Lucien Tirou

Plato

Dishware for visually-impaired people

LUNDS UNIVERSITET

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Plato Dishware for visually impaired people.

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Abstract

This Master Thesis aims to explore the design of kitchenware products for visually impaired people. With an estimated 285 million people worldwide experiencing visual impairments, the design of kitchenware products has traditionally focused on aesthetics and functionality for able-bodied individuals, often excluding people with disabilities. Through a mixed-methods approach that includes literature review, interviews, material testing, and prototyping, this research will identify the challenges faced by visually impaired individuals preparing and consuming food, develop design principles and strategies to address these challenges, and design and prototype kitchenware products that improve accessibility and usability. The results of this research will contribute to the development of inclusive design practices for kitchenware products, especially tableware, improving the quality of life and independence of visually impaired individuals in the kitchen and at the table.

Acknowledgements

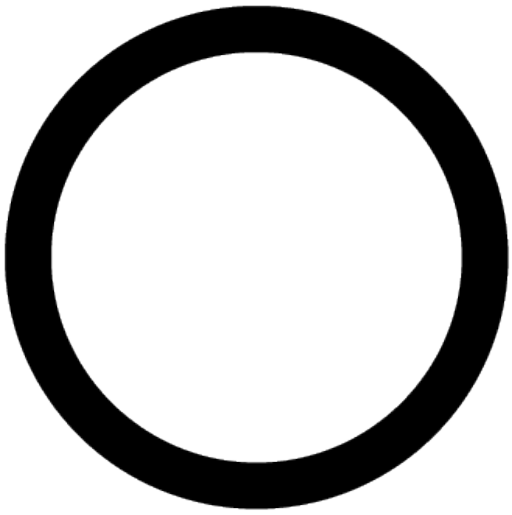
I would like to take this opportunity to express my sincere gratitude to all my past and present tutors, starting in 2018 at ENSAV La Cambre to here, at Lund University. Their guidance, support, and knowledge have been instrumental in shaping me into the product designer I became. They have challenged and inspired me to think critically, push boundaries, and explore new design possibilities. Special thanks to Dr. Elin Orlander and senior lecturer Olof Kolte for the constructive feedback given throughout this project.

I am also grateful to my surroundings, including my family and close friends, for their support and encouragement throughout my studying journey. Their belief in me and my abilities has been a driving force behind my motivation.

Coming to the end of my academic journey and preparing to enter the industry, I am excited about the new challenges and opportunities that lie ahead. While I imagine that the transition from academic life to professional life will be challenging, I am eager to embark on this new adventure and discover even more wisdom in the field of Industrial design.

I look forward to applying my creativity, passion, and knowledge to design products that not only solve real-world problems but also make a positive impact on people's lives.

Introduction



Through this Master thesis, I tend to understand, and upgrade the bond between the user and the product, also called attachment design. Of course, every scenario or context has its own level of attachment. That is the specific reason why I think working with impaired people having to live with ordinary designs throughout the day is the most relevant topic to work on. How do they adapt and deal with the situation in which their impairments become a disability? The goal here is to identify simple tasks that people with different impairments struggle with, through field research, and observation. Later in the process, the idea is to come up with a physical solution that makes these reviewed products intuitive and user-friendly enough for everyone.

Motivation

I entered the last semester of my education without a clear idea of what I wanted to work on for my degree project. I knew that I wanted to choose a topic that would not only challenge me but also allow me to grow both personally and professionally. It was essential for me to work on something that aligned with my interests and values.
Deciding to work on a project involving visually impaired people in the kitchen was driven by my interest in ceramics and the process of cooking and eating. I wanted to explore how I could use my skills as a designer to create inclusive design solutions that improve the quality of life and independence of individuals with disabilities.
Cooking is an integral part of daily life, and the ability to prepare meals independently is crucial for maintaining one's physical and mental well-being. However, visually impaired individuals often face significant challenges in the kitchen, from measuring ingredients to using sharp knives. This is where I see an opportunity to make a difference through my work.
By designing kitchen utensils and tools that are accessible and easy to use for both non- and visually-impaired individuals, I believe we can promote independence and social inclusion. Working on this project will not only allow me to deepen my knowledge of ceramics and inclusive design, but it will also give me the chance to contribute to a more equitable and accessible society.

Target Group & Brief

With an estimated 285 million people worldwide experiencing visual impairments (World Health Organization 2021), the design of kitchenware products has traditionally focused on aesthetics and functionality for able-bodied individuals, often excluding people with disabilities.
The main interest of this research is to identify the various objects people with visual impairments use daily, related to the kitchen area, food, and its consumption process. get to understand what makes the use of that object optimal, and identify its negative aspects of it. That exploration would lead to new concept proposals and alternatives improving the user's experience and their attachment to that object. The concept should first and foremost be optimized for visual impairment, but usable and enjoyable for non-hindered people.

Propose a solution for preparing food, eating food, and cleaning the dishes. All this while keeping the sense of tactility as important as before by enhancing its effectiveness. The storage and accessibility of those items have to be carefully thought out. The overall appearance should be as inclusive as usual dishware can be, avoiding stigmas.

Timeline

12/2022

IDEN35: Research methodology in Design course.

Found subject.

01/2023

Master Degree project START.

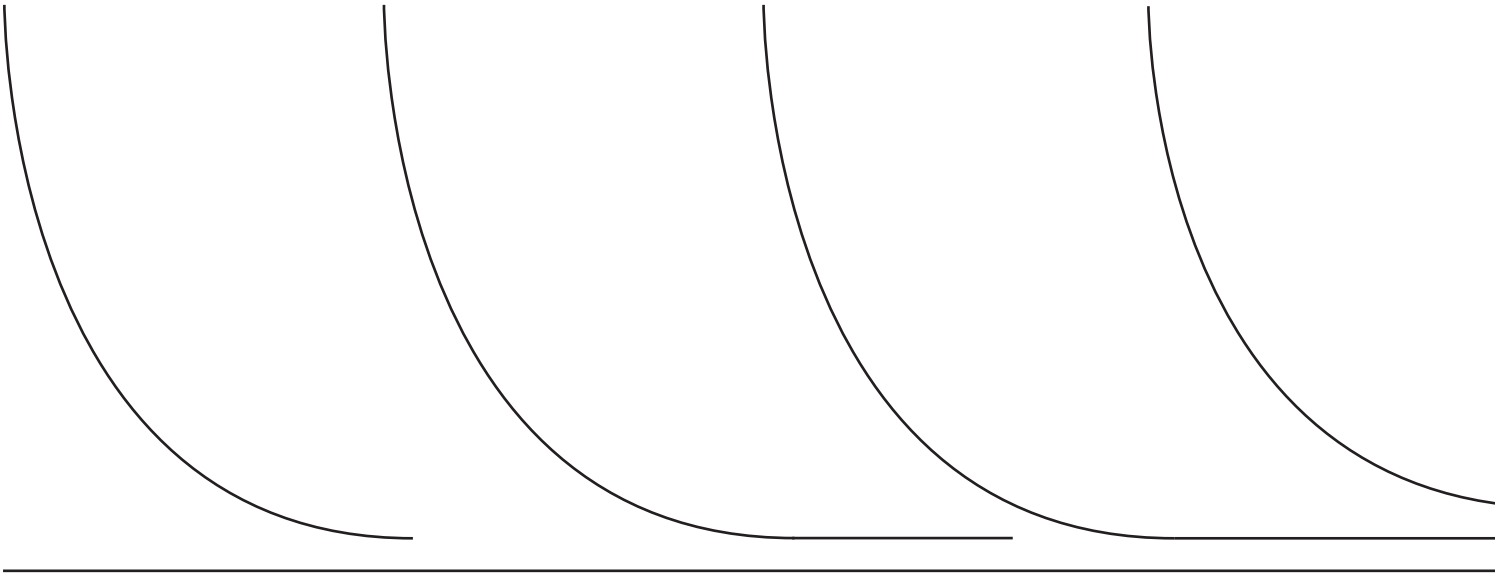
Motivation/Idea/ Brief/Problem.

02/2023

Analysis, research and Ideation.

03/2023

Experimentation and material exploration.



04/2023

Modelling and finalization Design.

05/2023

Production Final prototypes.

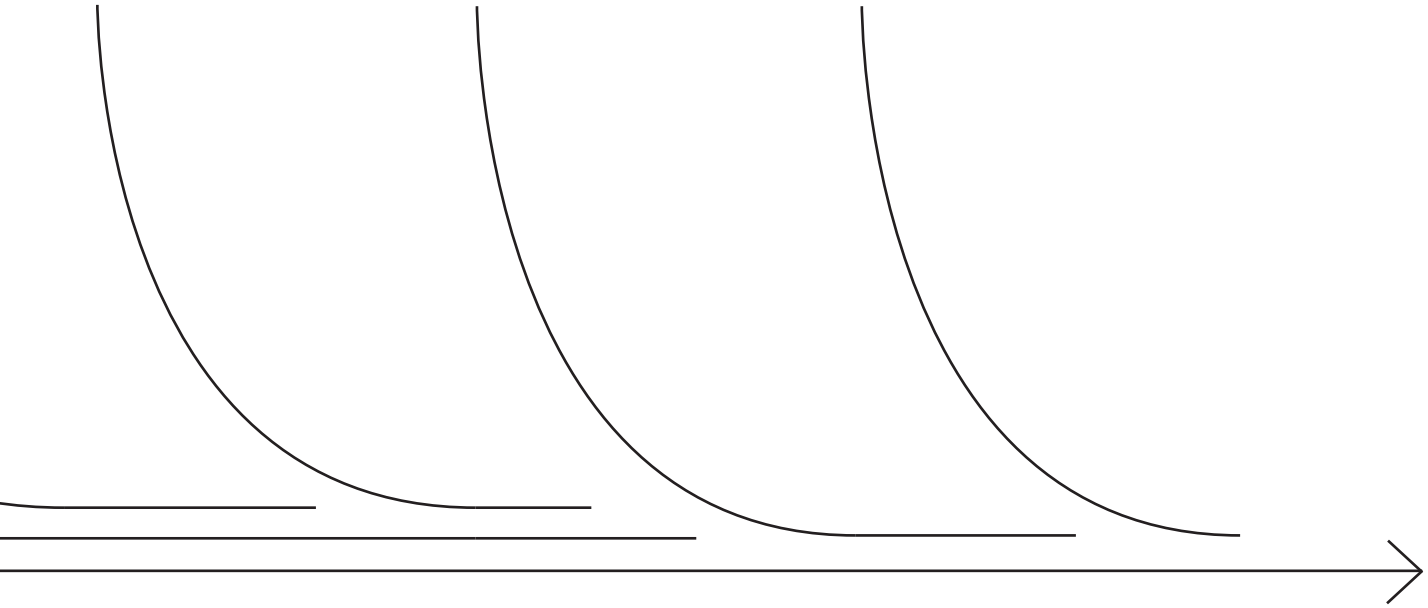
Master degree project presentation and start documentation.

06/2023

Master Degree project show and exhibition.

07/2023

Master Degree project Final documentation.



Research

This research entails an investigation into inclusive design solutions for visually impaired individuals within the realm of kitchenware. It involves thorough literature analysis, empathetic interviews and experimentation with the visually impaired, and the creation of ceramic prototypes tailored to their needs. This comprehensive approach equips me with the ability to translate theoretical knowledge into practical, impactful solutions. As I transition to the industry, this research cultivates a blend of creativity, empathy, and innovation essential in Industrial Design, shaping my capacity to craft designs that not only captivate aesthetically but also enhance the quality of life and autonomy for individuals with disabilities.

NYC Restaurant Photography Gallery – Moriah Sawtelle

Benefits of cooking

Overall, cooking is a valuable life skill that offers numerous benefits for physical, mental, and social well-being. Whether you're a beginner or an experienced cook, there are plenty of reasons to spend time in the kitchen and develop your culinary skills.
Cooking also allows you to save money and reduce food waste. By cooking your meals at home, you can avoid eating out or ordering takeout, which can be expensive and unhealthy. You can also use leftovers or unused ingredients to create new dishes, reducing food waste and saving money on groceries. This way, a more sustainable and eco-friendly lifestyle on food is pursued while also enjoying nutritious meals[1]. Furthermore, it is a form of self-expression and a way to connect with your cultural heritage. Learn about the history and traditions behind different cuisines, and even pass down family recipes to future generations. This way, it can help you to connect with your roots, preserve your cultural identity, and share your heritage with others[2]. Preparing food is a therapeutic activity that reduces stress and promotes mindfulness. It requires focus, attention to detail, and a degree of patience, all of which can help you to disconnect from the outside world and enter a state of flow. Additionally, cooking can provide a sense of accomplishment, boost self-confidence, and further enhance your well-being.

1. Canada, H. (2018). Cook more often. [online] food-guide.canada.ca. Available at: https://food-guide.canada.ca/en/healthy-eating-recommendations/cook-more-often/.

2. Sibal, V. (2018). Food: Identity of Culture and Religion, ResearchGate. [online] www.wathi.org. Available at: https://www.wathi.org/food-identity-of-culture-and-religion-researchgate/.

History of adaptive kitchen ustensils

Adaptive kitchen utensils have a long history of evolution, dating back to ancient times. In early civilizations, such as in Egypt and Greece, people used simple tools such as knives, mortars, and pestles for food preparation. As societies developed, kitchen utensils became more sophisticated, and new materials such as metal, ceramic, and glass were introduced.
In the 19th and 20th centuries, the Industrial Revolution led to the mass production of kitchen utensils, resulting in more affordable and accessible products. However, these products were designed primarily for able-bodied individuals, with little consideration for the needs of people with disabilities[3] [4].
It wasn't until the mid-20th century that adaptive kitchen utensils began to emerge. During World War II, soldiers with disabilities required specialized utensils to help them eat, as you can see on the top image where additive loops are added to classic cuttelry[A]. Leading to the development of the first adaptive utensils, such as angled knives and fork grips. These utensils were designed to help individuals with limited hand function, allowing them to cut and manipulate food more easily. Since then, adaptive kitchen utensils have continued to evolve, with designers and manufacturers developing a range of products that address the specific needs of people with different disabilities. The colorful plastic GUZZINI plate design from the late 60's, on the bottom left corner[B], is a good example of how relief and segmentation in dishware became popular with the given materials and production techniques that were massively used in that era.
Some products are also designed to be used with one hand, allowing individuals with limited mobility to go on with food more easily.
Today, adaptive kitchen utensils are an essential component of inclusive design, ensuring that individuals with disabilities have equal access to food preparation and cooking activities.
The Pi-spoon, on the bottom right picture[C], is a twist on the classic nesting measuring spoons that explore different geometries and shapes for greater intuitiveness and aesthetics. Rather than nesting circles, its spoons are visible divisions of the one before it. Better yet, it's an ideal tool for the blind who can feel and instantly recognize the shape and therefore size.
As technology and design continue to evolve, we will likely see further innovation in adaptive kitchen utensils, leading to even greater independence and inclusion for people with disabilities.

3. Beeton, M. (1861). The Book of Household Management. - "Of the culinary utensils of the ancients, our knowledge is very limited; but as the art of living, in every civilized country, is pretty much the same, the instruments for cooking must, in a great degree, bear a striking resemblance to one another".

4. Parloa, M. (1880). Miss Parloa's New Cook Book and Marketing Guide. - "Cook Book and Marketing Guide" listed a minimum of 139 kitchen utensils without which a contemporary kitchen would not be considered properly furnished.

A

B

C

A. Adaptive Fork, Spoon, & Knife Set - Dining With Dignity

B. GUZZINI Yellow - Space Age Design

C. Pi-spoon, Twist on the Tea/Tablespoon - Yanko Design

Accesibility of kitchenware

According to the studies executed by the «Rehabilitation Engineering Research Center on Universal Design and the Built Environment»[5], and another study published in «the Journal of Accessibility and Design for All»[6], most kitchen utensils on the market are not designed with accessibility in mind and may pose challenges for people with disabilities. The study found that many commonly used utensils, such as knives, peelers, and graters, require precise visual and manual skills, which can make them difficult for individuals with visual or motor impairments to use. Of course, hindered individuals who do not have the resources to the adapted tools, have to learn to work with the available utensils. It is important to understand what ineffectiveness they have taken for granted. What action doesn't bother them anymore? This is one of the major reasons to do user research so that I can identify the schemata of that particular audience. It is important to point out what bothers the flowing action of cooking and consuming food. While there is limited data available on the rate of accessibility of normal kitchen utensils for impaired people, it is clear that more work needs to be done to promote inclusive design and accessibility in this area. Many organizations and initiatives are working to address this issue, and there is hope that with increased awareness, we will see more accessible kitchen utensils become available in the future.

5. Disability healthresources. (n.d.). Rehabilitation Engineering Research Center on Universal Design and the Built Environment | National Resource Center for Aging with Disability. [online] https://disabilityhealthresources.

6. Journal of Accessibility and Design for All. (2008). www.jacces.org. [online] http://www.jacces.org/index.php/jacces.

NAB Center for women – Blind Bakery and Cafe

Users needs and preferences

With accumulated background knowledge, through anthropology, experimentation, further discussions (35-39), and additional online research, such as «APH connect center»[7] and «RNIB»[8] clarifies, a list of several cooking techniques for blind and partially sighted people came up.

Good lighting[D]: Visually impaired people need bright, even lighting to help them see what they are doing.

Contrasting colors[E]: Use contrasting colors on countertops, utensils, and cookware to help distinguish between different items and to highlight important areas.

Tactile markers[I]: Use markers or raised bumps to help indicate different areas and appliances in the kitchen, such as the oven, stove, and microwave.

Talking appliances[F]: Talking scales and thermometers can help visually impaired people accurately measure ingredients and monitor cooking temperatures.

Braille labels[G]: Used to identify spices, canned goods, and other items in the pantry or refrigerator.

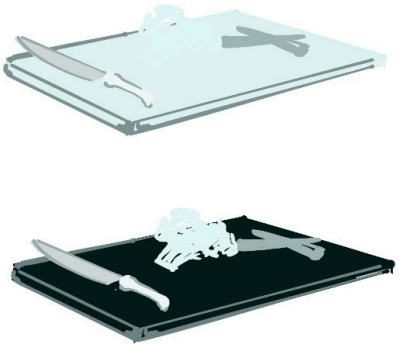
Non-slip surfaces[H]: Use non-slip mats or pads to help prevent accidents and spills.

Keeping a well-organized cooking space can enhance the efficiency of the cooking process. By establishing a consistent layout and routine, sight-impaired individuals can rely on their memory and repetition skills to quickly and efficiently locate and use the tools and ingredients needed for each step of the cooking process. By consistently following a set routine and checking off each step as it is completed, it reduces the risk of mistakes and oversights. This aspect of memory and repetition seemed very relevant in the case of my target group. Is it something that comes involuntarily or is it a long-term drilling process? What are the biases behind these ways of embracing cooking with an impairment? Understanding and linking the different theories and facts was in my opinion an important factor to look into. The next steps of the research (26-31) are emanating from this previous reflection on repetition and cognition.

7. APH Connect Center. (n.d.). Safe Cooking Techniques. [online] https://aph-connectcenter.org/visionaware/living-with-blindness-or-low-vision/daily-living-skills/cooking-and-eating/safe-cooking-techniques/

8. RNIB. (n.d.). Cooking. [online] https://www.rnib.org.uk/living-with-sight-loss/independent-living/cooking/.

D



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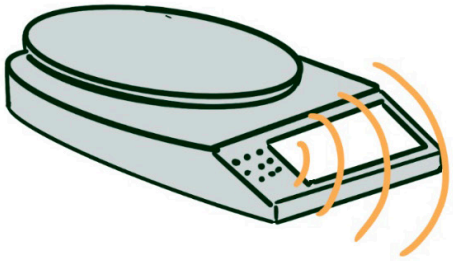
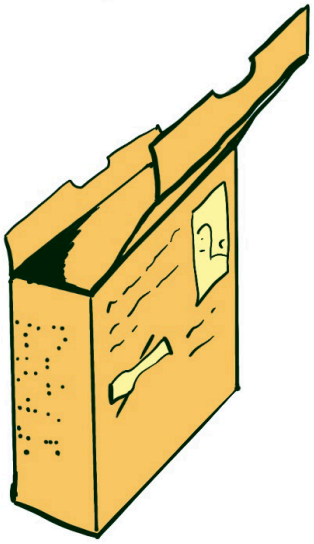
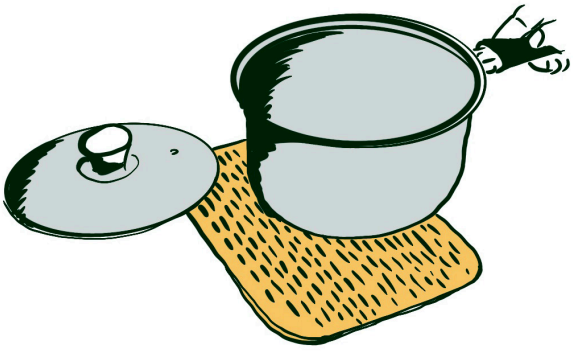


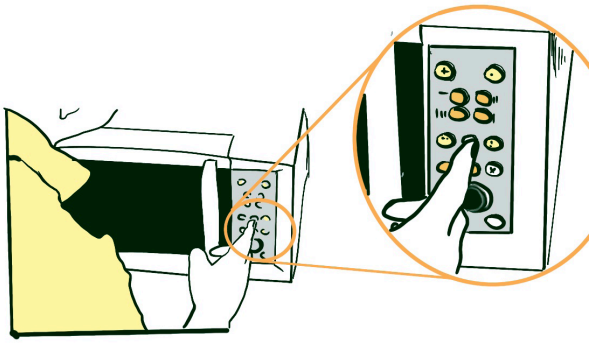
F



G



H



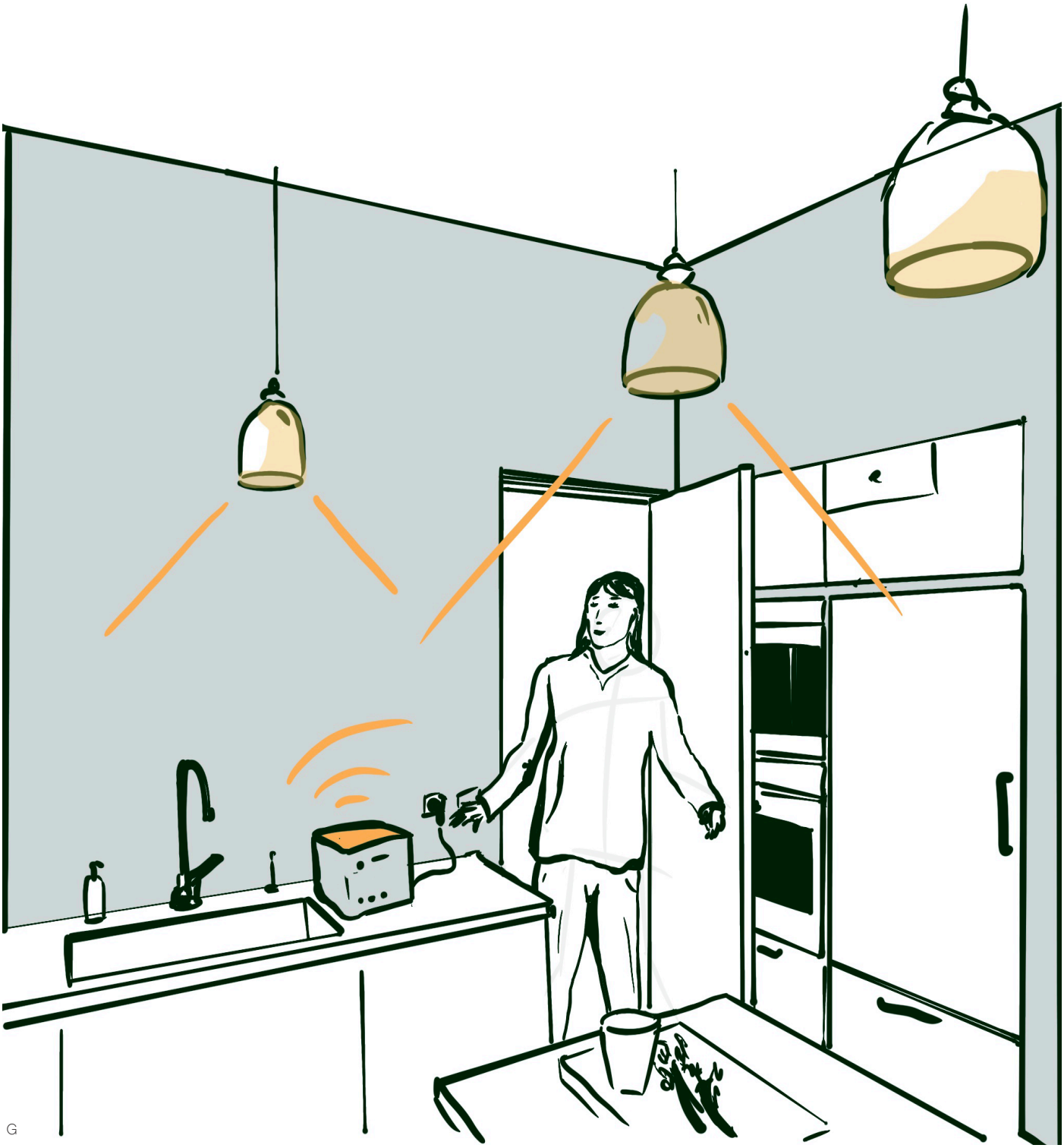
I

The different theories that will be mentioned here were relevant to me because of the previous research executed. During the «Experimental emphatic modeling" (36–39) I noticed various forms of repetition and conditions making the action fairly easy and predictable. I mention these thoughts later in the report where it felt the main purpose of actions where directly related to them.
In the Suzuki method[9], repetition of musical phrases is used to help students develop their listening skills and memorize the music. Similarly, sight-impaired individuals in the kitchen may rely on physical repetition to memorize the layout of the space, the location of objects, and the steps required to prepare a meal. The Suzuki repetition method and physical repetition memory used by sight-impaired people in the kitchen share some similarities in terms of their emphasis on repetition and memorization.
Once repetitions become unnoticeable because of their banality, the idea of conditioning processes and habits emerge. The Russian psychologist Ivan Pavlov brought up experimentations and theories on this subject. «Pavlov's classical conditioning»[10] is a type of learning in which an initially neutral stimulus (conditioned stimulus) becomes associated with a naturally occurring stimulus (unconditioned stimulus) that elicits a reflexive response (unconditioned response). Over time, the neutral stimulus alone can elicit the same response, now known as the conditioned response.
For example, a visually impaired individual may want to establish a habit of turning on a specific assistive technology device whenever they enter a certain room or environment. By consistently pairing the act of entering that room with the act of turning on the device, over time the act of entering the room can become an automatic trigger[G].

Overall, Pavlov's classical conditioning theory offers a framework for understanding how habits are formed and how they can be modified, which could be a valuable tool for helping visually impaired individuals develop new habits and behaviors that enhance their independence and quality of life.

9. Suzuki Association of the Americas (2018). About the Suzuki Method. [online] https://suzukiassociation.org/about/suzuki-method/.

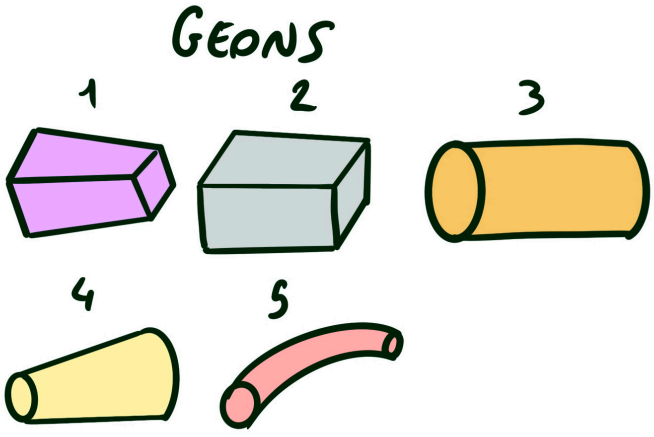
10. Mcleod, S. (2018). Pavlov's Dogs Study And Pavlovian Conditioning Explained. [online] Simplypsychology.org. https://www.simplypsychology.org/

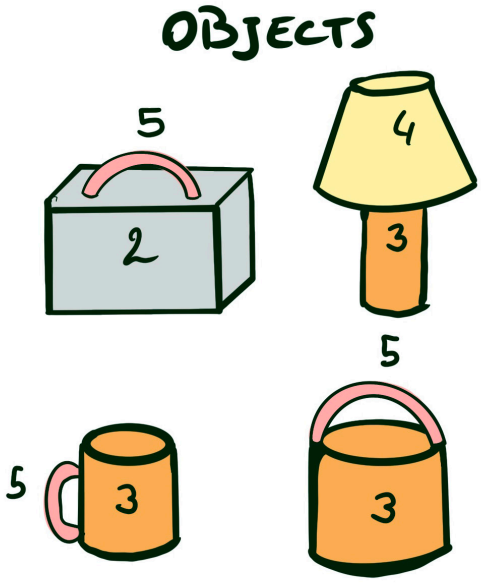


G

Our brains can categorize thousands of objects. With a glimpse, we nearly instantly recognize what its purpose is, what it is made of, and how to handle it. Even in the dark, or when closing your eyes, objects can be identified through sizes, tactility, geometries, and surroundings. What makes it so important for an object whose main purpose is function, to keep its main appearance intact?

The GEON theory of object recognition[11] is a cognitive model proposed by psychologist Irving Biederman in the 1980s. The theory posits that humans recognize objects by decomposing them into a small set of basic geometric shapes called «geons,» which are three-dimensional, view-invariant, and distinguishable from one another.
According to Biederman, there are approximately 36 geons that can be combined to form a wide variety of objects[12]. These geons include simple shapes such as cylinders, cones, and spheres, as well as more complex shapes such as wedges and bricks[K]. This theory proposes that once the geons and their spatial relationships are identified, the object can be recognized even when viewed from different perspectives or under varying lighting conditions. This is because the geons and their spatial relationships remain constant despite changes in viewpoint or lighting.
The GEON theory of object recognition could potentially help visually impaired people have a more fluent understanding of their environment by providing a structured and systematic approach to object recognition. By breaking down objects into basic geometric shapes, visually impaired individuals could develop a mental library of geons and their spatial relationships, allowing them to recognize and understand objects more efficiently.





K

11. Weinschenk, S. (2011). 100 Things Every Designer Needs to Know about People. Sydney: Pearson Education, Limited.

12. Research Gate. (n.d.). (PDF) Geon Theory as an Account of Shape Recognition in Mind, Brain and Machine. [online] https://www.researchgate.net/publication/253720753_Geon_Theory_as_an_Account_of_Shape_Recognition_in_Mind_Brain_and_Machine.

L

M

L. Walnut Handle Cheese Grater - Gristmill Collection

M. Rotary cheese grater - Regent kitchen

Having evenly blurred both images of cheese raspers, It becomes obvious that geometries that we expect in a certain environment have a big input in the assertiveness we get when reaching for it. In a test where a dozen of people from my surroundings were asked to identify the objects of those two blurred pictures, The first design[L] has always been recognized, what it is, and what it is used for. The second item[M] at the contrary has been identified twice only.
I concluded that Biederman's Geon theory will have a very big impact on the next steps following the research process. To design an intuitive user experience, it is important to make sure the conceptual model of the product matches the mental model of the target group. On the contrary, If you have a design that does not match anyone's model, you will need to provide some drill, through repetition and memorizing, to conditionate the user to its new product.

N

O

Q

P

R

N. Whereoware 2020 Cookware – Cuisinart

O. Finger Friendly Cutting Board – Yanko Design

P. 4-Cup – OXO

Q. EATSY – Jexter Lim

R. Cubiertos angulados QUEENS – Ayudas Dinámicas

Market Analysis

It is a growing market as the number of visually impaired people around the world continues to increase and more awareness is paid to this topic. In this market analysis, I had a look at the current trends and products available for visually impaired people and identified areas for improvement.
The market for cooking and eating utensils for visually impaired people is dominated by a few key players such as MaxiAids, LS&S, and independent living aids. These companies offer a range of products including talking kitchen scales, large print measuring cups, braille measuring spoons, and tactile food labels. Mainstream kitchen brands such as OXO and Cuisinart have also started to incorporate features for visually impaired users into their products. For example, OXO's Good Grips line of kitchen tools includes a line of measuring cups and spoons with raised markings for easy readings[P]. Cuisinart's Chef's Classic Stainless Steel Cookware Set[N] includes large, easy-to-grip handles that make it easier to handle hot pots and pans. Kitchenware and dishware for impaired people are made with materials that prioritize functionality, accessibility, and ease of use. These products commonly feature non-slip and lightweight, durable materials, bright and contrasting colors, and easy-to-clean materials. By incorporating these characteristics, kitchenware, and dishware for impaired people can promote independence, safety, and confidence in the kitchen because of their effectiveness. But all those function-oriented factors make it sometimes obvious that those objects are not meant for non-impaired use and this can lead to immediate categorization of a social- and norm-difference. The perception that such products are only for a small segment of the population can contribute to the stigmatization, as individuals may feel excluded or singled out by using them. Similarly, poorly designed products that emphasize the disability or lack sensitivity can also contribute to a sense of shame or embarrassment.
To reduce the exclusiveness of kitchenware and dishware for impaired people, it is crucial to design inclusive, non-stigmatizing products that meet the needs of individuals with disabilities and that could be normally used by non-impaired people (34). «including everything or all types of people» through the use of one object, as the definition «Inclusive» points it out. This involves careful consideration of factors such as material and appearance to ensure that the products are safe, durable, and easy to use, while also being aesthetically pleasing and accessible.

Further understanding of those often-used terms, «stigmatization» and «inclusiveness» within the context is crucial for the next Ideation process (43-63).
How to tackle the problem as an Industrial Designer? As our profession is highly implicated towards the user and its environments, how do I, more specifically actwithin our society and kitchens for this Thesis topic?

Social and cultural implications

Stigma has played a significant role in the design and creation of kitchen objects throughout history. From the materials used to make cookware to the design of utensils, biases have influenced the objects we use in our kitchens (The Association for Consumer Research 1992)[13]. Copper and cast iron cookware have been considered high-end and luxurious, while aluminum and other more affordable metals have been seen as low-quality or "cheap". This has created a stigma around the use of cheaper cookware, which can make people feel embarrassed or ashamed to use them in their kitchens.
Moreover, the design of certain utensils and tools has been influenced by gender roles and stereotypes, leading to a sense of shame or embarrassment for people who may not conform to these gender roles. Additionally, the size and shape of certain objects can be designed to accommodate certain body types or abilities while excluding others, creating a sense of inadequacy for people who may not fit into these narrow categories (Frontiers of Psychology)[14].

Stigmatization[15]: «The act of treating someone or something unfairly by publicly disapproving of them.»

As Industrial Design is the creative process located at the crossroads of art, technology, and society, it places interaction at the very heart of the concept by integrating the human being at the center of the development.
Anyhow, accessibility is often considered unattractive and restrictive and is not taken care of by some concepts. Which in that case excludes or disapproves with the inclusion of people with impairments for example. The creation of infrastructures or goods that support active, safe, and accessible usability encourages a physically active lifestyle and user-friendly places stimulate social participation, facilitate integration, and improve the quality of life for all citizens.

13. Rudmin, F.W. and Marsha Lee Richins (1992). Meaning, Measure, and Morality of Materialism.

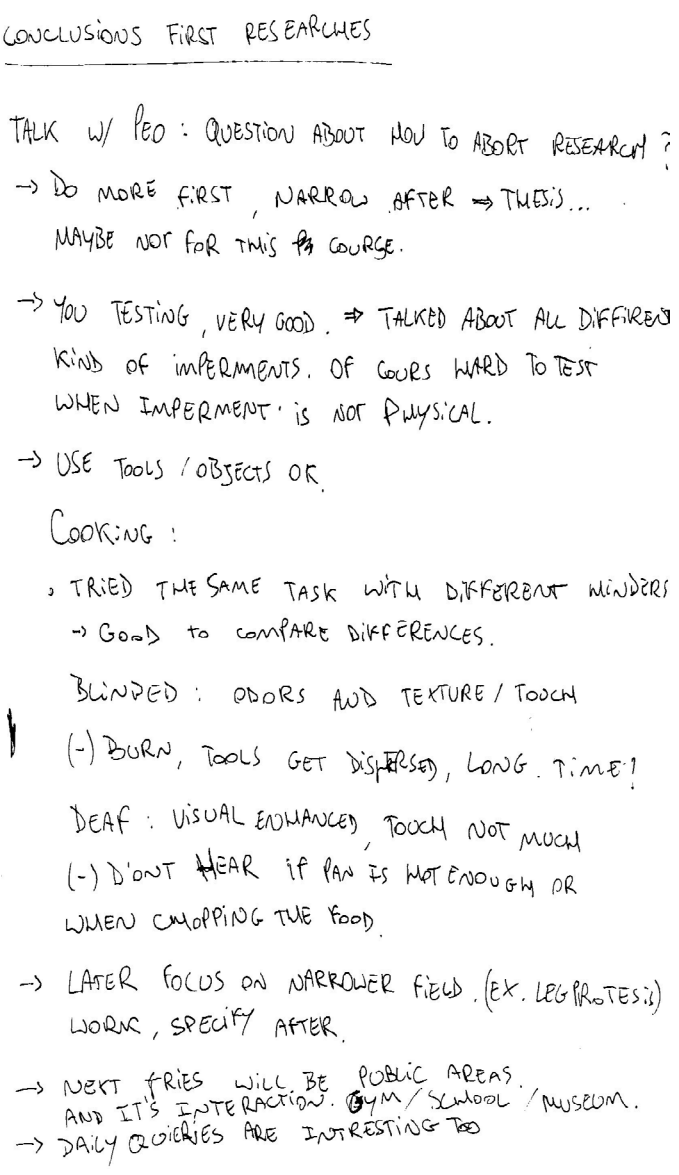
14. Brooks, K.R. (2019). Body Size Adaptation Alters Perception of Test Stimuli, Not Internal Body Image. [online] https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02598/full.

15. Cambridge Dictionary (2019). STIGMATIZATION | meaning in the Cambridge English Dictionary. [online] https://dictionary.cambridge.org/dictionary/english/stigmatization.

Interview

After the literature research, which oriented me on the fondness and efficiency between objects and people with impairments, I still had a lack of knowledge and consciousness concerning interaction and limits not to cross when working around that topic.

The next method that settled me on my worries was “Interviewing”. Asking specific questions and having a flowing discussion with more than one targeted user is the best way for me to efficiently collect data for my research. It can be through a video call, although meeting someone in real life adds a huge human value to the whole interaction.
I had the opportunity to meet Per-Olof Hedvall. P. Hedvall works as Director of Certec, Department of Design Sciences, Lund University, Sweden. His work deals with accessibility, participation, and universal design, with a particular interest in the interplay between people and technology. Working in close collaboration with the disability movement, he focuses on people’s lived perspectives and how human and artefactual aspects of products, services, and environments can be designed to support people in fulfilling their needs, wishes, and dreams. He pointed out the boundaries to respect on many levels when being around people with impairments. In that way, I felt more comfortable pursuing my explorations without being scared to offend or disrespect anyone. He recommended several approaches that I could apply for further investigations concerning my research question.


CONCLUSIONS FIRST RESEARCHES

TALK W/ PEO : QUESTION ABOUT HOW TO ABORT RESEARCH ?
→ DO MORE FIRST, NARROW AFTER ⇒ THESIS...
MAYBE NOT FOR THIS COURSE.

→ YOU TESTING, VERY GOOD. ⇒ TALKED ABOUT ALL DIFFERENT KIND OF IMPERMENTS. OF COURS HARD TO TEST WHEN IMPERMENT IS NOT PHYSICAL.

→ USE TOOLS / OBJECTS OR.

COOKING :

- TRIED THE SAME TASK WITH DIFFERENT MINDERS
  → GOOD to COMPARE DIFFERENCES.

BLINDED : ODORS AND TEXTURE / TOUCH

(-) BURN, TOOLS GET DISPERSED, LONG TIME?

DEAF : VISUAL ENHANCED, TOUCH NOT MUCH
(-) D'ONT HEAR if PAN IS NOT ENOUGH OR WHEN CHOPPING THE FOOD.

→ LATER FOCUS ON NARROWER FIELD. (EX. LEG PROTESIS) WORK, SPECIFY AFTER.

→ NEXT TRIES WILL BE PUBLIC AREAS. AND IT'S INTERACTION. GYM / SCHOOL / MUSEUM.
→ DAILY CHORES ARE INTRESTING TOO

Experimental emphatic modeling

"Experimental emphatic modeling" is a research method in which I tried to immerse myself in the user's shoes. It helped me understand how people with impairments experience moving and interacting in public and domestic areas. For this report, I hindered my vision while executing daily life queries. Something that I had to be aware of, is that for impaired people, the different obstacles they have to face, are approached as "normal". That is a key point where putting myself into their shoes would trigger main problems. P. Hedval gave me access to different experimentation tools, allowing me for example to reproduce a bad eye-sight. As a result of those different experimentations, unnoticeable problems when not suffering from a vision disability, become way more obvious. This automatically opens up a whole new spectrum of possibilities that can be improved

As my first experiment, I wanted to experience a public place. Going to the grocery store was a great scenario in which I thought many factors could hinder the shopping while having a bad eye-sight condition. I was accompanied by a friend for my safety since I am not drilled to interact with an impairment around streets and people.
The first step was to reach the grocery store, which might sound easy at first glance. On the contrary, it was a frightening experience. Having the white cane as a leading device was sufficient in itself[S], although a lot of other senses were highly triggered. The hearing sensitivity is highly increased, and the tactile senses are more important, especially on the foot area. It was interesting to witness how other road users would adapt to my condition and help out to cross the street and other obstacles. When that would happen, I felt a sensation of gratitude towards the people leading me. When holding the hand of my friend, for example, I could not avoid trying to get as close as possible to his arm leading my way, as if his body had become mine.

Once in the grocery store, it felt way safer. The lights, shelves, and people around me were reassuring. The feeling of being lonely and vulnerable disappeared.
Going through the alleys and picking different products triggered a "practical" problem. Reading the information on flyers and tags was very hard. Although I knew the store quite well, I had a hard time getting detailed information. The hand tactile senses were here useful in some way to take guesses at the type of product I picked[T].
Coming to the candy area, I could distinguish all the different colors characterizing the different candies[U]. I asked a salesman if I could touch and taste the different candies. This was a very fun experience to combine all those triggered senses but vision.
The cashier was comprehensive, and I was helped through the different steps to finalize the payment and exit the store correctly.

During the whole experience, I could feel that passers-by were concerned and curious to know why I was carrying special glasses, putting myself in this situation. After some explanation, people were comprehensive and accepting of the situation.

S

T

U

V

W

Preparing the food while hindering my vision brought up serious handicaps while measuring amounts. The measuring devices I usually use have engraved numbers, which made it possible to guess an amount or height in the container[V], but in no way, I have been accurate during the whole process. Besides that, switching ingredients from one recipient to another was very hard. You have to be extra careful pouring everything slowly and precisely to avoid making a mess on your workspace[W]. Having your workspace clean is a priority when cooking with a sight impairment. This extra attention takes a lot of time which is a problem when something is already cooking on the stove. The risk of being disoriented, not finding tools, and losing track of your cooking process can add a lot of stress and ruin the experience of cooking, which should be an enjoyable and therapeutic experience.

Once done with the cooking, I noticed using nearly twice as many dishes as I usually would. Preparing and cutting all ingredients in forehand, and storing them in individual bowls and plates, helped me be less overwhelmed by the mess and disorder. That would be an interesting topic to work on, develop a concept where measuring, stocking, heating, and eating ingredients would be one. In that instance; "Interaction and fondness between people with visual impairments, objects, and daily life queries." Would be upgraded.

Challenged to do the dishes, having the same hindrance as when doing my groceries and cooking. Again, the tactile sense came up as being the most important element for me to complete this task. While doing the dishes, I videotaped the whole process, from cleaning to putting it back in the shelves. Of course, while going through the different phases of cleaning, I came across some obvious problems that I had to understand and solve. Such as adding the right amount of soap or avoiding spilling water[X]. Some days later, I went through the videotape I recorded and analyzed more in detail how I interacted with my surroundings. It was clear that touch was a huge part of the success of the task. I held the cleaning brush very low down its handle, to have a better feeling of what I am cleaning[Y]. Cutlery was quite easy to identify, as for the plates and other products[Z]. Knives were not as a big danger as I thought they would be. It could be a potential source of injury while handling it, but knowing and identifying the different objects makes it relatively safe. In one of the images, you can see that I am using my fingers as segments to differentiate the forks from the spoons and knives. It was an easy way to hold them all at once before dropping them in the shelves.

It is with a purpose that I executed research evolving only around having a sight impairment. I thought it would be more interesting to compare different scenarios related to the kitchen and food for which that impairment would influence my actions. Identification of objects and the sense of touch are more tightly connected than I would have thought. As a conclusion of these different explorations, I can say that the situations I put myself into were relatively basic, I have noticed various challenges that could lead to potential research topics and ideation for further concept developments.

- AVOID STIGMA

→ Finnish thesis : " co-design workshop"
→ Signals of the object change
→ Social norms
- "svart ~~Zwart~~ clubben" Blind restaurant Stockholm
- People with visual impairments live with partner / kids: Make sure it is accessible for the right persons.
- "Yanko design".
- Care on where you put your objects.
- There are differents ways newly impaired people act
→ It is the way it is / No bother
→ It is the way it is / I'm bad at everything
→ Shit, I could find tricks / solutions to my problems.
- Blind cook in Master chef.

Books:

"Product experience": H. schifferstein.
(Senses / interaction / Product personality).

"100 things every designer needs to know": S. weinschenk
→ chapter about visual & Brain analysis.
(How to get information without seeing)

"Design meets disability": G. Pullin.
(Critics over his projects.)

Conclusion

In conclusion, an inclusive design project for kitchenware can emerge from the integration of historical evolution, cognitive theories, market analysis, and the impact of stigmatization. By understanding the historical context and cognitive processes, I gained insights into the needs of individuals with disabilities. Market analysis helps identify gaps in existing solutions and informs the design process.
An inclusive design approach, centered around user research and user-centric solutions, leads to the development of kitchenware that fosters empowerment and independence. By embracing the GEON theory, it is interesting to create systematic and structured products for visually impaired individuals. Theories like the Suzuki repetition method and Pavlov's classical conditioning offer insights into how visually impaired individuals rely on repetition and memorization to navigate the kitchen safely.
Additionally, by challenging stigmas and creating aesthetically pleasing and functional designs, kitchenware becomes a medium of empowerment and acceptance. It is a must to create kitchenware that seamlessly integrates into any kitchen, irrespective of user abilities. An aim is to create a kitchen environment that celebrates diversity, enabling all individuals to participate in food preparation and cooking activities with equal ease and confidence, matching the main positive benefits of cooking.

Ideation

The ideation process in an Industrial Design project is a pivotal phase that allows for the generation and exploration of diverse design concepts and solutions. As an Industrial Design student, this phase involves harnessing the insights gained from extensive research.

The process begins by synthesizing the findings from interviews, literature reviews, and usability tests. These insights serve as the foundation upon which a range of innovative ideas are built. Collaborative brainstorming sessions, often involving mentors and peers, foster a rich exchange of ideas that challenge preconceived notions and stimulate creativity.

Sketching and sketch modeling then become crucial tools in translating abstract concepts into tangible visual representations. Rapid iterations allow for the exploration of various shapes, forms, and functionalities, all tailored to the specific needs of visually impaired users. This phase encourages thinking outside the box, encouraging the exploration of unconventional design solutions.

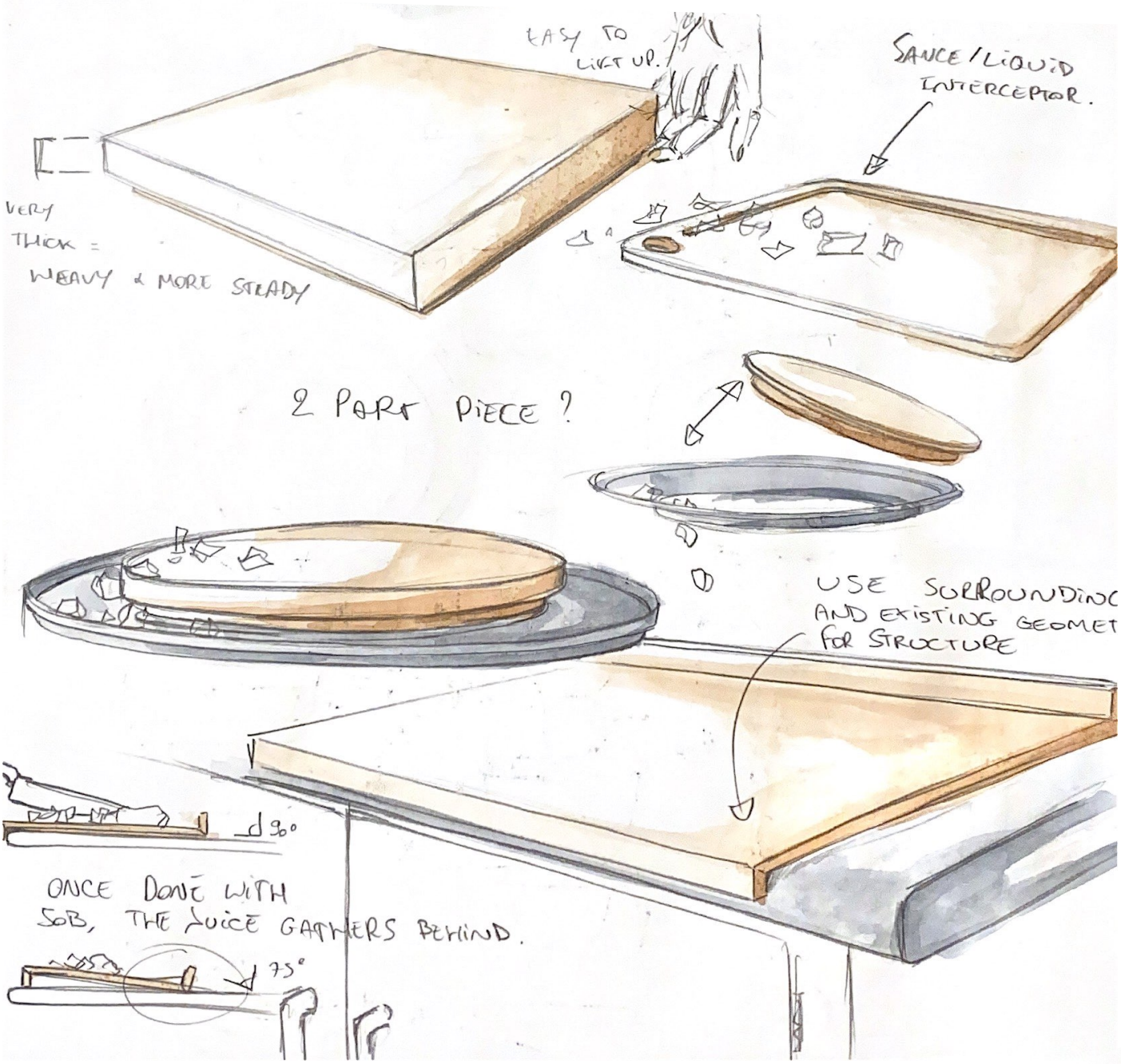
The ideation process ultimately yields a collection of refined design concepts that undergo evaluation against predetermined criteria. Each concept is scrutinized based on factors like usability, aesthetics, manufacturability, and, most importantly, its ability to enhance the independence and quality of life for visually impaired individuals in the kitchen.

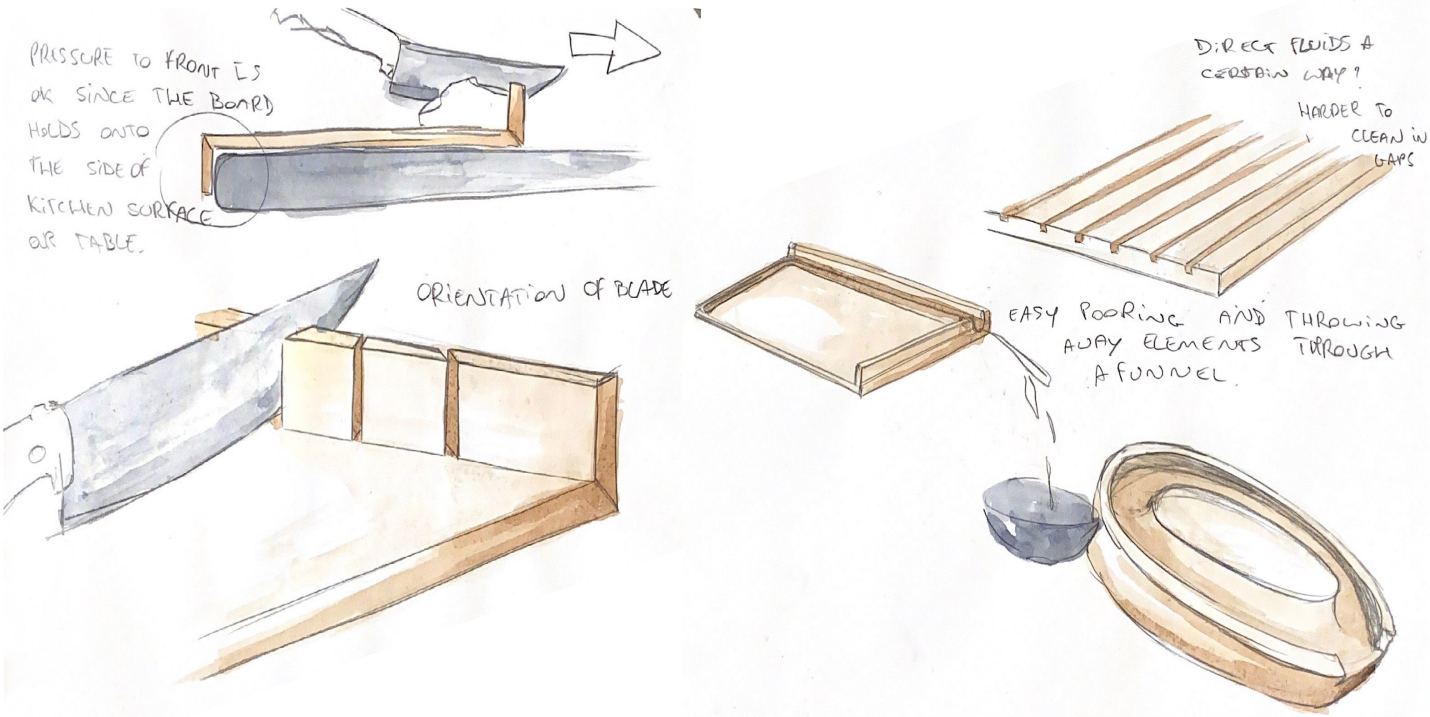
Concept proposition 1: Cuttingboards

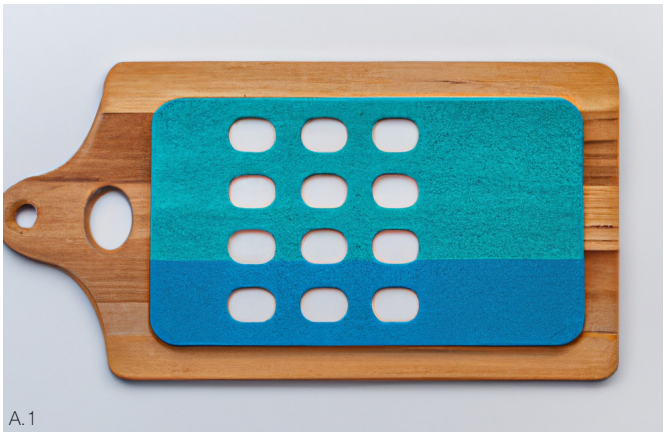
Whenever I start an ideation process I like to expand my conceptualization in several directions. This is how I usually choose three different concept proposals on which I elaborate further research and thoughts. Later in the timeline, when I focus on one particular topic, other knowledge gained through this process helps me reflect and discover alternatives that merge two or more concepts.

The first draft concept on which I decided to focus is the action of cutting and organizing the workspace of the kitchen. Cutting boards for visually impaired people offer a unique opportunity for innovation and creativity. They can be designed to meet a variety of needs and preferences, including size, shape, texture, and color. For example, cutting boards with high-contrast markings or tactile features can help visually impaired individuals identify the location and orientation of the cutting surface, improving safety and accuracy1. Similarly, boards with raised edges or non-slip surfaces can provide additional stability and prevent accidents.
Additionally, cutting boards for visually impaired individuals can be designed to be inclusive and accessible to people with different types and degrees of visual impairments. For example, some cutting boards may incorporate features for people with color blindness or those who have difficulty

1. Connect Center. (n.d.). Safe Cooking Techniques. [online] https://aph-connectcenter.org/visionaware/living-with-blindness-or-low-vision/daily-living-skills/cooking-and-eating/safe-cooking-techniques/


EASY TO LIFT UP.
SAUCE/LIQUID INTERCEPTOR.
VERY THICK = HEAVY & MORE STEADY
2 PART PIECE ?
USE SURROUNDING AND EXISTING GEOMET FOR STRUCTURE
90°
ONCE DONE WITH SOB, THE JUICE GATHERS BEHIND.
75°


PRESSURE TO FRONT IS OK SINCE THE BOARD HOLDS ONTO THE SIDE OF KITCHEN SURFACE OR TABLE.
ORIENTATION OF BLADE
DIRECT FLUIDS A CERTAIN WAY ?
HARDER TO CLEAN IN GAPS
EASY POORING AND THROWING AWAY ELEMENTS THROUGH A FUNNEL



A.1

A.2

A.3

A.4

A.5

A.1-5. DALL-E - OpenAI 2023

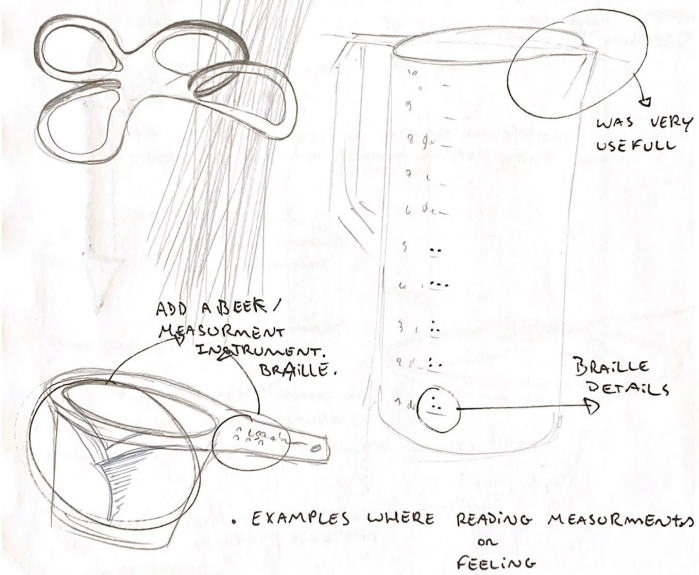
These AI-generated images are a good affirmation of the previously mentioned characteristics innovative cutting boards can have. It is in no one's favor to overcomplicate the geometry of the board. Keep it simple with special attention to high-contrast colors, textures, and markings.

In my opinion, it is important to include similar materials abled people's products would use. Wood for example is a perfect material used for cuttingboards. It is light and sturdy, and the manufacturing process is easy and adapted for industrial production.

Concept proposition 2: Measuring utensils

When executing the empathic experimentation (36-39), one of the most difficult tasks was to measure, weigh, and handle ingredients from one recipient to another. As I mentioned before, The reading of amounts on non-adapted kitchen utensils is nearly impossible.
A tool used by individuals with sight problems is a liquid level indicator. This device attaches to the side of a measuring cup or container and makes an audible sound when the liquid reaches the desired level. This makes it easier for individuals to measure liquids accurately without having to rely on sight. It is certainly effective, but individuals with sight problems have been using their senses, before technologisation, such as touch and smell, to measure ingredients and pour liquids. For example, when pouring liquids, individuals may use their sense of touch to feel the container's weight and texture to determine when it is full. They may also use their sense of smell to detect when a liquid is reaching a specific level.
This aspect of using your body as a tool is in my opinion the easiest and fastest way to reach your goal. Avoiding technology by using simple, analog methods is in my opinion the way to go for this project. Avoiding over-complication is something that I value a lot in this concept.

from research: when blinding eyesight; Difficulties to take and measure quantities.

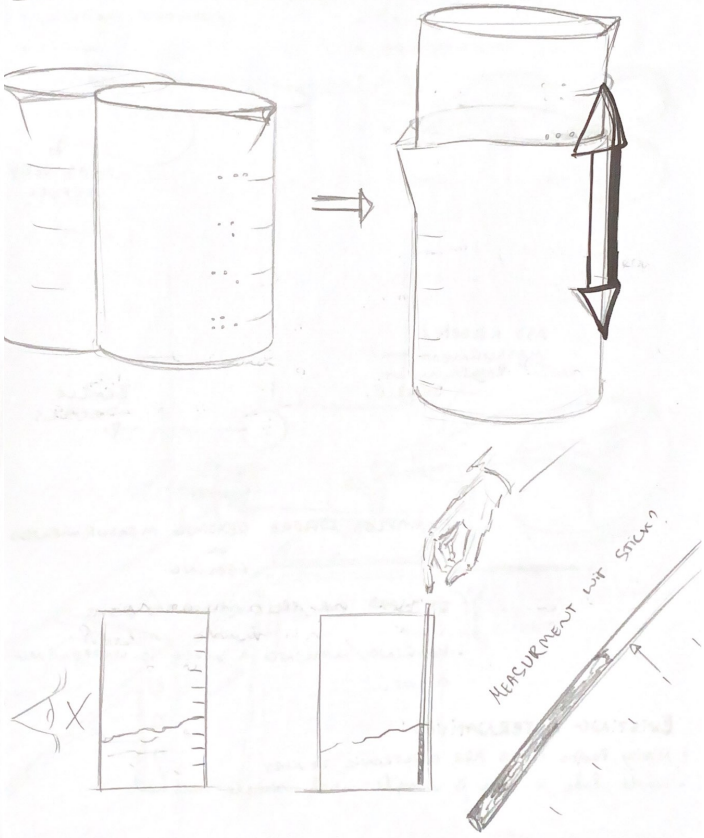


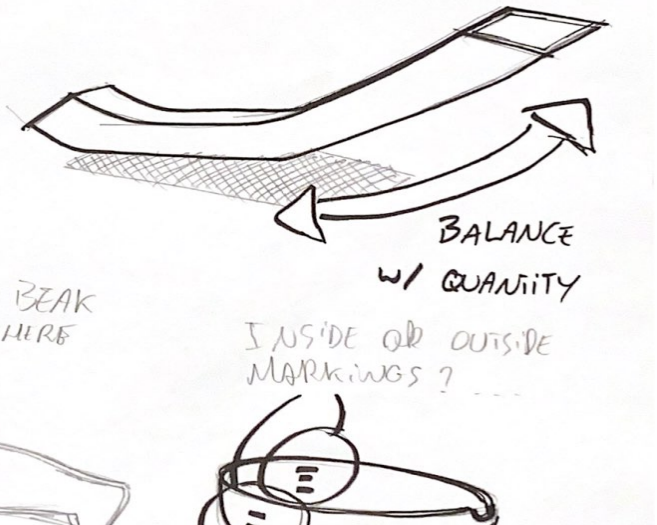
- EXAMPLES WHERE READING MEASURMENTS or FEELING IS HARD FOR PPL WITH A BAD SIGHT.
- POORING/MAKING A MESS IS HAPPENING A LOT.

EXISTING ALTERNATIVES:

- MANY PROPOSITIONS ARE ELECTRONIC DEVICES
- would like to keep it simple with simple method

- ALSO HAD PROBLEMS PUTTING FOOD ASIDE WHILE CHOPPING / COOKING OTHER THINGS
- FELT LIKE EASY STACKABLE COMPARTMENTS WOULD BE VERY HELPFULL.





B.1

B.2

B.3

B.4

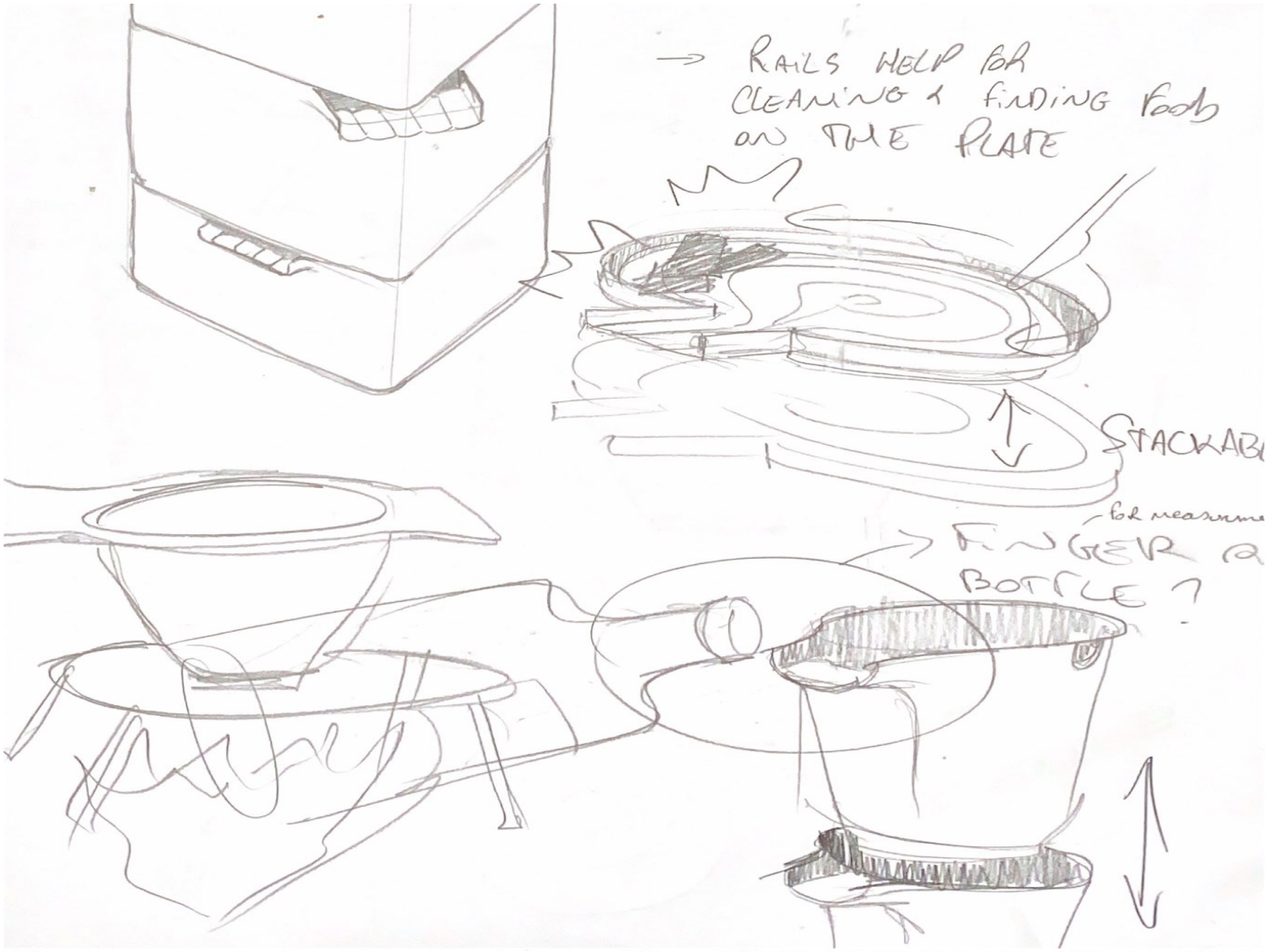
B.5

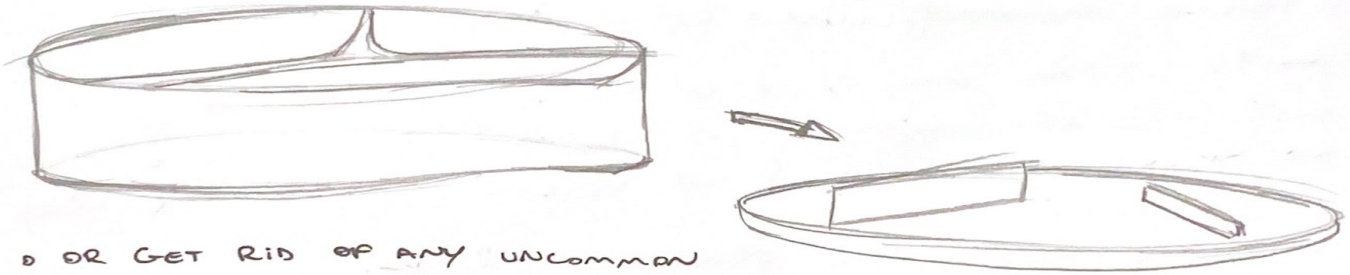
B.1-5. DALL-E - OpenAI 2023

It is interesting to discover those artificial images proposing several measuring tools for sight-impaired individuals. In some of the pictures, we can, again, notice some colour contrast plays on the different elements composing the objects. The use of bowls and recipients as measuring devices is not put aside. What surprises me is that I don't see any braille alphabet letters, nor much relief or physical markings. The few indications we can notice on them are relatively small, which is the opposite of what I am aiming for.

Concept proposition 3: Dishware

Having elaborated on the concept of stigmatization previously (34), adapted dishware can help reduce that perception. By providing dishware that looks and feels similar to standard tableware, visually impaired individuals can feel more comfortable and confident while dining with others. Adapted dishware can also improve safety in the kitchen by providing features such as non-slip surfaces or high-contrast markings that help visually impaired individuals avoid accidents and injuries. It can make the dining experience more enjoyable for visually impaired individuals by making it easier for them to identify food and drink items on the table. This can be achieved through innovative material research and color play, as seen previously with the cutting board draft. Another factor, besides eating, to keep in sight for dishware is the cleaning process. Doing the dishes is as important and challenging as preparing food. creating patterns, handles or elevated parts in the plate can reduce the cleaning effectiveness.

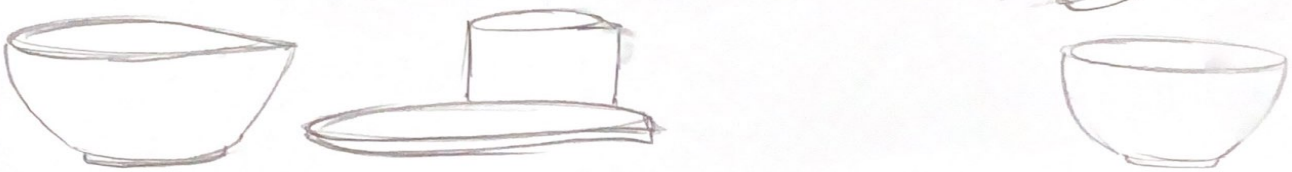




- OR GET RID OF ANY UNCOMMON CHARACTERISTIC WITH TEXTURE.
- HOLD FOOD IN PLACE / SMALLER VEGIES "PEY"

- MATERIAL RESEARCH AND A LOT OF TESTING. CAN BE A VISUAL ASSET TOO

- WORK ON CUTTERY IS ALSO OPTION.
- ⇒ TO BE FOLOWED.




C.1


C.2


C.3


C.4


C.5

C.1-5. DALL-E - OpenAI 2023

It is very noticeable that color contrast has a big importance amongst dishware. Elevated edges that are easier to grab and manipulate, while preventing spilling seem to be an important factor to keep into consideration. It is noticeable that those higher edges are slightly indented inward of the plate. In some of the images, we notice an under-plate or food mat preventing the elements from slipping. Cuttlery, which I am not that eager to work on, still has noticeable, interesting characteristics influenced by color and volume, which is a recurrent factor important in all three draft concepts.

After the elaboration of the three concept proposals, I felt that the concept exploration and material experimentation could be the most interesting and linked with the dishware orientation. The idea of working with ceramics was already in my mind for a short while, which pushed me to start focusing on its characteristics and benefits. The texture, colors, creativity, and effectiveness of this material are ideal for the further evolution of the concept.

Characteristics such as braille alphabet, stackability, high edges, high contrasted colors, became factors that were all achievable.

D

E

F

G

D. Eierbecher – Füessli

E. UDON Coffee Cup – Studio Oyama

F. .19 – Onshus

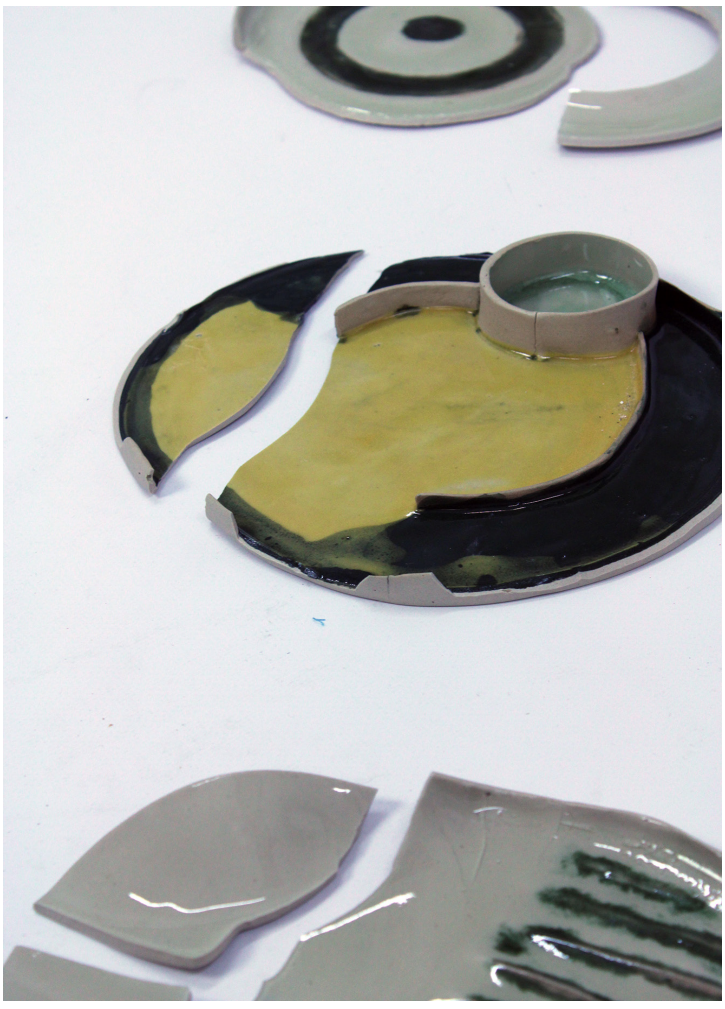
G. “The Biosphere” – Platemetrics

Material choice

The choice of material for these objects is crucial to ensure that they meet the needs and preferences of users whilst considering production possibilities in mind. While plastic and aluminum dishware are commonly used for their affordability and lightweight properties, ceramics offer several advantages.

One key advantage of ceramics is its potential to reduce stigmatization that can come with using assistive devices. Many visually impaired people may feel embarrassed or self-conscious about using devices that look different from standard tableware. Ceramics can be designed in a variety of colors and styles, allowing for visually appealing and discreet options that can blend in with other tableware. This can help alleviate some of the negative feelings that can come with using assistive devices and promote greater acceptance and inclusion.
Another advantage of ceramics is their environmental friendliness. Plastic dishware is often not recyclable and ends up in landfills, where it can take hundreds of years to decompose. Aluminum production requires a lot of energy, and the process can release harmful pollutants going against more durable production. In contrast, ceramics are made from natural materials like clay and sand and can be, in some cases recycled or repurposed after their use. Choosing ceramics can help promote sustainability and reduce the environmental impact of assistive devices.
Ceramics also offer several experience benefits for impaired people. They are heavier than plastic and aluminum, providing a more stable and comfortable eating experience for those with tremors or other motor difficulties. They also retain heat better than plastic or aluminum, helping to keep food warm longer. Additionally, ceramics do not leach chemicals or toxins into food, as can be the case with some plastics.

H. Fear of a flat planet: Heatherwick Studio's adventures with clay



Material Research

In the meanwhile of ideating about measurements, usability, and aesthetic choices, material research enabled me to synchronisely come back and forth on my decisions. When an idea would come to mind, it was easy to head to the ceramic workshop and immediately create a fresh model made out of clay. Some shapes, and techniques were more efficient than others in several ways; stirtyness, manufacture, and effectiveness.
A part of the material exploration has been done on intuition as well. Without any sketching and concepts, changing the material as it comes. Playing with its material characteristics and constraints increased my knowledge of this craftmanship. Indents, curves, thicknesses, pattern repetition, and sections, are some of the elements I applied throughout this process.
As I went through the whole process of cooking and glazing the prototypes, I started trying out different color pigments. Using shades of dark green and light yellow, with the natural off-white color of clay, I became satisfied with the colorpalet obtained.


Capri
LEMON

Design

The designing process that follows the research and ideation stages in an Industrial Design project is a transformative phase, where selected concepts are refined into tangible solutions. Working on my kitchenware project for visually impaired individuals, I employ digital tools to translate sketches into detailed models. Deepend iterations and material research ensure functionality, accessibility, and aesthetics align. Prototyping allows real-world testing, refining ergonomic aspects, and optimizing user interactions. This design process harmonizes aesthetics and functionality, resulting in products that not only address challenges but also provide an intuitive user experience. This phase lays the foundation for the final stages of development, culminating in the implementation of the design solution.

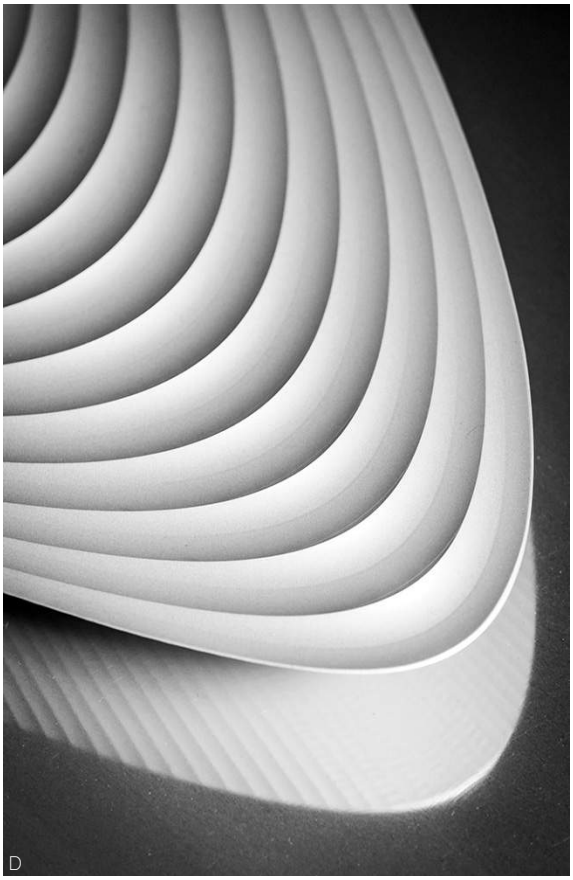
Moodboard

The selected pictures for the mood board and inspiration represent a diverse range of design objects and geometries that evoke various textures and visual characteristics. Each image captures unique elements, styles, and concepts that serve as a source of inspiration for further design development.
The combination of different textures and ceramic elements for the jewelry cases from Luis Arrivillaga, and the beauty of interplay between different cohesive elements through shape and color as seen in NÜÜD Ceramics's work, showcases intricate craftsmanship and artisanal beauty. These pictures inspire to create unique, handcrafted pieces that add artistic value to living spaces. The bottom left design is the «Bubble Side Table» from Steven Bukowski inspires me with the vibrancy and power of color when used right with the geometry. As I might have described previously, color and contrast play a big role in this ceramic project. The combination of more or less bright color and repetition, as seen in the two bottom pictures, creates in my opinion a certain patterned dynamic while keeping a simple and expected comprehension of the design, which is important for sight-impaired people who have to relate to simplicity while interacting with objects and graphics, as perceived in the bottom right «Salver Plate» from Alex Rasmussen.
It is with some of those elements that I got inspired for the next design choices. Use highly contrasted colors for a better distinction of food elements in the plates while keeping textures important for a better tactile experience. Above that, the stackability within the different elements helped create this, looked for, repetition.

A

B

C



D

A. Matter - Luis Arrivillaga

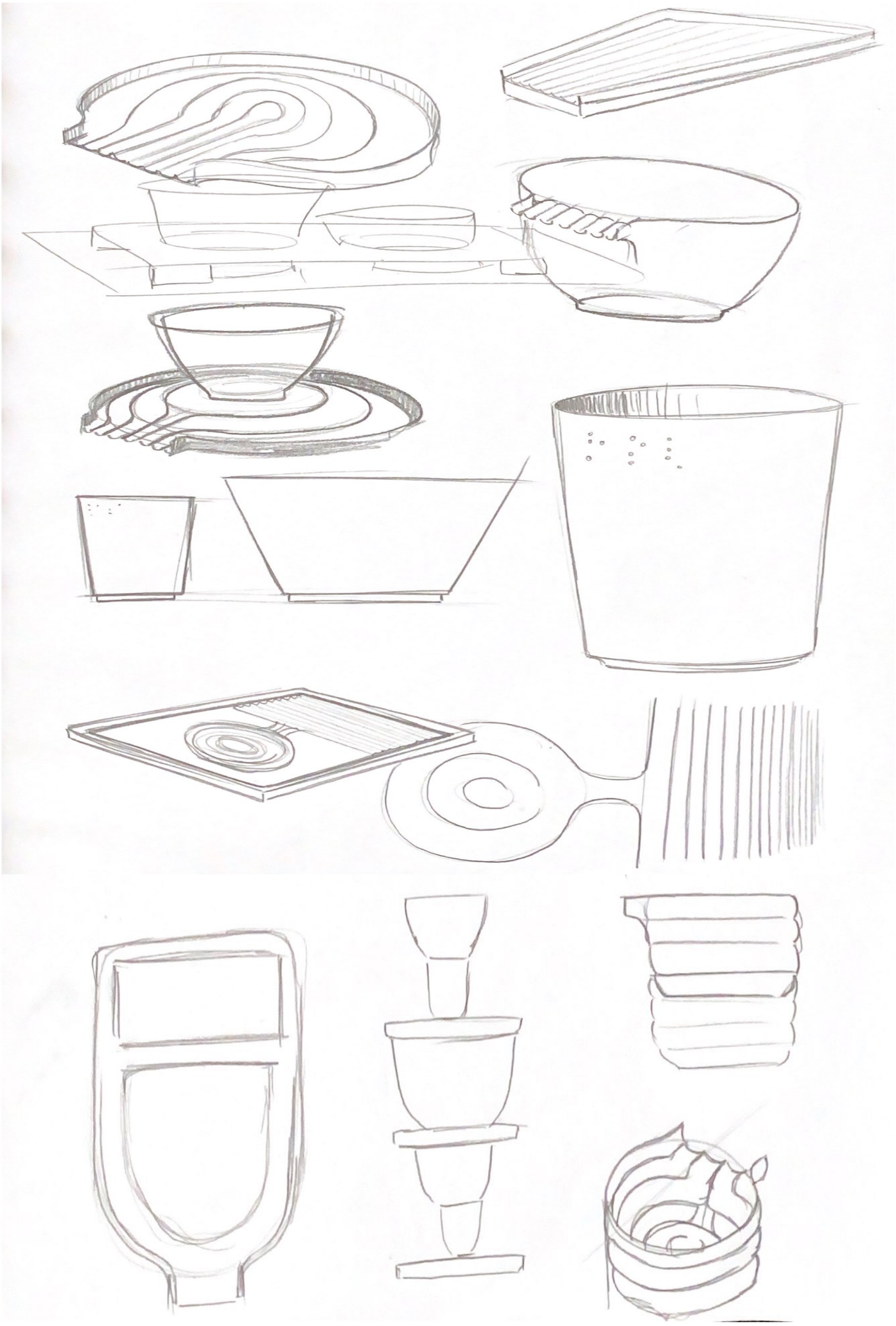
B. Herder G - Nüüd Ceramics

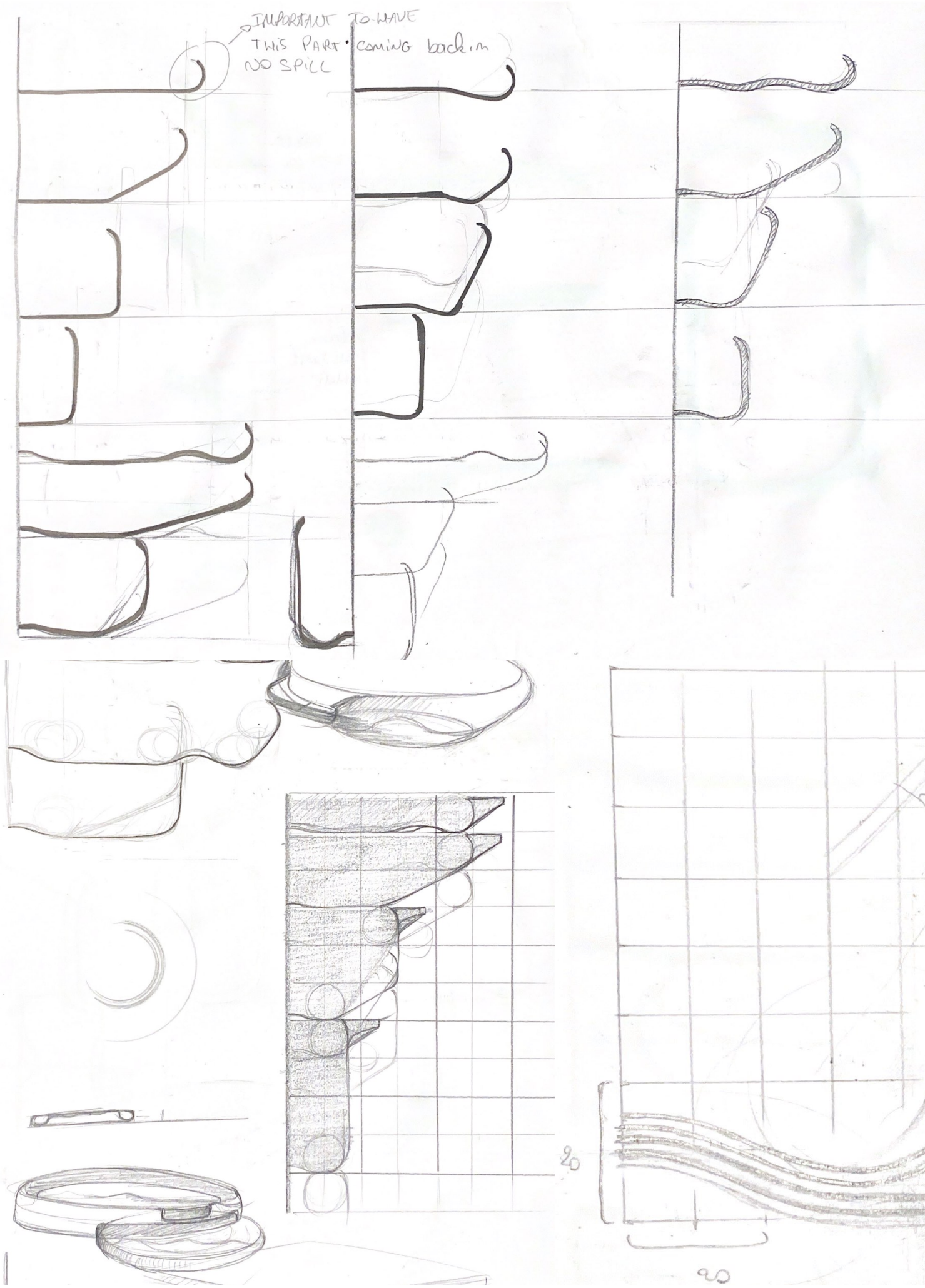
C. Bubble Side Table - Steven Bukowski

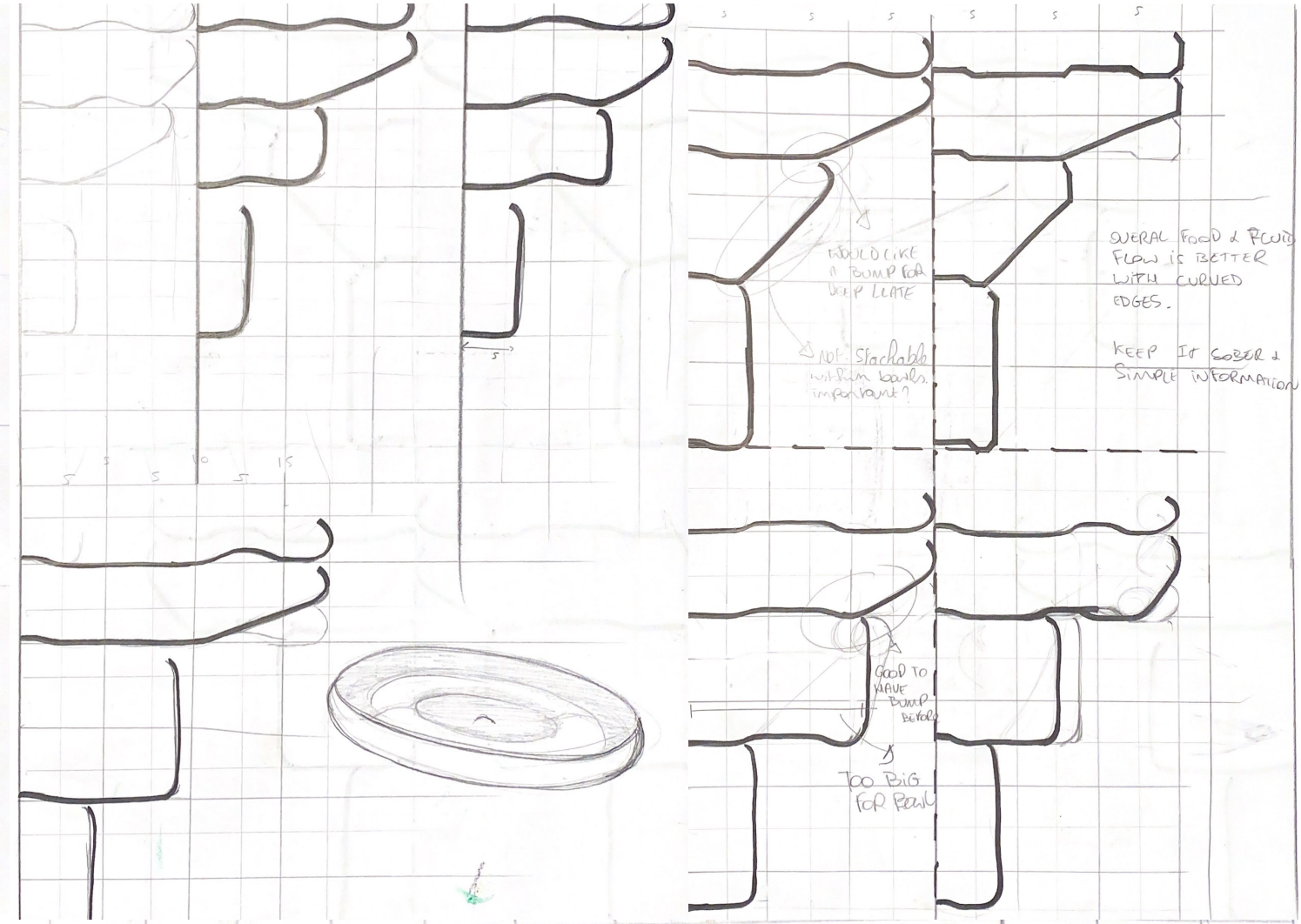
D. Salver plate - Alex Rasmussen

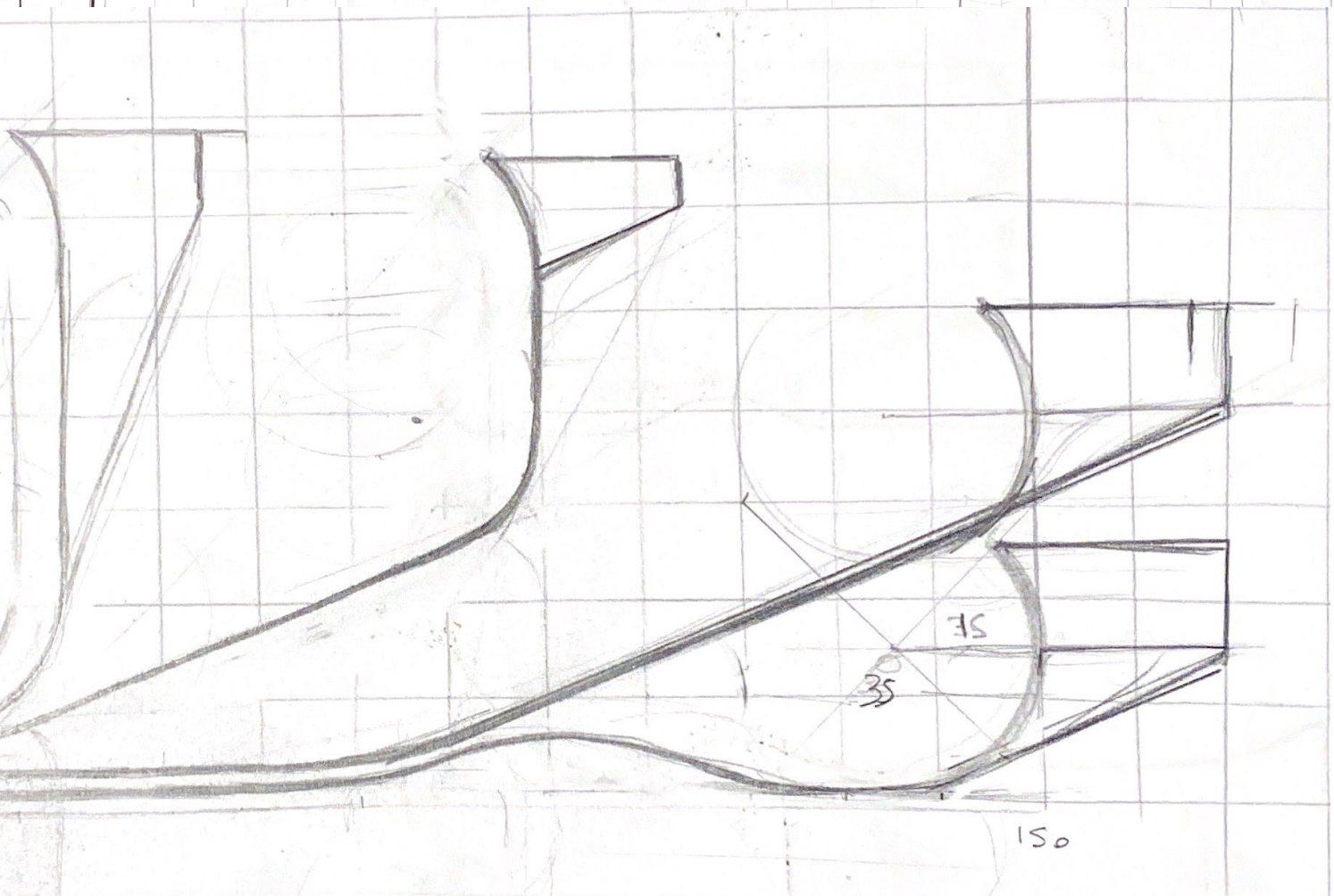
Development process

During the material research, I intentionally worked on the repetition of patterns. Circles, lines, and volumes are examples of ways to add interesting volumetry without overwhelming the user with unclear and inconsistent elements. It helps locate elements on plates and bowls by following the flow of the lines and patterns with the sense of touch. It can be used to restrain and orient the flow of fluids as well, emanating through whole and versing beaks. The raised, slightly indented edges are also a concern I am keeping track of within the evolution and definition of the design. They are useful for the stackability of the different plates and bowls as well as to avoid unwanted spilling of the contained ingredients.

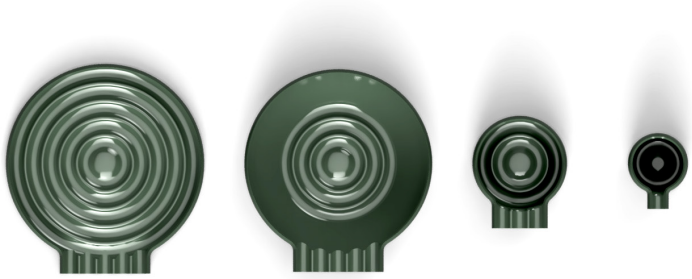


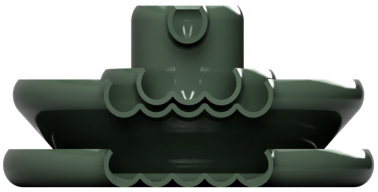

IMPORTANT TO HAVE
THIS PART coming back in
NO SPILL


WOULD LIKE A BUMP FOR DEEP PLATE
NOT Stackable within bowls important?
OVERAL FLOW & FLOW IS BETTER WITH CURVED EDGES.
KEEP IT SOBER & SIMPLE INFORMATION
GOOD TO HAVE BUMP BEFORE
TOO BIG FOR BOWL

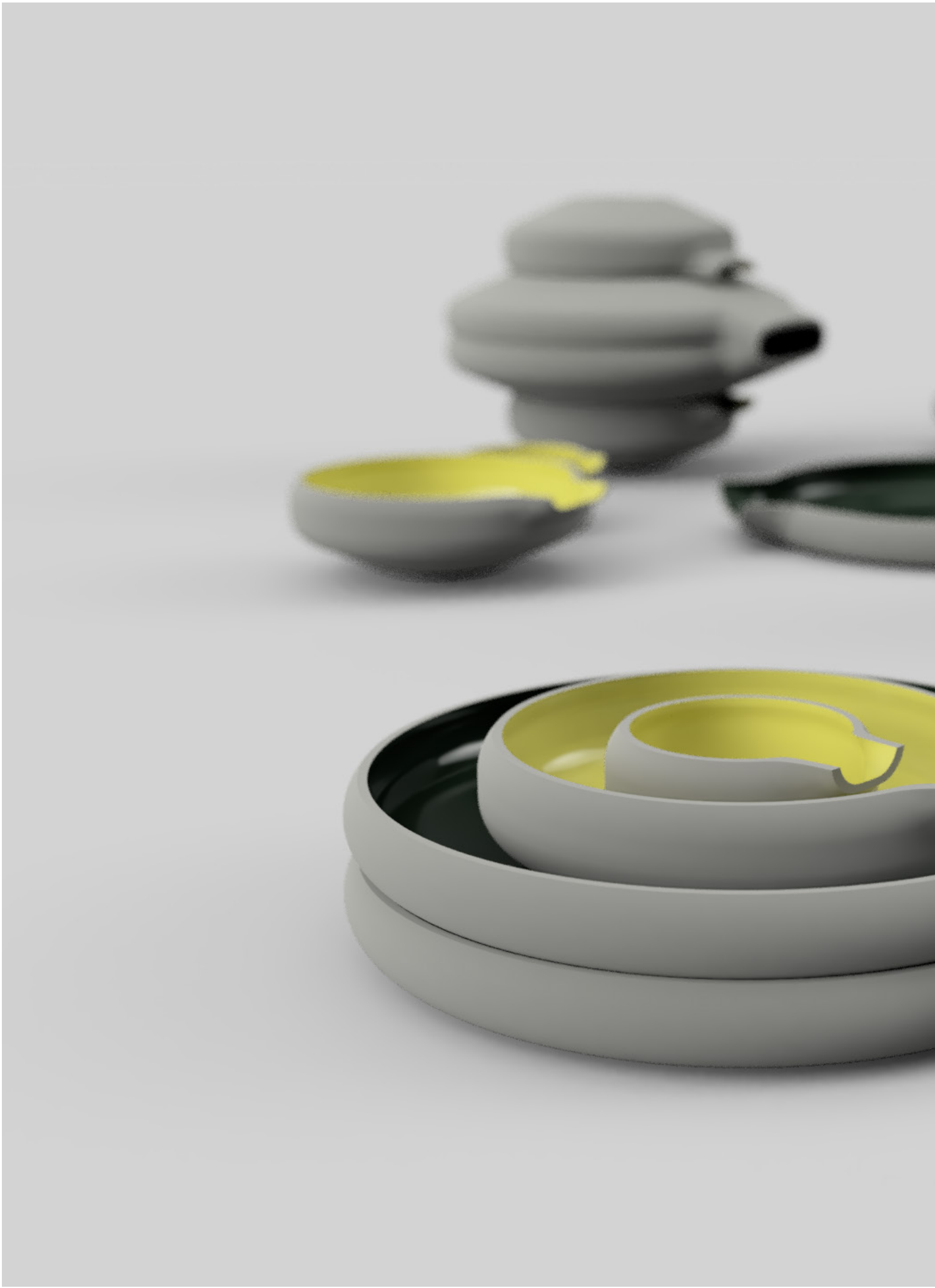

15
35
150

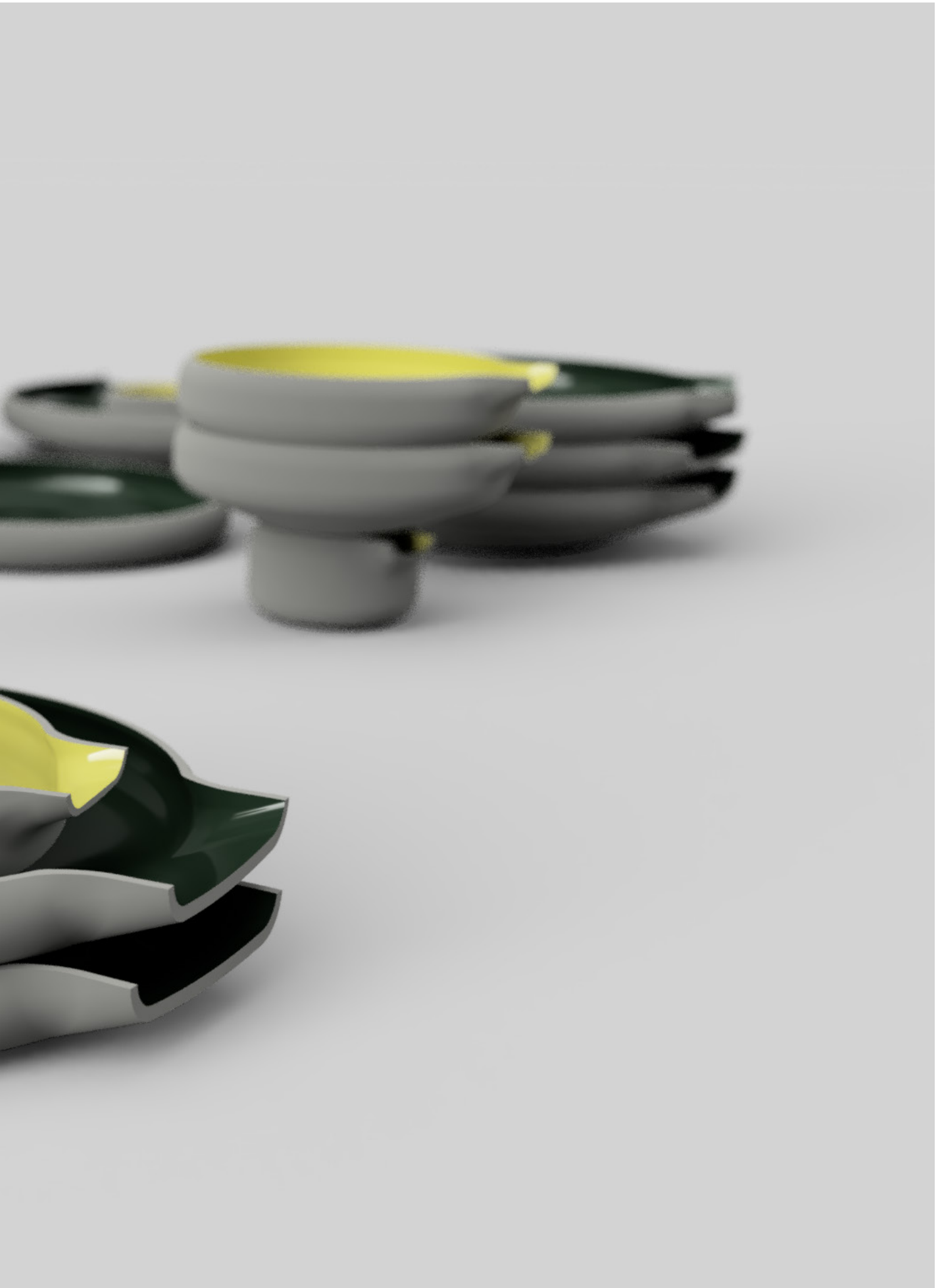
After a few sketches, combining both ideations of interesting geometric characteristics with esthetics, taking into consideration the production boundaries that will be faced, CAD models and renders were created to get a first grasp on more precise measurements. Stackability and interplay are something I want to preserve. this allows me to test out the different combinations I can work with. Here, rendering gives me a first glance at how colors and texture works with the geometry.





The different possibilities of interaction between the dishware, user, and the food were until the 3D printing only a theory. Apart from the previous Material research which gave me some paths to work on, those more precise models were way more accurate and confirmed my thoughts. The versing beaks and indents, combined with the lifted edges were all elements that hipoteticly helped the interaction with the concept. Out of the 3D testing, some major measurement changes needed to be done for the elements to reach the best interplay possible. The way the versing beak has to correlate with the plate patterns has to be on point. Assure the flow and motion of the hand to direct food and fluid properly.



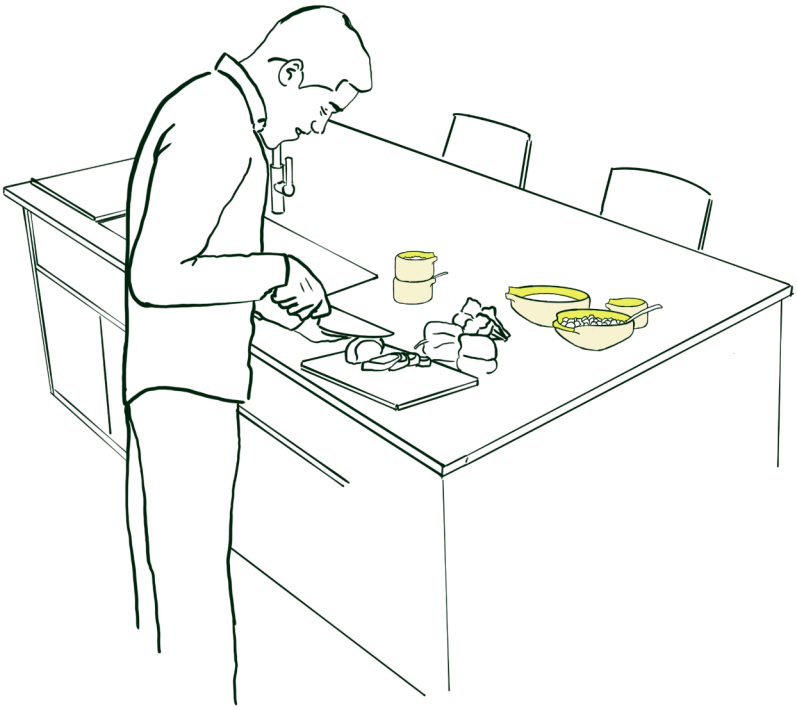


System

The purpose of this concept is to simplify the whole connected process of preparing food, eating food, and cleaning the dishes. All this while keeping the sense of tactility as important as before by enhancing its effectiveness. The storage and accessibility of those items are carefully thought out so that different elements stack together, an important factor for the concept to ensure stability and a tight workspace. The overall appearance should be as inclusive as usual dishware can be, avoiding stigmas while still responding to the needs of what adaptive utensils require. Measuring units and volume indications on the different dishware will allow the user to quickly estimate the amount of food is contained. The inclusion of a versing beak allows the easier transition from food and liquids from one container to another, adaptable while cooking as well as doing the dishes.

1. PREPARING

→ Versing beaks to transfer sauces / liquids
→ Storage of ingredients in stackable bowls & cups.
→ Measuring features w/ thumb
→ Stable and easy handling

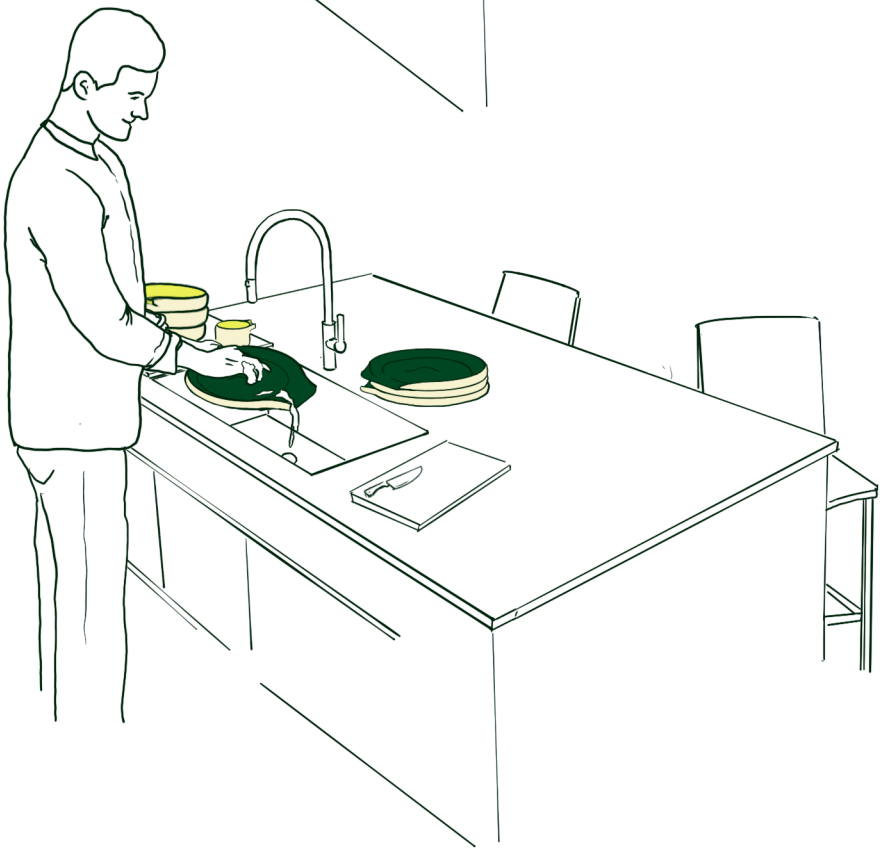


2. CONSUMING

→ Contrasting Colours & relief for easier interaction w/ whats in the plate.
→ higher edges to avoid spilling
→ inclusive aesthetics & material

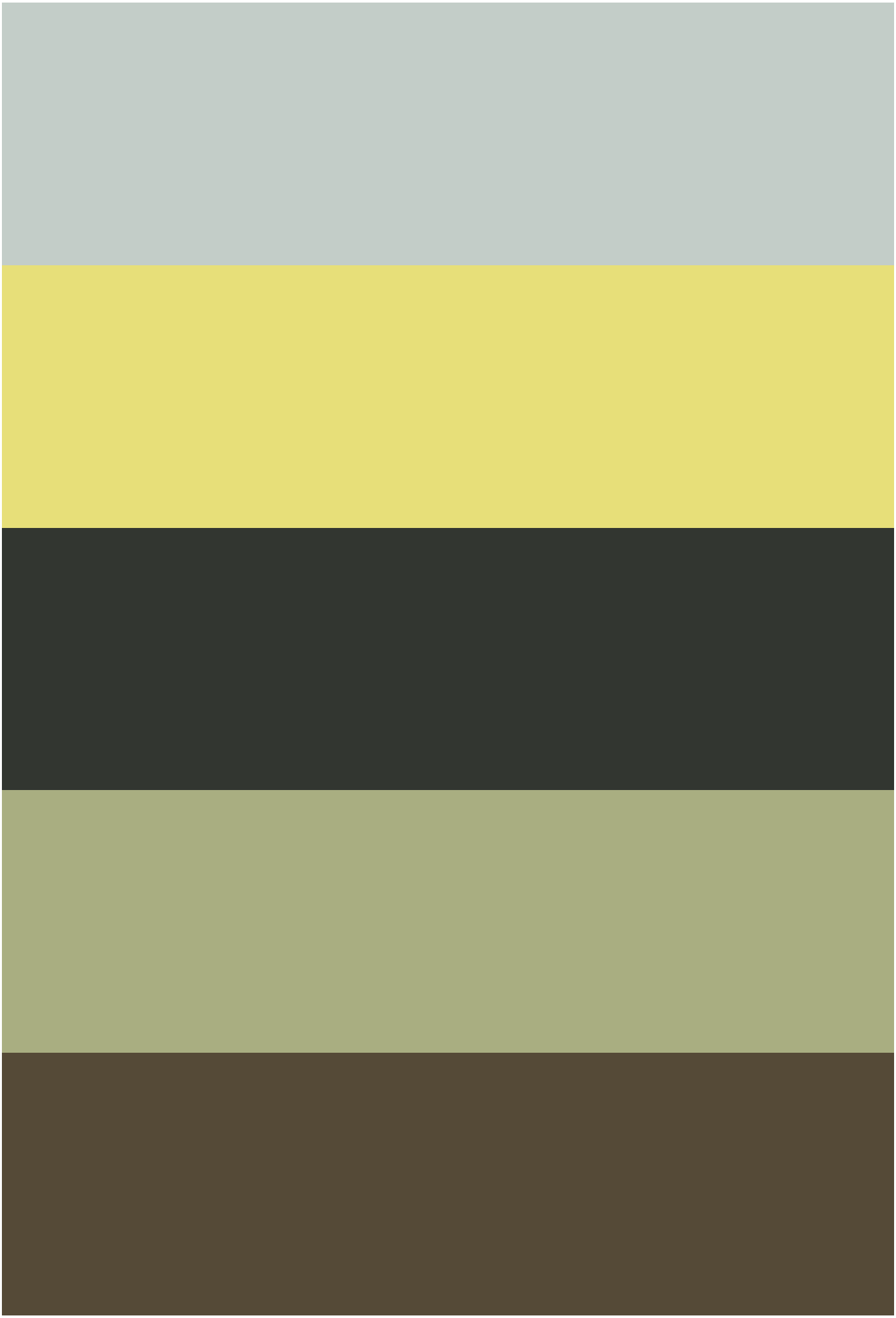
3. CLEANING

→ Elevated edges are a plus for a better grip.
→ relief on the dishware helps guiding the fluids & residues towards the versing beak Good to orient to trash for example.



In crafting this palette, every color choice holds a deliberate intention. The darker greens echo the power of natural pigments, while mirroring the clay's earthly origins. These hues provide a dense backdrop, enhancing the tactile experience for those who navigate these pieces through touch. Paired with the vivacious yellows, a visual symphony is created that elevates the senses. The contrast and vibrancy found in this palette not only create an aesthetic dance but also serve as a practical guide for visually impaired individuals, providing high-contrast cues that enrich their interaction with these ceramic creations.

These ceramics, purposefully designed as a dishware set for visually impaired individuals, transcend mere utility. They embody a dedication to inclusivity and artistry, a fusion where form and function coalesce to celebrate touch and texture. Through the harmonious marriage of green and yellow tones, these pieces convey a vibrant story that speaks to the tactile elegance of clay while fostering an environment of accessibility and sensory delight.



Production

Slipcasting in plaster molds is a highly advantageous technique for making ceramic plates. It enables precise replication, ensuring consistent shapes and dimensions. This efficiency allows for mass production, making it time-effective and cost-efficient. The process allows for the creation of complex shapes and intricate designs that may be difficult to achieve using other methods. Plaster molds promote uniform thickness, reducing warping during drying and firing. The technique is material-efficient, reducing waste and enabling recycling of excess slip. The resulting plates have a smooth surface finish, enhancing aesthetics and ease of cleaning. Slipcasting offers versatility in size, shape, and design options, catering to diverse preferences. Additionally, consistent production conditions ensure a higher level of quality control, leading to superior ceramic plates.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The initial step revolves around designing a master model of the desired ceramic production, meticulously sculpting it from clay or 3D printing are adequate materials and ways to create this model. Make sure to scale up the dimentions of the model by 15%, since later in the process a lot of shrinkage of the pieces takes place. This master serves as the foundation for the subsequent mold-making process. A plaster mold is crafted from the master model. The master is enveloped within a container, and liquid plaster is poured over it. Before the casting begins, the master model necessitates a coating of mold release agent to prevent adhesion between the model and plaster. As the plaster solidifies, it captures the inverse impression of the model, forming the mold. This newly formed mold is then allowed to thoroughly dry and cure, preventing potential imperfections during later stages.
To prepare for the slipcasting process, ceramic slip is concocted by blending finely ground clay and water to achieve the desired consistency. This slip should be free of air bubbles and possess a smooth texture to ensure optimal results. With the mold appropriately primed, the slip is poured into it, filling it to the preferred thickness depending on the amount of time the liquid stays in the mold.

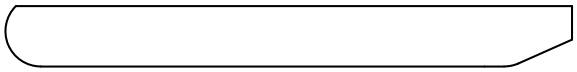
The mold is then maneuvered to facilitate the draining of excess slip, leaving behind a clay layer adhering to the mold's contours.
Once the desired thickness is attained, the residual slip is poured out, yielding a hollow clay structure within the mold. This creation requires a judicious sense of timing to achieve precise results. It takes around thirteen minutes for my table ware to reach the desired thickness.
After casting, the clay structure within the mold must be allowed to dry and solidify. When the optimal consistency is reached, about twenty-five minutes, the mold is gently opened, and the cast ceramic piece is delicately removed. This stage necessitates careful handling to prevent any damage to the delicate piece.

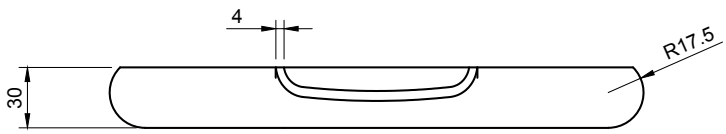
Post-demolding, the ceramic piece might require minor finishing touches like edge smoothing or imperfection removal to meet the envisioned quality standards.
The cast ceramic piece then undergoes an initial firing, known as bisque firing, conducted at a relatively low temperature (typically around 950°C). This strengthens the clay and renders it more resilient for subsequent glazing.

Glazing comes next, involving the application of a glassy glaze substance onto the ceramic piece. This substance not only adds color but also serves as a protective layer. Various techniques like dipping, brushing, or spraying can be employed for glazing.
Following glazing, the piece is subjected to a final firing, termed glaze firing, at a higher temperature (usually between 1025°C and 1250°C). This step fuses the glaze to the surface, culminating in the distinctive appearance and characteristics of the ceramic plate.
Prior to packaging and distribution, each ceramic plate undergoes rigorous quality inspection to ensure it aligns with the desired standards.

Prorotype

In essence, the final prototyping stage is the crucible where design aspirations and functional realities merge. It is the embodiment of meticulous research and meticulous design work, leading to tangible outcomes that resonate with the project's core purpose. The insights gained from this phase provide a solid foundation for the subsequent development stages, as the project nears its realization in the form of a meaningful, inclusive kitchenware solution.

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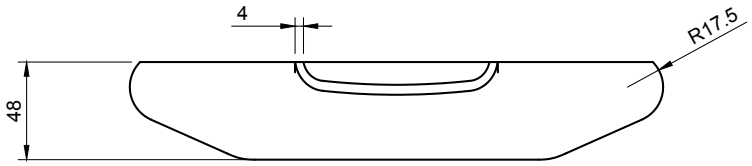
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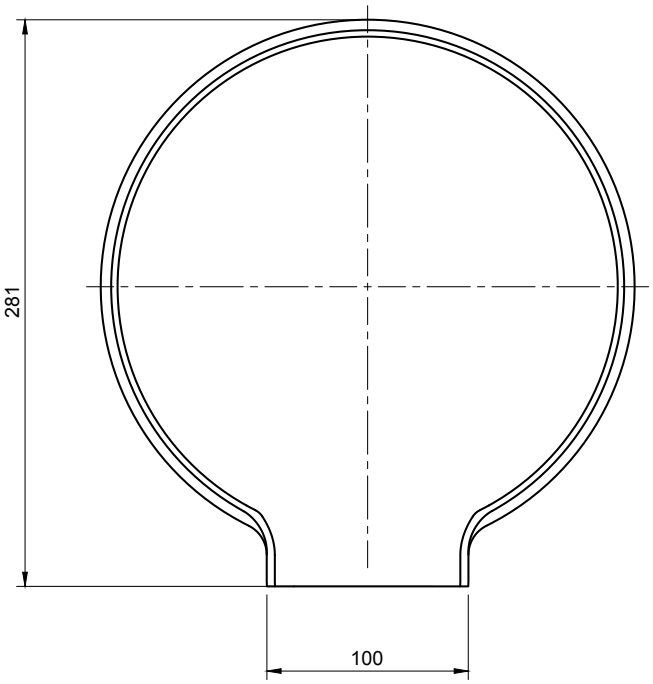
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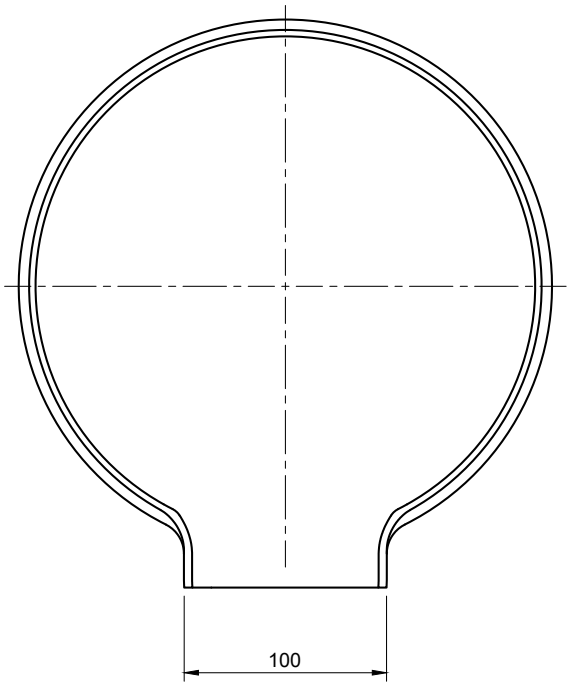
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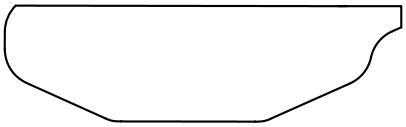

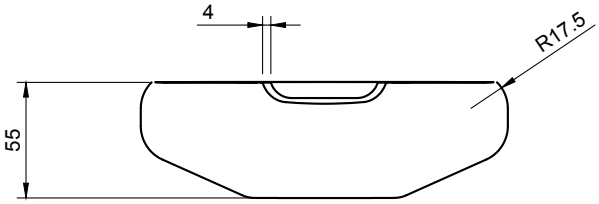
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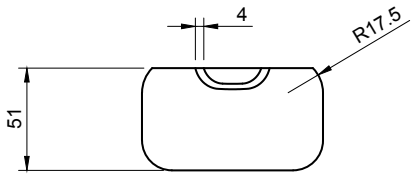
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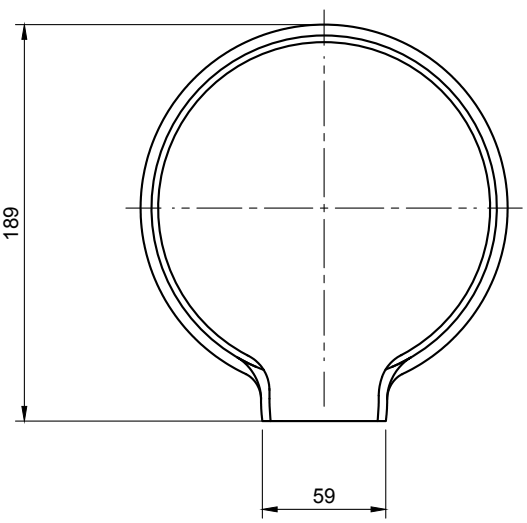
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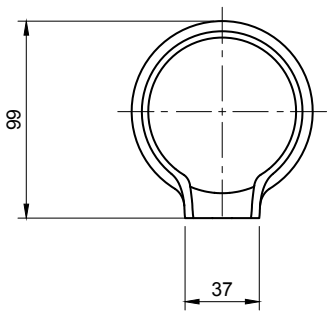
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Reflection

Undertaking the creation of a ceramics-based dishware set for visually impaired individuals has provided a transformative experience within the realm of industrial design. As a student, the project's wide array of choices ignited a sense of creative freedom that kindled my enthusiasm for conceptualization. Navigating the design process underscored the significance of empathy, as interactions with the visually impaired community informed every decision.

The scope of actions available to a student in industrial design is invigorating, allowing exploration beyond conventional boundaries. This creative autonomy empowered me to craft a unique blend of tactile ceramics that merged functionality and aesthetics. Iterative cycles of prototyping and refinement showcased the iterative nature of design, with feedback guiding the way.

This journey redefined my perspective on design's power to create positive impact. The ceramics dishware set stands as a testament to inclusive design principles, propelling me towards a future of responsible design practice. As this chapter closes, the newfound knowledge, skill growth, and empathy cultivated fuel my commitment to continue shaping a more thoughtfully designed world. The thesis is not an end but a pivotal step in a lifelong odyssey of meaningful design.

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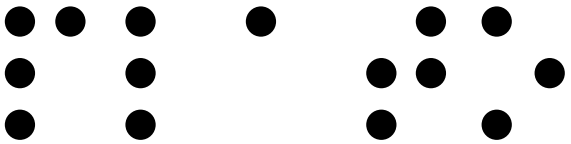
Lucien Tirou



Plato

Dishware for visually-impaired people

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