



Filter Coffee

Exploring Pour-over Coffee Workflow & Efficiency

Authenticity Statement

This is to certify that to the best of my knowledge, the content of this report is my own work. This report has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and that all the assistance received in preparing this report and sources have been acknowledged.

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AI Use Statement

I have utilised Generative AI in this report (ChatGPT, Dalle, Bard, or similar) to assist in various ways. The way I have used Generative AI includes transcribing interview audio to text with otter.io, and doing thematic analysis of each interview through ChatGPT.

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Project Timeline

01



- Preliminary Research
 - Literature Review
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- Surveys
 - Interviews
 - Observation
-

03



- Analysis & Findings
 - Discussion
-

04



- Design Implications
- Concepts
- Conclusion

Abstract

Around the world over 2.25 billion cups of coffee are consumed in the world daily, (Lark Allen, 2023). Filter coffee as most of us know is the cheap black coffee drip machines, which you would find at a diner. In our current era of filter coffee, it breaks down into numerous categories with pour-over being the style that expresses the complex flavour profile of the roasted bean. It was found that almost 80% of Australians said that the most important factor to buying coffee was the taste and quality, with price not being a concern, (Kate MacDonnell, 2023).

This research report investigates how home baristas and café baristas interact with the process of making pour-over coffee, and the caveats they face. It was immediately found that the pour-over coffee community was a large-knit community that faced challenges daily, yet minimal research into small issues wasn't too apparent. In 2012, the Melbourne International Coffee Expo to connect buyers and sellers as Australia's only coffee-dedication trade show. This how now evolved as the largest coffee show in the southern hemisphere which connects new and existing customers to discover small innovations in the market.

A rigorous literature review will highlight the structure, composition, and process of roasting coffee beans, to discover small issues within the system. These issues can lead to poor final roasted bean distribution to businesses and home brewers. Inconsistent bean roasting leads to more by-product waste as well as a halt in workflow for brewing pour-over. The biggest issues to draw focus on will be chaff management and how to reduce the presence of it whilst brewing. To help uncover these issues three interviews, a survey with 29 responses, and an observation were done.



Introduction

In the grand scheme of things, filter coffee, specifically pour over seems like a niche subject to most, yet the world of coffee is the most widely traded commodity globally, (FAO, 2023). When you walk down the street for a coffee, the odds are its just a commercial coffee shop, serving milk-based drinks and a long black. All simple and standard with no choice of beans or style of drinks, whereas if you delved into specialty coffee, the array to choose from is much more varied.

It is in this certain range where coffee is more than just the caffeine hit. This method of brewing coffee has been present since the 1900s from the Melitta brewer and has evolved in the last few decades. V60, a cone dripper, a common method for pour over which was started in 2005 by a Japanese company, Hario. Since then, cone drippers started to vary with different shapes to evoke certain brewing techniques, (Mark Prince, 2022). These techniques relied on multiple variables, from brew ratio, to grind size, to pouring method. Each variable could adjust certain aspects of the bean that you would try to showcase.

Pourover is already a developed topic for industries, and the improvements have gone beyond the big picture to now minor details. The pour method is about the ratio of each pour that determines the brew, but also the amount of agitation applied. This variable can decide where the end result lies, and it is up to the brewer to dial this in overtime. Grinders have gone into the realm of electrical, manual, flat-burr, conical-burr, static decreasing, and zero-retention, with developments still being explored. Though there are constant improvements, certain consistencies created by certain brands are trusted by the community even if it requires a still after grinding. To pour over brewers it is now about the finer details in the brew, the water quality, the bean origin, the way it was roasted, the fermentation process, the workflow from beans to cup, and the small tools that aid along the way. It is in this specific area that this project sits, and uncovering those issues is to aid in increasing both workflow and consistency.



Literature Review

This literature review will focus on understanding coffee beans, a breakdown of the fruit, the fermentation process, and roasting. As well as tools used in the field for silver skin removal, which includes patents from the past.

Introduction to Coffee: From Preharvesting to Fermentation

If we focus on pour-over coffee, instead of using commercial beans, we tend to use specialty beans. It means that the beans used are of higher quality, usually more expensive, and vary in flavours based on the process method, (Martinez et al., 2021). To begin, there are two factors that will influence how the coffee will taste, the “pre-harvesting” and “post-harvesting” factors, (Wintgens, 2004). Two-fifths of the physical, chemical, and sensory features within coffee occur during the pre-harvesting, whereas the three-fifths is post-harvesting which relies on the quality of the way it has been processed, (Richard et al., 2007).

A coffee plant can be broken up into two main species, *C. arabica* and *C. canephora* which are arabica and robusta respectively. Arabica roughly contributes to 66% of the coffee production around the world and is cultivated in climates more than 1000m above sea level. Compared to robusta which is the remaining third that is cultivated at low altitudes less than 800m above sea level, (Anzueto et al., 2005).

The coffee tree yields coffee cherries which get harvested when ripe. Coffee cherries are composed of a few parts, the exocarp which is the skin, usually matures when it is red or yellow. The exocarp contains a single layer of

a waxy substance that protects the beans. The flesh from the exocarp inwards is roughly 2mm thick and is called the mesocarp. Followed by a thin pectin layer of mucilage which is still technically the mesocarp. The endocarp is a layer of parchment that is known as the hull, not to be confused with the silver skin. The silver skin is the epidermis that covers the bean, a thin sclerotic layer, (Franca & Oliveira, 2016). The coffee cherry should contain two beans per fruit which is made of endosperm and embryo.

In the book, *Comprehensive Reviews in Food Science and Food Safety*, it is stated that the pre-harvesting factors are based on aspects within agriculture. Variables such as altitude, latitude, the slope of the land, soil, coffee variety, and fertilization all play a role in the outcome of the bean’s overall taste, (Hameed et al., 2018). For this review, we will draw our focus towards post-harvesting.

Primary processing occurs after the cherries have matured enough to be harvested. There are three methods of processing, dry, semi-wet, and wet processing. The pair of seeds are removed from the exocarp, mesocarp, and mucilage before being processed, into the roasted beans we know, (Schwan & Wheals, 2003).

Dry processing is a technique that uses coffee cherries with moisture content between 30% - 65%. The dehulled seeds are spread over a large surface area that gets sun-dried for up to 20 days, (Borem et al., 2014). To avoid the beans getting mold and allow even drying, the beans are raked multiple times during the day. Semi-wet processing uses a method of testing the quality of beans by floatation, if it sinks it is good quality, if it floats it isn't and is most likely immature. It involves the exocarp and mesocarp to be mechanically removed leaving behind the bean, this machine is the pulper. The good quality mature beans are known as parchment beans which get dried like dry processing, but only up to 12 days, (Franca & Oliveira, 2019). Wet processing follows the same principles as semi-wet processing. Instead of sun-drying, the parchment beans are fermented in rectangular bins. Fermentation occurs between 12 - 36 hours to remove the remainder pulp on the beans. They are then washed and dried identical to the rest of the semi-wet processing. All of these drying processes are to achieve a moisture content of 10-12% in the coffee beans, (Lee et al., 2015).

Respectively these processes are known to the specialty coffee world as natural (dry), washed (semi-wet), and anaerobic fermentation (wet). Once the drying process is finished for primary processing, beans are then ready to be stored for roasting. Beans can be over-fermented which is when the mucilage is beyond the required amount of looseness, it is considered to be inferior quality and detrimental to the bean, (Gibson & Butty, 1975). The issue causes "stinker" beans, the notes are fruity, sour, and alcoholic, (Jackels & Jackels, 2005).

Roasting

For the primary processed green beans to be the final product for consumption, they undergo roasting. The roasting process is known as, "secondary processing", this puts the beans through a thermal treatment, (Franca & Oliveira, 2019). The treatment goes through chemical and physical changes to create a certain aroma and flavour. The book, *Coffee: Production, Consumption and Health Benefits* by John L. Massey states once the beans hit a certain moisture content, they're dehulled again to remove parchment which we know as silverskin or chaff, (Massey, 2016).

When roasting, the beans will lose the majority of the moisture content due to the constant high temperature it is exposed to. The common form of roasting is through rotating batches of beans in a horizontal cylinder with hot air blowing inside at a temperature of up to 220 degrees Celsius. It depends on the style of roast for a period of time in the roaster, for pourover we aim for a medium roast. Once the beans are at the correct degree of roast, they are quenched by spraying water and cooled by an air stream. The beans will rest in storage bins to reach pressure equilibrium, releasing any large amounts of CO₂, where they are then ready to be bagged for the retail market, (Clarke, 1987).

Previous Designs

When grinding coffee for pour over specific brews, a caveat that brewers face is the presence of coffee silverskin (CS). CS consists of 4.2% of the coffee cherry, and when primary and secondary processing, most of the CS is removed, but it is still present inside the roasted bean, (Mussatto et al., 2011). Chaff within a brewed coffee causes a papery flavour to the final profile, ruining the flavours you are trying to bring out. A patent from April 1907, describes an apparatus used for separating chaff and fines from ground coffee. It was created by inventor, Louis Gans, basically an electric grinder then chaff remover. When in operation after being ground the coffee moves through passages to another chamber, that uses airflow to create a centrifuge. The centrifuge forces the light particles upwards into mesh screens separating the CS from the grinds, (LOUIS GANS, n.d.).

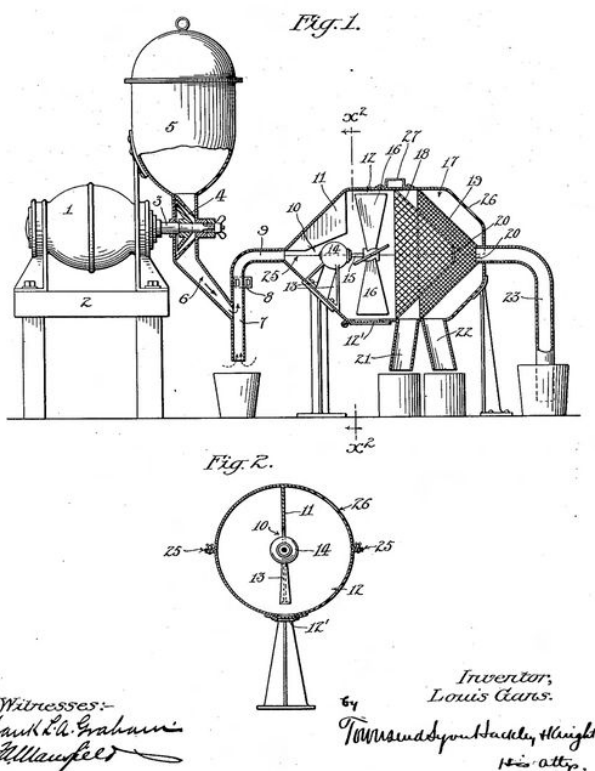


Figure 1: Louis Gans Chaff Separator, 1907, (LOUIS GANS, n.d.)

A 1999 US Patent by David M. Cochran, is a device made to separate chaff when roasting coffee beans. He calls the CS separator the *Chaff Collector Adapter*, which collects and removes CS from the exhaust gases when roasting. During the roasting, the *Chaff Collector* uses electrostatic attraction to hold the CS, until the beans have finished roasting, (Cochran, 1999).

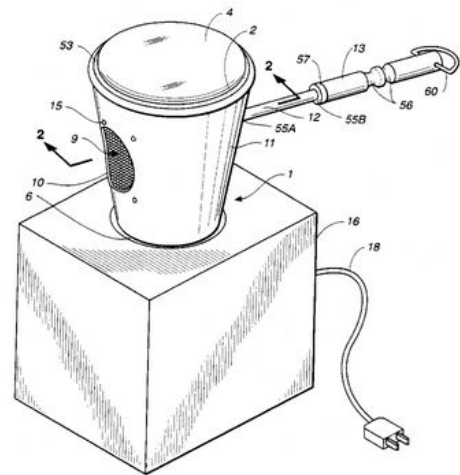


Figure 2: David Cochran Roaster and Chaff Separator (Cochran, 1999)

Specialty coffee has been evolving in the recent decade with more methods being utilised for roasting and brewing. Although CS contributes a minor amount in coffee beans, from the previous patents it does show that it is a general issue amongst coffee professionals. And has been researched to discover a method to reduce its presence.

Research

During this process, both qualitative and quantitative methods were used for this research. Applied research was conducted to understand both end users and expert's views on the matter. All forms of research had an overview of the project with participation information stated. This was either before the survey begun or before the interviews and observation with an included participation agreement.

The quantitative research was completed using a Google Forms survey that was posted to social media (Facebook and Reddit), forums, and in-person with personal and professional networks. The survey contained 15 questions: 11 multiple choice and 4 short answer questions, which were collected over a three-week period. The multiple-choice questions returned quantitative responses that could be analysed later for specific themes. The 4 short answer questions are aimed to focus on more qualitative responses to gain further insight into the participant's experiences. It was posted to 3 different Facebook Groups specializing in filter coffee, the forum Coffeesnobs.com.au and the Reddit community for r/pourover and r/Coffee. In the time span, the survey received 29 responses with some participants commenting their thoughts in the survey post.

The qualitative data was collected through a series of three semi-structured interviews with experienced people in this field. The choice for semi-structured allowed the interview to flow with the interviewees keeping in mind the next question, whilst elaborating on certain ideas stated prior. This format gave the chance to understand what the interviewee was thinking,

as well as elaborate more on certain areas. Participants were identified through personal networking that led to some professional networking. Each interview took place in the participant's agreed location with a signed agreement to record audio whilst interviewing. The interviews were transcribed by otter.io as well as, listened to, to ensure the accuracy of the system.

The first interview was with the manager of The Hideout Specialty Coffee, which is known for its rotating specialty bean array, friendly atmosphere, and deep knowledge of pour-over coffee and espresso. The manager, Thomas Webb, was a connection through a personal network, he has had over 7 years of experience in the field, specialising in pour-over in the last six years. The choice was made due to the café reputation and wide scope of knowledge he could provide.

The second interview was with a previous manager at Cups and Wells who competed in pour-over-specific competitions. O'neil Scovell is a barista who has been in the industry for 7 years with 3 years specialising in filter coffee. He has had personal experience and café experience in this area, keeping a non-biased between his opinions.

With competition experience, he understands the theme of consistency, and not wanting to waver from reputable products on the market.

The final interview was with Eddie Cho, the owner of The Hideout Specialty Coffee, and experienced in running a successful specialty coffee business. He started in the world of commercial coffee seven years ago and transitioned into specialty, with minimal enjoyment in the beginning. But the more he delved into the process, the more he began to enjoy it. Eddie focuses on the user experience when making pour-over, and notices that efficiencies could be improved when brewing. He has explored this area before and has ideas that can help influence the path of this design process.

An observation was made to understand the workflow of making a filter coffee in a café setting. This helped to uncover certain techniques that were being used throughout the process from prepping to the end of brewing. Analysing the process and each frame of the video showed aspects that can be improved. This also showed the order in which parts of the process were executed, this helps to understand why they are being done.

The research methods above played a part in certain findings related to filter coffee. Qualitative research in this specific field was limited when looking at the academic literature, excluding the prior patents. The survey helped to identify patterns that weren't otherwise confirmed by the literature review. Having access to end users and experts confirmed these certain assumptions, helping with the final analysis.



Analysis & Findings

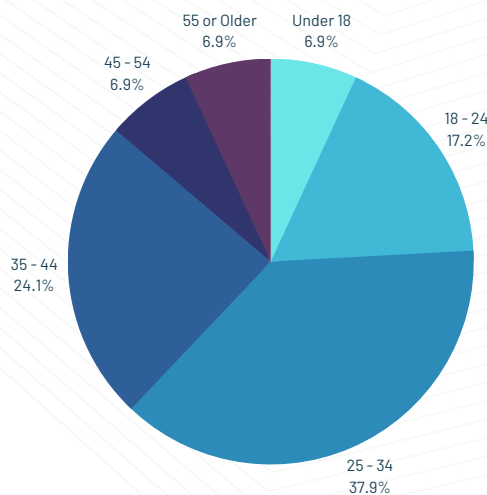
This section will outline the key findings from the survey, interviews, and observation. When completing the literature review it was apparent that a plethora of conditions in the pre-processing and post-processing stages affected the overall flavour profile of a cup. But the method for processing has been refined, the grinding and brewing stage still offers inconsistencies. Discovering how to achieve more consistent brews is all brewers are after, and analysing these results has uncovered them.

Survey

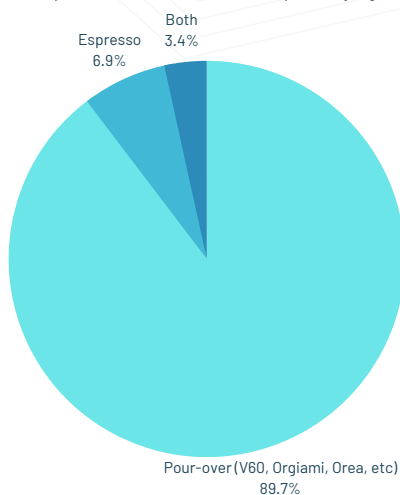
The survey was given to home baristas and cafe baristas who had experience with filter coffee. It received 29 responses from a mix of online platforms and professional networks. Refer to the appendix for the full survey response data.

Graphs 1 and 2 show that over half of the participants are 44 years old and younger and mainly make coffee using pour-over.

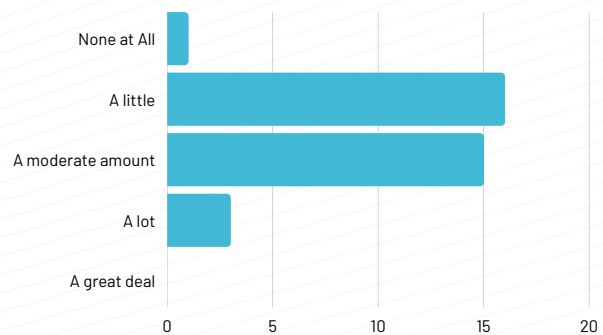
Quantitative Data



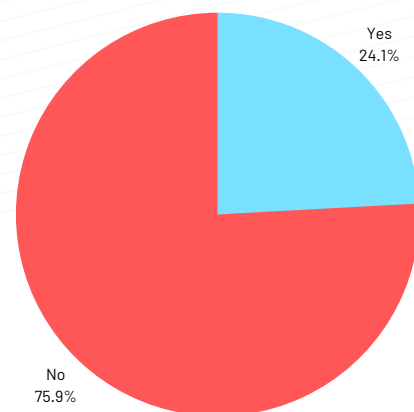
Graph 1: Total Number of Participants by Age



Graph 2: Style of Coffee Made the Most

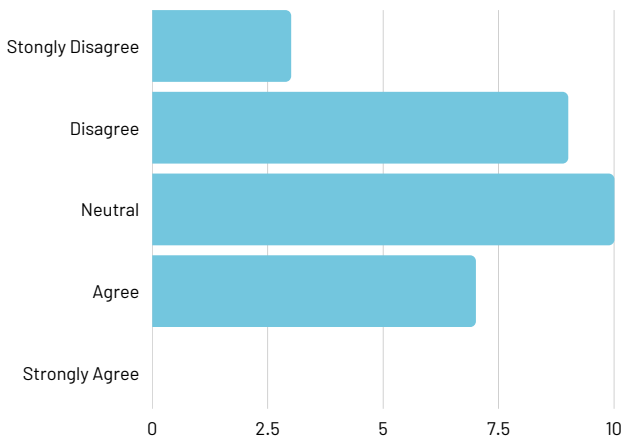


Graph 3: Amount of Silverskin Encountered when Brewing



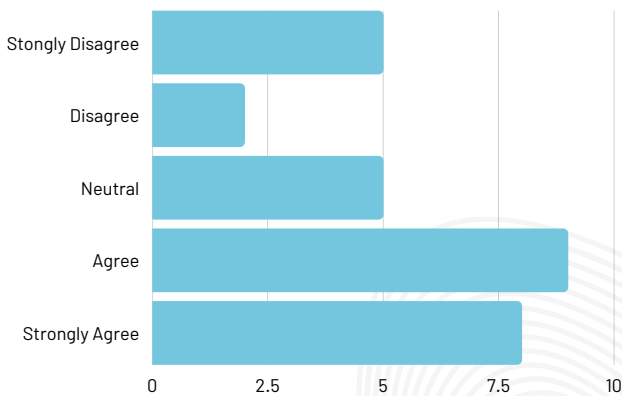
Graph 4: Do you bother removing Silverskin/ Chaff?

Graph 3 shows that almost everyone encounters chaff when brewing, whether is a little to a lot, it is still present. But, looking at Graph 4 it displays that 76% of participants don't stress about it.



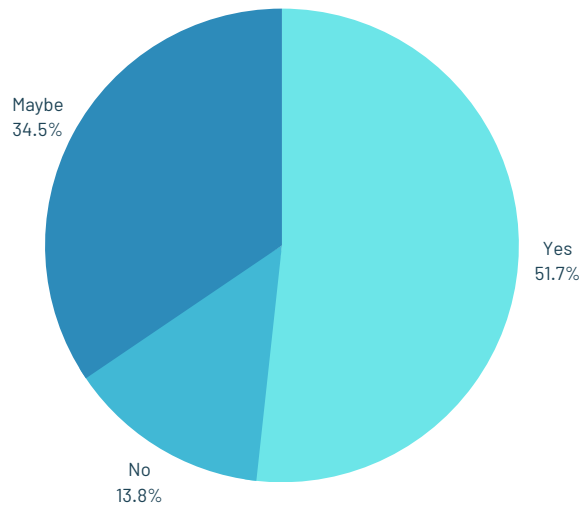
Graph 5: Silverskin Plays a Crucial Role in The End Flavour

41.3% of respondents disagree with the effects of chaff. 24.1% agreed, yet 34.5% were undecided which means they probably are aware of the impacts but aren't too concerned with the end flavour.

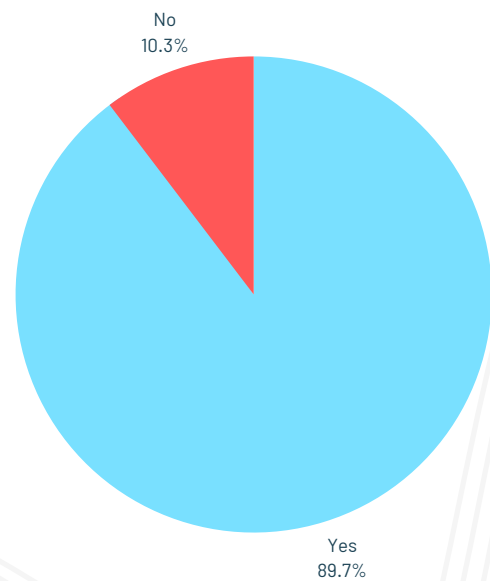


Graph 6: Enjoyment in the Current method of Grinding and Chaff Removal

Graph Six has a wide variety of mixed opinions on the question, of if they enjoyed the current method for grinding and chaff removal. Less than a quarter of the participants disagreed with the current method for grinding and chaff removal. Although over half agreed that the method is enjoyable it begs the question of requiring improvement.



Graph 7: Potential for a Chaff Removing Device on the Market



Graph 8: Model of Grinder Used Important for the End Result

Graph 7 and 8 begins to answer the requirement of improvement. They were asked if there was potential for chaff-removing devices within the filter coffee industry and 51.7% agreed. Another 34.5% was a maybe and the rest disagreed.

When you followed up with the question of whether the type of grinder is important for producing the end results almost 90% of participants agreed. This means that the majority of the participants stick to certain brands of grinders for certain results and over half of them see the future with a chaff removal device to compliment the grinders.

Qualitative Data

These three areas were the questions that revealed qualitative data. Some answers given contained more than one response by a single respondent, which impacted the importance in some certain areas.

For the short answer question, "What areas in Filter Coffee need Improvement?", all 29 participants gave a response leaving these 5 themes.

- 11 answers
- 6 answers
- 5 answers
- 3 answers
- 2 answers



Diagram 2: Visual of Required Improvements

The next short answer question, "What Method do you use to remove chaff?", 24 participants gave a response leaving these 3 themes. All none methods to remove chaff.

- 11 answers
- 2 answers
- 11 answers

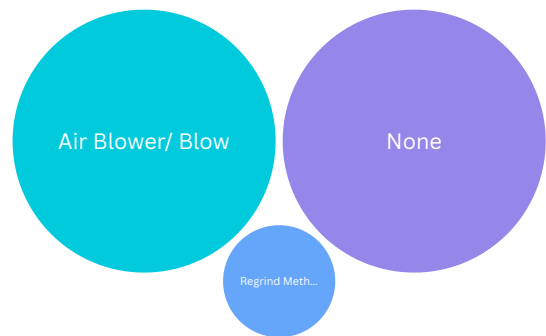


Diagram 2: Method used for Removing Chaff

The final short answer question, "What is your most used grinder?", All participants gave a response with some having more than one grinder in rotation. Also, numerous grinders are preferred by numerous users.

- 5 answers
- 5 answers
- 4 answers
- 4 answers
- 3 answers

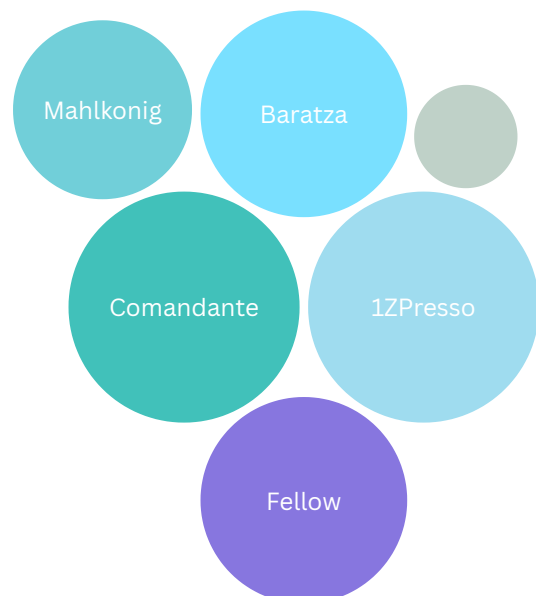


Diagram 2: Visual of Required Improvements

Interviews

Each interview was transcribed and analysed to identify any common themes through a thematic analysis. The thematic analysis was done using software to identify certain themes or patterns and then cross-referenced by hand to see similarities.

Thomas Webb

This interview was 25 minutes which helped uncover a range of themes related to filter coffee specifically for cafe baristas. His comments on this topic are passionate and realistic with experience meeting the community of baristas multiple times at cuppings and expos.

Throughout the interview, he puts his focus on quality control and experience towards the customer when brewing. When he shares the flavour he also wants to share that experience out of both passion and quality control.

"Every time you brew a filter coffee you actually have to QC it, you have to taste it, make sure it is at a great level of sweetness and flavour... So, I will actually partake in a small fraction of the beverage... To make sure it is of the right quality... It's a way of connecting with the customer."

Thomas follows up after talking about styles of grinders, with consistency in terms of grinding, pouring, and water temperature.

"We actually use a hand grinder because it is easier to clean... easier to reset the burrs... Comandante gives a particular profile... nice clean, transparent... Everything we do is not just for flavour but also for consistency. We have to reproduce the same coffee over and over"

He then states the importance of chaff in coffee and how he goes about removing it, this contains some drawbacks.

"Chaff will always contribute to a bitter, hay-like, grassy-like vegetable flavour which is not pleasant to have in your coffee... The camera blower we use to blow out the chaff... It is a bit of a pain in the ass when you do blow on the coffee. You also are getting rid of any... volatile aromatics which will actually contribute to the quality of the cup."

O'neil Scovell

When interviewing O'neil it was apparent that his experience led him to be meticulous about his art. He talks about his background in the world of coffee and immediately progresses to the small details, such as bean preservation through freezing, and the effects of changing different variables.

"I'd recommend an automatic just because you don't really want to be hand grinding [If multiple filter orders]... Comandante you can probably fit 20 grams, 40 grams in there... You can have a bit of inconsistency in the coffee beans [due to the amount]"

He continues to state how you can use the characteristics of your equipment to remove chaff.

"EK there's a little lever on the side that you can hit... and get all the coffee grinds up. But when you're doing filter... just take your coffee grinds off and then hit the lever to get rid of all the chaff... Comandante depends on the container... If you find that your coffee beans are more prone to sort of having a lot more chaff... I would recommend using the... polymer one."

A key statement O'neil said was about how meticulous and tedious roasters and brewers are with their craft and how important the details are.

"You can sort of taste if they aren't serious with their craft... a cafe in Woolloongabba called Light Coffee. And the two owners [the roasters] ... she would hand-segregate all of them any beans that look a bit differently would literally get rid of it... That's the type of tediousness that each roaster... Then you lay that [10kg of beans] out onto the floor and you're going through each one. And if one has a spec... she would take it off straight away."

He concludes the interview by stating that anything that can improve the consistency of brews in a cafe setting whilst getting rid of unwanted by-products would be ideal.

"Anything that can get rid of, or eliminate anything that you don't need while you're brewing will always help. Chaff removal is probably one of the big ones... Or anything that has like, that causes static helps get rid of chaff as well."

Eddie Cho

This final interview took 35 minutes and covered many different areas brought up in previous interviews. This includes chaff removal/ separation and insights from a business owner's perspective. After talking about his background he explains the fundamentals and keeping a consistent cup.

"The Pourover industry hasn't like actually changed a lot and the actual fundamentals are still there [how you brew, brew ratio, and temperature] ... all the techniques are same. But like nowadays, they tend to tend to go more automatic... for cafe owners, consistency is the key to making better coffee always."

I asked him about his thoughts on chaff and silverskin after hearing the prior interview, and he responded with his insights.

"If we can get rid of it. The easy way is 100%... We're gonna use it. Because in terms of like putting in all the efforts. If we take another step to do it, then it has to be very efficient."

He follows up with the hierarchy of importance when brewing, but finds it needs to be an area that should be improved.

"First one's grind size. And the second one is the temperature. The third one is how many brews, like the division how many pours you're doing and the fourth can be chaff... this is not a major factor for chaff usually it can affect the timing... Chaff will cause the coffee extraction rate to be a little lower [incorrect flavour extraction] ... This minor is not major... it should be improved."

Throughout this interview, he is very passionate about the effects of chaff and we begin to dive into potential solutions related to the problem. He does state problems with the current method with the view of a businessman.

"Blower is not efficient, If I tried to blow like 10 times, maybe I can get rid of like 10% or 15% of chaff... I will also get rid of all the coffee at the same time... You put the screen here and then put coffee [ground] on top and then shake this way... Coffee will be strained in the bottom, and then chaff will be on top."

His input helped add direction to the design solutions and come up with more than one intervention related to the problem of chaff in the coffee industry.

Observation

An observation was made of one of the baristas of *The Hideout Specialty Coffee* making a filter with new coffee beans, exhibiting the process from start to finish. After analysing each second of the captured video, it showed the whole process plus small details which relate to the interviews and surveys. The analysis will be placed in the appendix below for the complete breakdown.

The process at the bottom of the page outlines the key steps to brew a pour-over coffee.

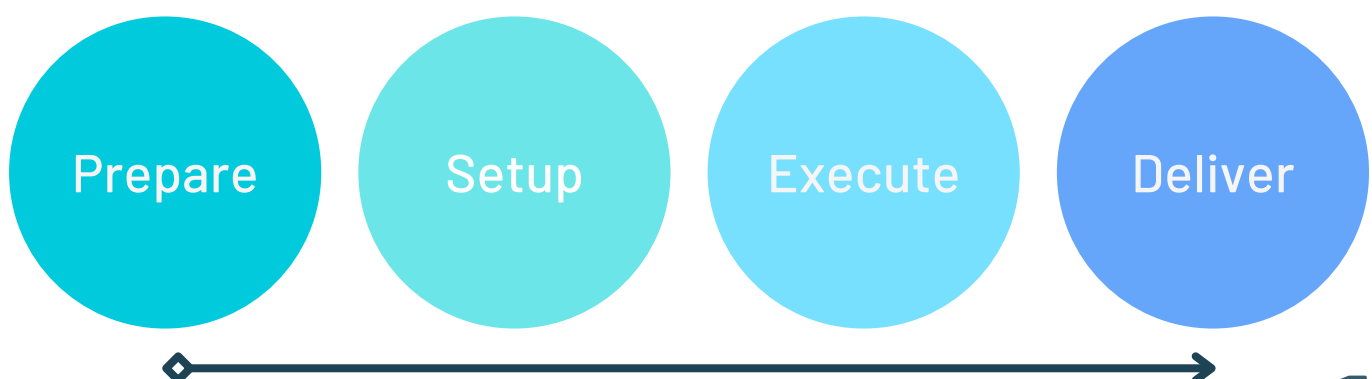
Firstly, it starts with preparing, the barista pre-moistened and heated both the brewer and server which removed the filter paper taste, but prep the brew to not get a temperature shock. The kettle is filled with filtered water, and set to a specific temperature that won't burn the coffee, and bring out the appropriate flavours. With an air blower, the dosing cup is cleaned, and the is measured to a certain grammage for the brew, in this case, 15 grams. The grinder is cleaned using an air blower to remove any previous particles that will affect the current brew and is set to the appropriate grind size.

It will be ground with the chaff being removed with an air blower as stated by the survey and interviews. This step is crucial to dialing in new beans, as it will allow all the potential flavours to be present after brewing, and not have the papery aftertaste.

The dripper and server will be placed on a zeroed-out scale, and the ground coffee will be measured. The measuring is to guarantee the retention of the grinder, as well as any loss of weight caused by chaff (CS). Once checked it will be zeroed out again, with the kettle at the specific temperature prepped to pour.

Executing the pour occurs following a brew ratio of 1:15 (grind weight: brew weight). The timer begins once the pours begin, the pour amount is dependent on how you intend to bring out flavour, usually 2 pours to bring out the flavour and 3 pours to change the intensity. The kettle won't be replaced on the kettle between pours as it can cause the beans to burn. A key point is removing the lid [kettle] to reduce the temperature if you notice the pours are running slow. Once the pours have hit the target weight, the barista waits until drawdown (final amount of exiting brew) and removes the dripper to a separate cup.

Finally, delivering the final product, the barista double-checks the final weight of the server, and QCs the leftover dripper drops for any specific flavours. The server will be twirled to infuse flavours and serve after a few minutes to develop the tasting profile. Whilst waiting, the grounds are discarded and the dripper and dosing cup are re-cleaned. After another quality control check the final brew is ready to be served.



Discussion

This section will outline and comment on the similarities in the primary research, and identify the gaps within the literature. Both the literature review and the primary research data will be compared to discover any findings that could be important to future design implications.

The literature review did present gaps in the research, mainly in the area of removing silverskin (CS) after grinding, and the effect on the flavour profile when present. It was identified that during pre-processing and post-processing, CS gets removed but sometimes, not 100% of the time. Fortunately, the survey and interviews focused mainly on the effects of CS whilst keeping an open mind on other present issues, that otherwise weren't stated in the literature.

Both the literature and the primary research proved to line up when talking about areas of improvement. There were two patents that focused on ground coffee CS removal and roast coffee CS removal, with each interview stating methods around this matter. Currently, the method to remove CS requires you to air blow once you have ground the coffee, which causes it to fly everywhere and make a mess. This was reaffirmed within the survey when 50% of participants used this same method. During the interviews, the negatives were stated by the interviewees, *"getting rid of any... volatile aromatics which will actually contribute to the quality of the cup"*, *"I will also get rid of all the coffee at the same time as blowing chaff"*, *"Adds like a little bit of like, bitterness in the coffee."*

Although this was the major finding throughout all the research there were still similarities among the primary research.

The survey results pronounced key findings that were brought up to the professionals when interviewing. The first one is that the type of grinder being used is important for the end result, almost 90% of the survey participants agreed, and looking at their grinders, it seemed like the professionals agreed. 12 of the surveyees used the same grinder as the professionals, mainly the Comandante C40, and the Mahlkonig EK43. One manual, and one electric respectively, two interviewees stated the importance of why they use it, *"We find we enjoy the profile of that grinder, and we enjoy the consistency."*, *"I find that like just has a lot of great history behind it... It worked better than any other grinders."*

Secondly, the potential for a device on the market that purely focuses on chaff removal was reaffirmed through both the interviews and the survey. Just over half the surveyees agreed to the concept of one on the market, with the interviewees backing it 100%.

During the observation, the barista made several detailed decisions that determined the brew outcome. The first was the repetitive air blowing of chaff and particles, this occurred three times. and secondly, constant weight and temperature checking were done to account for coffee grounds variables. The attention to detail confirmed the statements made during the interviews.

Design Implications

This report identified key findings and gaps in research within the literature on filter coffee. These discoveries enabled key opportunities that could aid in potential design implications for this study. The main focus will be on chaff removal within a cafe setting due to the amount of real-world issues encountered by baristas. Each topic below are key themes throughout the interviews which will need to be a part of the concept considerations.

Consistency

- Will need to consider how the tool interact will workflow of barista.
- How consistent and repetitive this tool can be used before failure.
- Is this solution reliable in producing the correct results.

Chaff Removal Capabilities

- Will need to be a simple mess free process.
- Will need to remove at least 90% of CS within a single dose.
- How will this interact will the baristas workflow (simple to clean?).

Customer Experience

- Can this solution help yield better brews then the considered previous methods.
- Will the users enjoy using this more then current method of chaff removal?
- How will this effect both the user and customers?

Market Potential

- Will need to be desirable for filter baristas.
- Will the solution make it as easy as they expect?
- How will cost price effect interest in product?

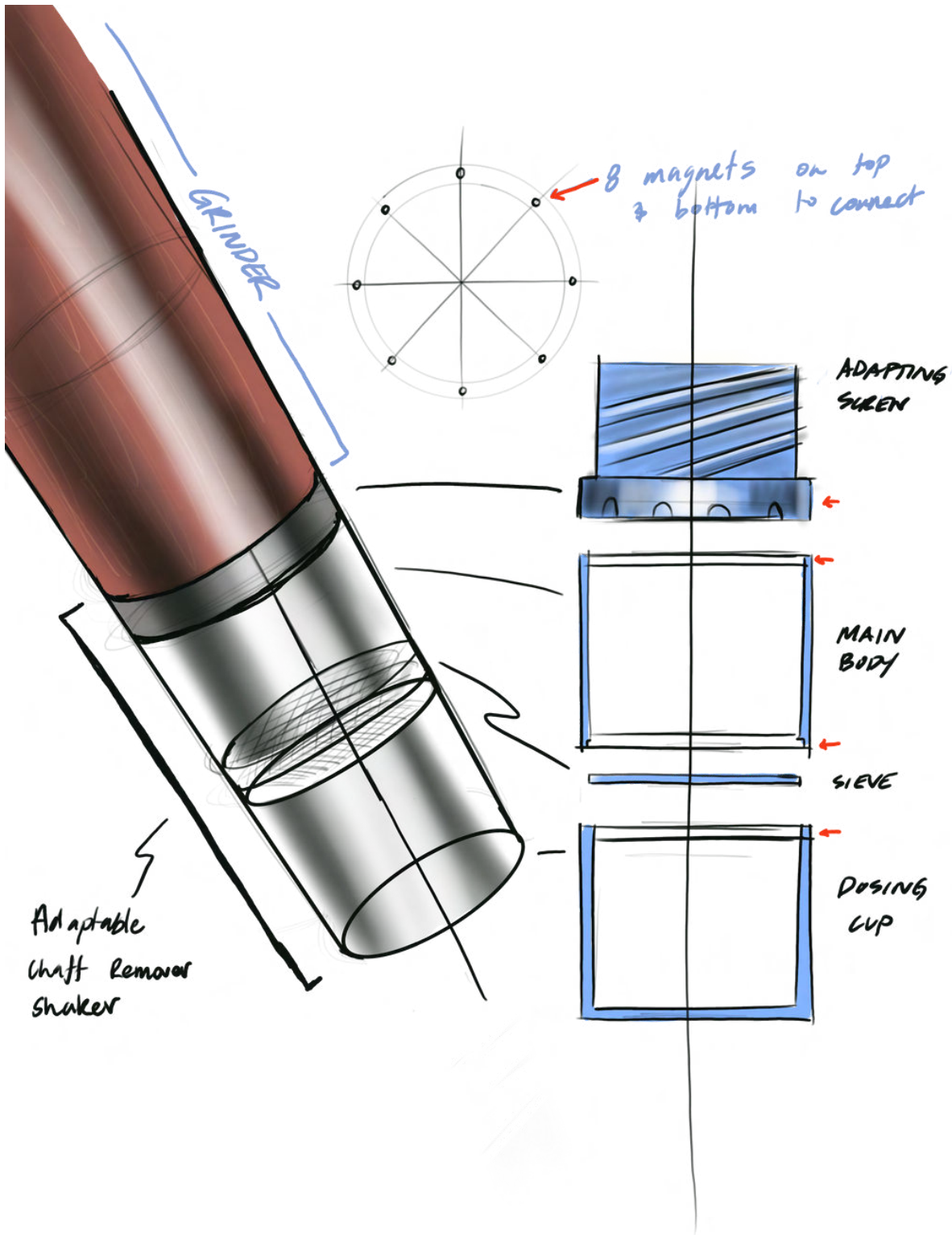
Initial Concept Sketches

Concept 1 - Electrostatic Collector



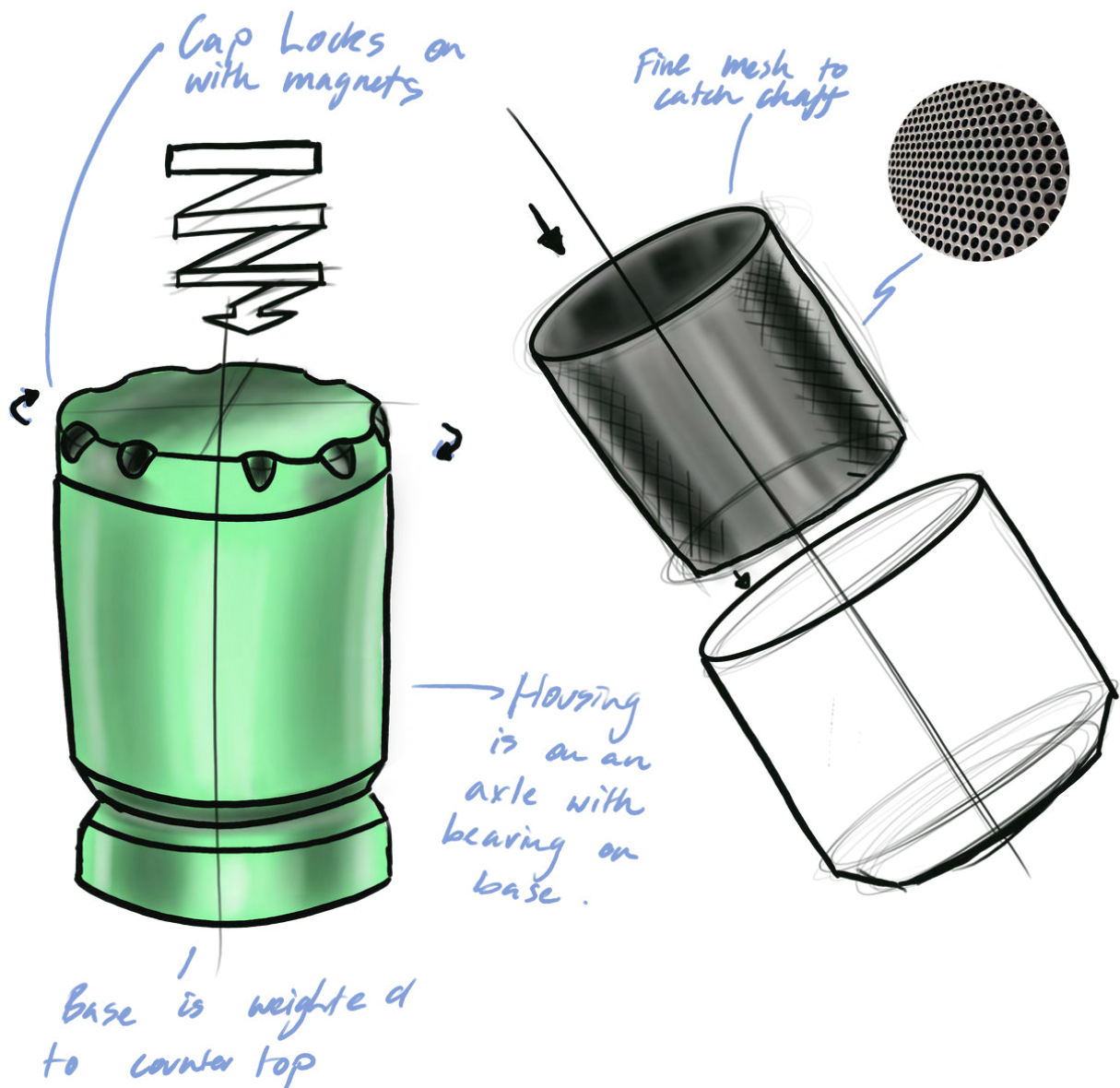
Initial Concept Sketches

Concept 2 - 2-in-1 Shaker



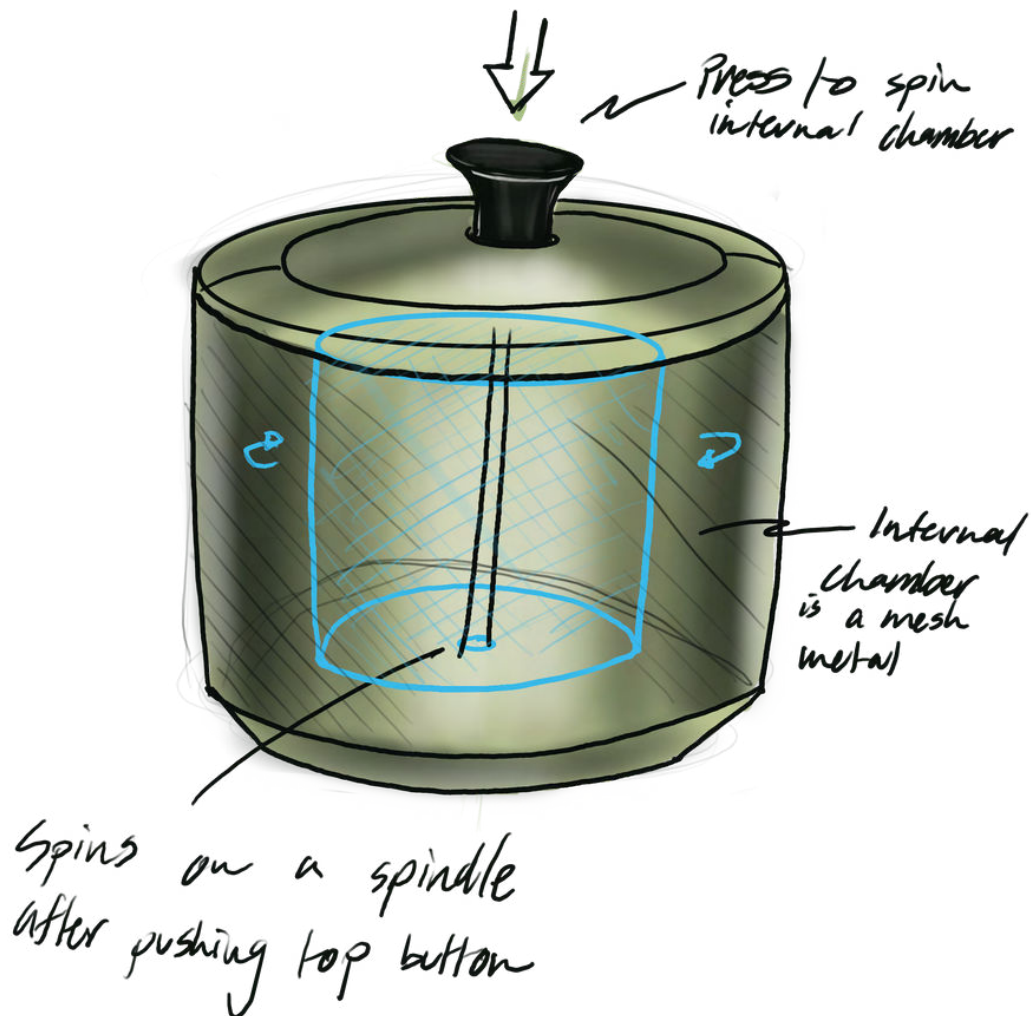
Initial Concept Sketches

Concept 3 - Bench Spinner



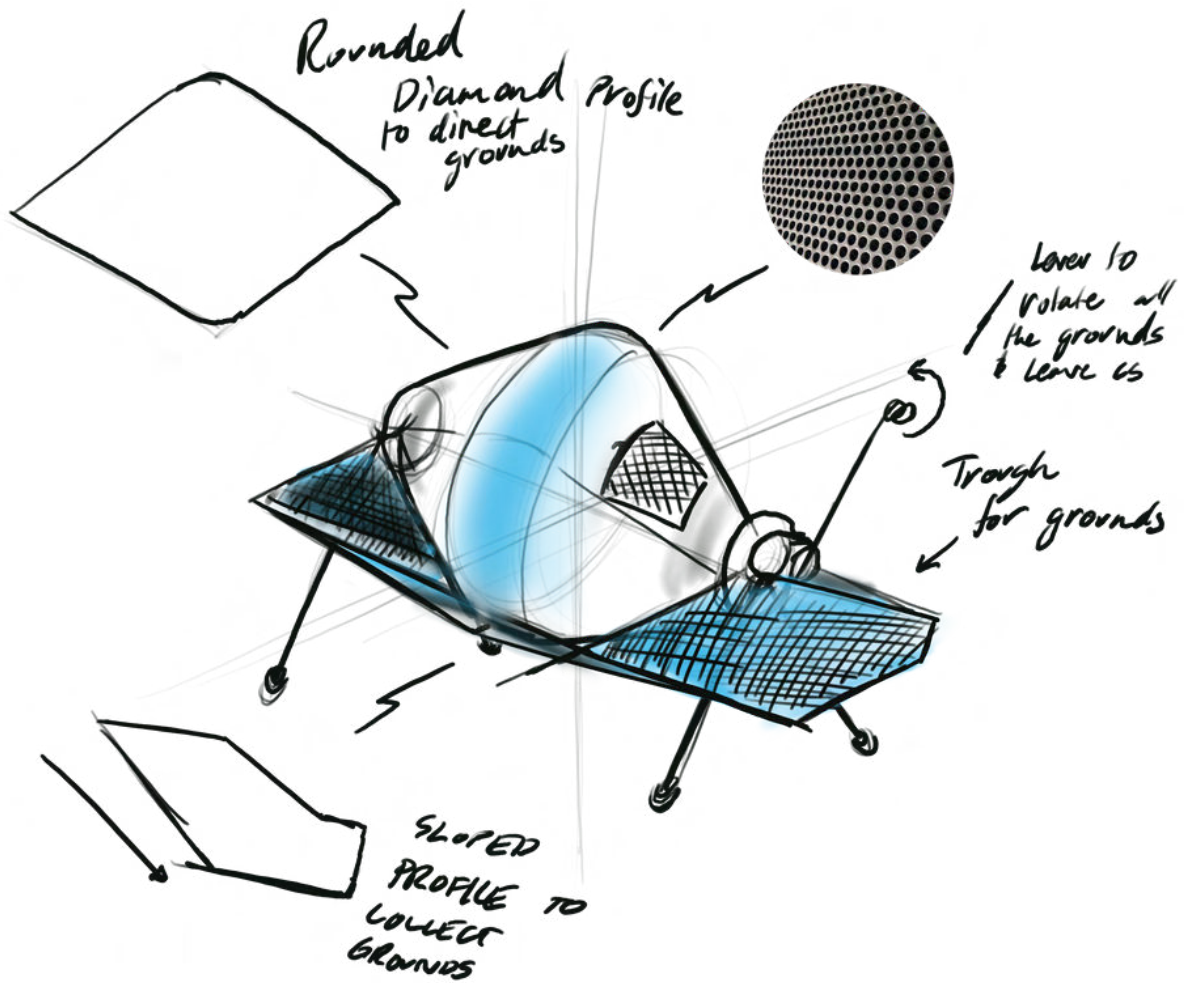
Initial Concept Sketches

Concept 4 - Silverskin Spinner



Initial Concept Sketches

Concept 5 - The Tumbler



Conclusion

This research paper has delved into both primary and secondary research to understand making pour-over coffee and the issues related to it. The secondary research included a background investigation of coffee, processing, and roasting as well as prior designs related to the target of this report in the form of a literature review. The primary research was conducted through an online survey that had 29 respondents, and insights for both home baristas and cafe baristas. Three interviews were conducted with experienced baristas from different walks of their pour-over journey. An observation was done to see real-world timings and workflow for making a filter coffee. Both the interviews and observation uncovered important areas to intervene in for future solutions. These areas will be the target for part two of this capstone, hopefully fulfilling the requirements of all whom participated.

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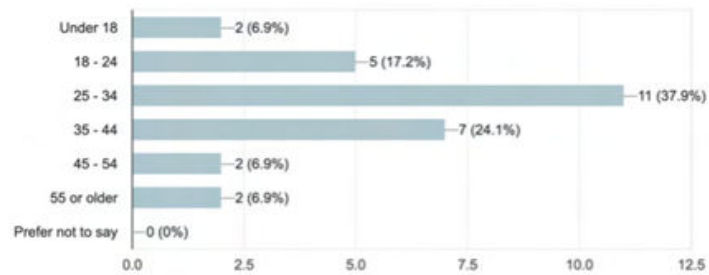
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Appendix

Appendix 1: Survey - URL: <https://forms.gle/ib3yT8anExwGhKT98>

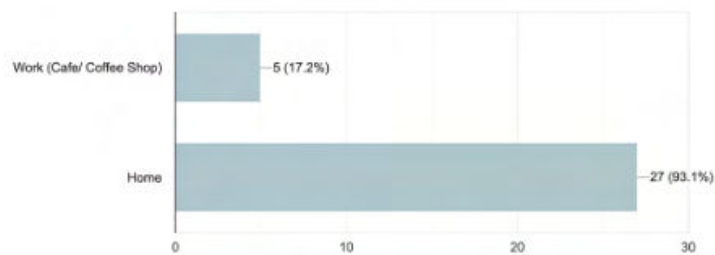
What is your age group?

29 responses



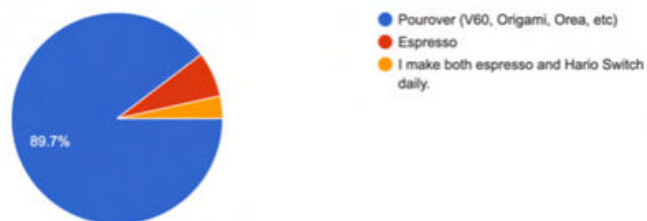
What environment do you tend to make coffee the most?

29 responses



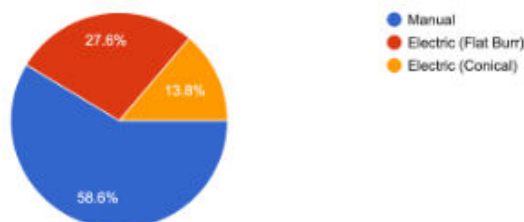
What style of coffee to you make the most?

29 responses



What type of grinder do you use?

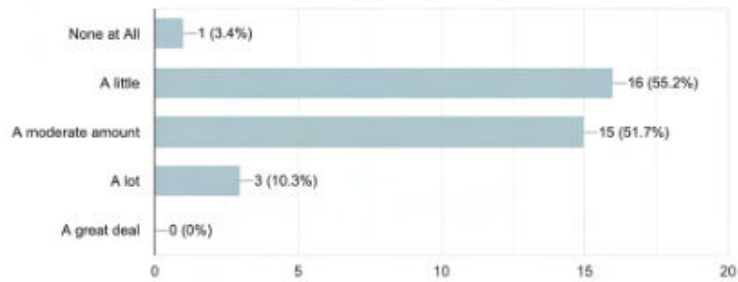
29 responses



Appendix

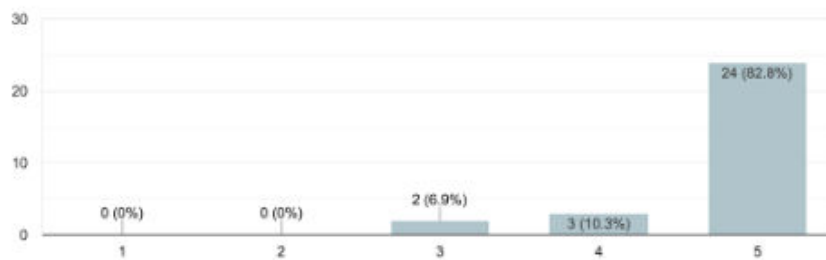
How much silverskin/ chaff do you come across if making filter coffee?

29 responses



You enjoy the process of making pourover coffee?

29 responses



What are areas that you find need improvement?

26 responses

- Having better control on the water flow and removing the chaff
- Time efficiency
- The mess
- Standardization of bean roast levels
- Minerals in brewing water, needing home grade water filtering system for coffee.
- Pouring consistency
- Workflow
- Pouring technique
- Workflow

Appendix

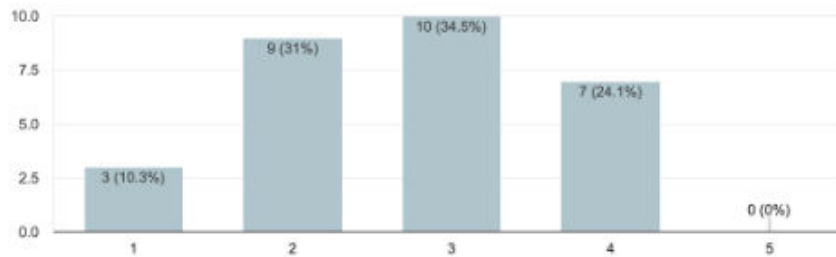
What are areas that you find enjoyable?

26 responses

- Outcome of coffee made, ease of cleanup
- Doing the pour, grinding the coffee and drinking it
- thinking through the process of figuring out how to make a coffee better
- Experimenting
- Delicate taste and flavours from Washed process beans.
- Experimenting with new beans and techniques
- Grinding and pours
- Faster workflow than espresso
- Pouring

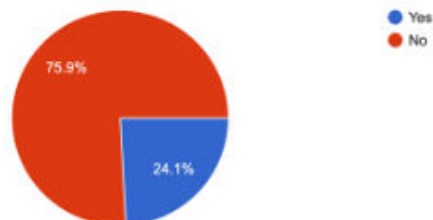
Silverskin/ chaff plays a crucial role in the overall flavour of pourover

29 responses



Do you bother removing silverskin/ chaff?

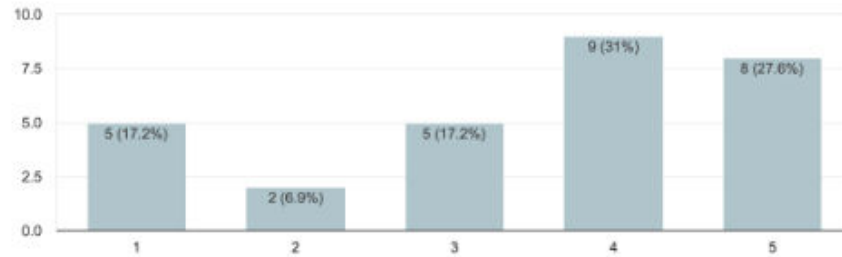
29 responses



Appendix

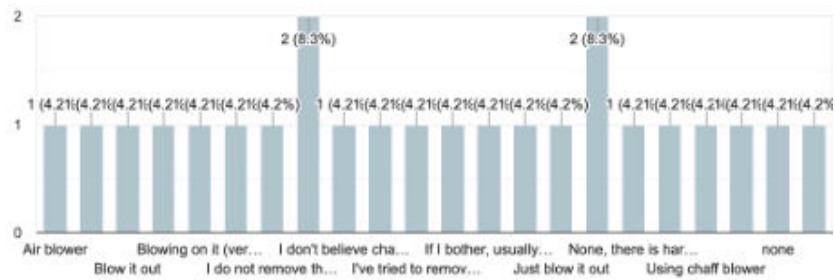
You enjoy the current method of grinding and chaff removal?

29 responses



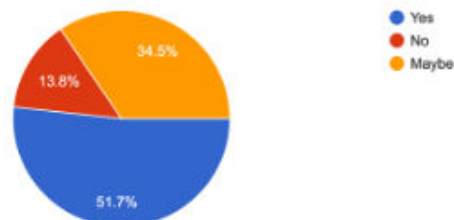
What method do you use to remove chaff?

24 responses



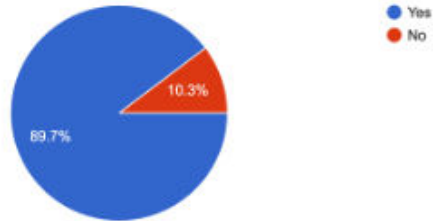
Is there potential for a chaff removing device on the market?

29 responses



Appendix

Is the model of grinder you use important for the end result?
29 responses



What is your most used grinder?

29 responses

Comandante C40

Kingrinder K6

Sette 270

1zpresso JMax

Comandante nitro blade c40

1Zspresso JX Pro

Commandante

Capresso burr grinder

DF64V

Appendix

Appendix 2: Thomas Webb Interview Transcript

R: My first question basically is, how long have you been filter coffeeing or making filters, per se?

T: I've been in the coffee industry since I was twelve, um I've been volunteering in like church cafes growing up

R: Sounds like me

T: Like as soon as I could work, um, I worked in cafes all over. And then about six years ago, I was introduced to specialty coffee and filter coffee. I walked in and basically had this experience, where this guy sat me down and for the first time in my life, he gave me the opportunity to choose what coffee I was gonna drink. And in my mind, I was like, "What the hell, how can I choose?" And he told me there were four different blends, one from India, one from Ethiopia, one from Papua New Guinea, and one from Columbia alright.

R: Yeah, yeah

T: And I picked the Ethiopia one, and he said, "Yeah you'll like this one" So he made a latte for me, and it taste like strawberries, and it like opened my eyes right.

R: Yeah

T: I was like, "What's going on here? How can a coffee taste like this?" And so, from that point I went, "There must be more to this" So I just kept asking questions, and then the guy was like, "you have to buy a pourover like a V60 pourover set. If you are gonna get into this buy a V60 set" So I did, and then he showed me kinda what batch brew was and what those tea-like notes are and how it's a way of expressing coffee, that I'd never had before.

R: yeah, yeah

T: Like if I thought I was blown away by a good latte, I was even more blown away at how coffee could taste like tropical fruits, or black tea, jasmine tea, flowers, nectarine.

R: yep

T: Like all those like, like fresh strawberry than like that stewed dry fruit, you know. Tea-like, floral, fruity in many ways and still incredibly sweet. I got into it through simply finding that flavour and then being incredibly curious about how they achieved that. And I would just keep asking questions, and then to this day one of my favourite things to do is brew a filter here and share those flavours. It is also not just serving the beverage. Cause it is so customer engaged, one on one, you get to actually enjoy and partake in that process. Cause every time you brew a filter coffee you actually have to QC it, you have to taste it, make sure it is at a great level of sweetness and flavour because when you are brewing filter it is a little bit more variables to it, it's a little bit more difficult to espresso. So, I will actually partake in a small fraction of the beverage before I serve it. To make sure it is of right quality, in a way it's a way of connecting with the customer and having a more engaging experience with the customer.

R: Cool as.

T: That's why I love it and how I got into it

Appendix

R: Sick, that is awesome.

R: I noticed you use a Comandante, I also use the comandante, uh do you prefer the manual grinders over the electric? That is considering if it is conical or flat-burr, or would you prefer always Comandante?

T: Yes, well like the reason why we use hand grinder is dose by dose. Like for our EK, like I've use it before, but it takes a lot of alignment, and it is also across EKs it is all very different. Not to mention we also use decaf and single origin, so it is hard to get a clean grinder. Like make sure the burr set is clean, to make sure we aren't getting any impurities in the pourover as pourover is very sensitive to flavours. Like coming off or overly bitter or under extracted.

R: Yeah, Yeah

T: We actually use a hand grinder because it is easier to clean, it is easier to reset the burrs, without too much hassle. Um also the Comandante it gives a particular profile, like it gives a nice clean, transparent and like the grind consistency super consistent.

R: So soo good

T: That is the number one thing when you are talking about grinding consistently.

R: yeah

T: Less static, there is no motor so no static, and more consistency, it doesn't matter if conical or flat, there are flat hand grinders as well that do just as good, there are many different types of hand grinders with different burr sets that all make coffee that are clean with different profiles slightly. So Comandante we find we enjoy the profile of that grinder, and we enjoy the consistency. Everything we do is not just for flavour but also for consistency. We have to reproduce the same coffee over and over and over.

R: yeah, yeah, yeah

T: That is why we are using that hand grinder.

R: Cool as

R: So, the purpose of this project from my view was to discover if chaff was an important issue in filter coffee?

T: Chaff?

R: Because I found when I was brewing a lot at home that I was getting annoyed and frustrated at the whole process of having to remove chaff and making a mess and blowing it every morning. So, I wanna know from a filter expert.

T: Yep

R: Do you think chaff such a crucial role in making a pourover, like do you remove it?

T: Yeah 100%, Chaff is mainly found on a washed coffee because during the processing method, it doesn't have a chance to break down during fermentation. So you mostly have a problem with chaff on your washed coffees, which is the most common processing method for coffee, the most traditional one as well coming out of Africa like that. Chaff is also increased when roasted on a small roaster, most specialty coffee roasters work on smaller roasters which is why it happens on specialty coffee.

Appendix

R: Makes sense.

T: Yeah, I know a lot of roasting as well. And some Roasters they are really good at filtering out that chaff, like my little sample roaster at home was that was, and that some roasters have a really bad process and sometimes they don't take enough care, and end up with too much in the bag. Chaff will always contribute to a bitter, hay-like, grassy like vegetable flavour which is not pleasant to have in your coffee. You don't want to have it, So yeah, we tend to we have a little like blower.

R: Like a camera lens blower?

T: Yeah, the camera blower we use to blow out the chaff if it is an excess amount of it. And also, it's easier to blow it all around. And then yeah, it is a bit of a pain in the ass when you do blow on the coffee. You also are getting rid of any like a lot of volatile aromatics which will actually contribute to the quality of the cup. Can you remind me, what was your question again?

R: So, my question was, do you remove, obviously you remove chaff

T: in excess amounts

R: In excess amounts you remove it

T: Like this amount not too bad

R: Do you think that there is an option on the market for a single dose chaff remover?

T: Yeah, well there are already a few on the market.

R: I have heard of the airmill.

T: There are a few they're actually, like a micron sifter, you'll see you can sift through

R: oh yeah, the kruve?

T: Yeah, that's one example. You also have like little thing screens that can fit inside and then get rid of fines it's just as much as chaff, fine particles are also like your enemy, they create excess bitterness. Yeah, so definitely there's definitely space on the market for something that actually just like attacks chaff. Yeah, I feel like a shaker of some sort. Something that allows the coffee to keep integrity of volatile aromatics moving that those impurities.

R: Like similar to shaking skin off of garlic in a jar?

T: Yeah, yeah like some way, something handheld that you could use efficiently on a brew bar, that would be awesome.

R: Yeah. I've been looking into different methods and the one method that has peaked my interest the most is winnowing and how like people separate chaff from wheat or like cocoa nib when they, when they like break it down into their respective things. And that's just where it's like air is flowing into it and sifting it away. And you're basically separating it into separate, separate things. But ideally, it would be great to have something that doesn't rely on, like electronics to do it. And it's all manual because it's easier to replace parts.

T: yeah, and impossible to get it working in a café environment

R: For sure.

Appendix

T: If you want it for home baristas you can like sell to them. You could sell anything at home barista but if you make something applicable for a cafe, it's gonna be a much better business model.

R: Yeah, cool. Do you find when you're brewing is there any other areas that need improvement?

T: Well, I find fine particles will make a big difference. In terms of like the quality of coffee you're buying, and what you're expecting, like the biggest thing is having reliable reliably sourced coffee that's been processed roasted with care allows you to get that cup of coffee that's not full of chaff, not full. But in terms of problem solving, if you do end up within up like, talking about.

R: Yeah

T: So, I guess, it's one of those inevitable problems that you get, I feel like just why I need some intervention. I think that like in terms of what you're looking to do, provide a tool that allows us to kind of speed up the process of removing the chaff without diminishing the quality of the coffee.

R: That's pretty much my idea.

T: Yeah, like that's that, that's something that would be extremely helpful. So like, for you right on the money there. anything else that might be needed improving is simply like just innovation, grinders, kettle, how to make those consistent, how to, even tools like that allow less static to the mess fine particles, like spitting water on the beans.

R: Like RDT

T: Yeah, like Little things like that continuing to innovate, continuing looking at those little problems, from your own experience, like and just keeping innovating, step by step by step, I think you'll have an A, you can build an amazing model. And there are so many examples online, and on Instagram of people making really successful businesses online selling products, made at a cheaper cost as well, sometimes related to 3d printing, and sharing designs all over. And you have a whole Community of home brewers that are just literally they 3d printing each other's designs, just keep testing and innovating. So, there's a community for it to market for it. And if you feel passionate about coffee, anyone who's passionate about brewing will see those little things and be like, "I want that", and those are the things that would make my life so much easier.

R: Which leads me to the next thing which you actually talked about. When it comes to like static and retention, right? Obviously, these days now people discovered RDT where spritzing water all over and a lot of that. But also, you've got like the fellow ode gen 2 magnetizer whatever, you know, the fancy thing. Whatever it's called.

T: Yeah, I know what you're talking about.

R: Do you find that when you're making a filter, or even like a big batch brew? Do we even bother with that? Because static will like retain, some of the finer particles if you don't want or do you just keep it as is let it be.

Appendix

T: Well places like us, we always strive for quality. we avoid fine particles; we find ways to use our equipment to avoid that a lot of the fine particles are sprayed upon the walls of the burrs and stuff like that. Yeah, so when you finish grinding, take it out and tap the waste shaker, a lot of that chaff falls out. Knowing your equipment, knowing what good is and what acceptable is and isn't, is a part of the everyday cafe life. We definitely as a cafe strive to be understanding all our equipment and coffee nth degree to make sure that we can provide consistency in the cup. And because when it comes to filter more than any other brewing method, the little details matter.

R: Yeah

T: The temperature. Like every little thing, like the way you pour, the way you grind, it makes every little difference because you're trying to create a really transparent, clear, and easy to understand display that specific flavour. So, if you don't brew it to that level of attention to detail and care, you will not be showcasing that coffee. You're not replacing the positive notes of that coffee you will be exemplifying maybe some positive, but a lot of negative as well. We want to get the sweetness and that nice juicy acidity and great texture and body. We don't want them to have bitterness and ashiness, emptiness to the flavour. We don't want the sour or the chemically, which is what will those fines and all those like chaff those things may create, those unpleasant notes that actually make people go, "ehhh"

R: Yeah

T: We want to get rid of that. So, it's a necessary step in the right direction.

R: Awesome.

R: You said something about pouring. And I've done a survey, which I'll give to you as well. And it's basically just recapping what I've said quite a bit more in depth with all the questions. And most of the responses I've gotten so far is people struggle with their pour consistency. Do you think that there could be a tool that helps with that? I know, there's that like, web looking thing (LILYDRIP) that people use and like, spreads it out and drips more even. But from like a center pour perspective to a circular pour perspective, Would you want to have a device that could do circular pouring a lot more consistently? Or? Like, don't even bother just practice? Is there already one out there?

T: We have devices like this printed by Hario. That, sit on top. Let them really drip as you're saying. Yes, I guess they help. They're good for creating consistency. And they've been used on the world stage brewers cups. Of course, practice makes perfect.

R: Yeah

T: Like if you have a consistent method, that's good. As long as it's consistent. You can make any, any coffee, delicious, as long as you understand the physics of it. And you have a consistent method. You're only meant to really change one variable at a time. When you're brewing. You don't want to mix things up too much. You need to know why things are changing what you're doing right, what creates good stuff and what creates bad stuff. So, it's a bit of a, it's a bit of a science project when it comes to filter with all coffee. Yeah, there's a couple of good books out there.

Appendix

T: There's one called the physics of the coffee. That's really good. You need to understand how water interacts with the coffee in the bed of the filter, how that affects extraction. So, the amount of like the how you how aggressively you pour or how much pour on one side more than the other, you're creating unevenness, as long as it's consistently trying to create that flatbed, like I haven't agitated at all. But that's flat, there's no holes, you need to be able to get to the point where you're steady enough that you can pour without creating major unevenness of the extraction. So that's part of the practice. If you use something like this, you will get it right every time. So, I 100% recommend this. I get this one of my fiancée, she uses it. It's cheap as chips, it was 7 bucks. Like, and it fixes all the problems. Yeah, I say yes, please do it.

R: Yeah

T: But, if you want to, like dedicate like some extra time and attention, when you're pouring manually, you actually have a little bit more adjustability.

R: Yeah, you have got every direction.

T: So, for example as well, if you feel like you need to speed up the brew, you can speed up. Yeah, this one is controlled. So, there's less possibility. But more stability. So, you ride the line. You choose which variables you want to adjust. You can choose to adjust pouring, or you can choose to adjust grind size to work with this.

R: yeah.

T: To increase the pouring and increase the flowrate. So yeah, like, there's so many possibilities, it's really up to your understanding. And the more you research and delve into it, the more you practice, the more you taste, not just taste and brew, but record what you brew and write down what it actually is.

R: There is like an app like bean brewer? So anyway, it's something that my friend recommended that I use. He was the one that taught me filter, and he told me the whole change one variable at a time thing. Which is awesome to hear from another brewer. And that I'm not getting taught anything wrong. Awesome, well, that's like, more or less what I was.

T: YouTube as well is a great resource

R: Yeah. Lance Hendrick

T: Hoffman

R: Yeah, thanks for that. You helped out a lot.

T: Happy to give my two cents as well.

R: Definitely helped me out. So many different things that like, I'm really happy to hear about because this is, in my head this is what, I'm like, "I need to work on this", but from the responses I've gotten from different brewers, that are home brewers just don't care enough. And so, I was like doubting myself in the fact that maybe I'm wrong. But now to hear it.

T: I mean, I just got back from Melbourne, the Melbourne International Coffee Expo. Where 1000s and 1000s and 1000s of coffee people coming together for the same reason.

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R: yeah

T: All of them are by-products. So, I mean, you definitely need to have some kind of system. One good way is to keep in touch with the coffee community and understanding what's happening and innovation. Like for example, the four six method that was created Tetsu intensity for all of it is still popular because it works. It doesn't matter, you don't have to follow his specific pour pattern, you just have to create your like expression. And it's true that it's missing science like how you start the pour for the first 40% 70% 30-70 or 60, how you brew actually increase as a science.

R: Cool as, thank you for your time and your help on this project.

T: More than happy to.

Appendix

Appendix 3: O'neil Scovell Interview Transcript

R: Well, first question to open. Is how long have you been in the filter coffee industry?

O: So, filter coffee slash specialty coffee, but seven years, All up. then I got heavily into filter for the past three years. Yeah.

R: Yeah. Cool. And did you start earlier? Doing like espresso-based coffees?

O: Yeah. So, like, with Brisbane's history of making coffees pretty much started off making coffees, at the showground so where they hold the Ekka and stuff. I worked there for about three years. And because I wanted more shifts, I said, "Can I have more coffee shifts?" Because I wanted to be better at coffee. And yeah, that was when back in the days of not measuring anything. And pretty much just cracking on press it as hard as you can. Tap it a million times, and then steam your milk until it's really hot. And then that's perfect. Yeah, so that was back in the day. Yeah, so that's pretty much how I started with coffee.

R: Yeah, cool. When it comes to like, filter coffee, yep. Is there a certain type of grinder you prefer? Like, is it electric? Is it manual, Do you prefer flat-burr, or do you prefer conical?

O: It depends, like for a busy workplace, an automatic would be a lot better. So, like an EK, the ones that's commonly used by everybody, just because it's easy to clean, easy to use, and it's pretty straightforward.

R: And it's just single dose brewing only?

O: Yeah, single dose brewing. So technically, with filter coffee. If you haven't dove into freezing coffee capsules and containers, then you pretty much dose up to x amount of beans, and then you grind that up, and there'll be a single serve. And then once you go past the suggested after roast dates, then you can start freezing it to preserve the coffee a bit more. But yeah, technically, single dosing will be a lot better.

R: Any grinder works, just preferably a fast single dosing.

O: Yeah, for busy cafes, I'd recommend an automatic just because you don't really want to be hand grinding. When you have 20 filter coffees even five, yes takes a while, especially with single, like, hand grinders as well. They only allow a certain amount of grammage per container, I guess.

R: Yeah.

O: So a good example is Comandante you can probably fit 20 grams, 40 grams in there, comfortably any more than that. You can have a bit of like inconsistencies in the coffee beans just because it's just too much in then.

R: Yeah.

O: But if you're going to be brewing at home, or just single dosage, you can. You can pretty much just use a hand grinder, and it's a lot better. And also depends how tedious you want to be with your coffee.

R: And your preferable one is to Comandante.

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O: Yeah, I find that like just as a lot of great history behind it. And I sort of Lent into that a bit more committed to buying one when I borrowed a friend's Comandante. And he's had it since 2015. And it worked better than any other grinders. So that kind of just shows a lot and he hasn't had to do any service with it. So that's yeah

R: when you're grinding, like in a cafe setting your I assume you're using an EK do you find you create more static? Or do you end up doing like an RDT to remove the static

O: with filter your especially with the automatic grinders that you will have a lot more static. Some of them might have the antistatic clip, which is just a metal clip that stops you from pretty much sticking so much. But most of the time after you grind it off, you generally don't want to hit the clip, So with the EK there's a little lever on the side that you can hit and probably hear a lot of times but they hit that to try and get all the coffee grinds up. But when you're doing filter because you're grinding it's such a bigger particle sizing rather than espresso. It ends up actually catching on this you actually don't want to hit that so as soon as you grind the coffee out, just take your coffee grinds off and then hit the lever to get rid of all the chaff which is which gets stuck by the static.

R: inconsistencies of it. Yeah, find that happens with like your Comandante as well.

O: Yeah, Comandante depends on the container that you catch it in. So, it comes with two so there's a metal one (actually glass) and there's a plastic one. If you find that your coffee beans are more prone to sort of having a lot more chaff than usual then I would recommend using the, I think it's a polymer one, using that, then if not, you can just use to the glass one. But generally, what I would do is I'd have like a small whisk, whisk that there in the glass and sort of like blow into it. And then all the chaff pretty much just like flies out of it. But again, that creates a little bit more mess, but it works.

R: What's your thought with, like micro particles, because when you're grinding, obviously, you've got your set size, your chaff, and then there's always going to be micro particles in the inconsistency. Yeah, just a small percentage, do you? Like do you care that they're in there, or when you do your chaff removal you also looking to remove some of those micro particles.

O: It really depends. So, like in the coffee industry I'm pretty sure = we refer to them as coffee fines rather than microparticles. So, you want to, that's when you sort of see people using filters.

R: Sieves?

O: yes, sieves and filters to sort of like run the coffee through, that way you have a bit more consistency with everything. I just don't bother too much about it, just because it's such a

R: Small variable?

O: Yes, such a small variable, and you have a lot more other variables they have to deal with in creating a finer cup. The only thing with that one is obviously it'll sink to the bottom a lot more and it may cause clogging in your filter paper. And then again, this is where filter paper sizes come in. So, you have some filter papers where the netting in between them is a lot bigger than the other papers.

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R: Yeah

O: So like Hario, which is the one that everyone kind of uses. It's a good midpoint for everything. But I've had, I've used filter papers before where the particles are a lot bigger as well, in the sense that like if I grinded up the same size in the brewing times around say three, three minutes, this literally just coffee ran for like 210 (2:10min)

R: Okay

O: and I didn't change anything. So, everything else stayed the same. The only thing that I changed was the filter paper. So again, that's where you sort of have to play around so different coffees and different roasters in the way they're roasted coffee will affect the way the coffee reacts depending on the different types of filter papers.

R: Okay. Do you think with like certain roasters, there's a quality to how they roast? Like, I'm aware that some roasters are a bit tedious, not tedious, they're a bit reckless and the chaff removal during like first crack and second crack isn't as good as other places that do like single dose roasting, like single bag roasting and all that. Do you find it's the same?

O: It varies like I've a lot of roasters are pretty tedious when it comes to the way they roast coffee. But again, you can sort of taste if they aren't serious with their craft, I guess, because most of the roasters will be really careful with the way they roast coffee. It also depends on the coffee beans and the way they sought them as well. Chaff, normally is quite minimal when it comes to roasting. It normally happens once you break the coffee beans apart because again, when he arrives in the roastery, it's all green beans. Then yeah, it just depends on each roaster is what I found with when it comes to that.

R: yeah

O: Some roasters are a lot more tedious and others like a good example. This used to be a cafe in Woolloongabba called Light Coffee. And the two owners that were there. They were both pretty much the roasters there and she would literally lay out all of the green beans on the on the floor and would pick out any bean that she didn't like.

R: Any quackers any

O: So, imagining, so any stones like that she would hand segregate all of them any beans that look a bit differently would literally get rid of it. So again, that's the type of tediousness that each roaster has that again thinking like say you have like 10 kilograms of beans, and it's all green beans. And then you lay that out onto the floor and you're going through each one. And if one has a spec, she wasn't happy with that she would take it off straightaway.

R: Crazy.

O: As to others would sort of like have machines that do that for them. But then again, it's by machines. So sometimes they're quite good. Others they're not too good. But so yeah, it really depends like yeah, does that she's probably like one of the most tedious processes that I've seen work so far.

R: Yeah, cool, over the last however many years you've done these seven years. Do you still enjoy the process?

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O: Yeah, I still brew coffee at home. Still quite tedious when I'm at home and I'm making coffee. Yeah, this like sort of like it's like a zen part of the whole thing, I guess. Because you know, everybody has their own little thing that they do so people can paint canvases and that's like the therapeutic and for me that's brewing coffee at home.

R: Yeah.

O: It's just like, having my music on. I just have me, and my partner and I just make coffee for the both of us. And yeah, I'll still do experiments at home on different types of sorts of like temperatures, waters, filter papers, types of filter cones, and so many, so many more other things. But yeah, I still enjoy it, it's always going to be a part and it's always good when you tasted coffee that you brew and, you can sort of tell if it's hasn't been extracted well, or if I did something wrong while I was brewing and just being a lot more tedious with it, what again comes with experience. But yeah, it's a lot of fun.

R: And you also make it in a cafe setting too.

O: Yeah, so yeah, I used to. But now I'm sort of just doing the work in the climbing gym. But obviously, we just don't really just use it use espresso, but when I was back in the other spot, yeah, I used to brew filter there, people would order them and obviously try and bring up the quality and showcase the beans that we're using. So really communicating with the customers on where the beans from and the characteristics and why we brewed it a certain way and why this recipe works and so on like that. That's pretty good.

R: Do you find like, there are some caveats when you're making filter coffee, even like at home or back when you're in a cafe? Do you think the workflow could have been more efficient?

O: Yeah, there's always gonna be room for improvement. Because it again, it varies some, like, I think the busiest one I had was I had 10, coffee, 10 orders of filter coffee all at once, there was 10 people in the table. With that, again, obviously comes with how many scales we've got, and how many servers, how many cups and all that jazz, because if you want to serve filter coffee in a certain way, you have to serve it in a certain carafe. You can't just serve it in, say ceramic, because again ceramic, if it hasn't been sitting up on the coffee machine, it will cool down really quickly. But yeah, it's sort of like just doing them two to three at a time three are probably max it out. Because again, it depends on how many kettles again, you have. But normally people don't order filter coffee anyway know what to expect, and how long it may take. But then again, you just communicate with them say, hey, it's gonna take about this much time for each coffee and so on and so on. And yeah, pretty much people order filter coffee pretty understanding.

R: Yeah, yeah, that's good. Do you reckon there's like a product that's required to aid and workflow? Could that be something that can improve removing chaff in a more efficient way, like pre grinding or post grinding your beans? Could there be something that could be done for that? Or is there like another thing for pouring consistency that's required? Because that's something I keep seeing is a lot of people struggle with pouring consistency. So like, what do you think about that?

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O: Yeah, like if you can get if you can remove most of the chaff after grinding it, because that's normally when you obviously you break the coffee apart. That'll be a lot better because again, chaff doesn't really taste like anything. Or it just adds like a little bit of like, bitterness in the coffee.

R: Paperyness.

O: Yes. So yeah, if you can get anything that removes stuff that you don't need, then that's obviously a bonus point. Yeah. And in terms of just brewing, in terms of brewing anything that you can have like little tools that you have placed on top of your, on top of your brewing cones that you can sort of place there's one I forgot the name.

R: Paragon?

O: No, not Paragon, Paragon normally is pretty much like trying to capture the volatile compounds, in terms of trying to keep more flavours in so you can get the most out of your coffee cup. But there's is like a shower screen that you put above your coffee. And then you pretty much pour water, and then it just acts like a shower screen. So again, there's the water, even water distribution. But then again, it's

R: oh the, \$7 thing.

O: I think so yeah.

R: And that will always give like a consistent method. But the issue is, it's just a slow drip than a circular pour.

O: Yeah, yeah. So again, like circular pouring is more about agitation of the coffee, trying to make sure that everything gets saturated. The shower screen sort of method is if you sort of pack your coffee into much into your cone. And again, you have a bit more of a denser bottom, which in turn might not help to help the water go through as quickly. So again, anything that sort of doesn't disrupt the flow of the water. And as long as you can make sure you get all of the coffee grinds saturated, then you're winning.

R: Yeah. So, with the whole pour, center pour, circular pour, you'd think it's more based on practice and skill then it really is relying on a tool.

O: Yeah, yeah, because you can, again, like with the center pour or the circular pour, you can either pour it quite slow, or quite fast, but then you have to keep the same pace the whole time, or have like an aggressive pace to start and then slow it down.

R: Like with the tool, you can't adjust these variables

O: Yeah, it's like the same flow throughout the whole thing, which again, may not be a bad thing, depending on the coffee that you're using. But yeah, I just found that I like doing the circle pour a lot better because I have a bit more control. But then again, there's a lot more room for error on that one as well.

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R: Yeah. Do you reckon the coffee market would need like a chaff removal is that something that home brewers and like Cafe brewers would want.

O: Yeah, yeah, I like anything that can, again, anything that can get rid of, or eliminate anything that you don't need while you're brewing will always help. Chaff removal is probably one of the big ones. Again, the only thing that I found that works is other a filter, which the different mesh spacing, think it's called Krave And obviously, they take an X amount of money that you have to spend. Or anything that has like that causes static helps get rid of chaff as well. But then again, you some of your coffee grinds might actually get stuck in there as well. So just that's the type of thing you just have to sort of account for the chaff removal. So instead of 20 grams, you might have like, say a gram of chaff, then you're only left with 19 grams, you then have to dose 21 grams to account for that. It's one of those things, but again, depends on how tedious you are with your coffee and what you're really trying to get out of your beans and how to get the best tasting cup. Really where you end up, but I found that a lot of baristas, and filter brewers in general want to try and be as tedious as possible, so, yeah

R; Cool as. Well, thanks for that, man. I think that's all the questions I've got.

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Appendix 4: Eddie Cho Interview Transcript

R: Alright, cool as, so how long have you been in the coffee industry for?

E: Around seven years? Yeah.

R: And then it was commercial, then specialty,

E: commercial and specialty. I think that is the usual process, you get into commercial and then get to know coffee and then jump into specialty.

R: Do you enjoy the process of filter?

E: Honestly, at the beginning, I didn't. But like once you get into the specialty coffee more and more you like getting into it, like enjoying more and more. Yeah, definitely.

R: Yeah, is there like anything in filter coffee that you feel needs to be improved? Like the process, the workflow? Like pouring consistency, I know there's tools out there for that. Anything like that?

E: So, Pourover industry hasn't like actually changed a lot and the actual fundamentals is still there. Fundamentals like how you brew, like brew ratio and temperature, like, basically, all the techniques are same. But like nowadays, they tend to tend to go to more like automatic, using more of machines, or like, because like, when people brewing it can be inconsistent. Yeah, but for the cafe owners, consistency is like the key to make better coffee always.

R: So, a machine can just replicate the same processes every single time. When you make a filter coffee, when you use a grinder, do you prefer a hand grinder? Like a manual one or an electric? And is that flat-burr or conical?

E: Definitely flat burr, because when we brew filter coffee, we want to make that flavour really clear. So, it tends to make the flavour clear.

R: And that's a manual or electric

E: It can be manual. It can be electrical. Yeah, it doesn't really matter. But we usually use the manual one.

R: The Comandante?

E: Yeah, but Comandante is not flat burr, I know. Yeah, so we think that we will change to get another one. A manual flat burr is quite expensive. So, I'm just like waiting a little bit, yeah.

R: Do you find when you're grinding, specifically for filter? Do you run into a lot of static? Like, do you end up having to do like an RDT method to reduce the static or do you want to keep the static there just to capture like loose particles or chaff?

E: Electrical usually has the static a lot. Like personally. Personally, I have a fellow one for my home.

R: The fellow Ode? Is that the gen one or gen two?

E: Gen one actually, when it came out, I just bought it right away because at home when I get busier, I just don't have time to grind. So, that's really quick. But it's always lost like point five gram or one gram always losing it. Yeah

R: And that is just to static alone?

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E: Yeah.

R: And do you prefer that now that you've gotten used to the system? Like does it aid in having less chaff in your coffee

E: Chaff? Yeah, less chaff but in terms of grinder, I don't know how it can remove the chaff.

R: Yeah, it's more, I've figured out when I use say like a niche zero is what we use for our espresso but sometimes used to filter the static from that causes the chaff to stick to the grinder.

E: Chaff to stick to the grinder. Yeah, yeah

R: I don't actually end up getting much of the chaff in my grinds unless I tap it.

E: What's the name again?

R: The niche zero. It's like

E: niche

R: Niche yeah, N I C H E.

E: Zero.

R: Yeah, so I'm pretty sure it's a flat burr grinder, really nice.

E: I haven't used this one. But yeah, if it can hold some chaff. That would be really good. quite pricey.

R: It nice though, what are your thoughts on my chaff and silverskin?

E: If we can get rid of it. Easy way is 100%

R: 100%?

E: Yes. 100%. We're gonna use it. Because in terms of like putting in all the efforts. If we put another step to do it, then it has to be very efficient. Yeah.

R: And you wouldn't want it to be like reliant on electronics at all. You'd want it to be.

E: Yeah

R: by hands and like, just physics or something. like to do it.

E: You mean like manually? We, do it?

R: Yeah, manual, you wouldn't want an electric thing because if there are caveats to the electrical it'll just slow you down.

E: I think it's about like the same for all the peoples. Yeah. For example, a watch, nowadays all wearing like Apple Watches to work, but still there are people who always they want to go analog.

R: Yeah.

E: It is depending on their skills, usually very high skilled barista people they tend to do manual one. Yeah, yeah, but why we need electrical pour-over system, because all of us tend to have a different kind of style of how to brew it. So, for business purpose when we want to give like contestants like same flavour to the customer. Then if the brewing skills are all different depending on the bar size. It can be very hard. So, I mean, like for a very high skilled barista they want to do their own. Yeah, they tend to go manual more.

R: Yeah, do you tend to find at home when you're making a filter, do you remove the chaff as well? Or is it only at work?

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E: Depending on my mood, if I wanna brew like usual, like if you can watch just, you know, just a normal one. I just don't care. But if I brew, like really expensive, like Geisha or some like, cedar or whatever, is something really high-quality coffee, I do, because I know that will affect the flavour.

R: Yeah, and like you just said it affects the flavour. What are your thoughts on the flavour, how badly does it skew the overall flavour of the coffee?

E: So, chaff, okay, in terms of flavour, like chaff can be a little bit minor site, but that will impact because like coffee, when you brew is not only one thing is the main factor. But if I just put the numbers which one's more important. First one is first one's grind size. And the second one is the temperature. And the third one is the how many brews, like the division how many pours you're doing and the forth can be chaff or how you brew fast. Yeah, this is not a major factor for chaff usually can affect the timing.

R: Like drawdowns?

E: Drawdown timing, yeah, because you can slow down of course. Chaff will cause the coffee extraction rate to be a little lower so flavour wise doesn't come out properly. Yeah, that's why we are tasting. When you get rid of chaff and not getting chaff. But this minor is not major.

R: Yeah, but it's still like an area that should be improved?

E: Yeah, it should be improved.

R: When you bother to remove it, do you like just to blow it? Just blow it out or use your fancy blower?

E: Blower is not efficient, if I tried to blow like 10 times, maybe I can get rid of like 10% or 15% of chaff. Because if I try to blow, I will also get rid of all the coffee at the same time as blowing chaff too. Yeah.

R: So, what would your method be then to remove it? If that's not efficient enough?

E: If you want to make it, that was actually what I was thinking to make, but actually if you take, I'm fine with it. So, what how they call this one? (Points to mesh colander)

R: colander or sieve?

E: Sieve is like a strainer thing? Yeah, so make the exact size, I think you can make, you can find out the size of chaff, because usually chaff size is much bigger.

R: Yeah, that's one of my first questions, which was do you have like an ideal range for the microns of like, grounds to how big the chaff would be?

E: The chaff and the filter range, chaff is much bigger. And then this is actually the silverskin Yeah.

R: So, if you could sieve through the grounds and remain the chaff.

E: Yeah, I think so. So, for example, you have a like the smaller version, for example, the smaller version. So, I don't know like the technical like mechanism things. But if you put the screen here and then put coffee on top and then shake this way. The only one got one side to go to sharpen and then the other side going to go coffee. Yeah, if that you can kind of make integrate with comandante the bottom one. In comandante.

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R: Oh, yeah, the dosing cup.

E: yeah, the dosing cup if you like very simple way. Try to put not too much money into this. So, I mean, like usually they have a plastic one too, right? Yeah. So, this one actually the length doesn't really matter. All right, yeah. Yeah. So, if you make it, this is the screen grinding, come down. And you just do this. Right? Yeah. And then you have a one more. So, all the coffee will be strained in the bottom. And then chaff will be on top.

R: And you can unscrew this one?

E: And then just unscrew here, so you can use it right away, you know what I'm saying?

R: Yeah.

E: So yeah. If you can make that all the washed coffee. And I mean, like, really if you make this one in itself, it can be good money. Then yeah.

R: Cool.

E: Yeah, just a screen there when you grind it, and then the grind is actually going to go through anyway.

R: Yeah, but the shaking will add to it anyway.

E: Yeah. So just make sure like, all the coffee grounds on top will need to go down as well.

R: Have you used the Kruve?

E: Kruve? Yes

R: Is it the similar process?

E: Similar process? Yeah, but Kruve has like stupid microns. It's for the coffee grounds.

R: Like espresso?

E: Yeah, so what they do, like, probably, you know that right? Like, although they try to make exactly same particle size.

R: To keep the consistency the same.

E: Yeah, because when you brew it, the particles volume if the volume is big, and the volume is small, and then they're mixing around. Then of course, when you go to do the same process of extraction, this one's going to melt. Big problem. So, is this one is going to be over brewed, like over extracted, this is one will be under. So that's why people try to use that.

R: Alright, that makes sense, damn, so many ideas, ideas. Cool. Well, I don't really have any other questions. Do you think like, there is a reason for this idea to be done? Like, would it be worth looking into anyway?

E: This idea is actually a really good idea. Because coffee industry what I see is coffee industry, they try to always look for where they can improve. But it's about it's only about the direction. Yeah. So, you want to improve the grinders? Like they always looking at how they got to put the burrs right.

R: Like the new C60 that just got announced?

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E: Yeah, yeah. But because they're, they're a big company, right? They try to find out where the money is, but chaff is like for a big company to make, it's probably they will not make that much profit. But like if the individual small company makes it or like for coffee celebrities or someone who's won like competition. If they make it, they can sell lots.

R: Would you want it to apply to just the Comandante or would you want it to be like in the 1ZPresso? Or just everything?

E: First one is following the big brands. Yeah, so Comandante and then see what's going on. And then you can make sense, because if that is really working well, "oh my god, like whenever I use washed coffee, it's just so easy." Like the chaff that thing at home if you want to remove chaff, you can't do it. Because it's going to make like your house so much messy.

R: Yeah, I found that sink is messy. The ground gets messy. The bench gets messy.

E: Yeah, so this is good idea. So, start with Comandante. And then actually if people are really crazy about all these products being really good. They'll ask.

R: Yeah, and then you can progress to say like the 1ZPresso and all the other new.

E: I mean, even for example, like dosing cup, right. Like make it some dosing cup whatever hand grinders or like electrical grinders. You just make it.

R: And, then it can adapt.

E: Yeah, this is the separate thing, and this is dosing cup plus, the carry function of the silverskin.

R: Do you find much success in the whole shaking to remove it, does it remove?

E: I haven't tried.

R: Haven't tried?

E: I haven't trained, for example this particle size I don't know, but let's try with this washed coffee over here.

R: I was going to say for me to test this how many clicks would you want the Comandante to be?

E: Like it has to be from I'll say seven and the maximum 40, so this is one our trial rates usually people seem to go around like 20

R: Yeah, I'm roughly in the 20s

E: Yeah, but if that's how your method is, like for example, if we did two pours very fast, two pour division as a very fast pour, times go under two minutes sometimes we do like

R: yeah

E: when you make the prototype, and can you bring in?

R: Yeah, well I'm just QUT.

E: Oh, that's good.

R: I actually want to record this too. So, we have like a

E: oh, okay, so I'll just do what I'm using brew, this is washed coffee, you can video it. So, I put 20, 20.1g in there.

R: And that's to account for 0.1 gram being just chaff.

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E: Yeah. Yeah, this is 30 clicks, when you look at the coffee you can see chaff right away.

R: Yeah, yeah, it's just on the inside.

E: So, this kind of washed coffee, just make sure its cleaned and ready. I haven't tried it yet, so it's a good test. I don't know if 30 clicks is too coarse for this.

R: What I can do is I can 3d model with different micron sizes and just 3d print sieves. Like I've got a 3d printer and I've got probably a kilo of beans that I don't use from when I was away sick so I can just use that to test

E: Yeah, hopefully go here, hmm this particle is too big, we can try with like 20 clicks maybe?

R: Yeah, so it's just finding the good medium.

E: Yeah, because you can see all the chaff here, so this mesh is too big.

R: You can definitely integrate it with different screen sizes to adapt for whatever clicks you do. So instead of just making it with one single like filter, you can have different filters for different ranges. So, from six clicks to 12 clicks, and then from 13 clicks to 18 clicks, just to adapt for it.

E: I think this was we'll work once we get the right size. You know, for example, when you look at the glasses, yeah. So they just feel bad. Right? I think you can make the mesh, really big one, big mesh one, and if you put on top is going to be changed half-size. You know what I'm saying? Because, yeah, I don't know how that works. Because when the mesh, like, if like, it was easy to mesh, the size, the particle size like this, and then put one more mesh is going to be, is it halves it. Yeah, it is, and then have this, you know what I'm saying? So, you can put 12345, whatever. And you can just check it, that can work well for trying to find the very fine grinds. If they want to use for fine grinds setting you can use them to also if they can chaff you can use that as well. So, if you look at that, like there's no big chaff.

R: Yeah, what a difference.

E: So, this big chaff like, size is much bigger, so I think it is easier.

R: So, if we look into halving, the method of halving, so start with particle size. Then there's different.

E: I don't know how that works. But that is one, I think.

R: I know what you mean, and I can picture it in my head. Just a bar, but obviously, it would span over a certain amount, which will then half the size. And then you go again, going this way. And then that will pass.

E: So, this one shouldn't work with the rounds. Right? Because rounds going to be like a spin. It just means Yeah.

R: I can see what you mean. And I can picture it as like, say you've got it. Like this is your screen. You've got your initial one, which is got like, yeah.

E: a little bit bigger. Yeah.

R: Yeah, main squares. And then your next screen will be the same size screen. And I reckon you'd have a notch in it. And then you'd put in a direction, so it can stay aligned every single time in a direction that. Yeah, I know. Just be bars. And that's it.

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E: And you just print it off as bars. And then for your next screen. He's doing the same thing. You'd have another notch going in, say this direction. Yeah, to line it up. Yeah. And then you'd go. You'd go this way. And then we'll just line up again. E: I think that'll be perfect.

R: And then you'd have to do it for however many screens, however many times to constantly decrease it incrementally. Yeah, but with the whole having like a notch. A little notch spot for it, that can like account for alignment. So, say this is the notch in each tool. Anytime you put it in, there's always the one way which means that this should line up. Yeah, every single time so

E: so, it doesn't spin inside. Like what is what is the other one, other screen, You show me that? I forgot the name.

R: Colander, Kruve?

E: Kruve! what is the small size? Do you know each particle hole shape? Okay.

R: Yeah, I can get it up for you.

E: or some idea how the shapes getting smaller, it shouldn't be just round shape

R: It's in microns

E: Just have a look on how they did it. And now you can apply because they probably have lots of research about particle. Was round. Yeah.

R: And these are in microns. So, it's 200 microns, all the way up to 1600 microns are just circles. But you could start initially as circle rounds that are big. And then you can put in the bars to half the distance. Because obviously, like, a single grind, for example, like that isn't round. So even if it's like a hemisphere, and then a half hemisphere, it surely still, and it will still be an accurate micron size. So, say it's 1600. And you have it, it'll change it to 800 half it again, we'll change that to 400 half it again 200.

E: Yeah, these will not be as accurate as this but still the main function of this one is to get rid of chaff. And also, people want to use for this one, and still can use it to do so it's like full functioning like two different purposes in one life.

R: Yeah, that could work, it's a method. I've had a few ideas on what I should do, and I was looking at. I was looking at like, a separator similar to like a Dyson.

E: Nah, that's too much money, too much money.

R: Air goes in and just does it and I'm like, Whoa, that's confusing. I was thinking of sifting with oscillation. So, vibration. It's like, oh, that's bad. And then I was thinking of like, centripetal force where you know, the salad spinners to remove, like water from salad. Yeah, have that with sieves on it, then go around it, put in your beans, and then press down. Yeah, and then the force itself just forces the stuff. And then down below, we'll have the actual grounds. And that's like my main few ideas. And then I was like, kind of didn't know where I wanted to lead. And then I came across like winnowing, which is what they use in like, flour, wheat. And that's basically where you drop in. You're, like, wheat, a fan blows it, and then it separates into whatever you're after.

E: But um, the thing is, people don't want to want to spend as part of a market.

R: Oh, for sure.

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E: You'll see when you make it if you sell 40 bucks' people will buy.

R: Yeah, but if it's like, 120, that's too much to outweigh what it's worth, yeah. Which is why I've been looking into it. And then I was like, what if I just look at a bingo ball machine. Because they already have sieves. Just imagine if they're finer, finer sieves, and you have a trapdoor for grounds, and you just roll it and then they come out separated.

E: But this is like you can't put this with something. It has to be separated.

R: Oh, yeah. It would have to be.

E: Because when you make this one,

R: You'd want it to adapt to keep the workflow consistent the whole way through.

E: So, when you put this one here, you can make all the things you can use a Comandante, Comandante to use this one as a bottom thing, the bottom like holder.

R: Yeah.

E: And also, the chaff and the consistency. It's everything, like three things in the one. Yeah. You know, like the flow of how we make coffee.

R: Yeah.

E: And the electrical one, you can just put, like, for example, I will show you that San Remo, San Remo makes this one (Grinder), so this is espresso and is also filter, I can't see it, I think it is Moccamaster or something.

R: Yeah.

E: So, they can go all the way to the filter version (Grind Settings). And this is for actually filter section (Dosing Cup). So, you put it there, and they're just grind it, it will all go there. So, this kind of holder, if you can make it as a shake it, close it, check it and they use it. Yeah, they can be like a.

R: Like, so basically two variations, one specific for manual grinders and the other specific for electric, right?

E: Because electric grinders always use portafilter, so that shape should be the same, so find something to adapt the dosing cup, so make this, screen, one for electric and one for Comandante.

R: That makes sense.

E: Don't use any electronical stuff no charger.

R: Just pure shaking

E: it's very simple but people want it, but from a business perspective and from a barista if the goal was different to what you were after then the solution may be different.

R: Thanks heaps, I think that is all my questions.

E: No problem.

Appendix

Appendix 5: Observation Breakdown and Analysis

STEP 1

Filter is placed in brewer.



Water rinses the filter & brewer
 ↳ WHY?
 - Gets rid of any papery filter flavours
 - Removes the chance for the filter to absorb coffee oils.



After filter paper fully saturated it is emptied

Ensures hot water to make sure filter is fully saturated

Most of the skills making filter coffee occur in a cyclic motion.
 ↳ This means consistency
 ↳ Saturation
 ↳ Uses the full potential.

Filters



Cone shape

- Main version that is almost all V60/Cone

Filter Density

- Different filter paper for brewing → smaller larger



Flat bottom

- Conus in a variety of style; ruffled (above) or conical
 - dependent on style of brewer
 - suited to cone brewers with flat bottom

has a specific size micron gaps
 micron = slower drawdown
 micron = faster drawdown



Circle

- Basic but can be folded to suit specific brewer
 - tends out there to aid in folding.

Frame 2

STEP 2.

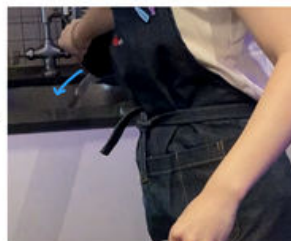
WATER IN KETTLE.



is rinsed with a small amount of water
 ↳ get rid of any impure or old sitting water.

KEY POINTS

- Dependent on coffee, ground size & brew ratio will play a factor in the brew temperature
- Water hardness is important, 50mg is okay but always aim for 50mg - 80mg



Poured out into sink
 ↳ move of a flush to be honest



- Water is refilled to more than the required level
 Set between 90-96°C

"Often with filter coffee, people prefer softer water (around 100 ppm) with alkaline levels between 30 and 80," he explains. "When making espresso, it can be good to use more alkaline water as it helps to balance the acidity of the more concentrated coffee." 19 Apr 2022

↳ Alkaline levels can be changed using a variety of chemicals.

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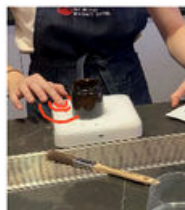
STEP 3.

MEASURE OUT COFFEE & GRIND



Air blower
Dosing cup

precise scale made for coffee



- Scale is zeroed out



15g dose of specialty coffee beans

- Dose the cup with desired amount, dependent on brew ratio

- Dosing cup from hand grinder has to be cleaned from any prior grounds using an air blower
- small particles fly out in the air & on work area

There are many different types of scales, all different prices & features.

ACAIA & NORMCORE are considered best

STEP 4



→ set to 28 clicks
↓
A good mid-ground for dialling in some new beans



Changes the grindsize on manual grinders

- Will set to a medium/coarse grind size for filter

- For this grinder it is the Comandante C40 MK3 → Used by almost all filter coffee brewers

↳ Numerous style of grinders → consistency is the aim

Beans will get transferred to top of grinder after being set

→ will be grinded until all beans are ground & crank spins freely.

Key things

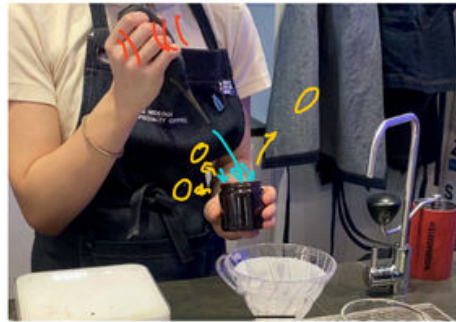
- Order of operation SET → TRANSFER → GRIND
- Every step is done for a reason

Appendix

Step 4, 5 Chaff Removal ↓



• Particles of chaff flying everywhere



A key step when making filter is chaff (co) removal
 ↳ adds a papery, grass-like flavour to the brew which doesn't taste good.

Barista uses air blower to remove the chaff

↳ Issues → goes everywhere
 ↳ removes some important coffee fines which contain flavour

↳ Benefits → removes papery flavour

• You can grind coarse & then blow & re-grind.

Frame 8

STEP 5



Tare button

Tare the scale after placing dripper & server on to = zero



Transfer grinds over & double check weight & double grinds



Re-tare to zero after weight is correct

Key Points

- Taring the weight to double check grinder retention & amount of chaff + weight removed
- Kettle is prepped & ready at correct temp to start the pour once the scale is at zero → timer will start as soon as pouring starts

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Step 7



- After a certain brew ratio weight of time has been hit, the server gets transferred after the last few drip down

Goal - time & weight
 twist to incorporate flavours

Tastes the end brew drips to determine how the brew went.

Key Points

- Dripper transferred to make sure the remainder drips don't affect the final result

Swirling & smelling can explain a lot about the brew

Letting the coffee sit develops the flavours more.

Frame 11

Step 8



After brew is complete re-blows drying cup to remove any volatile grounds when doing the next brew

Coffee has sat for a minute or so to develop the flavours & prepping for next brew

Key Points

- Always cleaning
- flavour can go from acidic to sweet after a few minutes sitting.