



# Impressions of Nature

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# Abstract

This is a practice-based project that uses qualitative, artistic research methods. The project's foundational method of re-mediation is used to explore the dynamic relationship between form and materiality and how this interaction can produce objects of aesthetic value. Located at the center of the project is a collection of artifacts. This collection, made from high-fired and unglazed porcelain, is the product of the main method, re-mediation. This collection is mentioned in the research question:

How can re-mediated surface samples collected from nature inform the design of products?

This line of research encourages a practical and tangible process with a clear goal related to product development. As a result, three uniquely different products were developed during this project. The purpose of the product development has firstly been to afford insight into different aesthetic aspects that can be achieved through an exploratory design process. Secondly, different processes such as 3D printing in clay combined with traditional handcrafting methods have been used to investigate how to design both a personal and a shared aesthetic experience for the user.

Keywords: Re-mediation, digital mediation, Aesthetic intelligence, Artistic research, Design thinking.

Design can be art.

Design can be aesthetics.

Design is so simple, that's why it is so complicated.

*Paul Rand*

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# 1. Introduction

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# 1.1 Introduction

This is a practice-based project that uses qualitative, artistic research methods. The project's foundational method of re-mediation is used to explore the dynamic relationship between form and materiality and how this interaction can produce objects of aesthetic value. Located at the center of the project is a collection of artifacts. This collection, made from high-fired and unglazed porcelain, is the product of the main method, re-mediation. This collection is mentioned in the research question:

How can re-mediated surface samples collected from nature inform the design of products?

This line of research encourages a practical and tangible process with a clear goal related to product development. As a result, three uniquely different products were developed during this project. The purpose of the product development has firstly been to afford insight into different aesthetic aspects that can be achieved through an exploratory design process. Secondly, different processes such as 3D printing in clay combined with traditional handcrafting methods have been used to investigate how to facilitate both a personal and a shared aesthetic experience through design.

It is not surprising that I have chosen a project with an aesthetic and material focus. Looking back on the progression of my master's studies. There is an evident dedication toward understanding aesthetics' role within the design field and how to communicate the value of aesthetics to both peers and the design community at large. This dedication is evident in my contribution to the EPDE conference 2021 with the article; *Understanding Aesthetics in Design Education*. This article discusses how aesthetics is a valuable tool in "the pursuit of innovation as well as of creation of ethical and sustainable products" (Egan, 2021, p.6).

# 1.2 Philosophy of design

This project has primarily been designed to facilitate research through design and exploration with material and aesthetic thinking as guiding principles. The project framework is founded on the five stages of design thinking; empathize, define, ideate, prototype, and test (Kleive, n.d.). As a methodology, design thinking has a comprehensive and holistic framework well suited to meet user needs and produce relevant design solutions (Muratovski, 2016, s.17-18). My one criticism that might be connected more to my use of the method and my proclivities rather than the theory itself is that it tends to promote logical thinking on the part of the designer. For example, the empathy stage is, in my experience, rarely referred to as empathy; it is often called user perspective. At first glance and within the context, they might be viewed as synonyms; however, there is a significant difference between these terms in how it affects my thought patterns as a designer. When confronted with the term user perspective, I wish to locate the users in question, collect relevant data and look for connections, commonalities, needs, wants, pressure points, and design opportunities. This is a valuable and powerful approach that is governed by logical thinking. Empathy, on the other hand, is not based on logic. It needs a different approach, and as I have learned through the work in this project, a different way of thinking. An Aesthetic way of thinking. Pauline Brown, the author of *Aesthetic Intelligence: How to Boost it in Business and Beyond*, calls this approach the other AI, which she defines in the following way:

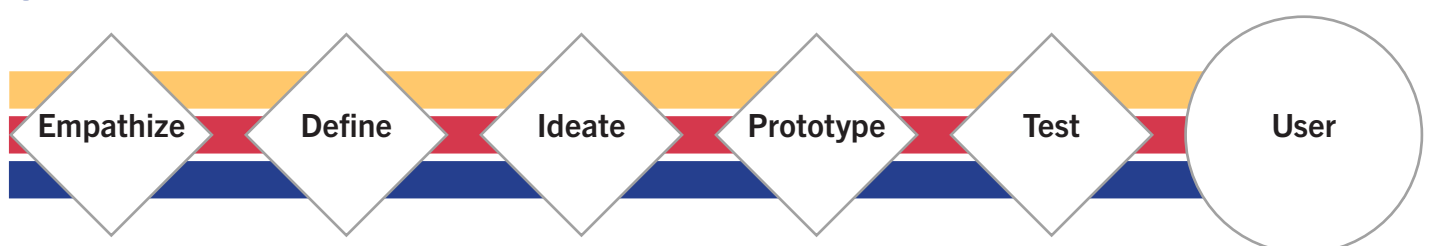
Aesthetics is the pleasure we, i.e., all humans, derive from perceiving an object or experience through our senses. Aesthetic intelligence... is our ability to understand, interpret and articulate feelings elicited by a particular object or experience (Brown, 2019, 01m 35s).

Although logical thinking is well suited to revealing and defining problem areas, aesthetic thinking is well suited to give insight into how those solutions can be communicated and implemented to add value and facilitate user experiences. Aesthetic intelligence, or an aesthetic way of thinking, is connected to how people perceive and interact with the material and the sensorial world. Within this perspective, it becomes clear that aesthetic thinking or aesthetic intelligence is a vital skill for a designer to have since it directly effects to what degree and in what way the design solutions will affect the user. As Pauline Brown puts it, aesthetics represents humanity in design and represents as such a very user-centric approach. In addition, I would like to add another term to the foundational approach this project has toward design; Material intelligence.

”As a culture we are in danger of falling out of touch, not only with objects, but with the intelligence they embody: the empathy that is bound up in tangible things. I am speaking here of material intelligence: a deep understanding of the material world around us, an ability to read that material environment, and the know-how required to give it new form.” (Adamson, 2018, p.4)

Approach to Design thinking:

- Material intelligence
- Aesthetic intelligence
- Logical thinking



# 2. Artifacts

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# Artifacts

These artifacts are of a specific importance because they form the basis for all design development that has evolved throughout this project. One thing that is important to note is that these artifacts are the impressions of nature that the title of this project refers to. They are not nature, they are abstractions, the results of a remediating process that was already commenced before this project started. Within this context, they are the seed, that all the products detailed in this thesis, has grown from.



*Image depicting the entire series of surface sample artifacts. Photo by Anna Dypsjø Egan*



# 2.1 Pre-project

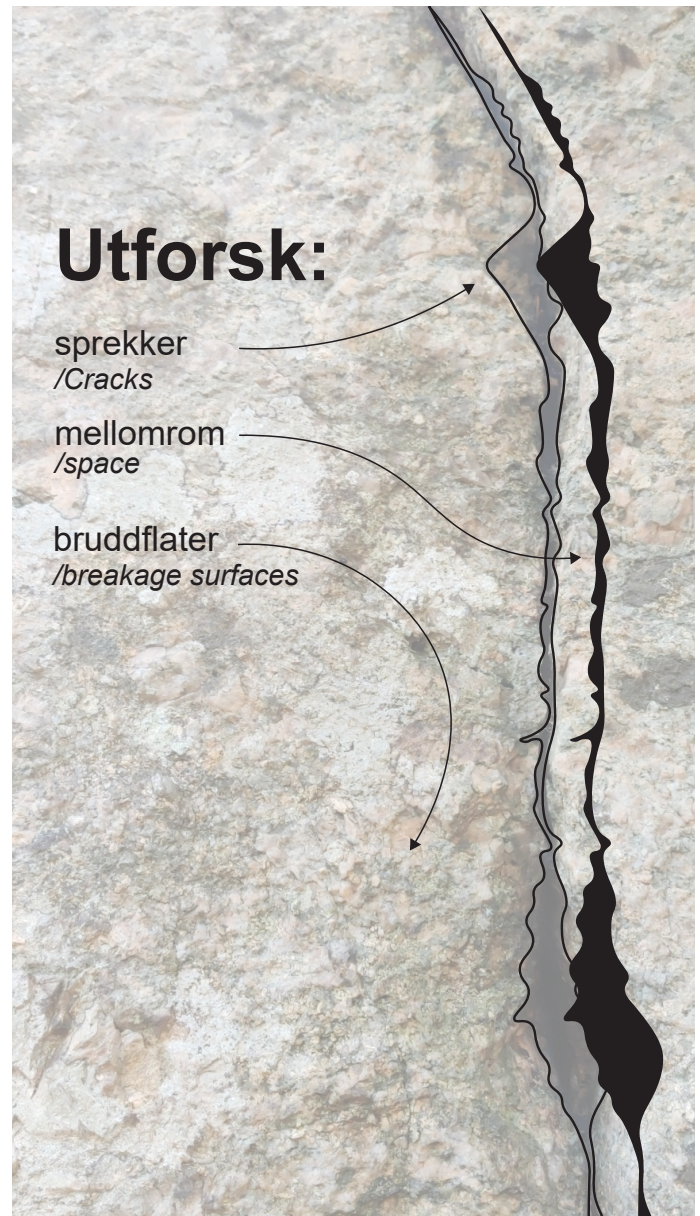
## MAPD5300: Aesthetics of materiality

As a conclusion to the fall semester of 2021, I worked on a project that explored the nature of cracks in connection with the subject MAPD5300, entitled Aesthetics of Materiality. This project delved into the nature of cracks, their appearance, character, and spiritual or cultural meaning. The cracks were found in natural and urban environments and on the human body as scars or stretch marks. During this project, I was introduced to the method of re-mediation, which has become foundational in this project. Mediation, within this context, is the act of transferring form and texture from one medium into another, for example, by imprinting the surface of a rock into plastic clay or recreating the form you are studying by using a different artistic or crafting technique. Remediation is the act of repeating this process of transference into different material contexts. The remediation during the aesthetics of materiality subject concerned itself primarily with exploring two-dimensional pattern design, a very different direction than what this thesis concerns. However, this project could only have become a reality with the work done on the subject of Aesthetics of materiality (5300). This is partly because the work in this subject allowed me to explore how this co-design with materials can spark new ideas, insights, and perspectives that culminate into experiential learning and surprising results. But more tangibly, the artifacts that this "Impressions of Nature" project explores are molded on the material remains from the pre-project. The clay imprint depicted here in various forms was made into a plaster cast that, among other materials like stones, tree bark, and other biological materials, became the starting point of the exploration I continued after the concluding exam of the subject, Aesthetics of Materiality.

*Illustrative poster depicting the research topic in MAPD5300 - Aesthetics of materiality.*

*Picture of a dried clay slab, imprinted with the positive form of a crack. part of process documentation from MAPD5300. Photo by Anna D. Egan.*

*Process documentation from MAPD5300 depicting mediation in the field. Photo by Anna D. Egan.*





## 2.2 Creation of the artifacts

### A collection of surface samples

During the spring of 2022, I continued to experiment and explore how the material collected in the pre-project could be perceived if re-mediated into clay. This was done by rolling out a slab of stoneware. This was divided into circular shapes using a cookie cutter before the clay was imprinted with the various surfaces and forms. I did this because I wanted to provide a consistent geometric framework through which to



view the organic formations. The rounded shape provided a uniform that served as a contrast to the imprinted surfaces. The results from this first test round were intriguing, so I repeated the process. I was only changing the clay from stoneware to porcelain. High-fired and unglazed, the 44 specimens formed the collection of artifacts this project is built on.



*Picture of a plastercast made from an imprinted clay sample stemming from MAPD5300. Photo by Anna D. Egan.*

*Picture of the three artifacts that form the basis of the material exploration in this thesis project. Photo by Anna D. Egan.*

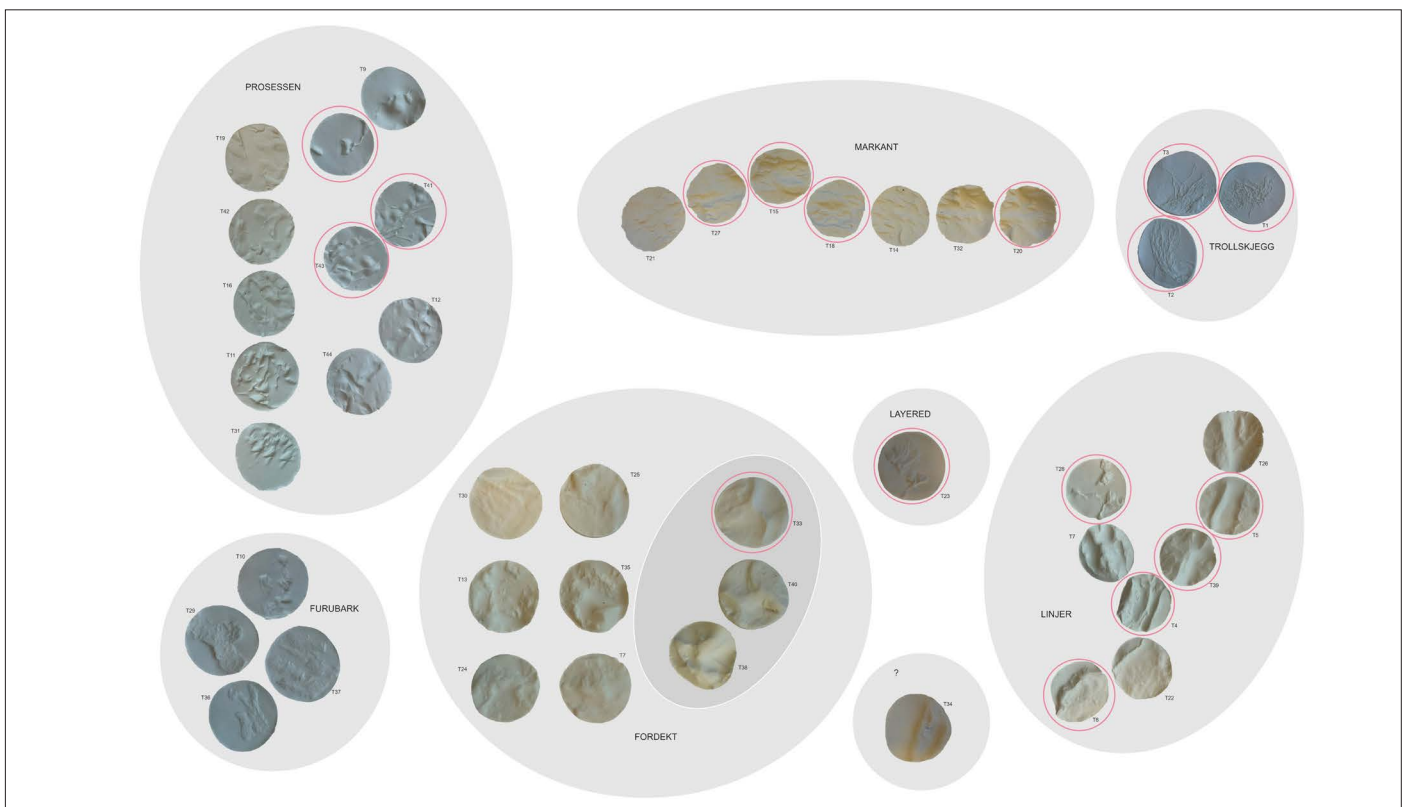
*The making of the artifacts. Here shown as wet, unfired porcelain. Photo by Anna D. Egan. This picture was taken on the 02.03.2022*

## 2.3 Categorisation of the artifacts

At the very start of the project, my focus was entirely on getting to know the artifacts. To study them, to understand them, and to unlock their aesthetic potential. I knew that I was fascinated with them and that they sparked my interest. However, I was only partially aware of why that was. I intended to gain a higher level of insight, and the first step was to study them actively and categorize them. Considering the goal of this project, to strengthen my aesthetic thinking, it is interesting that I undertook the task of trying to understand the aesthetic value of these artifacts in such a logical manner.

The artifact collection holds 44 specimens named and numbered, ranging from T1 to T44. The T stands for texture since, when these samples were made, the texture was what I thought I was capturing. As the process of this project progressed, however, I came to realize that they contained so much more than that. Therefore, I looked for a common origin when I started sifting through the artifacts to categorize and define

them (Appendix, p.7-14). Examples of this are the categories named Pine bark (Furubark), Bryoria (Trollskjegg), and The process (Prosessen). The category of Pine bark and Bryoria is reasonably self-explanatory. They contain examples imprinted with pieces of the thing they are named after. The category called "the process" shares this commonality but in a different way. These artifacts are imprints from plaster casts that depict the traces of the process from the 5300 subject, Aesthetics of materiality. Rather than showing imprinted forms of nature, it shows traces of my fingermarks and the clay I used to create the plaster mold of the original remediated objects. This strategy soon became less helpful when I tried to apply it to the remaining artifacts, so I changed tactics. Instead of looking for what the samples originated from, I started to look for qualities that sparked fascination. The categorization process went through several iterations with two goals in mind. Firstly to gain insight into their aesthetic value and potential. Secondly, to reduce the number of artifacts

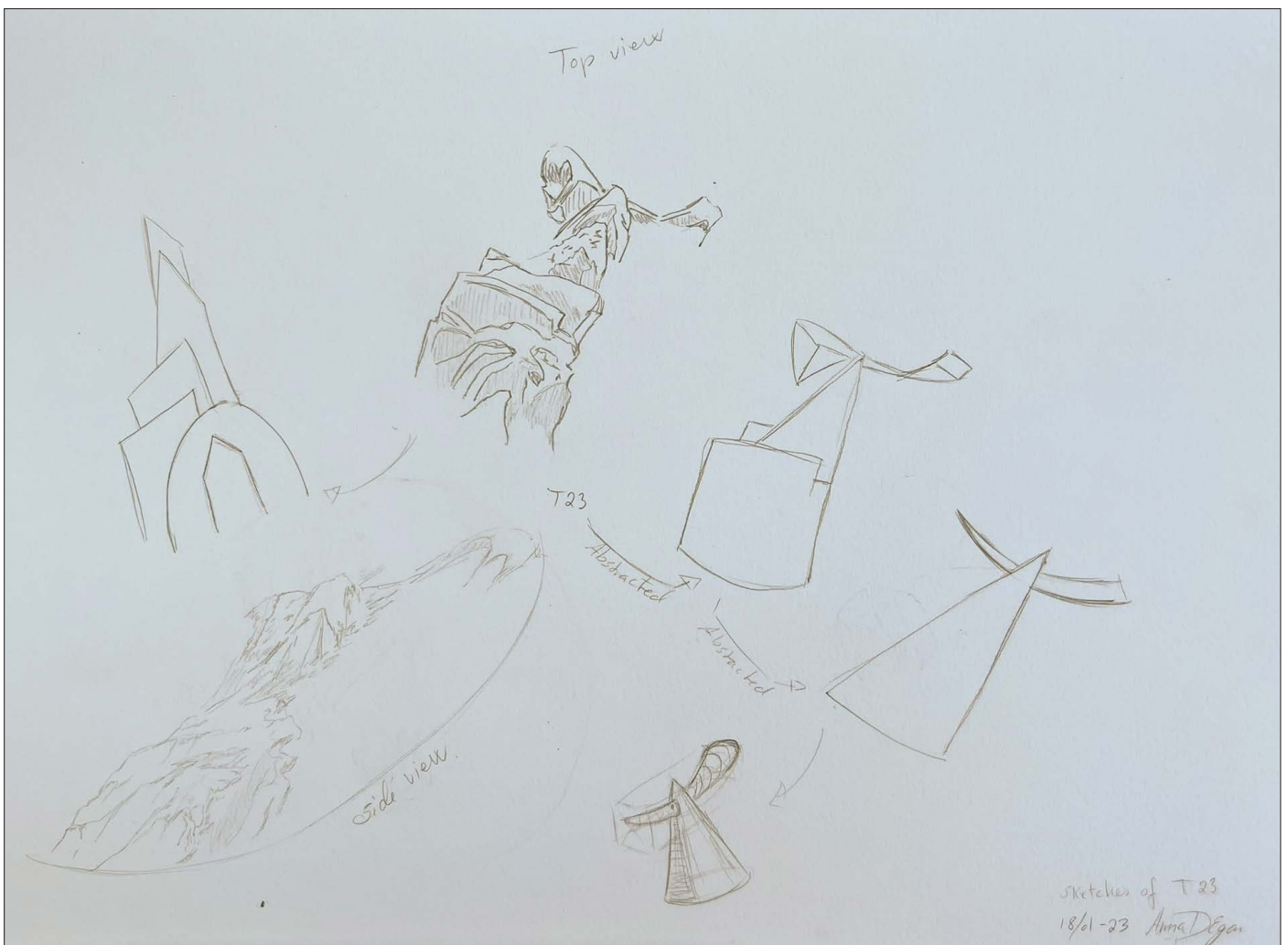


Screenshot of the first categorisation mapping, made on the 16th and 17th of January 2023. The red circles show the artifacts that I continued to work on after the first categorisation round was completed.

to something more manageable, especially considering the time constraints attached to this project. This winnowing process of assessing artifacts was not solely approached in a logical and categorizing manner. Other methods, like mapping as well as sketching both with paper and pencil as well as in clay, were used to aid the process (Appendix, 8-16,22-23,25-26,28-29).

The hand grasps the physicality and materiality of thought and turns it into a concrete image. In the arduous processes of designing, the hand often takes the lead in probing for a vision, or a vague inkling, which it eventually turns into a sketch, materializing thus the idea. (Pallasmaa, 2017, p.104)

This quote of Pallasmaa is geared toward the design process and the act of capturing or channeling creativity; however, it also speaks to how the body and the act of making can facilitate a reflective process. As a consequence, I tried sketching using different media as a way to gain a new perspective. To view the artifacts from another vantage point. This mode of approach is inherent in using remediation as a method. In this case, using material exploration as a conduit to understanding the artifacts was not the triggering cause that led to the selection of the final three. However, it provided insight and awareness of the potential and limitations in both my capabilities and the material, which will expand their boundaries during the course of the project.

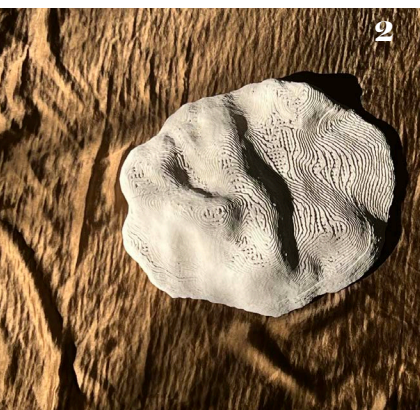
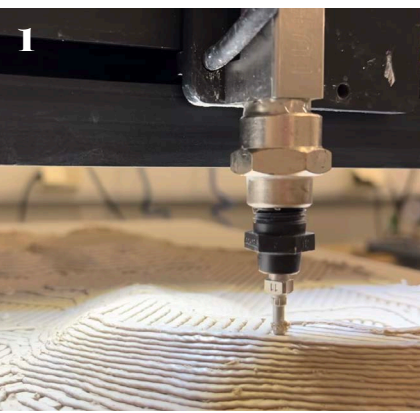


Picture of a sketched study of the artifact T23 made on the 18.01.2023. Photo and artwork by Anna Egan.



## 2.4 Elimination by 3D printing

It was only when I started using 3D printing in clay to reproduce the digital captures of these artifacts that I could finally narrow the scope to the final top three. The 3D printing process will be explained in more detail in the method section of this thesis. Still, I bring it up here because reproducing these artifacts has revealed itself to be a pivotal action, both in terms of the impact it has had on the research direction for this project as a whole and in terms of completing the selection of artifacts. I have allowed a significant amount of attention to the artifact collection in this thesis, and the reason for that is that they represent the foundation and the inspiration for the entire project. They are the seed that all other things grow from. Therefore it has been vital to establish an understanding of their intrinsic anatomy. This is where the method of 3D printing in clay has been invaluable because, unlike other methods that have been tried during this project, it enabled me to look beyond the surface and discover the structure beneath.



1: A closeup of the printing process.

2: The negative form of artifact T20. digitally remediated and printed in stoneware clay. Bisque fired and unglazed.

3: The positive form of artifact T20. digitally remediated and printed in stoneware clay. Bisque fired and unglazed.

4: Artifact number T20. High fired, unglazed porcelain.

## 2.5 The final three



### T20

This artifact caught my interest due to the dynamic nature of the tensions evident in the surface, that evokes imagery of stormy seas with roiling waves. The form is dramatic in its essence, depicted by the conflicting directions to which it bends and stretches. Both light and shadow underline and enhance the form even as it breaks through its circular framework, changing the shape. Uncontained.

### T4

Unlike the T20 artifact, this form has a clear direction in its movement. The surfacetension displayed here, however, evokes imagery of waves breaking against a beach rather than a temultious ocean. In addition, the balance between light and shadow is even more evident in this artifact. Part of what I find fascinating with this form is the repeatability of the main lines coupled with the supporting movements in the surface. This makes me wonder; what will the impact be if contesting elements of texture and form is removed. If the main element of this form is abstracted further.



### T28

This artifact contributes a sense of balance to the selection. Where the T20 and T4 are both depicting dynamic formations that give way to equally dynamic imagery and associations, this artifact is more static in comparison. What I find most interesting with this form is the contrast between the pertruding formations and the smooth background. It's reminiscent of mountain ranges and makes me think of landscapes on a large scale. I would describe it as stoick, yet playful, considering the hesitanlty searching and welcoming relationship between the lines that make up the two opposing elements.



# 3. Methods

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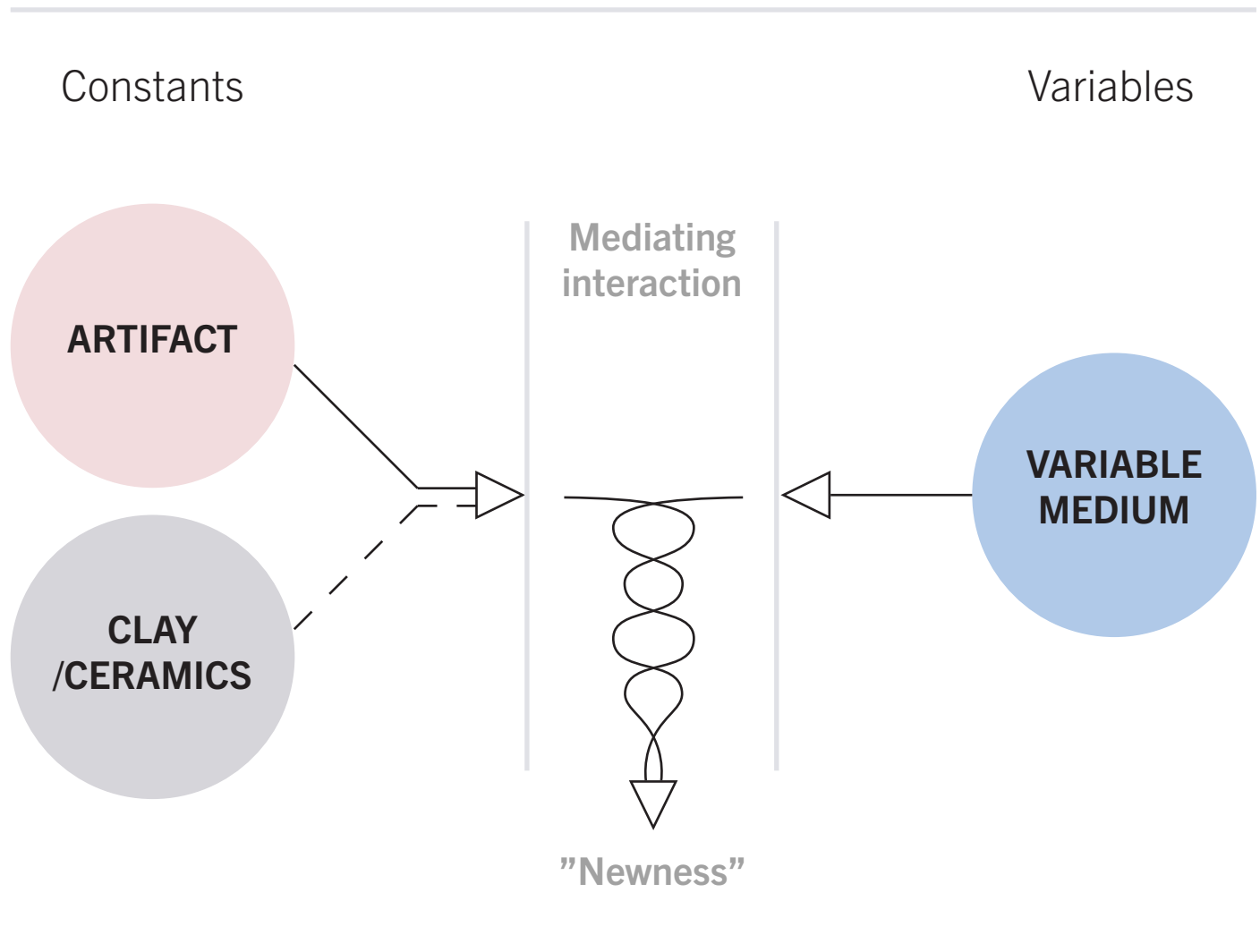
# 3.1 Artistic research

As mentioned in the introduction, this is a practice-based project that uses qualitative, artistic research methods. The foundational method of re-mediation is used to explore the relationship between form and materiality as an approach to gain a deeper understanding of aesthetic intelligence through material exploration. Anette Arlander has been a source of inspiration and knowledge when it comes to the field of artistic research. Her article; On methods of artistic research, has been a great help in consieving the projects structure. I attribute the choice of clay as a constant material, aswell as the choice of re-mediation as a constant method to the advice she offers in the conclusion of this artickle; "I recomend that an artistic researcher, holds on to at least one of the following in the turbulence of the research process - the question, the method or the material" (Arlander, 2014,p.38)

To undertake an exploratory researchproject can be a daunting thing, and the inclusion of the constant elements has helped me navigate this process without getting too lost in the material. Another aspect that has helped with keeping the process on track, is the autoethnographic reflection (Ellis et al., 2011) that has been documented through the journal found in the appendix (Appendix,p.6-90). The autoethnographic reflections usefulness is not limited to the act of writing the journal. After a while the constant reflection on the actions undertaken during the exploratory process becomes a mindset that prevents complacency. There is an increased sense of awareness and intention that permeates both the approach and the respons to the work and its results.

## 3.2 The use of methods

In the coming pages the details connected to the use of methods will be outlined. However, to better understand the relationship between the constants and variables applied by the re-mediation method I present the following diagram. This diagram illustrates the intention and functionality behind the use of the method.



In the meeting between the constant and the variable elements, the mediating interaction produces a result that is uniquely related to the sources that produced it. In this space something new is created, a newness if you will, an abstraction that can be surprising both in its nature and its qualities. This project is concerned with facilitating the repetition of this process as well as analysing and reflecting upon the aesthetic aspects of the results. When mediating a form by transferring it into a new medium, there is one certainty: a change will occur. Therefore, something will be lost in the transaction, and something will be gained. The interesting point is then to pinpoint what the difference consists of. What did you lose? What did you gain? What did you learn?

# 3.3 The constants

## Re-mediation: The central method

I refer to re-mediation as a method, as it was presented to me as such during the MAPD5300 subject, Aesthetics of materiality. However, I have yet to be successful in finding research articles that support remediation as a method. I have opted to utilize it because it will allow me to explore materiality and aesthetic properties tangibly and systematically. On the basis of this, I believe that re-mediation qualifies as a research method (Muratovski, 2016, p.84) appropriate for conducting research through design, within the realm of artistic research (Arlander, 2014, p.29)

Remediation has become a central exploratory approach during the initial research period and is consistently used throughout the project. This is an artistic research method, and within art, a medium can refer to both the material and the mode of representation, i.e., the technique used to produce the artwork ("medium," n.d.). As mentioned earlier in this thesis, mediation, within the context of this project, is the act of reproducing elements or the entirety of the artifacts form by applying a new material or technique, otherwise known as artistic media. Remediation, then, is the act of repeating this process. This method is specifically tailored to accommodate the envisioned learning outcome, which is to acquire a deeper understanding of aesthetics as a design tool.

## Artifacts

Another constant in this project is the artifact collection. Due to their importance I outline them more thoroughly in section 2 of this thesis.

## Clay: The constant material

Clay can be a self-mediating material in the sense that it has the intrinsic capability to radically change its core material characteristics in response to its environment. If the clay is placed in a humid environment, it will be soft, malleable, and flexible. The clay will also become dry if it's in a dry environment. Its colors will become dull and matted. The clay body will become lighter but also harder and more brittle. If you strike the clay in its dry form, it will not absorb the blow like plastic clay would. It will crack and break. The clay can shift between the stages of wet, soft, leather-hard, and dry in an endless cycle. Each stage of the clay's spectrum of stages is reversible. That is, until it stops being clay and becomes ceramic. When Clay is inflicted with heat in the range of 900-1000 degrees Celsius, what is called a bisque fire, the clay will become pottery. At this stage, it will be hard but brittle and porous since this temperature range marks the start of the vitrification process that strengthens the ceramic body. At this stage, the ceramic object can absorb and release water. However, it will not be able to hold water. Clay that's fired to a higher temperature of 1220-1300 degrees Celsius, depending on the clay's intrinsic qualities and component parts, has the potential to vitrify fully. Considering this, Clay as a material is uniquely qualified as a partner in a project like this, which can be regarded as a form of material co-design. When I say this, it is in a limited sense. I call it material co-design as a way of illustrating the importance of the role the clay has played during the course of this project. The clay, as a material, cannot be said to be able to inhabit the role of a stakeholder or an end user. However, it has been able to provide feedback through use of the re-mediation method in a consistent way that has driven the project forward. This feedback has been valuable in regards to aesthetic, material, and technical capabilities.

# The effects of digital mediation

While searching for relevant research related to re-mediation as a method, I stumbled across this article: Exploring the Composite Intentionality of 3D Printers and Makers in Digital Fabrication (Somanath et al., 2022).

The study that this article refers to is of a different nature and goal than what I have been working on in this project, however I found it relevant. The study in question investigate the relationship between technology and human beings, whereas I am using 3D printing technology as an exploratory mediating tool. This study set up a printing service where the 3D printers were tampered with in order to create manipulated and surprising results, in other words, the test subjects did not have the same agency as I have had in this project. Nevertheless, the characteristics they define in their finding resonate with my own experiences.

Our findings describe theoretically and empirically derived characteristics of human-technology relations within digital fabrication that include:

- a) opening a space for anticipation that accepts a role for technology to shape the outcome in surprising ways;
  - b) that the relationship with the technology is one of iteration, a co-exploration of where the creative process can go; and
  - c) there is resistance to the increased agency of technology in digital fabrication, which at times can be productive.
- (Somanath et al., 2022, p.79)

When I print using clay, the material and the technology together does create surprising result that are difficult to foresee even though I have access and agency over the entire supply chain. From the physical artifact, the photogramic scan, the meshmixer file where I control density, to Prusa where I control the print settings. Every step of this process is visualized and within my control, and still I find myself agreeing with the first finding of this study. I do feel anticipation because there is a difference between theory and praxis. A difference between a digital space and the experience of seeing the model materialize and to aid in its birth. This is in no small way dependant on the qualities and challenges

affiliated to clay as a printing material as well as the current limitations of the printing technology. There are so many things that can go wrong during a printing session that it requires constant vigilance. Intervention on the part of the operator is common. Based off the sound of the machine, you might change the speed, the flow of the clay or the air pressure in order to obtain the desired result in a consistent way. With a challenging print and a practiced operator, the session can still be one of dynamic concentration and both physical and mental exertion (Appendix, p.42-50).

Their second finding that talks of co-exploration I also find relevant to the results and experiences gained through my process in this project. The foundational purpose of re-mediation as a method is to facilitate a cooperative conversation between the maker, the material or the medium. This is not limited to digital technology, although I have found 3D printing as a valuable ideational tool that has afforded me insight into structural form that has previously been unobtainable (Appendix, p.42-50).

For their third and final insight that describes a resistance to the increased agency of technology. Once again I must agree that I can identify with this sentiment and my discomfort has materialized in many different ways. Through printing, even considering surprising results, I managed to achieve a highly precise level of accuracy considering the limitations of the medium. The prints started to become cleaner and more controlled and this level of control started to bother me. I started to resent the amount of space and focus occupied the machine was claiming in my work. As a reaction to this I started to feel the need to seek out media and methods that would afford me less control. Examples of this is handbuilding, exploration of crystal glaze and pitfiring in a bathtub. Exploration of crystal glazes and pitfiring represents a limited relinquishing of control that is affiliated with a certain level of risk. It can so easily go wrong, and more often than not it did, however it also affords the opportunity for discovery and therefore it creates a sense of anticipation. Handbuilding has also been a risky endeavour, but this is due to my limited skill level not the technique itself.



## 3.4 The variables

In the following pages will detail the different examples of variables used in conjunction with the re.mediation method. They will be divided between traditional handcrafting methods and digital mediation and production techniques.

Traditional handcrafting methods:

Impression

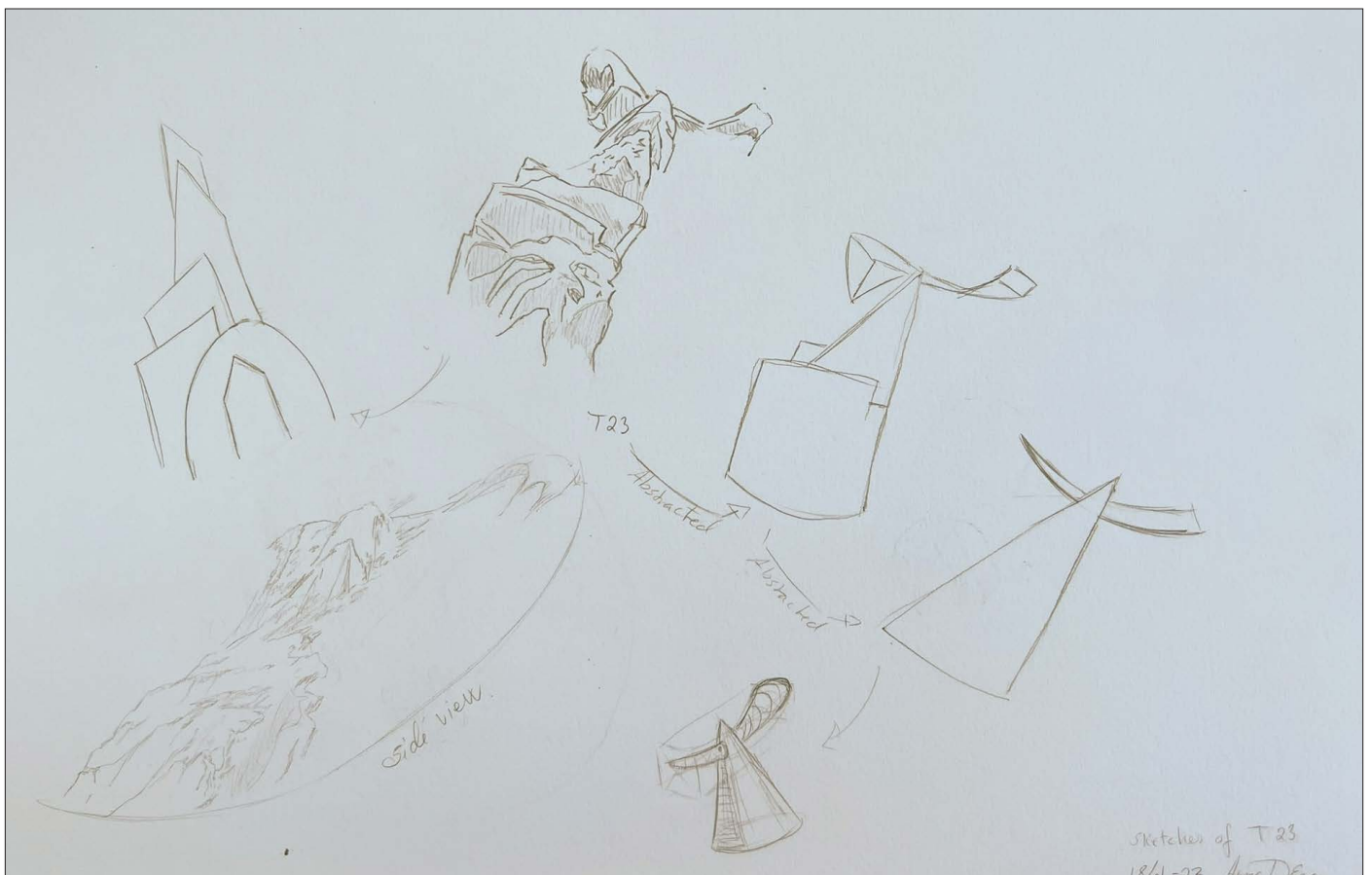


One of the first techniques I tried was to use the artifacts as a tool or a mould, impressing the surface into soft wessels thrown on the wheel. This is a natural continuation on the original mediation that created the artifacts. This altered both the texture and the form of the vessels, however I found the results to be aesthetically underwhelming (Appendix, p. 17-21).

# Sketching

Sketching has primarily been done using paper and pencil as well as clay. When sketching in clay I would also try to include the pencil drawing in the clay modeling process (Appendix, p. 13, 15-16, 22-23). I choose to illustrate the choice of the different representations of sketching by including a quote from the book, Elements of design:

**Three-Dimensional Sketches:** Use whatever materials are appropriate to the problem: clay, paper, cardboard, bristol board, wire, glue. . . . Work quickly. Make as many sketches of the abstract relationships as you can. The abstract relationships express the relation of the parts to the whole apart from any concrete or material embodiment. They reflect the direct visual experience of the thing, how forms and spaces and movements "speak" to one another. (Hannah, 2002, p. 46)

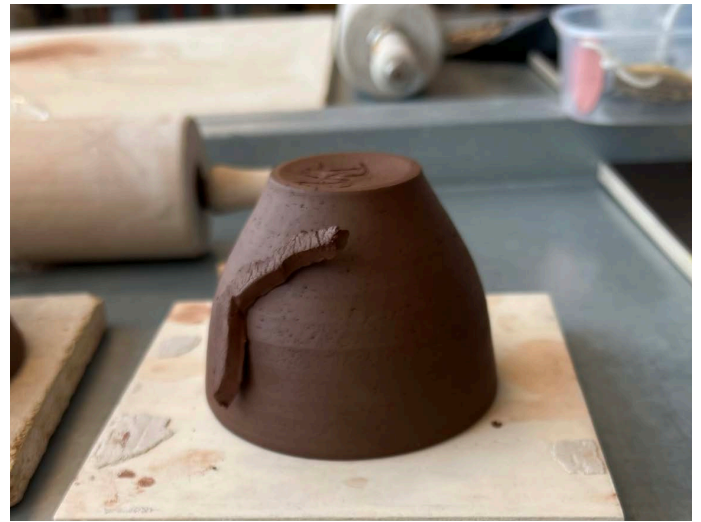




## Surface alterations to thrown forms

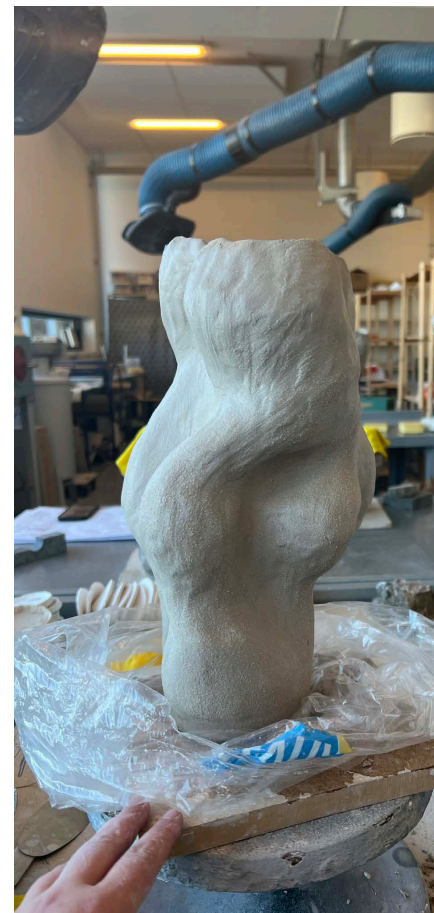


This technique was applied in an attempt to transplant an abstracted interpretation of a surface segment onto a geometric, three dimensional form. Several iterations were tried, combining on a selection of different thrown vessels (Appendix, p. 25-26, 34-36).





# Handbuilding



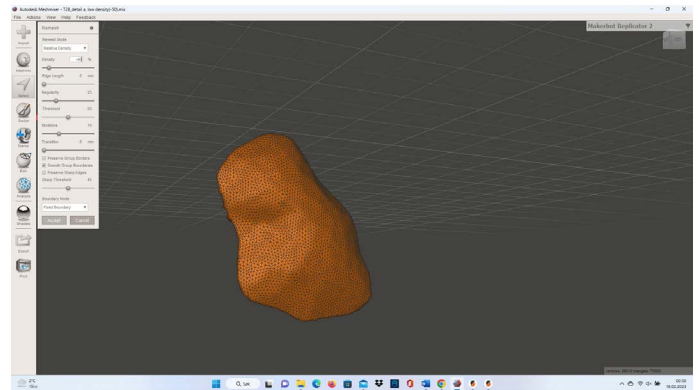
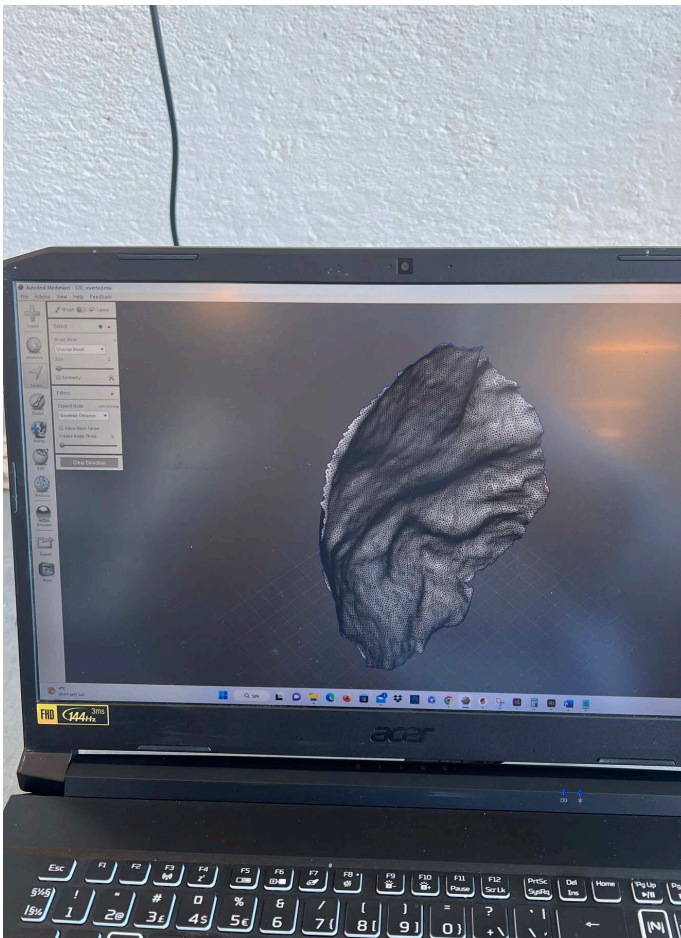
The technique of handbuilding has been used in conjunction with other techniques. For example the top pictures show vessels that have been handbuilt as an extension of altered, wheelthrown forms (Appendix, p. 58,61-63). The bottom picture shows a vessel that have been first pinte in clay and then shaped into a vessel using handbuilding, combining the two techniques (Appendix, p. 69,71).





# Digital mediation and production techniques:

## Digital mediation-Meshmixer



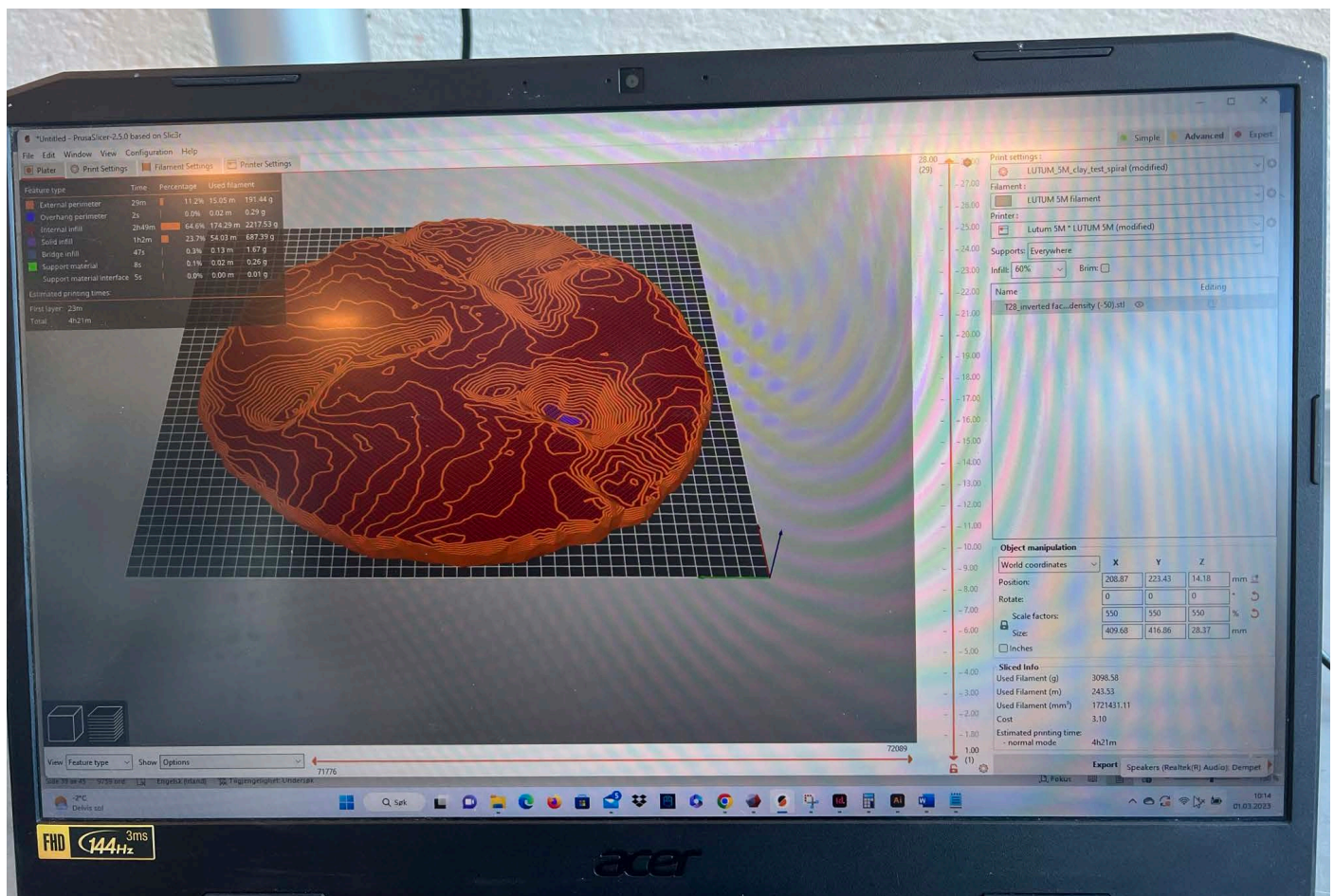
All the artifacts have been scanned and digitalized using photogrammetry. "Photogrammetry is a combination of photography and geometry. The artist takes multiple photographs of an object all around the subject and common points are referenced in the computer" (Mongeon, 2016, p.69). This is an accessible and relatively easy way of transitioning a found object into a digital file. The digital copies of the artifacts used in this project have all been scanned using Polycam, an app that's available for iPhones. The files are stored in a cloud service connected to a personal account and is therefore available for download via the computer, making it easier to access.

The scanned file is rarely compatible with printing in its raw form. Some cleanup and refinement in terms of density and removal of unwanted elements included in the scan, is done in Meshmixer. In this digital space it is possible to edit the model so that it will be possible to print.

The picture seen on the top left, shows the T20 artifact being processed in meshmixer.

Mediation in Meshmixer is not limited to simply cleaning up the scanned models. This is also the programme that has been used as a way of creating inverted models of the scanned form, i.e. the negative form. Another form of digital manipulation of a scanned form can be seen in the images to the right of this page. These are the materialisation of form segments that have been isolated in Meshmixer and later printed. This action makes it possible to regard the 3D patterning without the background. Just the parts, not the whole.

# Digital mediation-Prusa



A digital, 3D model cannot be printed without first being prepared further. It is not sufficient to tell the printer what to print, you also need to tell it how to print. This is done using a software called a slicer. For printing in clay I have used Prusa, however for printing using PLA (plastic) I use Cura. The reason for this is that Prusa have settings that are better calibrated towards clay printing.

The slicing engine will allow you to manipulate the settings dependent on your needs and wants. For example, this is the program I use to scale the models prior to printing. The image seen on this page shows the 3D model (inverted T28) in Prusa after it has been scaled up and sliced.

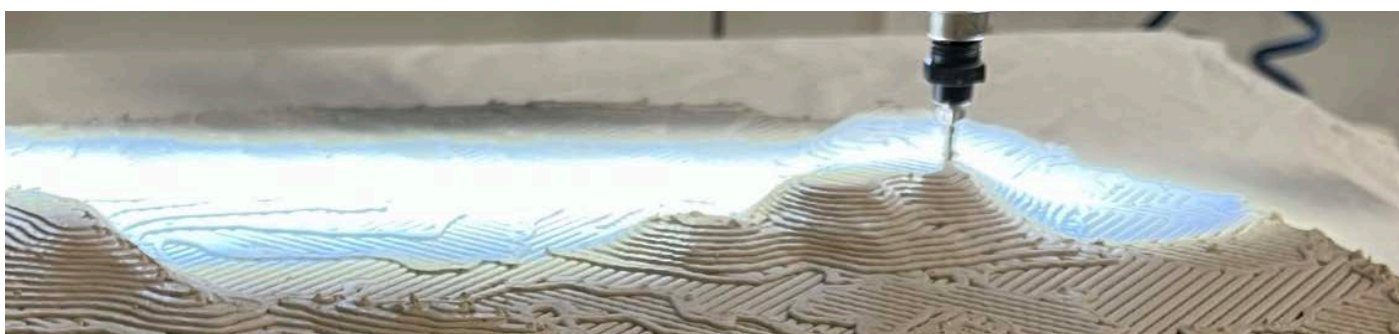


## 3D printing in clay

As mentioned in the artifact section of this thesis, 3D printing in clay represented a changing point that altered the direction of this project. Reproducing the scanned artifact provided a unique and unexpected perspective, both in terms of how the process affected my way of thinking, but also in terms of the physical results evident in the printed models themselves. When it comes to the shift that affected my way of thinking, it is related to structure and time. Printing with clay is a process that is much faster compared with printing in plastic for example. A relatively small model that might take a normal desktop printer 4-6 hours to make, can be produced in approximately 10 minutes with a clay printer. The results would be vastly different in appearance but my role is also different in a comparison of these two printing methods. When printing with clay I am required to remain present and vigilant and with these found object, my role is that of observer rather than designer. Instead of being a production effort it is a discovery process where the objects seem to grow before my eyes. It provided an entirely new perspective in terms of experienced knowledge and how form is comprised of structure. It allowed me to look beyond the surface.



For example, the T28 artifact was not one of my favourites initially. I mainly kept it in the collection because it represented something different, it was inherently different than the other artifacts. It has a surface area that seems more abstracted and curated than the other samples. It is a fairly flat, clean, and smooth model with three interruptions of rocky formations arranged near the edges. When it is printed, however, a topographical landscape consisting of a flourishing tapestry of crosshatched lacework adorns the entire surface area.





T20



The T20 artifact, on the other hand, was also surprising in that the printing process revealed an almost contrasting effect compared to the original artifact. The associations to the T20 artifact in its original state are one of natural forces, of dynamic energy, like the ocean's surface during a storm where conflicting forces work against one another. Creating an almost tethered chaos that is trying to burst through the boundaries that hold it. The printed version, however, has a very grounded, almost rooted feel, like a wild mushroom found in the forrest.



## Mediation using moulds

Moulds became a vital part of the mediation performed during the product development phase of this project. Although 3D printing afforded me new perspectives in the research and ideation phases, 3D printing as a production method was simply not compatible with the forms that has been explored in this projects. The use of material and time were the biggest challenges. One model could take between 4-10 hours to print and the material use could not be defended from a sustainability or even a practical standpoint. A different mode of reproduction was called for. The choice fell on plastermoulds as a viable alternative for all the product development processes in one way or another, however, plaster is not the only mould material used in this project.



Image depicting a clay printed object that would later, after the initial bisque firing, be used as a hump mould by pressing and so forming a slab of clay over this form.



Image depicting a plastermould of the first iteration of the Atlas platter. The mould is used for both slipcasting and presspiling.



The top image show two interdependent plaster mould. The mould on the right is a two-piece mould that affords the fabrication of a form that does not have ease, meaning that the clay model would get stuck if the two parts that make up the mould were not divided in this way. The mould on the left on the other hand does have ease. These two moulds each give form to two halves of what is to become one product, a double walled vessel as seen on the picture to the right. The final form is completed by manually joining the two halves of the form together. Both of these moulds were made from a mothermould made from 3D printed plastic (PLA).







These images shows moulds printed in PLA that act as a startingpoint for handbuilding with clay. This means that any formexploration conducted using these moulds will contain the inverted formlanguage evident in these plastic objects. However, where the form stretches away from the mould, the claybody will contain the possibility of occupying space unhindered. This idea of combining a freeflowing form with a strict visual and tactile anchor in this way is enticing, especially in terms of aesthetics. There is something playfull yet grounded about the nature of the formexploration that grew from these moulds.

The last three pages has detailed how moulds can be used to further the re-mediation process in several different way. However it also shows that all the moulds explored during the course of this process has been a derived from a 3D printed object, either in clay or plastic.

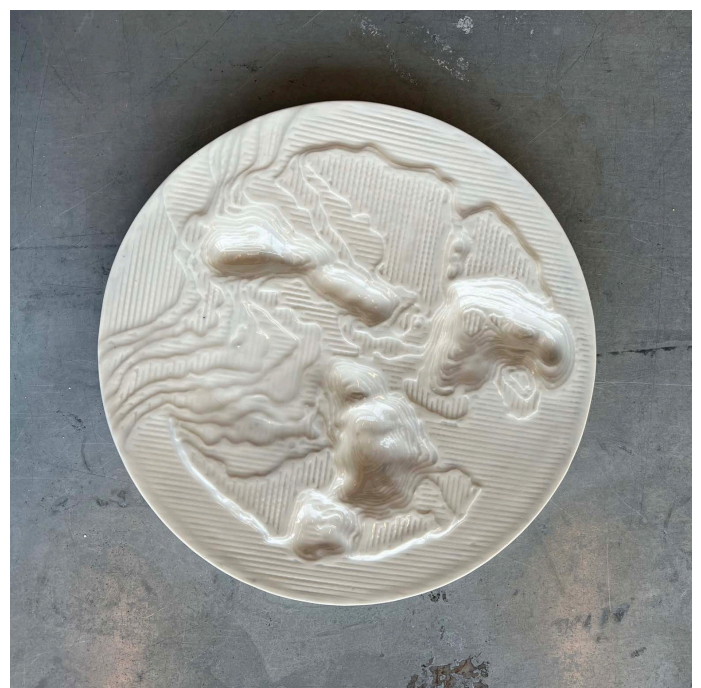
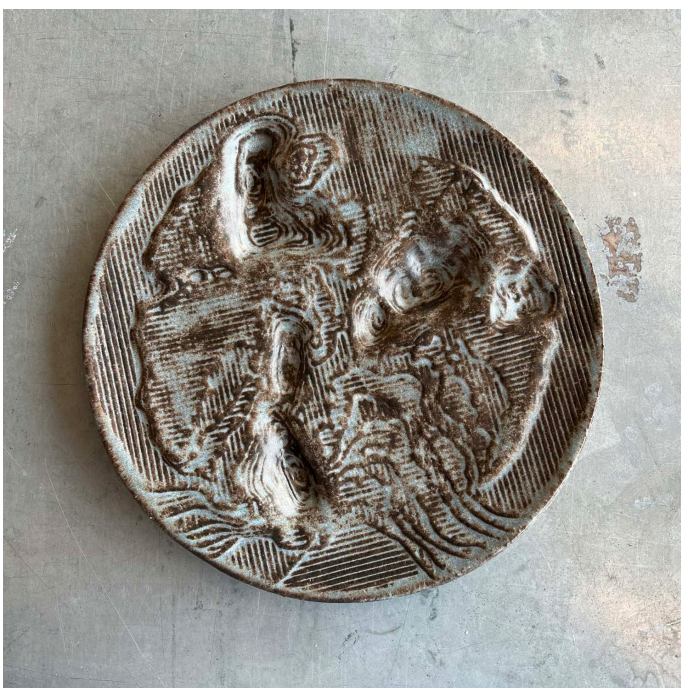




## A glaze fit to purpose

The act of choosing and applying a glaze to a ceramic object can be compared to finding the right clothes to dress it in. This isn't merely a question of looks, it needs to fit as well, both in terms of physicality and through intention and context. Depending entirely on what you are about, finding the right glaze to fit your clay body can be an easy task or a difficult one. In this project it has been challenging at times.

The glaze requirements for these platters for example have been notoriously challenging. Due to its fluctuating surface it's preferable to have a matted glaze to avoid excess glare from light reflected off a glossy surface. However, it also needs to be hygienic and food safe. Not all ceramic glazes are classified as such so that specification narrowed the field substantially. Beyond this, there are two more challenges. On an object with a tactile surface decoration such as this, the glaze should not cover it up. This surface texture deserves to be seen. It should spark interest and the right glaze should highlight this feature. Lastly but not least, the glaze needs to be calibrated to the clay body. If the tension between the glaze and the clay body grows too great, it can crack the vessel. This is especially a challenge with crystalline glaze.





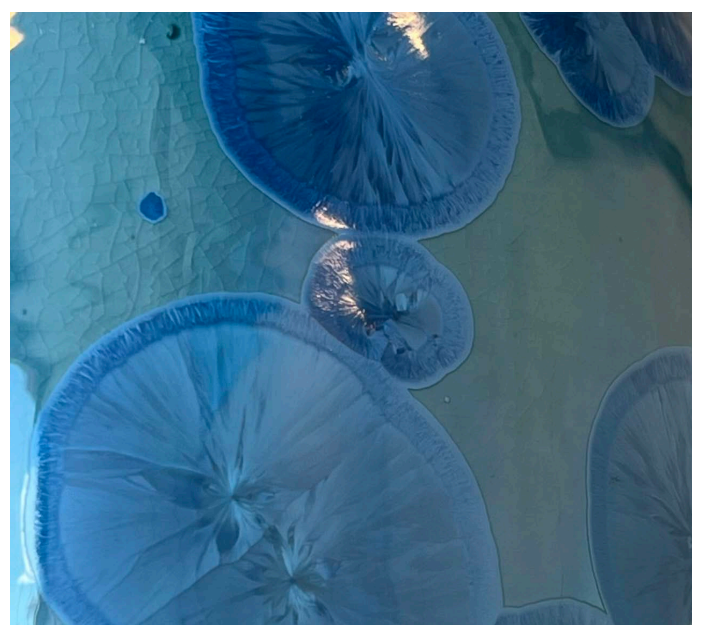
# Chrystalline glaze

Applying crystalline glaze is risky but equally rewarding if you get it right.

The successful cultivation of crystal growth on a ceramic object is a visual manifestation of a natural process, and because of this, it has a powerful aesthetic impact. It grabs the viewer's attention and holds it through fascination as they wonder how it is possible.

However, to get a macro crystal glaze (Bloomfield, 2020, p. 109-115) like the ones shown here to be successful, much work is involved, in addition to luck. Calibrating the glaze to the clay body is even more vital. While making the object, referred to as "the experiment," shown in more detail in this thesis's product development and product presentation section, holes had to be drilled in areas of the platter to provide escape routes for the glaze. This was done because the tension of this glaze if allowed to pool, has been so powerful that it has been known to break the vessel it's applied to.

Despite the risk, delving into experimentation with this glaze has partially been a counter-reaction to the amount of space and importance that 3D printing gained in this project. I longed to try things that would provide surprising results where I had less control in an attempt to establish a new form of balance in the exploration process.





# Pit fire

One of the approaches that have been tried in this project, which can be said to be unorthodox for a design project, is that of Pit fire. Specifically, I should say bathtub fire since the pit reserved for the purpose had frozen over and was entirely unusable. The Process from start to finish took approximately three days and produced exciting and decorative results where the smoke almost seemed to have materialized itself on the surface. This firing was performed in an old bathtub, in a garden in a residential area, so excessive use of oxides was not used out of consideration, considering their poisonous nature. As can be seen in these pictures, after three days with a temperature of minus ten, the fire was still smouldering. Even so, the highest temperature was estimated to be 1140 degrees celsius. In other words, this is low fired pottery.



Day: 1





Day: 2



Day: 3



# 4. Product development

4.1 The experiment	s. 40
4.2 The cup: U ``-	s. 43
4.3 The platter: Atlas	s. 46

# Product development

This chapter will give insight into an array of significant moments in the product development processes. It is essential to note that even though the three processes are divided up in separate and orderly timelines in the coming pages, the reality is that of a dynamic shift between each project that was often worked on simultaneously. This is illustrated in the autoethnographic journal for the research period, as well as the pictorial documentation (Appendix, p.1-149)

4.1

The making of: The experiment



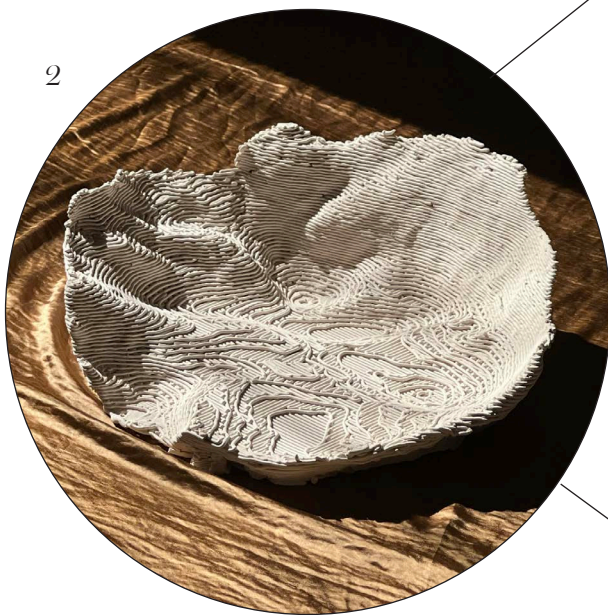
# 4.1.1

## The evolution of "The experiment"

The illustrations on this and the next few pages will highlight the evolution of form from the original artifact (T20) and how the process has progressed through the remediation method.

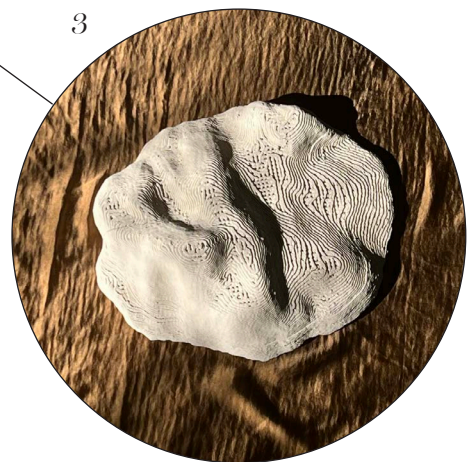


1: The artifact was scanned using the Polycam app. This scanned file was then refined and optimized for printing using Meshmixer and later sliced and readied for printing in Prusa (Appendix, s. 31)



2: A printed copy of the T20 artifact, scaled up by 500%. Reproduced in stoneware clay (K118) and bisque fired. This print took approximately ten hours to reproduce due to many delaying factors like technical difficulties, changing clay, etc. This was a particularly difficult model to print due partially to the sloping of the thinning walls along the edge. Managing to print this successfully was challenging (Appendix, s.43-50).

3: This is the negative form of the previous model; although changes have been made to decrease printing time and material usage, the top surface remains unchanged. This negative form was inverted using the originally scanned file in mesh mixer and then sliced and scaled to 400% of its original size. (Appendix, s.79)



To be continued on the next page

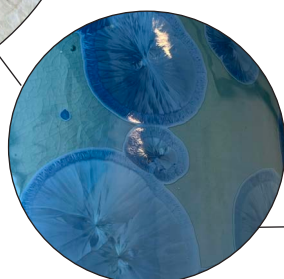
5: This picture shows the starting point of the product called "the experiment." (Appendix, s.102,133-134, 136-138). It shows the process of first using the printed, inverted model of T20 as a hump mold, imprinting the patterning and form onto the clay. After which the vessel is laid to rest in a bowl of sand that provides gentle support during the initial drying process. We are bringing it closer to the expression of the originating artifact.



4: This vessel is first thrown on the potter's wheel, then altered and used as a base for hand-building (Appendix, s.61-63,103-107). The surface decoration results from a pit firing session in a bathtub in my backyard (Appendix, s.103-107).



6: This image depicts the support structure built to allow the inside of the form to be covered in crystalline glaze. It serves two functions; firstly, it catches any glaze spillage and suspends the vessel, decreasing the chance of it becoming affixed during the firing (Appendix, s.103-107).



7: Lava glaze  
From a previous project,  
MAPD4210  
design and culture



8: Chrystal glaze  
(Appendix, s.102-103,72).



"The Experiment"

## 4.2

The making of:  $U^{\prime\prime}$  -

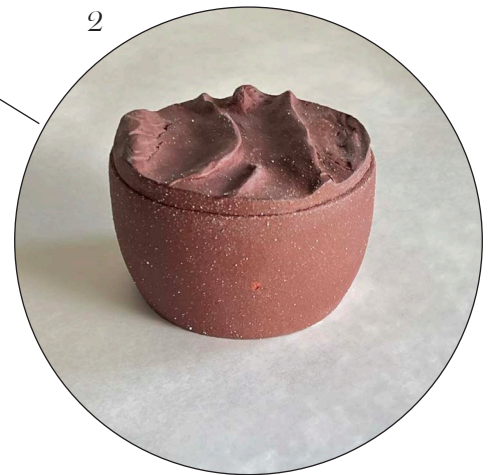


## 4.2.2 The evolution of U ' ' -

The illustrations on this and the next few pages will show some highlights in the evolution of form from the original artifact (T4) and how the process has progressed through the remediation method.



1: The artifact was scanned using the Polycam app. This scanned file was then refined and optimized for printing using Meshmixer and later sliced and readied for printing in Prusa (Appendix,s. 31)



2: An early form exploration combining wheel thrown vessel and a handbuilt interpretation of artifacts form (Appendix,s. 25-26)



3: This model was scaled up to 400% of the artifact's original size and then reproduced by printing horizontally in clay. (Appendix,s. 64)



4: This model is scaled up to 200% of the artifact's original size and printed vertically. As the picture shows, it needs some additional support near the end of the print. (Appendix,s. 64)



5: The vertically printed model was later part of an experiment where the newly printed object was explored further by incorporating it into a handbuilt vessel. This action combined technological mediation with a traditional handcrafting technique. The resulting object is unique in its form and expression, especially with its pit fired surface decoration. (Appendix,s. 69-72,106)

*To be continued on the next page*



9

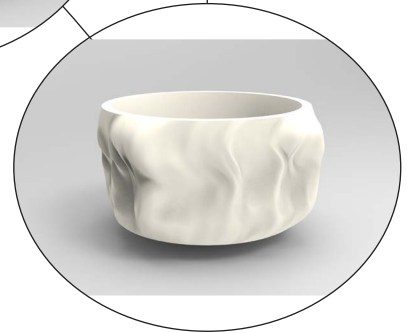


8

8 & 9: Renderings showing iterations 1 and 2 were realized using plaster molds made from 3D-printed mother molds in PLA.



7



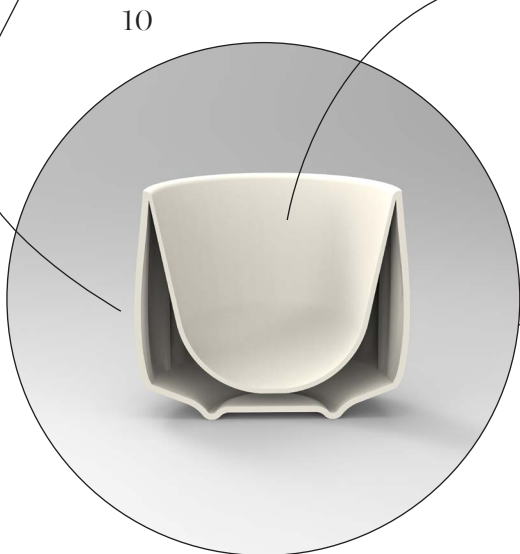
6

6 & 7: Renderings explore form using the profile of the rhythmic linework sampled from artifact T4. These were printed in clay before being abandoned. (Appendix, s. 92-95)



The exterior bowl

The interior bowl



10

10: Render illustrating the anatomy of the cup after assembly



11

11: In the end I chose a transparent and clear glaze in order to display the naturally white colour of the porcelain in accordance with Edmund de Waal, author of The white road (Waal, 2015).

## 4.3

# The making of: Atlas



## 4.3.2 The evolution of Atlas

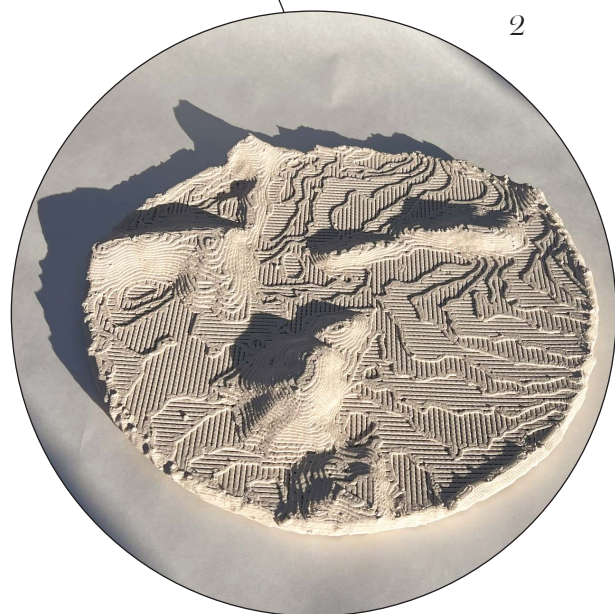
The illustrations on this and the next few pages will show some highlights in the evolution of form from the original artifact (T28) and how the process has progressed through the remediation method.



1: The artifact was scanned using the Polycam app. This scanned file was then refined and optimized for printing using Meshmixer and later sliced and readied for printing in Prusa (Appendix,s. 31)

2:A printed copy of the T28 artifact, scaled up by 550%. Reproduced in stoneware clay (K118) and bisque fired. This was the biggest surprise of the project. The crosshatched linework that underlines the incremental difference in the surface height was an incredible find, so much so that I built a product series around it.

This model was later used as a hump mold, a base to build upon using hand-building techniques.



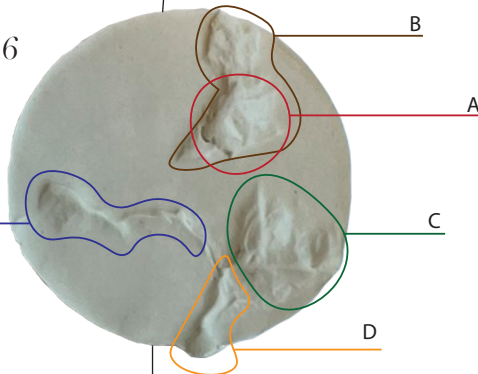
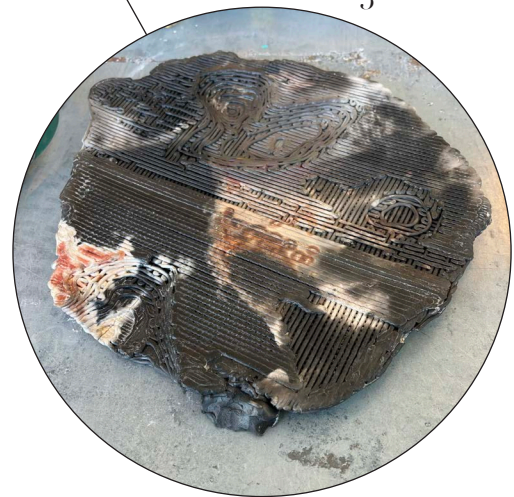
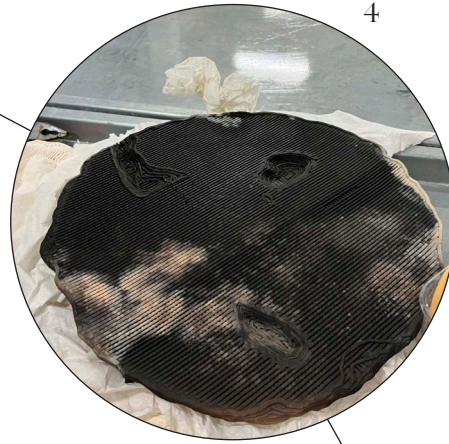
3: This model represents the inverted face of the previous print. As a result of this object, the idea of a platter that could utilize the indentations in the topographical surface in a functional way came to me.



*To be continued on the next page*

6 & 7: These pictures show isolated parts that make up a larger whole. This was an abstraction experiment to see how these formations would be experienced without the background and the circular frame.

4&5: Unfinished prints in stoneware clay, bisque fired, and subsequently pit fired. The printed models of this size have a success rate of approximately 50%. These objects are a testament to the fact that a certain kind of beauty can be found in failure.

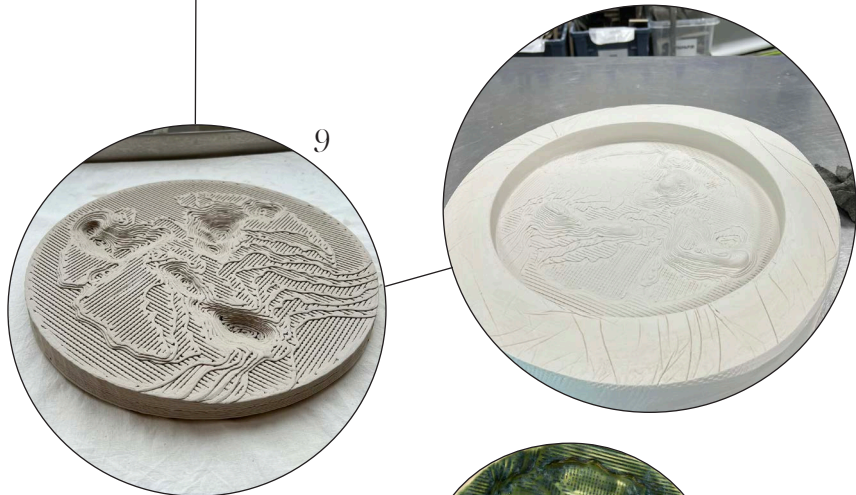


8: This platter was molded from the printed and bisque-fired form in picture nr. 2 on the previous page. Unfortunately, this platter developed a crack during the bisque fire and divided itself in half due to the subsequent pitfire. This accident revealed a potential risk. Why did it crack? Was it due to the mode of firing? Was it because the clay was too fine? Is there a tension problem in the form?





9: Based on the 3D printers' interpretation of the scanned artifact, a cad model was drawn up in Solidworks, printed in clay, and then used as a mother mold. This iteration has some flaws; I was less than careful in the cleanup work. However, this level of texturization (60% infill) is preferred compared to the second iteration, which uses 50 % infill to print the mother mold. This gives it a courser texture.



10



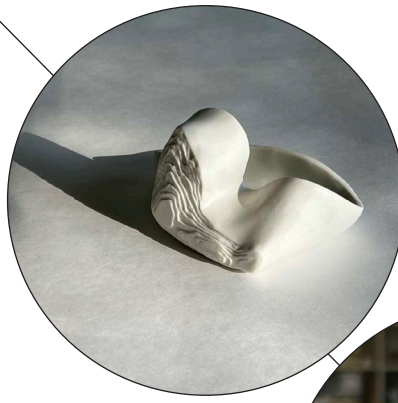
11

12

10: This picture shows the material experimentation that was performed in an effort to ascertain if the structure of the platter was sound and if different additives in the clay could strengthen the platter in order to avoid warping or cracking during firing. They were all successful, but one, the Limoges porcelain. However, this is a notoriously temperamental clay type.

11 & 12: Of the glazed platters shown here, numbers 11 and 12 were the glazes I decided to continue with. The light blue celadon (11) has a neutral and clean feel while, at the same time, it very gently highlights the texturized pattern without being too glossy. On the other hand, the shino glaze with black and blue detailing (12) accentuates the design differently. In this example, it covers it a little too well. However, a thinner application will be tried in the next iteration.





13



13: This exploration of form is called Paraphernalia since they are meant to supplement the platters. They have been formed using a 3D-printed plastic mold to provide a textured imprint for the base, which ideally will afford the dishes to fit comfortably in the platter's topography, with its indentations and hills.



14



14: This is the second iteration of the platters. These are larger than the last iteration by approximately 9 cm in diameter. The landscape has also changed in that one of the "lake formations" has been inverted to the effect that there is one "hill" and two "lakes" on this platter now. The infill in the print of the mother mold was decreased to 50% rather than 60% in the last iteration. This decision will be reversed in the next iteration due to aesthetic and hygienic concerns. Food gets more easily trapped in the surface pattern of the last iteration.

# 5. Product presentation

5.1 The experiment	s. 52
5.2 The cup: U <sup>ss</sup> -	s.57
5.3 The platter: Atlas	s.66

## 5.1

# The experiment

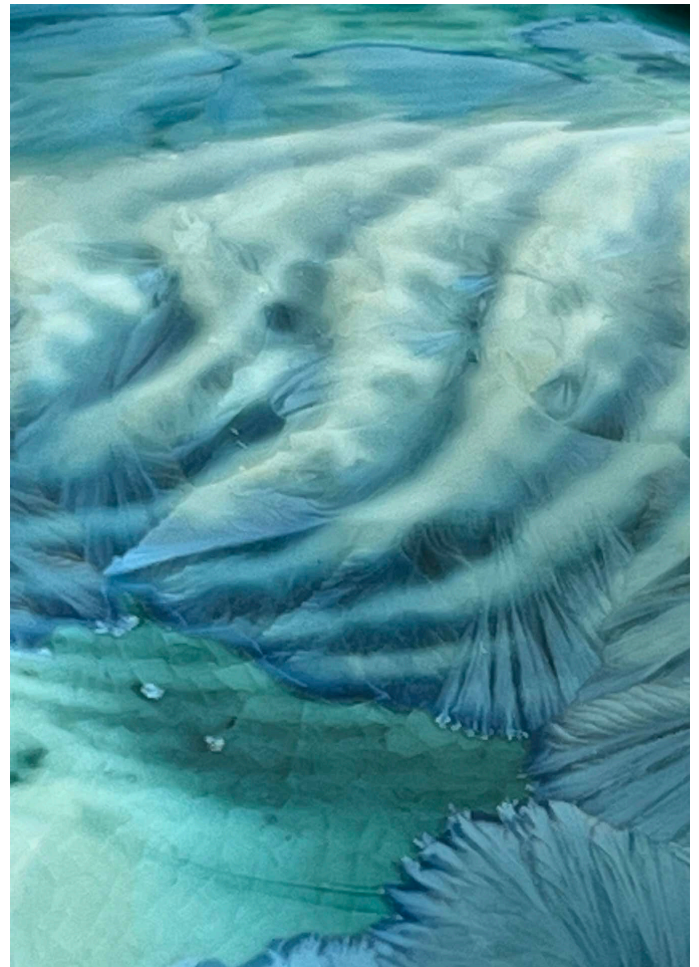
This object, entitled "The experiment", is so called, because it is the product of my material curiosity.





*Image depicting "The experiment", a porcelain vessel, fired to 1245 degrees celcius. The interior is adorned with a transparent, chrystaline glaze while the exterior is partially decorated with lava glaze in a myriad of warm hues. Photo by Anna Dypsjø Egan*

## 5.1.1 Symbiosis in glaze and texture



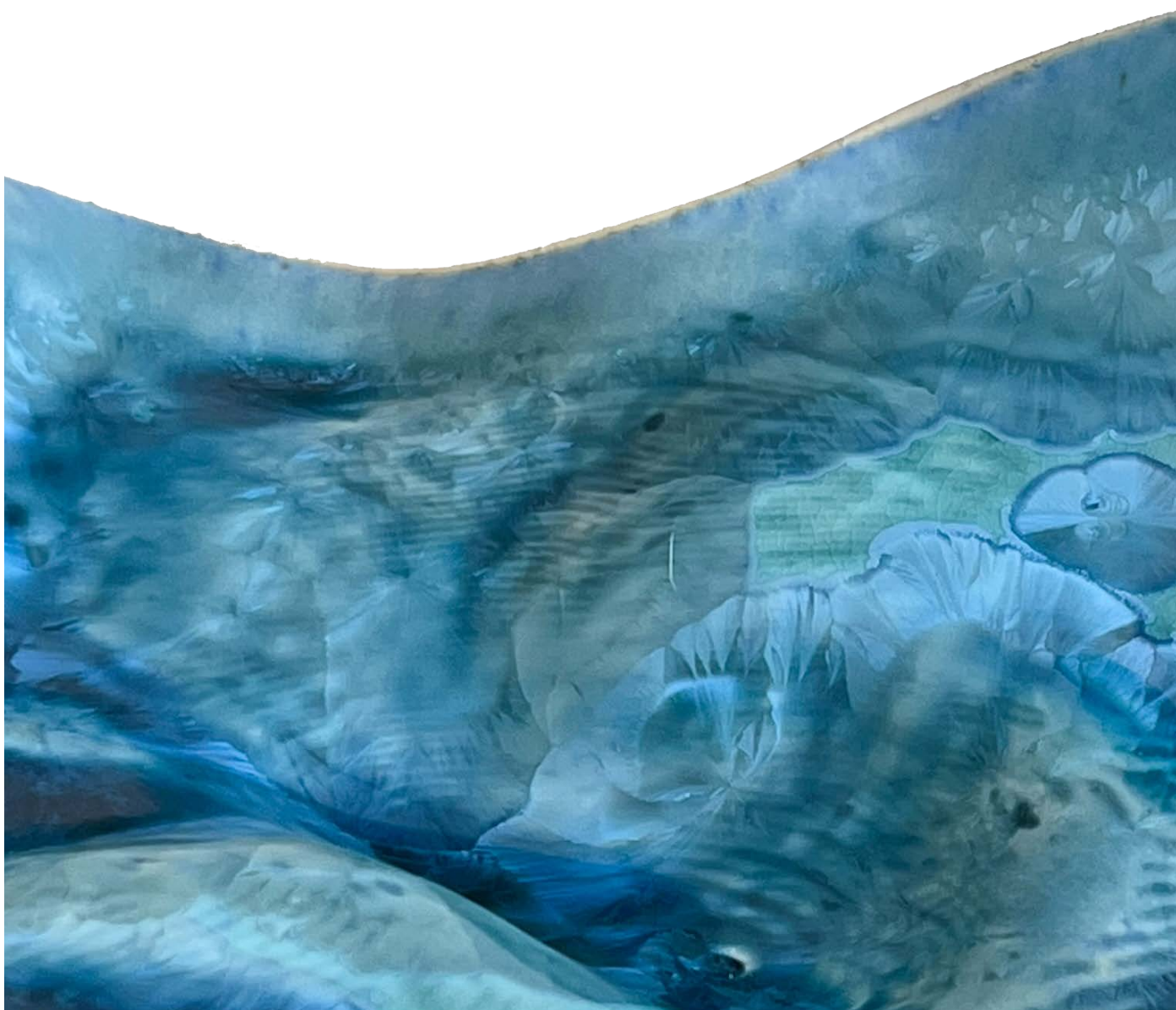
The most captivating feature of this object is the bluetinted crystalline glaze and how it covers the surface while also enhancing the texture. The glaze is both transparent and coloured. This emphasizes the decorative nature of the texture by providing the deeper indentations, where the glaze is thicker, with a darker hue. The crystal formations that flourish across the surface are naturally grown through the heat of the kiln and though the combination of these two surface features are visually competing, together they illustrate a symbiosis that can otherwise only be observed in nature.



## 5.1.2 The lines

One of the most prominent features of this object is the edge's lack of straight lines. The curvature of the edge fluctuates in concert with the undulating tension in the object's surface. When seen from a distance, this waving linework of the object's edge creates a sense of layered depth that invites the viewer to be aware of the space it occupies. However, the presence of lines is not limited to the edge. Curved lines that accentuate the form can be found throughout the bowl of the object. These are imprinted lines and pattern formations left by the 3D printed object that has functioned as a mold. What is interesting is that the form and the texture provided by the mold together provides a cohesive association to

both a natural and maritime aesthetic. The colour of the glaze coupled with the wavelike, dynamic movement of the surface form inspire associations to the rolling waves of the ocean. While the curved lines that accentuate the complicated form are reminiscent of seashells and how their structure is grown in much the same way. Seeing this result, it is interesting to recall that this object is a descendant from a clay imprint of a rock found in the forest. Far removed from the sea.





## 5.1.3 The body

The body of this vessel is not easy to comprehend. It's complicated and contradictory both in form and surface-texture. The overall perception and judgement of this object has the potential to be perceived as both beautiful while simultaneously hideous. "The experiment" is a decorative object with a maximalist nature. The surface decoration in the interior enacts a conflict between the crystalline growth and the underlying texture. The exterior surface has a similar conflict where the colour palette ranges from warm hues of brown contrasted with areas of stark white and blue. Beyond this, the roiling form of the body is also one of conflict, where it seems to be pulled from several directions at once. Considering this, it is never the less aesthetically captivating. There is a difference between seeing something as beautiful and Beautiful, this is the difference between aesthetic judgement and aesthetic identity. The aesthetic identity of "the experiment" is, according to the guidelines outlined by Kristine Harper, *Sublime* (Harper & Rahbek Simonsen, 2018, p.11). In terms of aesthetic judgement however, whether you find it beautiful, captivating or hideous is a matter of personal taste and is entirely up to you (Pallasmaa, 2017, p.99).



## 5.2

# The cup: U` ` -

The working title of this cup is U. This is based on the fact that the rhythmic line pattern that is the original feature of this design, spells out U in morse code (dot, dot, dash). This is an interesting coincidence seeing as the main intention behind the design is to create a personal aesthetic experience. In other words; its for U.



*Image depicting a variation on the first iteration of the thermal cup. Photo by Anna Dypsjø Egan*



## 5.2.1 The motivation behind the design

Cups belong to a product genre often taken for granted, perhaps due to their inherent utility and the frequency with which we interact. We encounter them daily, at home, at the office, in a cafe over lunch, or even on the bus or on the street, if you include the disposable or travel variety. As a product group, we interact with the cup intimately, consistently, and often routinely over time. They are prominently featured in the space between our life activities. They are present when we pause.

Personally, I start every day by drinking a cup prepared by my husband. I am not a morning person, so the preparation of the drink is a lure to get me out of bed. I shuffle over to the couch, where I nuzzle into the corner. I hold the cup and inhale the scent that waft up towards my face with its warm and curling traces of steam. As the liquid cools, I often rest the cup against the side of my face while I gaze through the window at the garden where I have tried to cultivate my own personal piece of nature. This is a ritual that grounds me. It is a soft launch of the day that I am about to embark on because when the cup is emptied, the rest of the morning is a blur of packed lunches, making sure the kids are dressed, that their teeth are brushed, and that everyone gets to where they are going on time. When my husband prepares this cup every morning, it is an act of love. Knowing this, however, it is interesting that statistically speaking, I probably have an interaction with the cup in question more frequently than I do with the man who prepared it. My hands hold this cup; my lips touch the rim, I inhale the scent of its contents, and I rest the side of it against my cheek. This ritual lasts approximately 30 minutes every morning and has been a routine for several years. In addition, most likely, I will have other interactions with a cup during the day. Speaking solely in terms of volume, my relationship with cups represents an overwhelmingly integral part of my life, and there is reason to believe that I am not the only person affected by this phenomenon. Considering this, the design of a cup should be approached with intentionality, care, attention to detail, and aesthetic empathy for the user.

## 5.2.2 Relief of rhythmic lines



The rhythmic lines that form the relief that run uninterrupted along the side of this cup are the original feature lifted from the artifact that inspired this product (T4). The linework is emphasized by the curvature in this pattern that captures highlighted reflections and shadows. The design's utilization of a repetitive and perpendicular linework in its structure, points to the fact that the cup's aesthetic identity is striving to be beautiful, rather than sublime. However, it has a hint of a rebellious side. This assertion is based on Kristine Harper's definition of "The beautiful" and "The sublime" where the beautiful is represented by symmetry, comfort, order, predictability, demarcation, shape, and balance, whereas the sublime is the polar opposite. In essence, the beautiful is familiar and easy to interpret and understand, whereas the sublime is complicated and chaotic. Both can be aesthetically rewarding and nourishing (Harper & Rahbek Simonsen, 2018, p.11). I would claim that the design of this cup is mainly situated in the "The beautiful" in that it is orderly and balanced. It is also possible to interpret it as not instantly deciphered; it requires interaction, both visually and through touch.

## 5.2.3 Insulated double-wall



The functional effect of the double walled feature is that the distance it provides between the hand and the content of the cup, both in the form of the ceramic material and air, will enable the user to hold the cup without the fear of burning their fingers. Therefore, this feature supports the primary feature, the potential of the aesthetic benefits of the rhythmic relief pattern. The existence of the thermal insulating function is signaled to the user by the difference of form between the interior and the exterior. The difference in form is something that has been shown to spark visual interest according to the user feedback (Appendix, p.151-153) The render of the cups crosssection also serves well to illustrate the rounded edge of the rim and foot that affords the user to hold the cup in many different ways without losing comfort. This is a change evident in the second iteration of the cup, based on user feedback and observations. Many users find themselves holding the cup in unusual ways, often navigated by the edges. In the second iteration, the top rim and the footring is softened to resemble the curvature found in the relief pattern. This creates a more holistic feel to the cup as well as providing a more comfortable grip since the rounded edges disperse the pressure on the user's fingers.



## 5.2.4 A welcoming rim

The smooth and tapered rim greets the lips in a comfortable way, enhancing the drinking experience.



”I like the rim, cause when i move my lip on it... theres no resistance at all, it just goes very smoothly. That was the first thing I noticed when I drank...theres no resistance at all. Its different to what I usually have wih a cup”

*Feedback from user #1  
(Appendix, p.151)*

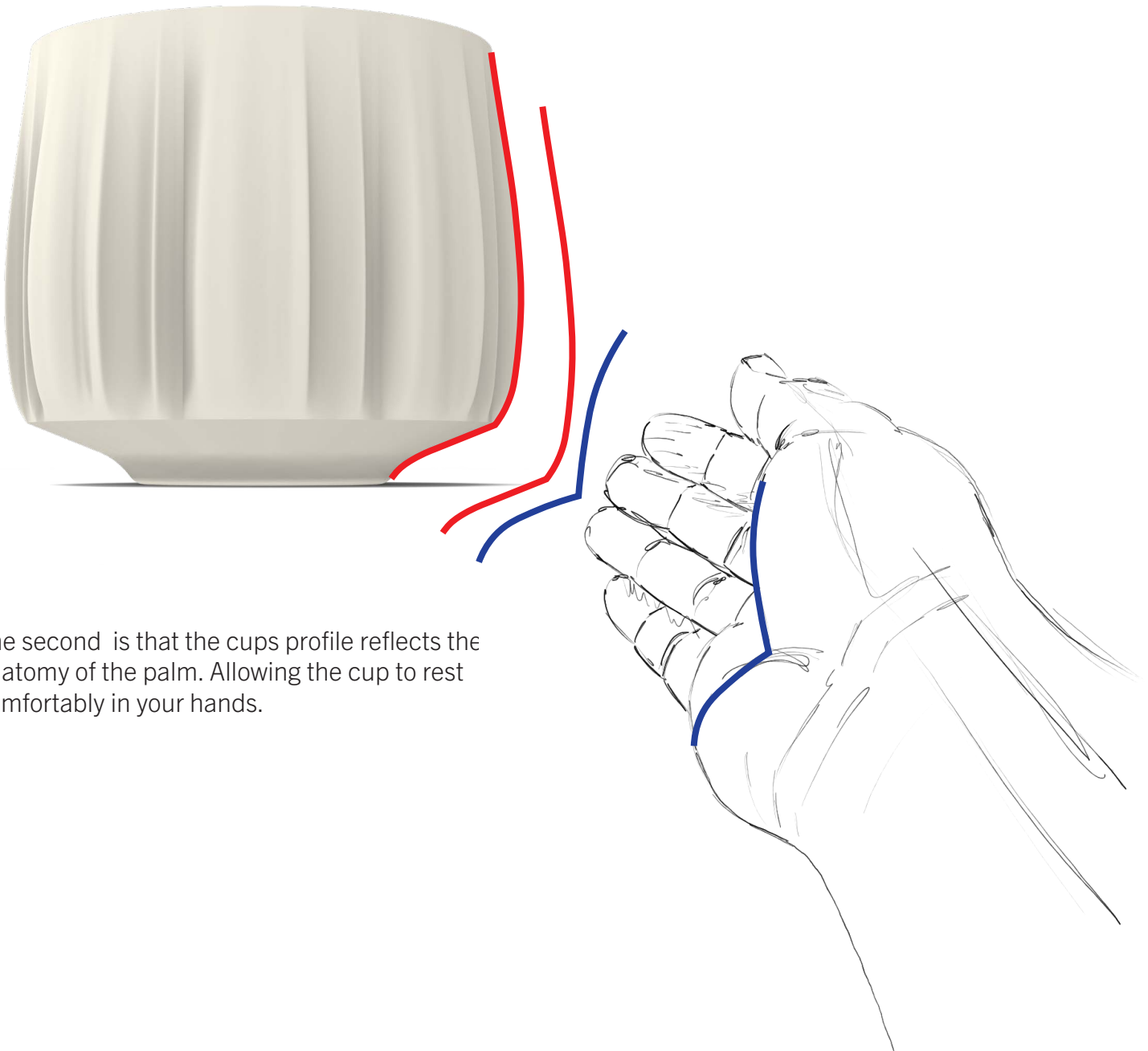
## 5.2.5 Visualizing the passage of time



The tapered form of the inner bowl creates a visual framework that highlights the content. This frame grows larger as the liquid is consumed, emphasizing how much remains. This visual measurement of the decreasing volume can resonate with the passage of time, much in the same way that an hourglass visualizes the process by evacuating sand. The difference is that you have no agency over the tempo of an hourglass, however you can always choose to drink slower to stem the countdown to the end of your coffee break.

## 5.2.6 The fit

The exterior bowl of the cup is raised of the surface for two reasons. The first is that when the cups body is lifted in this way it provides a visual suggestion of hovering, it appears lighter. This is an interesting feature in and of itself. However, in this context it also provides a visual sense of balance to a form that may appear heavyset without it, considering the roundness of the form and the low point of gravity.



The second is that the cups profile reflects the anatomy of the palm. Allowing the cup to rest comfortably in your hands.



## 5.2.7 Stackability



The additional function of the tapered form of the raised foot opens up for the possibility to stack the cups. This affordance is more of a utility aspect than an aesthetic feature, however function is not separated from the perception of beauty (Harper & Rahbek Simonsen, 2018, p.10-13).

## 5.3

# The platter: Atlas

The working title of the platter design is Atlas. There are several reasons for this and the most obvious one is the topographical surface formations and textured patterns that invites associations to landscapes and maps. The second reason is the etymology of the name. It stems from Greek mythology and is today a gender neutral name that means to carry (Merriam-Webster, n.d.). The primary function of the Atlas platter is to hold and present food and in this way it is aligned with the meaning; to carry. However the goal that has motivated this design work has been to create a social object that will help to facilitate a shared aesthetic experience. Considering this, the hope is that this design will be able "to carry" more than food.



*Photo showing details from the third usertesting scenario. Large platter from the second iteration, Stonewear with shino glaze fired to 1240 degrees celsius. The food that is shown: from right to left; dumplings, spring onions and wontons in addition to ponzu saus and a ginger and orange dip. Photo by Anna Dypsjø Egan*



## 5.3.1 Duality



The development of this design has delved into the exploration of size, scale and density. However, the defining trait of this platter is the topographical pattern that flourishes across the surface with its lacework of crosshatched and multidirectional texture. This surface-decoration differentiates itself from the other products explored in this thesis in that it is both systematic and highly detailed. There are two different iterations shown here, one small (28,5 cm) and one large (37,5 cm). These iterations are related, but not identical. Together they explore the duality of contrast in colour, the use of positive and negative form and the application of a coarser texture (shown on the large plate) or a smoother texture (shown on the small plate). It is a matter of balance, perhaps best depicted by the juxtaposition shown in the relationship between the geometric and organic form-qualities. The surface formation folds itself over different levels, revealing a complicated and organic form. The main focus of these are connected to the formations that are associated with lakes, hills or mountains. However, even though the remainder of the surface is less dramatically formed, there is still the presence of surface tension, a fact that is signalled by the decorative linework that make up the texture.

## 5.3.2 Display capabilities



As mentioned earlier, the fundamental function of this platter is to hold and display food to facilitate a shared aesthetic experience. It is no coincidence that I have chosen to work with products that address itself the consumption of food and drink. The reason is that the added functionality of consumables, provided by the user, lifts the product's aesthetic capability in that, with the addition of food, the interaction between the user and the product has the potential to evoke several senses, adding smell (olfaction) and taste (gustation), even sound (hearing) beyond the visual and tactile. This indicates that part of the aesthetic design concerns more than the material and physical; it deals with context. Where will this product be used, by whom, and under what circumstances? What will happen to the product when it is no longer in use? The answer to these questions is not to be decided by the designers but by the users; designers have limited authority (Harper & Rahbek Simonsen, 2018, p.85). However, we can facilitate for use by adding or detracting signifiers and functionality. The picture above, this text illustrates such a functionality. For example, the platters have a foot-ring that runs along the circular frame; this is primarily to ensure form stability during production but has the added use of enabling the platter to be hung and displayed on a wall and adding to its purpose from an object of utility to a decoration object where the functionality is aesthetic.



# 5.3.3 Paraphernalia

An exploration of form



Paraphernalia is an initial formstudy that explores the possibility of additional products that can add an increased degree of flexible use, but which can also promote playfulness and interaction between the users themselves and the platter.

The paraphernalia dishes are organic in form and are visually and tactily linked to each other and the platter by an impression of the plates topographical texture. This textural impression highlights a visual relationship between the dish and the platter, however it also signifies how they fit together in a physical space. These dishes are handbuilt out of moulds in 3D printed PLA (plastic) in order to optimize fit. One challenge with clay as a material is shrinkage, meaning that it drastically reduces its size. In the process of going from raw clay to fully sintered porcelain for example, the vessel might be reduced as much as 15% of its volume. This is a traumatic transition

and the decrease in scale is not always uniform and precise. This poses a challenge in terms of creating ceramic objects that fit together after firing. The idea is never the less aesthetically enticing and might be worth pursuing further.



## 5.3.4

# User testing 1. iteration

## Family style dinner

This user-testing scenario involves a family of four people; A mother, A father, and two children between the ages of eight and sixteen. The meal served is a medley of shareable food like mini spring rolls, chicken nuggets, and dumplings containing either chicken or mushroom fillings. Accompanying this is a collection of dipping sauces like soy sauce, ponzu sauce, plum and coriander, and sweet chili sauce. The dishes and sauces are presented in the middle of the table, where each family member can help themselves to the food they like. In addition, each family member will have their own landscaped plates (the object being tested) where they can place the food they help themselves to. Before the meal, the participants were encouraged to choose which platter they preferred, starting with the youngest member, who chose the white plate with a glossy glaze. The eldest child chose the porcelain plate with the light blue glaze, and the father picked the stoneware plate with the cobalt wash. It should be noted that the father commented that he would have preferred the white plate if it hadn't already been taken. The available utensils are chopsticks as an alternative to merely eating with your fingers.

### •Observation #1:

Before selecting which plate they wanted for the meal, the youngest child discovered the plates and immediately started touching the decorative surface's contours and running his hand along the top edge. The plate in question is also the plate he later chose for his meal.

### •Observation #2:

The youngest child preferred chicken nuggets without dipping sauce. However, the "valleys" in the plate landscape where the dipping sauce would naturally be poured were still utilized. The young child carefully and with intention placed one nugget into each indentation and seemed to derive some pleasure in doing so. This behavior can be reminiscent of form sorting toys where blocks of specific shapes are placed in corresponding indentations.





•**Observation #3:**

When there was only one remaining nugget, a new game was invented where the youngest child started to “drive” the nugget around the plate, making sure that the nugget managed to touch base with each of the indentations on the circular route, before coming to a halt in the middle of the plate. This action was accompanied by a sound effect resembling a racecar and was repeated three times before the last nugget was consumed.

•**Observation #4:**

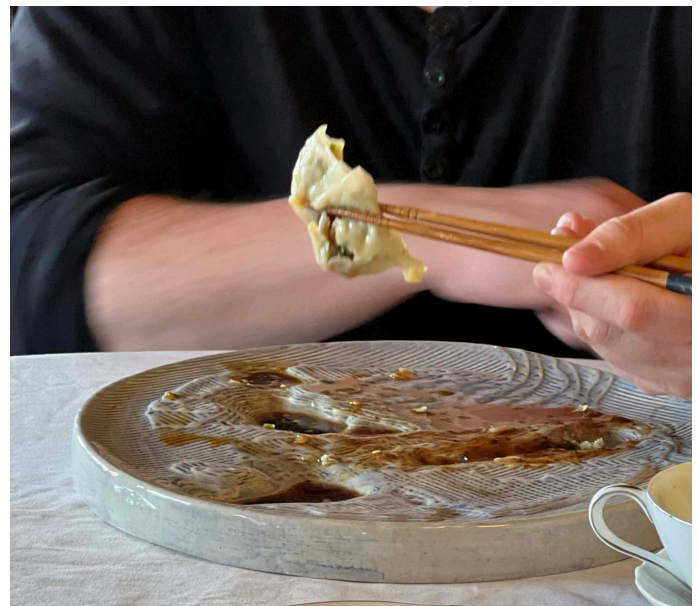
The eldest child tried all the foods but limited himself to sweet chili sauce for the mini spring rolls and ponzu sauce for the dumplings. These were poured into adjacent indentations, while the remaining lake formations on the plate were kept empty. He concentrated the food placement on one side of the plate. However, he used the remainder of the plate as a musical instrument. He produced a clear rhythmic sound by running the chopsticks over the textured surface and formed a musical composition by changing the direction and pace.





•**Observation #5:**

The father, who used all of the landscape indentations for various sauces, reported that he, too, started to play. He noticed that the “water level” of the sauces rose when he dipped a dumpling. This caused the sauce to flow into a corresponding reservoir. After he noticed this, he found himself trying to replicate the action, manipulating the ebb and flow of the tide, relating to soy and ponzu sauce.



•**Observation #6:**

The mother reported that she ate less than she expected due to a feeling of satiety. A possible reason for this is that every family member was playfully interacting with the plates and food in unaccustomed ways. This sparked conversations and interactions between the family members that might have delayed the food intake while simultaneously providing the time needed for the stomach and brain to register the information that you are full.



**•Conclusion:**

Based on observations and the reported experiences from the different family members, the plates are playfully activating and socially engaging even though they are used individually. In addition, the patterned texture and topography of the plates encourage the users to be more aware of how they eat. Finally, the adjustment when the users interact with the food in the unusual landscape this plate provides creates engagement as the users explore and test different functionalities that the plate offers, e.g., Sorting food, moving liquid from one reservoir to another, and making music, etc. These findings indicate that the plates can be a welcomed addition to a family meal situation, provided the family thinks it's okay to "play with your food." It is worth noting that this is the first time the plates have been used in a meal situation, and part of the activation and playfulness observed during this meal might be due to the novelty. It is difficult to say anything conclusive regarding the staying power of the behavior and experience of the users, should they start eating meals on these plates more regularly.





## 5.3.5

# User testing 1. & 2. iteration

## Tapas and Eurovision

This user-testing scenario involves a group of friends, Three women and one male, who are gathered to watch the Eurovision song contest on tv. As a part of this event, tapas will be served consisting of a wide variety of Spanish dishes containing fish, chicken, vegetables, meatballs, and cheese alongside an assortment of condiments. This testing situation is user-led in that all I provide to the festivities is the platters and bowls, while the rest of the party provides the food and orchestrates the food presentation on the platters. My role consisted of observation and documentation. The testing subjects knew very little about the platter before the party. All they had been told was that they would try out serving platters with the added capability to hold dipping sauces. The products that are being tested are, respectively, a large and smaller version of the plate with clear blue tinted glaze and the shino glazed accompanied by the three-legged kidney bowl and the inset bowl with the impressed bottom.

### •Observation #1:

The tapas was delivered by a catering service that unexpectedly provided the food already placed in ceramic bowls. As a service, it is an interesting take on sustainability and evidence of aesthetic thinking on their part. The bowls need to be returned after the party, which can be inconvenient. However, it does cut down on the use of disposable tableware. Even though I can appreciate this effort on the caterer's part, it made placing food onto the platters seem a little redundant initially.

### •Observation #2:

The participants were hungry and gave an impression of urgency to get the food on the plates. However, it transpired later that, in anticipation of the meal that was to be a special treat, they had moderated their food intake earlier in the day. Therefore, no time was spared inspecting the platters or bowls being tested. Instead, they went straight for the act of placing the food in order to start the meal. Their interest in the platters were limited to their ability to contain the food.



**•Observation #3:**

When placing the food on the larger platter that features a "hill" in a composition with two "lake" formations., they first became frustrated with the "hill" formation because it conflicted with how they had planned to place the slices of potato omelet. They found it was in the way and expressed annoyance. However, having solved that problem, they found the protruding formation useful as a natural divider when it came time to place the next dish: a salad mix of different vegetables.

**•Observation #4:**

When helping themselves to the food, using spoons, the different levels in the topography of the surface of the platters provided a helpful resistance. This makes transporting the food from the platter to the scoop easier without additional cutlery.

**•Observation #5:**

On several occasions, the user testers felt the need to pass the plate up or down the table. It then became evident that the plates were difficult to pick up due to the straight edge that meets the table at a 90-degree angle. This observation clarifies that some design modifications should be made to improve the user's ability to grip and lift the platters.

**•Observation #6:**

At the beginning of the meal the accessory bowls confused the users and they seemed unsure of how to use them or implement them in the meal and how they could relate to the platters. As the meal progressed, however, they gained more confidence in handling these bowls in terms of picking them up, sending them around the table, and placing them back into their designated position on the platter.

**•Conclusion:**

This user-testing scenario was primarily user-driven, and the results differ from the last session of the family-style dinner in one crucial way. Those whose task was to prepare and serve the meal needed more information on the nature of the dishes they were to use beforehand. This has colored the results and provided new insights into the need for improving the usability of the platters, related explicitly to picking it up and passing it around the table. Another crucial point is that this session did not show signs of connecting to the plates in a way that could facilitate an aesthetic experience. They were more interested in the functionality that the dishes could provide by presenting and carrying food. Their aesthetic experience was reserved for the food. This can partly be explained by their hunger, as mentioned in observation #2. However, it might also be due to a need for more preparation. The potential for achieving an aesthetic experience can be increased if the users are better prepared beforehand.





## 5.3.6

# User testing 1. & 2. iteration

## A meeting of friends

"This is an autoethnographic user testing scenario, meaning that I have actively participated in the testing. This is a meeting of three friends, all women, with a background in design. They are all aware of what the platters look like beforehand and what their purpose is in advance. They have been tasked to prepare a meal that they believe will suit the purpose of the platters. What each of us will bring to this potluck is unknown. In other words, this setup has an element of strategy connected to it. The task and the unknown element activate the test subjects, not knowing what the others might bring. This functions to introduce a sense of anticipation to the users. In a way, they are already onboarded before they arrive at the gathering. The items being tested are the two large platters and the two small platters with the shino and celandon glaze. In addition, the paraphernalia dishes are included in the testing scenario. Regarding cutlery, the users were provided with a personal knife, fork, and wooden skewers."  
(Appendix, p.156-157).

I call this session user testing, although strictly speaking this was more of a casual meeting of friends with common interest converging on design and aesthetics. Under other circumstances the participants would qualify as expertwitnesses, but considering our personal relationship, one must assume that some bias will be present. Regardless I still would like to mention this event, because during the preparation and partaking of the meal, I achieved what I originally set out to accomplish with the Atlas platter. I found myself part of a shared aesthetic experience.



# Conclusion

There has been much attention given to aesthetics and materiality in this thesis, but let us not forget that the goal of this project is to find answers to the research question:

How can re-mediated surface samples collected from nature inform the design of products?

After reviewing this thesis, there can be an agreement on the answer to this question. Re-mediated surface samples can inform the design of products in various ways. Furthermore, the three parallel product development processes demonstrate significant variations in aesthetic identities, from the Beautiful to the Sublime (Harper & Rahbek Simonsen, 2018), providing a wide lens to view the findings when comparing and contrasting the resulting products' qualities. However, some knowledge is difficult to articulate using only words, but it is possible to visualize it in 3dimensional form. This is embodied knowledge and experiential knowledge (Pallasmaa, 2017). Based on this, the products and objects made from the material exploration carried out in this project are physical representations of the breadth and depth of the achieved learning outcome.

In a concluding statement, I believe that the research question has served its purpose in how it was related to my personal and professional goals by undertaking this project. By approaching the methodology of design thinking with the added realm of Material intelligence, Aesthetic intelligence, and Aesthetic empathy, I have acquired a sense of professional belonging and aspiring confidence.

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# Illustration list

All photographs, drawings and illustrations are made/ taken / supplied by Anna K. M. D. Egan unless otherwise stated.