopped at the blonding point as depicted below:

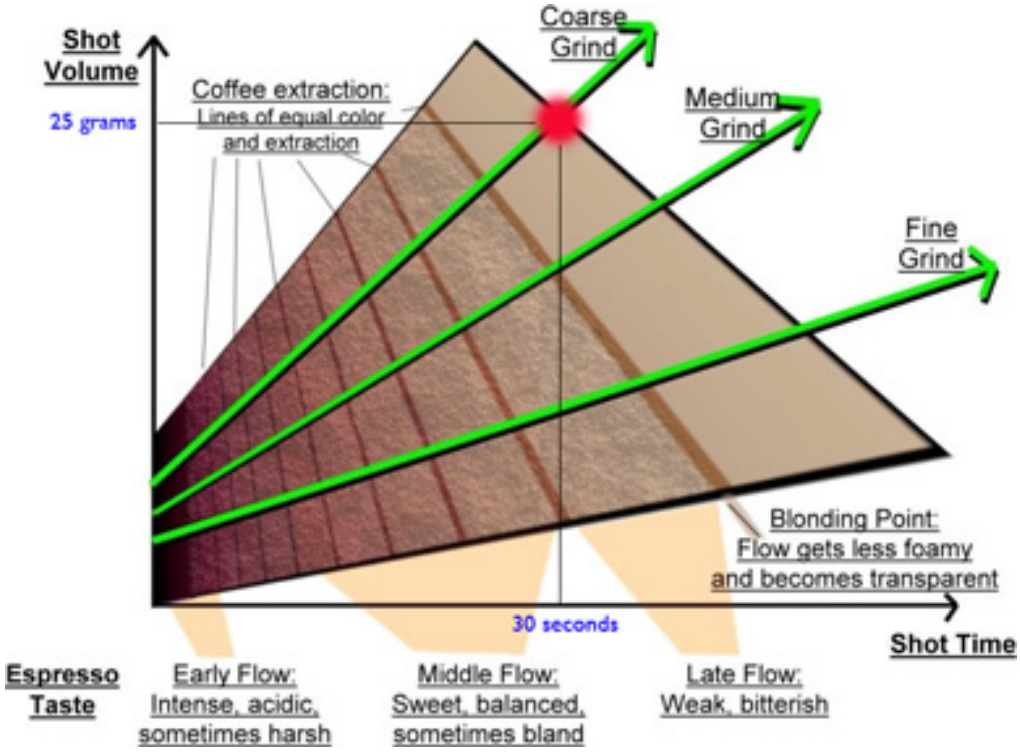


Under extracted: Now let's do the same extraction with a very fine grind with the same dose in the same 30 seconds. We would end up with a beverage of 7 grams, that only went through a part of the extraction flow. It will be an under extracted ristretto, which will taste too sour.

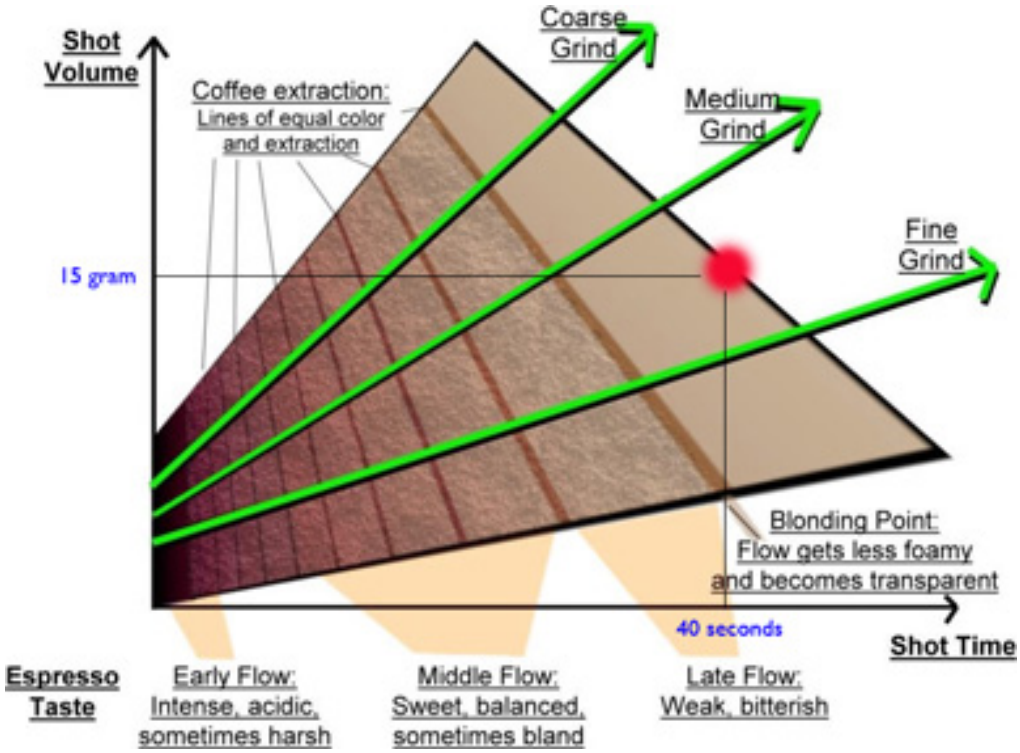


Over extracted: On the other way around, if we do the same

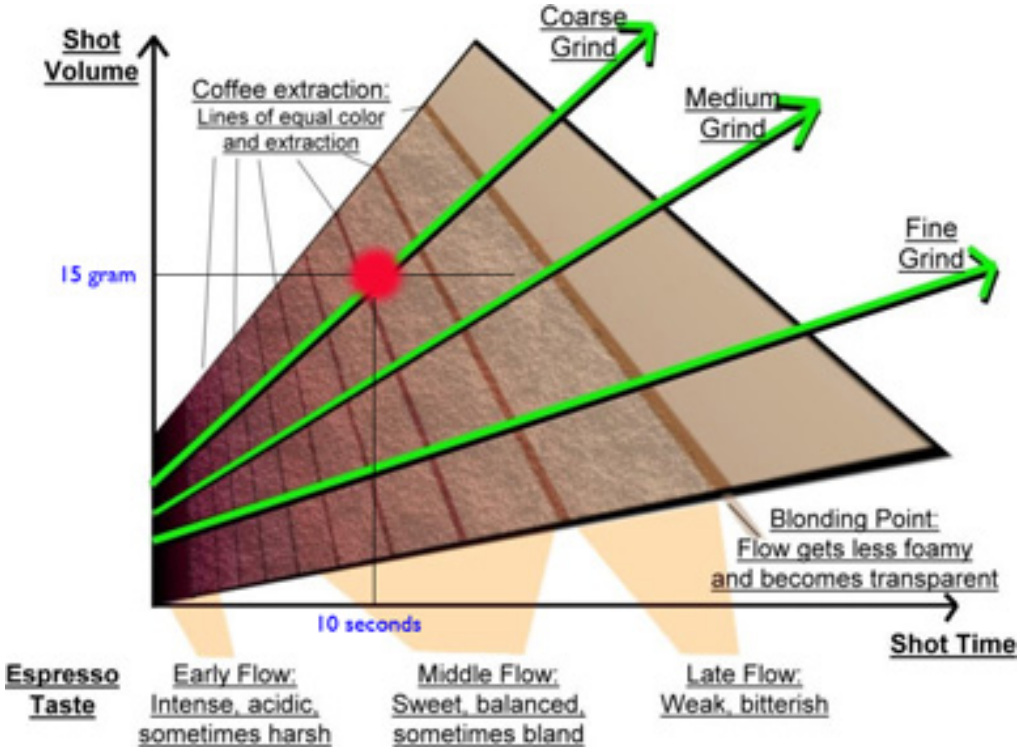
extraction with a coarser grind with the same dose in the same 30 seconds, we end up with a beverage of 25 grams, that passed the blonding point. It will be an over extracted lungo, which will taste too bitter.



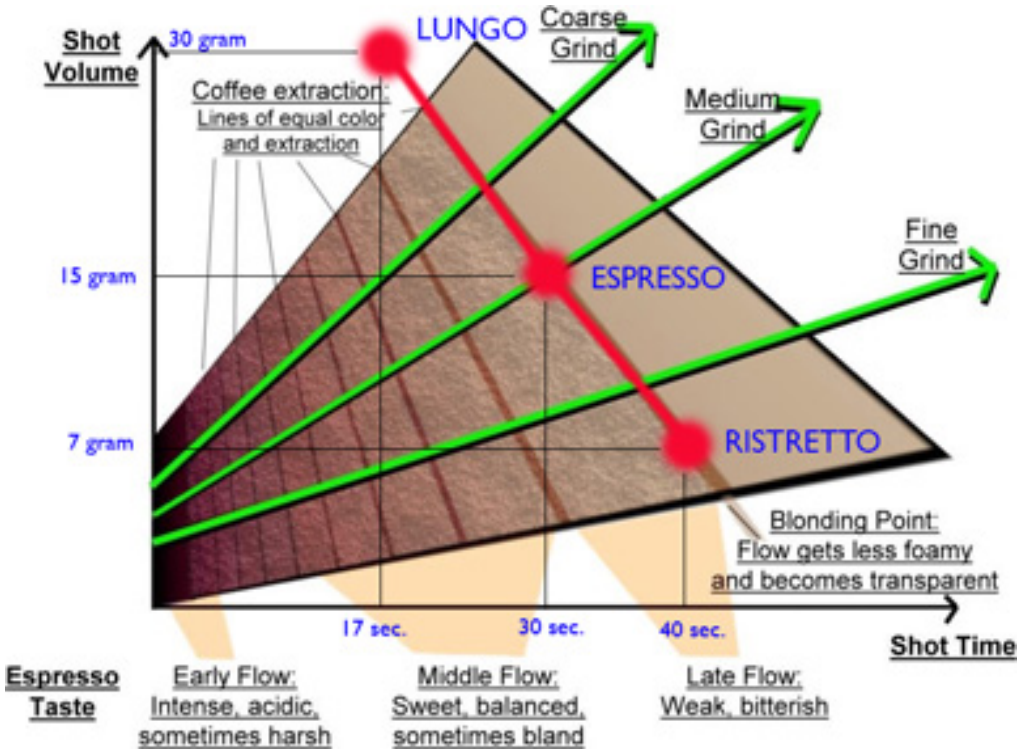
Over-extracted: We can also keep the yield of 15 gram constant, and vary extraction time. If the brew time is 40 seconds for 15 gram of espresso, the result will be too bitter due to over extraction, and obviously the grind was too fine.



Under-extracted: If the brew time is 20 seconds for 15 gram of espresso, the result will be too sour due to under extraction, and obviously the grind was too coarse.



The task of a barista is to search for the right dose, grind and timing to get a balanced beverage with the right strength (ristretto, espresso, lungo):



Espresso parameters

A rough guideline for creating a correct espresso (or doppio):

- Yield: ~15 gr (30gr) of beverage
- Dose: out of ~7gr (15gr) of coffee grind
- Time: in about 25-30 seconds
- Pressure: between 8-10 bars
- Temperature: water temp between 92-94 degrees

If you deviate too much from these variables, getting a correct espresso will in general be more difficult.

Some examples:

	Espresso (INEI)	Doppio (DENF)	Doppio (Marc)
Dose (gr)	7	21	21
Brew Time (s)	25	25	25
Yield (gr)	14	34	43

Water Pressure (bar)	9	9	8-10
Water Temperature (°C)	“88”	92-93	92

More Info

Dial in espresso: https://www.youtube.com/watch?v=lFwJF-_SUr0
Stopping at the blinding point: https://www.meticulist.net/blog/improving-espresso-stopping-shots-at-the-blonding-point-instead-of-time