The UX Method
Uniform eXtraction

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Formal note
The UX method is *not* trademarked, *not* copyright
The UX method is public domain for everyone to explore and enjoy

With

Inspiration from **Dr Anja Rahn's** Count Rumford work

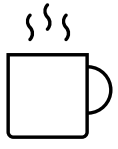
Scientific insights from **Dr Grażyna Mitchener**

Encouragement from the **Barista Hustle** team

Support from **Square Mile Coffee Roasters** & the **Prufrock** team

Uniform eXtraction: a low-cost, simple-to-use method

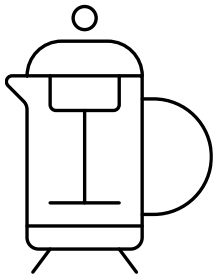
where each coffee has your preferred Temperature, Grind settings, Brew time

From Count Rumford		To Uniform eXtraction
 Temperature, mixing/stirring, grind separation should be controlled	▶	Temperature and mixing/stirring are controlled Separation of the coffee grinds is controlled (control of mouth feel)
 Open containers give aroma loss	▶	Containers are closed to minimise aroma loss
 Convection currents give loss of control	▶	Convection currents are minimised

Allowing: Uniform eXtraction

"Separation of the variables" – you can change things independently

Current methods are sub-optimal



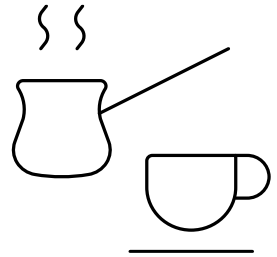
V60

- Blooming is out of control (and there's aroma loss)
- Filtering has bypass, flow rate changes, extraction changes
- Change the grind or the coffee and everything changes
- Lots of different "Best V60 methods"

French Press

- Poor extraction from grinds trapped in the crust or sunk to the bottom
- Uneven settling and uneven "filtering" via the plunger
- Change the grind or the coffee and everything changes
- Lots of different "Best French Press methods"
- Fines float

Current methods are sub-optimal



Moka pot

- Little choice of temperature,
- Little choice of brew time
- Complex flow through the packed bed, complex grind dependence

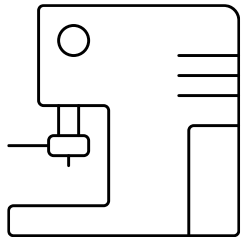
Aeropress

- Non-uniform stirring & settling, bed gets packed during extraction

Cezve

- An open brew with aroma loss
- Uneven temperatures throughout the process
- Uneven movement of grinds through the water during multiple rises/falls
- Strong convection during settling
- Too much sludge for many who otherwise love the taste

Current methods are sub-optimal



Espresso

A different universe

We are not trying to compete…

but we've some ideas on UXpresso

Cupping

Poor temperature control, convection, crust formation, "inversion"

Clearly unfit for purpose…

suggestions for UX Cupping later

The *XYZ Super Expensive Wizzo* Brewer (many other methods)

Share the flaws of the current methods … therefore they cannot give UX!

What you need for UX

Double-walled glass brewer with a lid

- We use a Dopper or Ecobrew, others are available
- Temperature control is good, the lids are good, we can watch the brew
- A UX-specific version would be great

Magnetic stirrer

- Magnetic stirrers are cheap £35 gives you what you need
- Fancier versions are available
- A UX-specific version would be great

A little enclosed magnetic stirrer bar sits in the brewer

The brewer sits on a plate which has a magnet inside

You control the speed of the magnet inside the plate …

~3 cm

… so the stirrer bar spins and creates a vortex

Into the vortex

- Blooming and crust are the enemy of good coffee
- Adding the grinds into the vortex solves the problem
- You have a clear Time = 0 point
- The lid goes on to stop loss of aroma & heat
- Grinds are swirled equally for your chosen speed/time

An ideal stirrer would

- ✓ have an accurate pre-set timer to stop
- ✓ give a short reverse swirl to stop all extraction
- ✓ allow you to dial in your speed, time, reverse

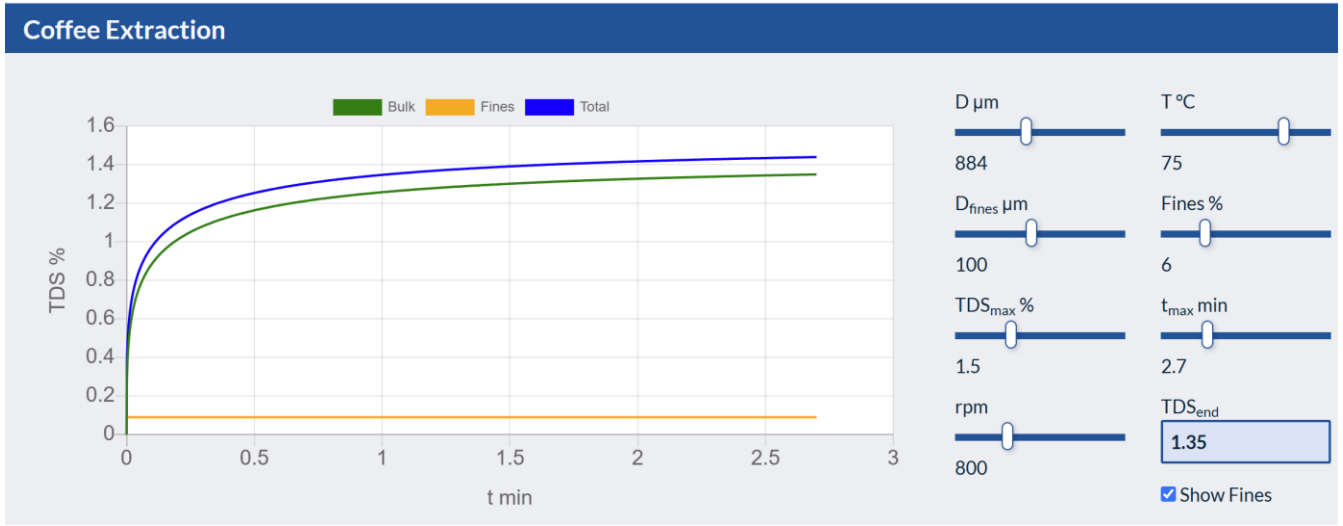
Seb is hacking his with an Arduino

https://youtu.be/OVdM_r4Xr_w

How long to spin?

We have a good app model based on quality academic papers

- Effect of Particle Size
- % Fines
- Temperature
- Spin Speed



80-90% of extraction is done in 10s

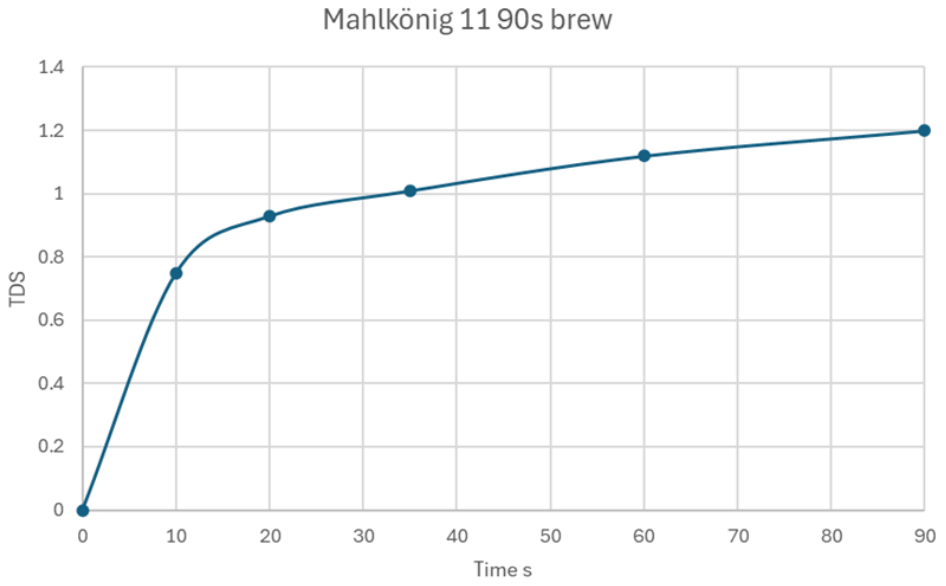
- Controlled by particle size
- Fines extract “instantly”

https://www.stevenabbott.co.uk/practical-mechanical/Coffee-Extraction.php

All my apps are free, Open Access

We can measure extraction with UX

- Suck into the syringe through the filter*
  At 5, 10, 15, 20, 30, 60, 90 … seconds
- It is always sampling from the uniform brew
  (not possible with other brewing methods)
- Brewing stops instantly in the sample
- Allow to cool, measure in your VST (equivalent)

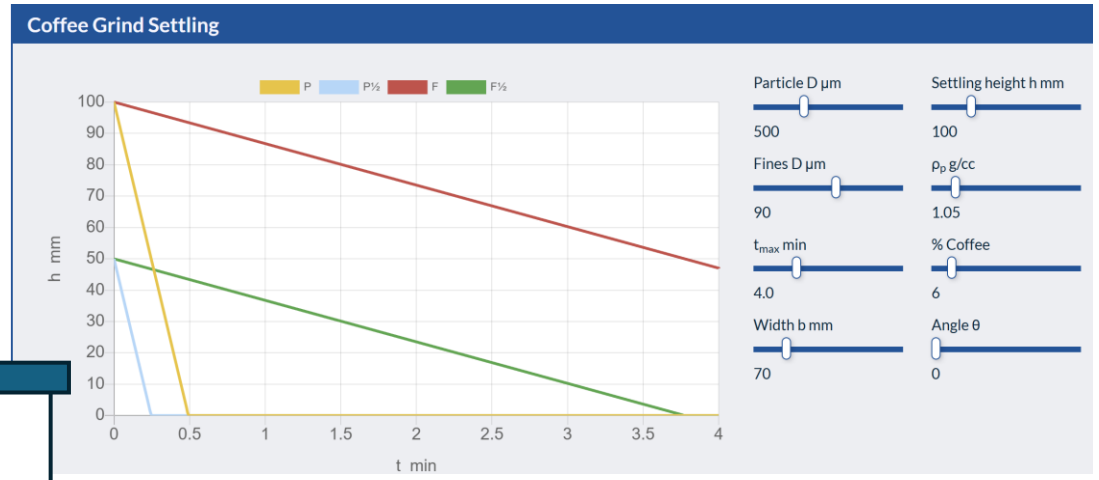


We did this at Square Mile and got it right first time

*The grinds can block the inlet, so cover it with a coarse filter

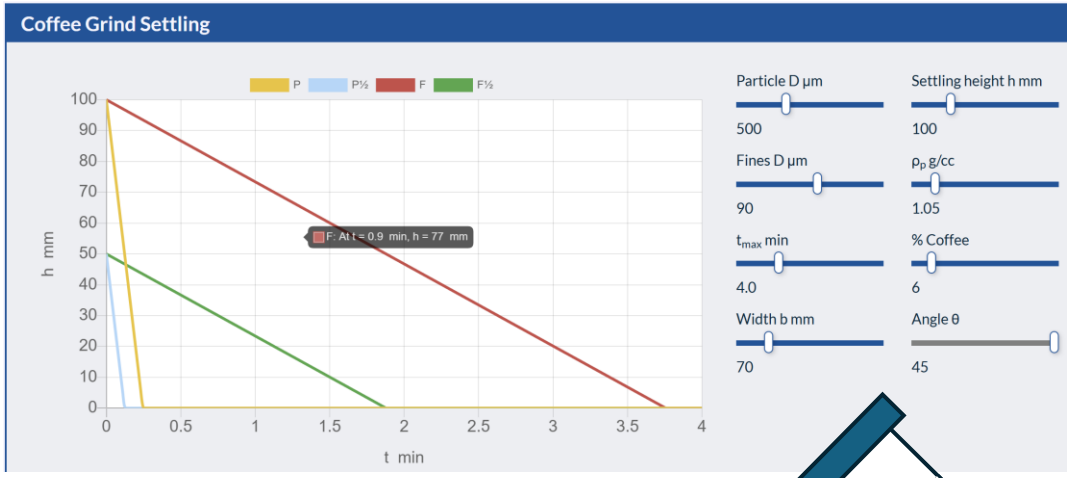
Settling: the mouth feel method

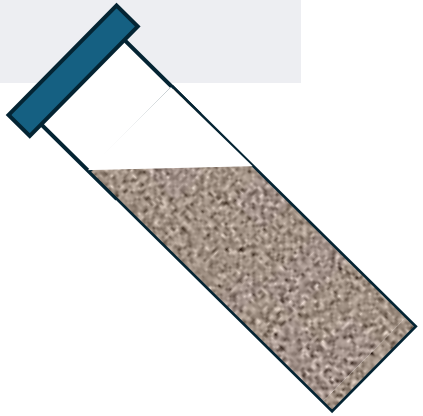
You can settle vertically
30 s to 10+ min for fines



We can calculate via an app

or at an angle (Boycott effect)
10 s to 4 min





Boycott effect discovered in 1920's
A very real effect, used in industry

https://www.stevenabbott.co.uk/practical-mechanical/Settling.php
https://www.youtube.com/watch?v=8zjixDxTEN8

The Finesweeper

Removing fines from the brew has many benefits

Make the fines bump into paper/cloth inside the brewer during vortexing

- Big particles fall off but fines are too small to be swept away

Remove the Finesweeper taking fines with it

It works, but not yet optimized

- An opportunity for the coffee community

Flash UX

Fines block filter papers - a settled brew, with fines, blocks instantly

Use the coarse grinds to help filter:

1. throw in the whole brew with lots of coarse grinds to capture most fines
2. encourage bypass
3. add a lid to avoid aroma loss

This is a 2-step method, ready to drink in 2.5 minutes

1. Vortex for 1 minute (high speed, medium-to-fine grind)
2. Filter in 90 s

UX Cezve

Using a cezve fine grind and brew ratio, you get an excellent cezve

- ✓ Better control
- ✓ Better settling (no convection) and pouring control
- ✓ Less “wasted” coffee in the sludge than a standard cezve

The Busy Barista method

Take a fully-biodegradable, insulated paper cup, with lid

Brew, Settle, Pour (into a real cup)

Throw cup and grinds into the bin – all compostable

! the cup's protective coating can't resist the stirrer and you might throw away the stirrer bar

Use the 3D-printed Finesweeper:

- The base protects the bottom of the cup
- Pull out after brewing or serving (your choice)
- … bringing the stirrer bar with it

What about UXpresso?

The espresso coffee/water ratio too extreme for UX settling

Use an Aeropress with Fellow metal filter

- Magnetic stirrer works well
  (but not on a paper filter)
- Add water, create the vortex, add coffee,
  spin for 15 s
- Move to the cup, plunge

An excellent drink ready in less than 60 s

- Not (yet) as good as a real espresso
- Feel free to experiment and optimize!

We will do a demo for anyone who fancies a try

UX cupping

Cupping experts can develop a UX technique using this setup

Once it is standardised you can purchase 100s of cheap, USB-chargeable, cupping magnetic stirrers tuned to the setup you've developed

- Agreed rpm, lid, spin time, reverse swirl, beep
- All pre-programmed

This will transform the quality of cupping

The future of UX

Thanks to Anja, Barista Hustle, Square Mile and Prufrock we have an excellent **new brewing method**

Low cost, no fancy extras, highly customisable, controllable, linked to fundamental science via apps

It can transform percolation/immersion brews, cezve brews, cupping
… and maybe UXpresso has a future

It is all public domain for you to explore at low cost, with opportunities for the coffee equipment world to provide UX kit

Where next for UX?

Let’s taste some brews!

Extra resources (and this presentation) available via this QR Code