

# COFFEE

Jan Pilzer

2019-03-29



# PREVIOUS COFFEE UDLSSs

- **From Bean to Cup: a history of coffee**  
Michael Firmin, 19 Sep 2014
- **Coffee Shops Around Vancouver**  
Michael Firmin, 13 Sep 2013
- **ABCs of Brewing Coffee**  
Alexandru Totolici, 5 Oct 2012
- **Coffee Vs. Chocolate Battle Royale: War of the Chemical Stimulants**  
Mihir Nanavati & Nathan Taylor, 16 Mar 2012
- **Coffee**  
Tom Hazelton, 19 Mar 2010



# COFFEE (AGAIN)

Jan Pilzer

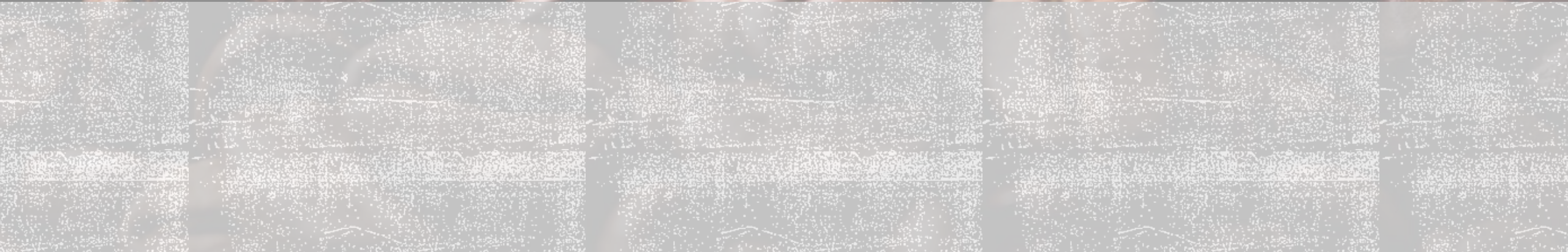
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# BIOLOGY







***COFFEA ARABICA***  
**FLOWERS**





## **COFFEA FRUITS**



# COFFEE FRUIT AND BEANS



# MOST POPULAR COFFEE SPECIES

## *Coffea arabica*

- Originated in Ethiopia
- Ideally cultivated at about 1400m altitude
- 60% of the world's production

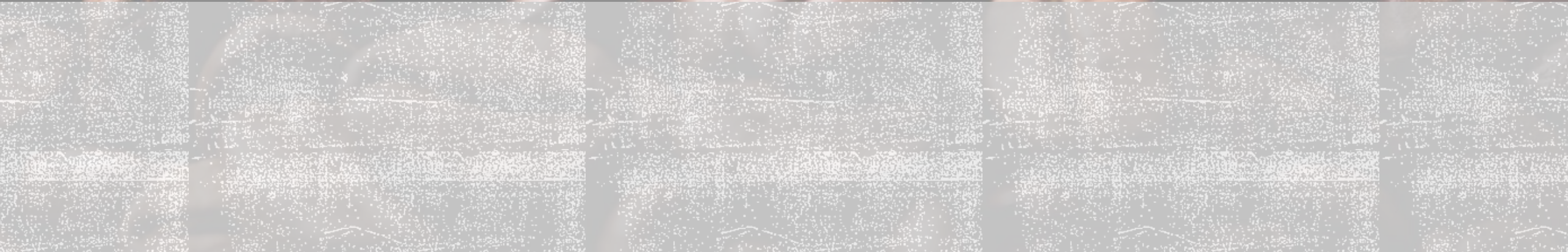
## *Coffea canephora*

- Commonly known as robusta
- Indigenous to Western Africa
- Mostly grown in Vietnam and Africa
- Easier to grow than Arabica, therefore cheaper
- Stronger flavor, but more bitterness





# HISTORY





# COFFEE LEGENDS

- Abul Hasan ash-Shadhili, an Islamic Scholar (~1200)
  - Observed birds of unusual vitality in Ethiopia
  - Ate the same berries and experienced the same vitality
- Islamic World
  - Coffee as replacement for the forbidden wine
  - Helps fast during the day and stay awake at night
- Kaldi, Ethiopian goat-herder (~800)
  - Noticed the energizing effect of the berries on his goats
  - When presented to the local monastery, the monks disapproved and threw them in the fire
  - The smell led them to rescue the beans and make a drink



# CREDIBLE HISTORY

- Yemen's Sufi monasteries (~15<sup>th</sup> century)
  - Used for concentration
  - Spread north to the large cities of Cairo, Damascus, and Constantinople
- Forbidden in 1511 by conservative imams in Mecca
- Ban overturned in 1524 by order of the Ottoman Sultan
- Introduced to Europe through Malta (~16<sup>th</sup> century)
  - Prepared by Turkish slaves
- Introduced to Vienna after the Battle of Vienna (1683)
  - Using supplies from the defeated Turks

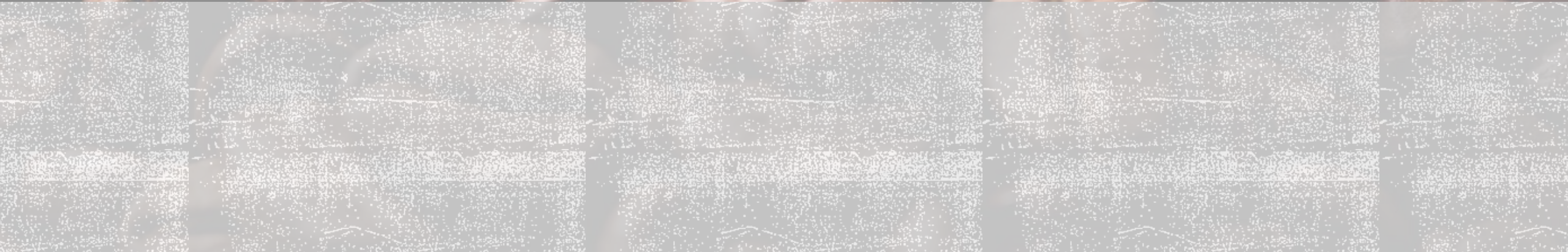


# COFFEE IN THE AMERICAS

- Brought to the Caribbean as seedlings in 1720
  - Starting mass-cultivation in the South-American colonies
- Surge in popularity after the Boston Tea Party 1773
  - More patriotic than drinking tea
- Brazil as largest coffee producer since 1852
  
- Modern trends
  - Fair Trade: Increased prices to increase farmers' share
  - Sugary coffee drinks can use cheaper beans



# PROCESSING





# CHERRY TO BEAN

## Wet Process (washed)

- Sorted by immersion in water
  - Ripe fruit sinks, unripe floats
- Fruit is stripped from the seed
  - Remaining pulp removed by fermentation
- Sun or machine dried



## Dry Process (unwashed)

- Traditional method
- Dirt, soil, leaves removed with a large sieve in a process called winnowing
- Unripe cherries removed by hand
- Sun dried





## MILLING

- Remove remaining layers of dry skin
- Clean the beans
- Sorting by size and density
- Removing discolored or defective beans
- Separating by color



**PERFECT COFFEE**  
**KAFFEE HAG**  
 95% OF THE  
 CAFFEINE REMOVED

If you find that ordinary coffee disturbs your sleep and that coffee substitutes lack the inimitable coffee flavor, why don't you try Kaffee Hag? You get the true flavor and aroma and sleep well besides

**KAFFEE HAG**

Kaffee HAG is real bean coffee with 95% of the nerve-racking and sleep disturbing drug caffeine removed. You can drink all you want of it with perfect safety, as it agrees with everybody.

25 cents the package—  
 in the bean only—all dealers.

**PERFECT COFFEE**  
 All of the Delights  
 None of the Regrets

PREPARED UNDER  
 THE CONSTANT  
 SUPERVISION  
 OF THE  
 PRESENUS  
 LABORATORIES  
 WIESBADEN  
 GERMANY

KAFFEE HAG CORPORATION  
 NEW YORK

# DECAFFEINATION

- Invented by German merchant Ludwig Roselius (1903)
  - Steaming the coffee beans
  - Using benzene as solvent to remove caffeine
  - Later other solvents (for example ethyl acetate)
- Swiss Water Method (1933 / 19800)
  - Create Green Coffee Extract (GCE) out of beans
  - Mix CGE with beans to migrate caffeine
  - Use carbon absorbers to extract caffeine from CGE
- In testing decaf can contain about 10mg of caffeine (compared to ~200mg of regular coffee)



# ROASTING

- Roasting at around 175 °C
- Weight loss of about 15%
- Double the size
- Home roasting
  - Can be done in a pan or wok
  - Common until the early 20<sup>th</sup> century







Green Beans

Drying Phase

Cinnamon

New England

American

City

Full City

Vienna

French

Italian





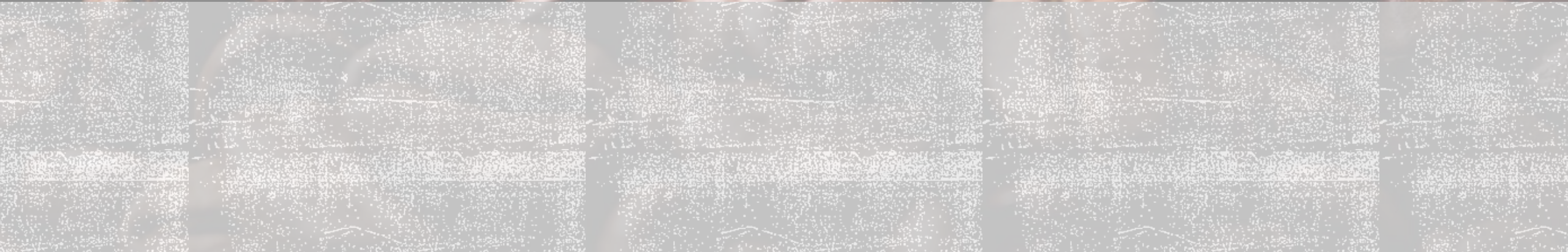
## INSTANT COFFEE

- Invented 1881 in France
- Invented 1890 in New Zealand
- Advanced process by Nescafé 1938
  
- Brewed with very hot water
- Concentrated by evaporation
- Freeze drying to remove water
  - Frozen and broken into small pieces
  - Warmed in a vacuum chamber
  - Water removed by condensation
  
- Half the caffeine content





# PREPARATION



The Compendious

# COFFEE

CHART of Grind Apparatus / Grinds / Production Methods / Output / Mixers / Drinks



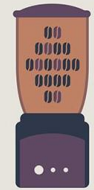
MORTAR & PESTLE



HAND GRINDER



BLADE GRINDER



BURR GRINDER

Grind Apparatus



EXTRA COARSE



COARSE



COARSE-MEDIUM



MEDIUM



MEDIUM-FINE



FINE



EXTRA FINE

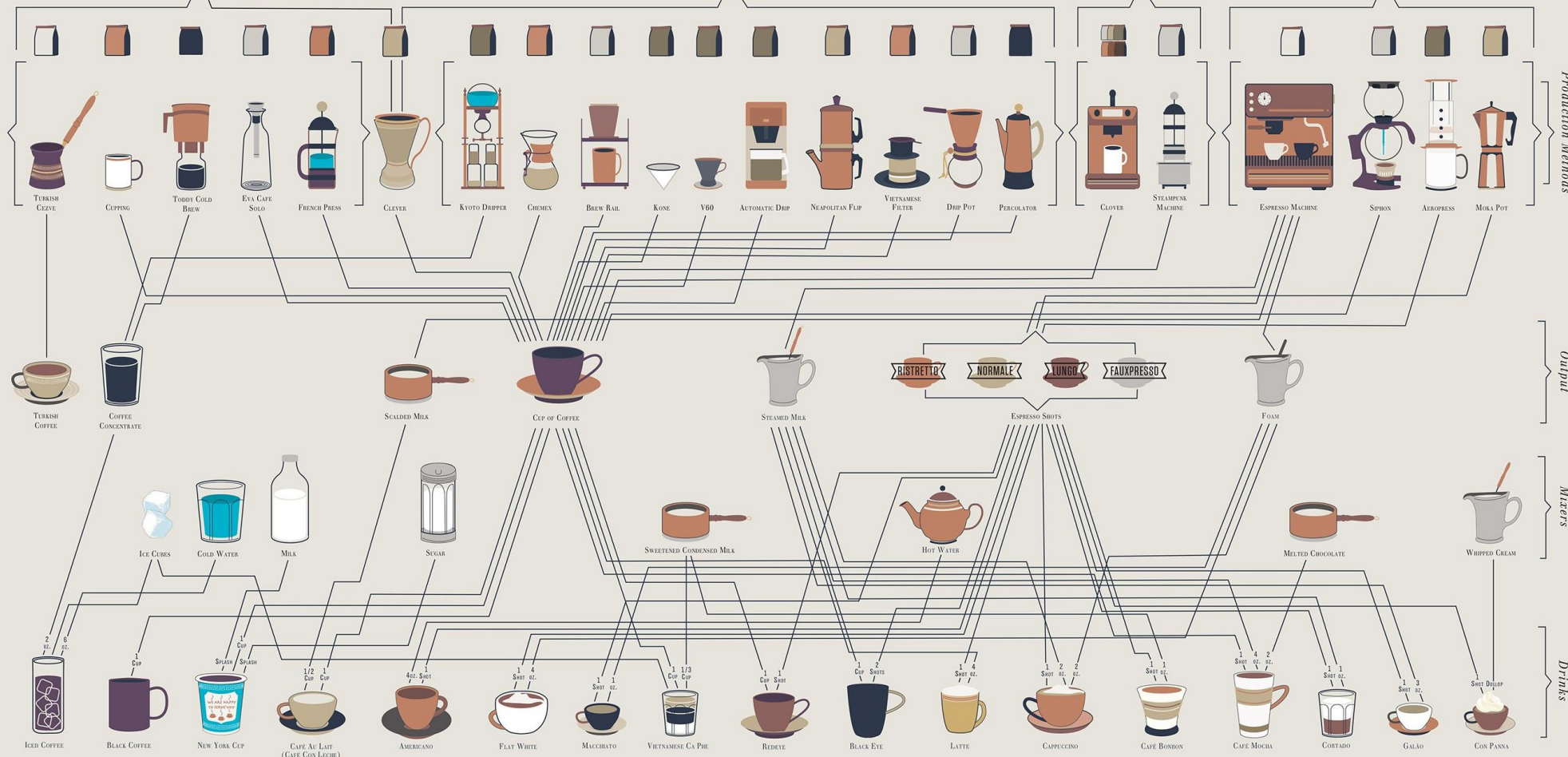
Ground Coffee

## STEEPING

## POUR-OVER/DRIIP

## STEEPER/VACUUM

## PRESSURE/VACUUM



Production Methods

Output

Mixers

Drinks



# GRIND APPARATUS



MORTAR & PESTLE



HAND GRINDER



BLADE GRINDER



BURR GRINDER

*Grind Apparatus*

- **Burr-grinding**
  - Beans are crushed or “torn”
  - Multiple size settings
  - Good for most brewing
- **Chopping**
  - Similar to a blender
  - Cheaper than burr-grinder
  - Non-uniform results
- **Pounding**
  - Finest result
  - Required for Arabic or Turkish coffee

# GROUND COFFEE



*Grind Apparatus*

*Ground Coffee*



# STEEPING



## ▪ French Press

- Also coffee plunger
- Patented by Italian designer in 1929

## ▪ Cold Brew for Ice Coffee

- Cold water
- Steeping for 12 to 24 hours
- Diluted with water before serving

# POUR-OVER/DRIP



## ▪ Paper Coffee Filter

- Invented 1908 by German housewife Melitta Bentz
- Clear, light-bodied coffee

## ▪ Automatic Drip

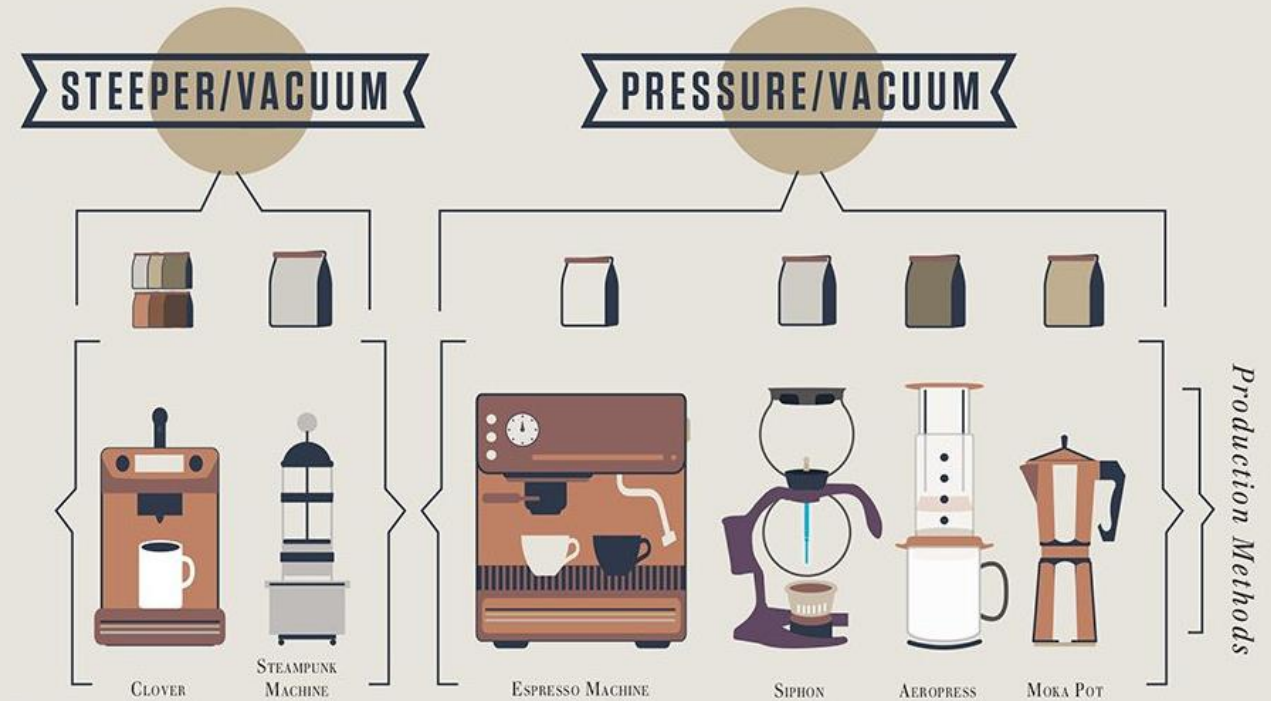
- Wigomat as first electric drip coffee maker
- Patented 1954 in Germany

## ▪ Vietnamese Filter

- Metal filter
- On condensed milk with ice



- **Espresso Machine**
  - Very hot water
  - High pressure
  - First patented 1884  
Improved 1905
- **Aeropress**
  - Invented 2005
  - Coffee is steeped for a few seconds, then forced through a filter
- **Moka Pot**
  - Boiling water to create pressure
  - Water forced upwards through coffee



The Compendious

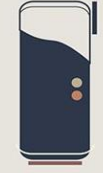
# COFFEE



CHART of Grind Apparatus / Grinds / Production Methods / Output / Mixers / Drinks



MORTAR & PESTLE



BLADE GRINDER



HAND GRINDER



BURR GRINDER

Grind Apparatus



EXTRA COARSE



COARSE



COARSE-MEDIUM



MEDIUM



MEDIUM-FINE



FINE



EXTRA FINE

Ground Coffee

## STEEPING

## POUR-OVER/D RIP

## STEEPER/VACUUM

## PRESSURE/VACUUM



# I HAVE BROUGHT THESE FOR TASTING





**THANK YOU**

Info Graphic by PopChart

<https://popchart.co/products/the-compendious-coffee-chart>