

Heini Virolainen

# A COFFEE PRESS TO SUIT TONFISK DESIGN'S WARM TEA AND COFFEE SERIES

Designing within an Existing Product Family

Bachelor's Thesis

Degree Programme in Design

April 2015



**KYAMK**  
University of Applied Sciences

Author Heini Virolainen	Degree Bachelor of Culture and Arts	Time April 2015
Thesis Title A Coffee Press to Suit Tonfisk Design's WARM Tea and Coffee Series — Designing within an Existing Product Family		43 pages 12 pages of appendices
Commissioned by Tonfisk Design Ltd		
Supervisor Jan Kettula, Senior Lecturer		
<p><b>Abstract</b></p> <p>This thesis work describes the design process of making a product concept to Tonfisk Design's WARM tea and coffee series. A coffee press was designed by studying how to design within existing product family. The design process itself dealt with ergonomics, production, and materials. The coffee press as a subject needed references to coffee culture, brewing techniques, and its history.</p> <p>The aim was to design a coffee press to suit Tonfisk Design's WARM tea and coffee series, which finally will be introduced to Tonfisk Design's product range in 2016. The designer's goal was to take this as a great opportunity and experience to create and study something new. The second goal was to produce new knowledge and skills.</p> <p>The research setting was action research. Therefore, the developing process was done in cooperation with the client. In addition to action research, product semiotics was used as a viewpoint in the thesis. Product semiotics examines brand identity and representatives of a product range. The product family design reuse methodology, functioned as a connection between the other two research methods. The method helped to determine a consistent framework, and also to find out the design patterns and the essential commonality within the product family.</p>		
<p><b>Keywords</b> product design, coffee press, product family, tableware, Tonfisk Design, brand identity</p>		

## CONTENTS

1	INTRODUCTION .....	2
2	TONFISK DESIGN .....	4
2.1	WARM Series .....	4
2.2	Design Style .....	6
3	RESEARCH QUESTIONS AND METHODOLOGY.....	6
4	COFFEE PRESS .....	9
4.1	Coffee Culture .....	9
4.1.1	History of Coffee.....	10
4.1.2	Evolution of Coffee Makers .....	11
4.2	Benchmarking.....	13
5	DESIGN BRIEF .....	14
5.1	Functionality .....	15
5.2	Distinctiveness.....	16
6	DESIGNING WITHIN A PRODUCT FAMILY.....	18
7	DESIGN PROCESS .....	21
7.1	Ideation and Sketches .....	21
7.2	Form and Size .....	22
7.3	Mock-ups .....	24
7.4	Development .....	25
7.5	Materials .....	27
7.6	Selection.....	29
7.7	Details.....	29
7.8	Finalizing .....	31
8	RESULT.....	33
9	EVALUATION .....	34
10	CONCLUSION.....	36
	REFERENCES .....	39
	APPENDICES	
	Appendix 1 Design Brief	
	Appendix 2 Timeline	
	Appendix 3 Sketches	
	Appendix 4 Technical Drawing	
	Appendix 5 Idea of Scoop	
	Appendix 6 Developing Ideas	
	Appendix 7 Collection of Technical Drawings	
	Appendix 8 Plunger Parts	
	Appendix 9 Technical Drawing	

## 1 INTRODUCTION

Design is a unique type of problem solving, setting, and structuring. Obtaining proper information about the problem and its context are key elements for the exploration of the solution. Information is data with semantics and meaning. The type of information studied during problem solving can be, for example properties of materials, manufacturing processes, and functional characteristics. This kind of information is very important in problem solving, even though it might not be immediately useful in directing an action to solve a problem (Ong, Nee & Xu 2008). Yet, the analysis of the problem is not the most important for designers but the evaluation of the solution is (Restrepo 2004).

In a product design task, knowledge motivates actions to achieve the desired goals. Problem solving is achieved through a reasoning process where knowledge is applied and a set of rules can be removed (Ong, Nee, & Xu 2008). The final working process should contain complete information about the early state of the task, which was the original problem, information about the transformation from the problem state to the developed solution, and information about the goal. When challenged with a new design situation or problem, the designer imposes images of possible solutions to it. These sketches provide methods for the designer to analyse and develop the solution further (Restrepo 2004). Design thinking is never a linear process, but a more complex action of execution of observing, exploring patterns and assessing. It is about testing and validating concepts and ideas early on in the development process through prototyping, and then making changes or improvements (Brown 2008).

After an internship in Tonfisk Design Ltd. in the end of October 2014, it was convenient and practical to continue cooperation with for this upcoming thesis work. Tonfisk Design's co-founder and managing director, Brian Keaney, suggested designing a coffee press for this thesis work. The goal of the thesis is to design a coffee press to suit Tonfisk Design's WARM tea and coffee series, which will be introduced to Tonfisk Design's product range in 2016. The goal is explained more in detail in Appendix 1. The coffee press should be easy to recognise as a coffee press and to understand its use. Additionally, the design should have an interesting functional aspect (Appendix 1).

This thesis is a design process of a product and its development process. The research setting is action research, which means that the thesis focuses on Tonfisk Design's needs. Also, the developing process is done in close cooperation with Brian Keaney, and every decision is discussed with him. The thesis has a case study approach and the main questions deals with designing a coffee press and designing within the brand identity and an existing product line. In addition to action research, product semiotics is used as a viewpoint to the thesis. Product semiotics examines brand identity and representatives of a product range. Product semiotics has an interesting viewpoint on standing out from competitors, which is important to understand, as Tonfisk Design wants to produce distinctive products that stand out from crowded markets (Appendix 1). Product semiotics has also an interesting viewpoint to usability and customer understanding.

## 2 TONFISK DESIGN

Bored of seeing more of the same Tonfisk Design was established in 1999 to market and produce objects which are not mere variations. Tonfisk Design was founded by two graduates from the University of Art and Design in Helsinki, Finland, Tony Alfström and Brian Keaney. Since launch of the company at Ambiente, the world's largest trade fair for consumer goods in Frankfurt, Germany, in 2000, Tonfisk Design has enjoyed international recognition as a Finnish and Scandinavian design brand and widespread publicity. Tonfisk Design's products are available in almost 30 countries (Tonfisk Design n.d.). Tonfisk Design's have been sold at Stockmann in Helsinki, at the Museum of Modern Art in New York, and at Harrods in London (Kokkonen 2012).

Tonfisk Design's slogan, "Forms follows function doesn't mean all objects have to look the same", describes best the company's design philosophy. For Tonfisk Design, Louis Sullivan's functionalist dictum works as a core value of both Finnish and Scandinavian design. The products are created with a vision of not producing yet another shape but a whole new idea. The main designer is Brian Keaney who have been awarded with the Ilmari Tapiovaara Award and the Ornamo Design Prize in 2007. However, the company produces products from several different Finnish designers. Many products have been developed with the designers as part of their studies (Tonfisk Design n.d.).

Tonfisk Design has changed through its time in business. These days the original co-founder Tony Alfström is not actively involved in the business anymore (Kokkonen 2012). Until 2012 all Tonfisk Design's ceramics were produced at their own factory in Turku, Finland. However in 2012 the production of porcelain has been moved to China (Tonfisk Design n.d.). White or black coloured ceramics with wood or cork have been typical materials used in Tonfisk Design's products, but also glass products have been launched. For example, Shadow water and wine carafe was launched in 2013.

### 2.1 WARM Series

WARM tea and coffee series is a result of Brian Keaney's work at the University of Art and Design in Helsinki. WARM is a tea and coffee set that combines ceramic teacups and teapots with bracelets of laminated bent wood.

The wooden part acts as a clever alternative handle, which prevents hands from burning. The wooden part does become warm but not hot. It also helps to keep tea or coffee warm by insulating (Tonfisk Design n.d.). The cup and handle are separate and easily removable (McDonald n.d.).

The WARM tea set has become Tonfisk Design's best-known product. Since its launch in 1998, WARM tea and coffee set has become a modern classic of Finnish and Scandinavian design (Tonfisk Design n.d.). WARM series can also be seen as classic Tonfisk Design, because it is a key product for Tonfisk Design and the most selling product family. In 2006 one of the most famous design magazines in the world – Wallpaper – introduced WARM as one of the 10 best design items of the decade. Over the years, a number of items have also been added to the set (Kokkonen 2012). In Figure 1 the existing WARM tea and coffee series can be seen. WARM tea and coffee series contains a wooden tray, two different sizes of teapots and four varieties of size in cups. Four cups are named after beverages: espresso, cappuccino, tea, and latte. Brian Keaney has also designed the WARM dining plates, the WARM bowls, the WARM cake plates, and the WARM candleholders to suit with the rest of the WARM range, but they are not produced anymore.



Figure 1. WARM tea and coffee series are available in white and black (Virolainen 2015).

WARM series has clear lines. Special about WARM series is that it combines ceramic teacups and teapots with bracelets of laminated bent wood. The ceramic material is white or black vitreous porcelain. Contrast to porcelain

brings wood, which as a warm material, is opposite to hard glassy porcelain. The dark wood is walnut and the light wood is oak (Tonfisk Design n.d.). Besides the fact the wooden part brings function to the product, it also provides beauty and a distinctive personality to the product. Wood has also haptic characters: "Something about wrapping your hands around warm wood feels more satisfying than a conventional mug." (McDonald n.d.).

## 2.2 Design Style

Tonfisk Design is dedicated to producing eye-catching and functional designs without sacrificing clarity and personality (Kokkonen 2012). As said, Tonfisk Design is recognized as a Finnish and Scandinavian design brand. Typical for Scandinavian design are light colours, the use of wood, and minimalism and functionality. Yet in spite of the symmetry and clarity, Scandinavian designs always radiate warmth (Worldguide 2015). As a modern Scandinavian design brand, Tonfisk Design creates simple but functional tableware. Characteristics in modern Scandinavian design style is also high quality and long-lasting products.

The company has two major selling points: products functionality and distinctiveness. The products are both functional but also distinctive so that the products have a chance to be noticed in an already crowded market place. Also the target customers value both functionality as well as distinctiveness. They are people who are often concerned about visual matters and value objects of visual interest (Appendix 1). A lot of Tonfisk Design's products are sold as gifts. Tableware is naturally nice and easy presents for a friend or family member, as well as given as business gifts.

## 3 RESEARCH QUESTIONS AND METHODOLOGY

The main subject of the thesis is to design a coffee press. The coffee press should match with and be part of the WARM tea and coffee series but also complement the rest of the Tonfisk Design's product range. This thesis has a case study approach and the main question deals with designing a coffee press, but also designing within the brand identity and existing product



line. Therefore, the thesis' main research question is "What kind of coffee press fits Tonfisk Design's WARM series?".

Moreover, this thesis examines functionality, product personality and what needs to be considered when designing within an existing product range. The design process itself deals with ergonomics, production, and materials. A coffee press as a subject needs to have reference to coffee culture, brewing techniques, and its history. Thesis' sub research questions are "What is coffee press? How to design within the product range? How to design within the brand identity? What is functionality in product design? How to stand out from the competitors?".

This thesis examines the design process of a product and its development process. What kind of coffee press fits Tonfisk Design's WARM series? To find an answer to this question, my main research methods are action research and product semiotics. Key method to finding answers to sub questions dealing with designing within existing products is called the product family design reuse methodology. Even though the method is aimed mainly for engineers it helps to find out the design patterns and the innate commonality within product family of the coffee press. The product family design reuse methodology might also work as a connection to my two other methods to each other. In addition, the thesis includes information research within this project such as product benchmarking.

### **Action Research**

Action research is process-like by its nature (Kananen 2013). It can be more suitable than traditional research when the developing process is made in close cooperation with an organisation. Action research focuses on an individual company's needs, and has a project-based approach to learning. Key words are customisation and experimental. When writing a thesis, the researcher makes comparisons of the situation before and after each cycle of planning/acting/observing/reflecting. There are two goals in action research: The first goal is to solve a practical problem within an organisation, and the second is to produce new knowledge and skills (Zuber-Skerritt, Perry 2002).

## **Product Semiotics**

The research of product semiotics focuses on the representative qualities of products. Representational functions of everyday objects can be interpreted, for example, through form, colour, expressivity, and symbols. Product semiotics is useful for understanding the nature of a design product and improves the interpretative act (Vihma 1995). Mastering the symbolic dimension of products is a vast challenge for designers developing products. Certainly, distinctive products with recognisable identities are needed. The relationship between brand identity and semantic design qualities is obvious (Karjalainen 2006).

## **Product Family Design Reuse Methodology**

The product family design reuse methodology establishes a consistent framework to ease designing within a product family by discovering the relevant information and the underlying patterns. A product deals with multiple product information aspects from functions to representation of product family that are useful to decision-making. Decisions have to be made concerning the target groups' needs, the requirements in the design brief, the choice of the variations to control product performance, and the optimization of the design variables to achieve balance between commonality and performance. When the design requirements are defined, and the physical components are identified, in following stage, the patterns of a product family are generated and evaluated with respect to product performance criteria. Product performance is evaluated as the average information content of a product family. After the optimization process, the final solution can be chosen (Ong, Nee & Xu 2008).

## **Benchmarking**

Benchmarking is the study of an existing product with functionality to the product under development. Benchmarking reveals information on the strengths and weaknesses of the competition. It is also used to discover the general concepts, on which they were based, as well as other, more detailed information, including, for example, the names of suppliers of specific components. This kind of external search is an important method of gathering solution concepts. External search remains detective work but it gives

resourceful information for pursuing leads and opportunities. An understanding of competitive products can provide a rich source of ideas for the product (Ulrich, Eppinger 2012).

## 4 COFFEE PRESS

Discovered from a pile of dusty notes in an old church in Provence, the original invention of a coffee press was found. The story tells about an old man who every day walked from his house in Provence to the top of the hill, where he sat for hours, thinking and drinking his coffee. One day, he made a mistake and boiled the water without the coffee grounds. When he realized the mistake, he quickly put the coffee grounds into the boiling water. The grounds formed a thick plug of coffee at the top of his pot. By fitting a section of screen over his pot carefully, he could press the screen to the bottom of the pot with a stick, which filtered the coffee grounds (Michael 2000-2001).

A coffee press is a coffee pot containing a plunger with which the grounds are pushed to the bottom, when the coffee is ready to be poured (Oxford dictionaries 2015). Coarsely ground coffee is placed in the warmed pot and hot water added to the grounds. After stirring, the brew is allowed to steep for three to five minutes, before the plunger is pressed down to separate the coffee grounds from the coffee infusion. The method is today one of the fastest growing ways to make fresh ground coffee (International Coffee Organization n.d.). The plunger method extracts the most flavour from the ground beans. Compared to other coffee brewers, coffee presses are more compact and easily portable. A coffee press is also known globally as a cafetière, coffee plunger, or French press (Coffee Makers Etc 2011).

### 4.1 Coffee Culture

Despite its faraway origins, coffee has become anything but exotic. The coffee culture is an important part of everyday life. It is often served at the end of a meal, normally with a dessert, and a universal part of any social gathering. There is also part of a ritual involved in coffee drinking, and a social marker that separated a child from the adult (Nordic Coffee Culture 2014). Of course,

coffee culture differs depending on the country. In some countries drinking coffee is a social happening, which means coffee is drunk while sitting and chatting with friends, as in other countries coffee is taken to go. In Italy people are used to drink their coffee fast, and in Finland people have even 12-minute coffee breaks twice a day at work places.

#### 4.1.1 History of Coffee

The history of coffee dates back to at least the 13th century in the Ethiopian province of Kaffa where coffee trees are originated from. There is evidence of coffee drinking in the mid-15th century (De'Longhi n.d.). Coffee was being grown in Yemen, district of Arabia, by the 15th century. By the 16th century it was also known in Persia, Egypt, Syria and Turkey. In an attempt to maintain their monopoly, the Arabs imposed a ban on the export of fertile coffee beans (International Coffee Organization n.d.). In the latter half of the 17th century the Dutch finally succeeded to obtain some seedlings (National Coffee Association USA n.d.).

In the 16th century, the first coffeehouses opened in Constantinople and Mecca, and then quickly spread throughout the Arab world and then Europe. Coffeehouses became important meeting places for social and business life. The Muslim world brought a large variety of African goods, and in 1615, also coffee was first brought to Europe as trade between the Muslims and Venetian traders. Hot chocolate was the first hot beverage appearing in Europe, brought in 1528, and later tea, which was sold in Europe in 1610. The new colonialists, who brought with them the trends and fashions of Europe, brought coffee to the United States in the late 1600s (De'Longhi n.d.). In the end of 17th century, the Dutch colonies had become the main suppliers of coffee to Europe (International Coffee Organization n.d.).

The Dutch continued to trade coffee seeds to new lands and soon coffee trees were planted worldwide. Plantations spread out to tropical forests and to mountain highlands. New nations were set on coffee economies. Coffee became one of the most profitable export crops by the end of the 18th century (National Coffee Association USA n.d.). During the first half of the 18th century coffee in Europe was relatively rare and quite expensive, so only wealthy merchants and nobility could enjoy coffee (Nordic Coffee Culture

2014). Enormous harvests in Brazil turned coffee from a drink of the elite into an everyday drink of the masses (Roast & Post 2015).

Second World War impacted the trade of coffee in particular. Coffee was rationed in many countries. After decades of rationing, this combination of availability and predictability was irresistible to most people. In the 1960s coffee became what most people know today: purchased at a supermarket, pre-grounded for immersion or percolator brewing, and with a consistent taste year after year. By the 1980s, coffee houses worried that younger people were not drinking coffee as much as before (Nordic Coffee Culture 2014).

By 21st century several new brewing methods and flavoured coffees have been introduced. Single cup brewing has become more popular even though its individual portion capsule packaging causes lot of waste. Consumption has shifted more and more to gourmet coffees instead of original drip-filter coffee (National Coffee Association USA n.d.). Still, the overall coffee consumption has not decreased. Over 500 billion cups of coffee are served worldwide annually which makes coffee one of the most popular drink on the planet (British Coffee Association n.d.).

#### 4.1.2 Evolution of Coffee Makers

Preparing a good cup of coffee is highly complex. All effects of the quality of the raw bean to roasting evenness and times, and preservation to type and degree of grinding to quality, temperature and water pressure to infusion times, and ratio of water to ground coffee has to be taken into account. There are also the many variables of coffee makers involved in preparing the perfect cup of coffee (Coffee Makers n.d.). In Appendix 2, evolution of coffee makers is illustrated in a timeline. Even though a coffee press is the key research object in this thesis, there are a lot of devices included in the timeline from different centuries, which are provided for an additional overview.

The very first coffee was prepared using the whole berry. Later, only the green, raw beans inside the cherry were first toasted, and then prepared by boiling whole roasted beans. The first coffee was prepared using Ibrik and Cezve coffee makers. They were used from Turkey to Syria, and from Tunisia

to Morocco. First coffee makers were finely decorated and produced in copper and brass (Coffee Makers n.d.).

In Europe the first coffee was prepared in homes by boiling coffee in tinplate coffeepots and jugs. This made a rather thick, bitter drink with a small amount of coffee grounds in it. These characteristics, along with the high cost of the product, did not arouse enthusiasm through Europe. Still, it was the beginning of a good three centuries of inventions, tests and alterations, to find the right system for preparing coffee (Coffee Makers n.d.).

During the 19th century, coffee devices as well as related coffee machines for home use were designed and patented. As said, preparing a good cup of coffee needs the correct ratios to harmonize roasting, grinding, infusion times, temperature and water pressure. The first inventors did not know much about coffee, so anything and everything, which could possibly be devised for extracting coffee with various principles of the physics of liquids were applied and experimented with as well as thermodynamics, vacuum, steam and hydrostatics (Coffee Makers n.d.).

The coffee press was one of the first new brewing methods in the 19th century. In 1852, a Parisian metal smith and a merchant, Mayer and Delforge, received the first joint patent on a coffee press: a cylindrical vessel, where a rod, attached to a piece of tin pierced with holes and inserted between two layers of flannel, was pressed by hand into, which would filter the coffee. In the late 1920s Milanese designer Attilio Calimani patented a version of the French invention. The simplicity of the coffee press is its greatest appeal. Even though the device has been manufactured by many companies, nowadays coffee presses have changed very little from the original design. (Engber 2014, Serious eats 2012). The most notably coffee press, Bodum Bistro was made in 1974 (Bodum 2014).

The first designs of coffee makers were intended to mimic intentionally the classic styles of silverware, the coffee pots and urns, which were used by European upper classes. In the 1900s through the 1930s, most of designs were in the eclectic style, which combined different styles. In the middle of the 1930s, more modern models of geometric style appeared such as cylinders or

spheres. This change can be linked to the evolving profession of industrial designers, who appreciated functionality in modern design. Also, the appearance itself was the major selling point. In the middle of the 30s, many brands adopted the cylinder style. The spout was put close to the top of the body, to prevent their shapes from having the dominance of the basic cylinder. The choice of the spout form might not to be the most functional, but it was done within relation to its geometrical style (Shinsuke 2001).

During the 1950s, the style of coffee makers converged into a fairly rationalised shape rather than a pure geometric shape. The shape of coffee makers were not geometric, but had a soft narrowing shape, combined with classic curves. Also, the spout is located closer to the base. The visual impact of the pure geometric shape was weakened. This kind of style in design can be seen also in other small household appliances during this period (Shinsuke 2001).

## 4.2 Benchmarking

For competitive product benchmark, investigated brands are OXO, Eva Solo and Muuto. The OXO French Press, The CafeSolo and The Push are all coffee makers, which advertise the original taste of coffee. Figure 2 shows that the OXO French Press is a more technical device, and it takes cleaning in consideration as the two other, the CafeSolo and the Push, are more about appearance and bringing something new in the material, which is due to the fact that the brands are more design oriented.



Figure 2. The OXO French Press, the CafeSolo and the Push (Virolainen 2015).

The OXO French Press' strength is an innovative grounds lifter that catches brewed coffee grounds and removes them in one easy step: no dumping, scooping, banging, or scrubbing. Just rinse and put on a drying rack. Also the heat-resistant glass carafe is easily removable from the stainless steel housing for cleaning. Other strength of the OXO French Press is convenient measurement markings to add the right amount of hot water for desired quantity (Oxo n.d.). As said, the OXO French Press is very practical and technical, and it does not value appearance so the target group is different than with the other two. This was an interesting discovery as the other two are more difficult to clean.

The CafeSolo coffee maker consists of four parts. A flask made of heat resistant glass, a filter funnel, and a smart flip-top lid, which opens automatically when you pour. There is also a cover in neoprene, which keeps the coffee hot for half an hour. These are CafeSolo's strengths. CafeSolo is not a coffee press but a Chemex. It is really praised in coffee blogs. The cleaning is almost automatized, as you can wash the parts in a dishwasher and the neoprene cover can also be machine-washed (Finnish Design Shop 2015).

The Push coffee maker by Muuto combines different materials beautifully, which is not its only strength. It is both soft to look at and soft to hold. The friendly shape goes hand in hand with the warm and cosy atmosphere that a good cup of coffee provides. Push is a characteristic coffee maker with a contemporary Nordic design. The coffee maker's weakness is that it is expensive. Stoneware as a material is strange and it looks heavy (Finnish Design Shop 2015).

## 5 DESIGN BRIEF

The assignment given from Tonfisk Design's co-founder and managing director, Brian Keaney, and also the goal of the thesis, is to design a coffee press to match with and be part of Tonfisk Design's WARM tea and coffee series. He wrote a design brief for me to specify the goal of the project. The design brief is available in Appendix 1. All general requirements are listed in



the design brief. Hence, the coffee press should be easy to recognise as a coffee press and to understand its use. Additionally, the design should have an interesting functional aspect, but its production should not be difficult, as the design's perceived value should not result in a higher retail price. Ideally the coffee press would utilize an already existing wood handle and have a minimum amount of parts (Appendix 1).

General requirements considered aesthetics, functions, and size, production, materials and cost. However, for the Tonfisk Design brand, the most important aspects in product design are functionality and distinctiveness. They are also Tonfisk Design's two major selling points. The products are both functional but also distinctive so that the products have a chance to be noticed in an already crowded market (Appendix 1). In the following, functionality and distinctiveness are studied and looked more into, also from a product semiotics point of view.

## 5.1 Functionality

Ergonomics means functionality between the user, equipment and their environments. As pointed out in the design brief, a product's user-friendliness must be considered so that the product's functions are clear to its user. A product must be logically consistent. A product's appearance should give a clue on how it is used, but also in case of misunderstandings, and for sake of safety, a product should also tolerate mistaken usage (Kettunen 2000). Desired design features to product's functionality also mentioned in the design brief were easy to fill, clean, and the function to pour well. In addition, thermal management must be considered. Material must be heat-resistant so it will not break. Also parts that will get hot but also touched must be insulated for sake of safety (Ashby, Johnson 2002).

Traditionally, product development has concentrated on the usability. Usability research tends to focus on the product's functional benefits. However, experiential benefits play an important role in product development as well (Kemp, Hartevelt 1995). The fundamental shift in the nature of consumption has changed the focus of design research to more representational research that focuses on semantic aspects of products. When the "early" product view emphasised functionality, and the later focused on usability, now to a stronger

attribution of the pleasure dimension has shifted to products. Therefore, also the aesthetic experience must be considered in the design development process (Karjalainen 2006). To make a product aesthetically meaningful, a designer can add an expressive quality, for example, to the product's use. This means that the product expresses how it can be used and how it functions. For example, its form exhibits a spot for grasping (Vihma 1995).

The concept of pleasure in product use is just an expansion of usability of a product. Often it is stated that it is pleasurable enough for a product to do what it was supposed to do efficiently. Also the usability and the appearance are important for a pleasurable product. Yet, the most pleasurable products seem to be important for people because they can express their identity within a particular social environment. In a way, the product can be used as a function to communication. Furthermore, many products can have some kind of history attached to them, which elicit good memories. For example, when a product is given by a beloved person or if it was bought when moving out of one's parental home. Therefore, design is an important factor in the experience of pleasure (Kemp, Hartevelt 1995).

As a conclusion, a product needs to satisfy the customer at all levels. A product should get to the point that it is more than practical to its user. A product can be used, and satisfy the customer, only because it is pleasing, enjoyable, or interesting. The experience is the key: a product should be pleasant to hold or the pleasure connects with social communication. The useful design supports in the accomplishment of the intentions: the product helps to do the task. Also aesthetic or ecological values are appreciated (Kettunen, 2000). The pleasure in design satisfies both the physical and psychological needs of human beings (Buchanan 1995).

## 5.2 Distinctiveness

A brand functions as one important aspect of recognition. Product design, as part of the aesthetics of the brand, plays a significant role in the competition: how to stand out from the competitors? Products represent the identity of a business. They are the most concrete and long-lasting presentation of corporate identity. Brand is the key attribute affecting on the product's appearance (Karjalainen 2006). In order to pursue distinctiveness, the acts of

identification, aesthetic experience, and colours can help the company to stand out.

A company is recognised through various representations. The name and logotype of the company are symbols, which refer to the company, and are known as direct identifiers. Often products carry these identifiers. Also, range of products can distinguish themselves from other models (Vihma 1995). In addition, design is used to reflect corporate values from defined attributes to show what the brand stands for. For customers, products are a way to differentiate the brands from each other (Karjalainen 2006).

The brand name can be the primary asset of the company. Creating products, which characterise the brand image by carrying it from one generation of products to the next, is an essential skill for designers (Ashby, Johnson 2002). When products change, some signs of recognition must remain. This means that the company needs to develop their products consistency across the product range with familiar enough, in order to provide constant customer satisfaction (Karjalainen 2006). Colours are good identifiers in product design because they stand out. Still, colours have to be used carefully, because of their symbolic value. Colours may strengthen the appearance of a product, but it can also lower it. The wrong choice of colours for an object can give an unnatural impression. For example, a brightly coloured object may easily look like a toy (Vihma 1995).

Colour, texture, or feel can be a sort of "character" that gives a product its personality, making it more satisfying. Product's personality relies most on visual and tactile features. Yet, the personality of a product is formulated by those who own or use it. Products are distinctive and have a personality when they resonate with tastes and aspirations of user group. Product's personality describes the associations and meaning that a product has for the user. It includes the lifestyle and aspirations of the consumer (Ashby, Johnson 2002).

A product should not be designed only considering about social, operational, and inventive terms (Karjalainen 2006). In order for a brand to build a long-lasting relationship with its customers, their experiences about the brand should reflect the needs and desires of the target audience, be emotionally meaningful and add value to the consumers' lives. Stimulating

storytelling and consistent authenticity are keys in delivering meaningful brand experiences. Brand experience is about the completeness and consistency across various marketing elements such as products. Consistency is important so that the customers know what the brand is going to deliver each and every time. Successful brands give experiences to its customers: teach something, entertain, provide exclusive access, inspire creativity, and allow time to have fun (Roscam 2010).

## 6 DESIGNING WITHIN A PRODUCT FAMILY

Firstly, product families share a design language. A design language is a main key style where products appearance, visual characters and usability are set. Design language works as a products' visual style guide to achieve a consistent look and feel. It can describe choices for design aspects such as composition, rhythm, colour schemes, shapes, and textures (Kettunen 2000). Introduced earlier in this thesis, the product family design reuse methodology supports designing within a product family by discovering relevant information and underlying patterns. Firstly though, product range's representatives are examined through product semiotics.

Product semiotics aims at connecting representatives through interpreting iconic signs in product families. This means that the representational form, material or style connects products with similar features to a group of products. An interpretation of a product's form tradition may have a characteristic form of its own and specific features formed early in its history. The reference of a colour may rather be seen as a support as it may improve the functioning of a form as an iconic sign. Like colour, the material of a product may, according to the interpreted similarity, refer to an iconic sign. A product can be interpreted as referring through a metaphor of another object. Even the size of a product can be conceived as an iconic sign (Vihma 1995).

Also products with different functions may refer to a style, which is associated with iconic signs on the basis of formal features. Product range relates to each other through the resemblance of form within the pre-given style. Stylistic features may refer to a certain period of time, trends, a sub-culture, a local tradition, social event, and a life style. In design, stylistic descriptions are often

used to characterise a product and its appearance. In addition, the product is considered belonging to an environment. A product may be interpreted as referring to a specific environment on the basis of similarity (Vihma 1995).

Consistency can be added in referring to similar characters. Style is an important tool in consistent adaptation to a product family. It helps if products belong to similar environments to connect associations. Consistent colouring makes an identity stand out and adds consistency. History helps people to recognise the product to the same product category, if the product has adapted a traditional form. This also helps in using the product (Vihma 1995).

It needs a lot of time and effort to study the essential relationships between the product characteristics and the various design variables. In product family design reuse methodology, the starting point is to research information of existing product cases. The effort is needed to find the relevant information and discover the underlying patterns so that it becomes informative. One important aspect of product information is function. The use of function effectively separates the design intention with the physical implementation to its product family. The function basis improves representation and reasoning logic (Ong, Nee & Xu 2008).

The representation and subsequent reasoning about function includes extensive study of the representation scheme based on functions, the function structure, the taxonomy, and the relationships between function, form and behaviour. Information analysis usually involves the assignment of rules and the recognition of design patterns from the existing products in the family. This may be carried out at different levels of the product development, such as customer requirement analysis and product architecture (Ong, Nee & Xu 2008). Product architecture defines the basic physical building blocks of the product so that their interfaces to the rest of the device are determined (Ulrich, Eppinger 2012).

Product behaviour refers to the underlying principles or processes of how a system behaves to fulfil the desired function. The behaviour is considered as a link between function and form. The form information is usually determined at the detailed design stage. Design freedom is low at this stage, and only minor changes can be made to the design, if the form information is insignificant to

the function. However, a function is not dependent on specific implementation to its product family. A formal representation of the product information forms product function, and identifies product architecture based on functional interdependence and product similarity (Ong, Nee & Xu 2008).

Contextual relations are considered in the product information. Especially useful is to determine the parameters that influence the product performance, which can be defined by the relationship between the key characteristics and product functions. Key characteristics are typical properties of a product aspect such as performance, appearance, quality or reliability. Key characteristics can capture information at various abstraction levels and from multiple perspectives. When the design requirements are defined according to the key characteristics to address the customers' needs and the physical components are identified, next, the configurations of a product family are generated and evaluated with respect to multiple product performance criteria. Through these processes, product optimality can be addressed as the balance between these multiple performance criteria (Ong, Nee & Xu 2008).

Furthermore, product platform is closely related to product family design reuse, as a product platform organizes existing product information that can be utilized in new designs. Product platform is responsible for correlating the functional requirements with the design framework. Typically, design involves the process of finding the proper design parameters to fulfil the design requirements: identify the design framework, identify relevant design requirements with suitable measurements, and then establish the relationships between the functional requirements and the design framework (Ong, Nee & Xu 2008).

The purpose of a product platform is to launch a group of product variants, which form a product family. There are three important features of a product platform: a common structure, (the platform is shared by a group of to-be-designed products,) sub-systems and interfaces, (same content in a product platform,) and efficiency in developing product variants (beneficial). The major concern is to make use of shared features and product variant differentiation. Knowledge must be well-organized within the framework of product platform to provide decision support. The core of the product platform

is the product architecture, product functions, and their embodiment (Ong, Nee & Xu 2008).

## 7 DESIGN PROCESS

### 7.1 Ideation and Sketches

After reading given design brief (Appendix 1) carefully, the design process started with ideating on basis of research and product benchmarking. Also, WARM tea and coffee series features were analysed briefly. In Appendix 3, there are the first sketches after first ideation. It was creating the form of the beaker and thoughts of how the wooden handle would go with it. Also the first ideas of the lid were drawn.

In Figure 3 are shown three ideas that came to me after first sketching. The first idea was more usual coffee press, which would utilize WARM teapot's 105 mm wooden handle. Rim would keep wooden handle in its place. The second one might fit better to product family, as the lid would act as a spout, which would not effect to the working of the plunger. The third idea was simple but looked nice. It would utilize 1.1-litre WARM teapot's wooden part. It was also researched how many cups there are in coffee press usually. One cup is usually about 1.35 dl, so that is why there is almost 6 cups in 8 dl.



Figure 3. Three sketches from ideation stage (Virolainen 2015).

Already in ideation stage, the subject as a coffee press restricted me. The visual shape of an object is largely determined by its outer boundaries, such as technical complexity, which limits the freedom of form in design in a fixed way (Vihma 1995). There was not much to do with the beaker, as the plunger should be designed to fit tightly in the beaker, so it would not get stuck, but would place all the coffee grounds on the bottom of the beaker. As a functional part, besides the wooden handle, similar coffee grounds lifter to OXO French Press would be useful. With its scoop, used grounds can be lifted from the bottom after using, which would make cleaning easier as well as sorting the waste.

After the first discussion with the client, the simplest design (third concept from the Figure 3) of my drawings was picked out from the first sketches. Still, problems were arisen, such as, if the wooden part is not easy to take off then there is not enough space to hold the pot part while pulling the wooden part off. This is an important detail, as this needs to be done when the coffee press is washed.

After discussions, it was decided that the next task is to find the right form and size through mock-up making. Considering human grip, the size cannot be too thick. Existing WARM teapots' sizes affect the coffee press' height and diameter. Also the volume has to be chosen. The desirable volume of the coffee press is about 1 litre. The diameter of the handle part should not exceed the dimensions of WARM 60 cl teapot, which is 85 mm with wooden part. However, preferably it could be a little smaller as it would be nicer to customer to use. Ideally, the new coffee press would not use a new size of wooden handle but would utilize an already existing size of wooden handle.

## 7.2 Form and Size

The first design with an extended upper part was simple: it had not a spout, but the edge was designed so it would be functional to pour. As it would not have a spout, makes it easy to produce from glass, since it could be turn blown. The plunger part is attached to the lid, which would have a hole in it below the pouring line, so that you can pour in any directions. Inspiration for the shape came from the WARM teapot's spout. The



first technical drawings (Appendix 4), CAD drawings (Figure 4), and mock-up were made. In Figure 4 the CAD drawing made with AutoCAD can be seen. The colour of glass looks transparent grey in the picture even though it would be clear in real life.



Figure 4. CAD drawing made with AutoCAD (Virolainen 2015).

The direction changed quickly when the client sent me an email that the use of the wooden part is not enough to make the product part of Tonfisk's range or WARM series. The shape made pouring easier, but a straight shape would match with the WARM series better. Then an interesting idea came to me. The idea of placing the scoop at the bottom of the pot for the coffee grounds was developed further. When the plunger is pressed down and rotated, it attaches to the scoop. Then, when the coffee is drunk, both parts could be lifted from the lid's knob. In that way, the coffee grounds would stay between the scoop and the filter. When same act is done

in opposite direction, coffee grounds can be poured to the trashcan. Also the scoop could be used as a spout, which match the straight shape, even if it needs a hole for it. This would make the pouring easier. Also, the measurements for the coffee cups and hot water could be marked on the scoop, as the measurement system can be seen through the glass.

In further development of this idea, the plunger and lid part caused problems. When sketching in real size 1:1, it was discovered that the rod of the plunger may look odd as a 20 cm coffee press would look massive with extra a 20 cm long rod sticking up. The rod of the plunger can be made shorter if it is not going all the way to the bottom. When discussing the idea with the supervisor of this thesis, he suggested that if the lid would be placed upside down, the plunger's knob would go all the way down into the body, so it would not show when pushed down. Appendix 5 shows the overview of followed idea: the frame is the beaker, the brown part is the scoop and the grey coloured part is the lid. The plunger is not in the picture as it is clearer this way. The idea would make the concept functional and more suitable for WARM series. The discussion was helpful and aroused many questions, on how to make the lid actually work.

### 7.3 Mock-ups

The first mock-up making showed that the rounded bottom in the beaker makes it easier to put to wooden-handle part to the body. The first mock-up was plastic foam but even if the material is easy to work with, plastic foam is not strong enough, and the tight wooden handle squeezes the foam and it crushes. The first mock-up was made according to first technical drawings in Appendix 4. Diameter was wrong, as it should have been total 85 mm with the wooden handle. Wooden part adds thickness 3 mm, so the final diameter should be smaller 79 mm. Also it seemed like the client was not happy with how the first idea was matching to WARM series.

The next idea was to make a new size for WARM pots to complete the range. The scale-based product family design method can be used to find out new size to coffee press. The scale-based product family

design is part of the product family reuse methodology, in which product variants are generated by scaling with respect to a set of variables (Ong, Nee & Xu 2008). In Figure 5 is analysed how WARM teapot's size is increasing. Also, requirement of the volume affects the size. The first thought was to choose one in between, but as the volume should be around 0.8 litres, the first chosen size was only slightly smaller than WARM 1.1 litre teapot.

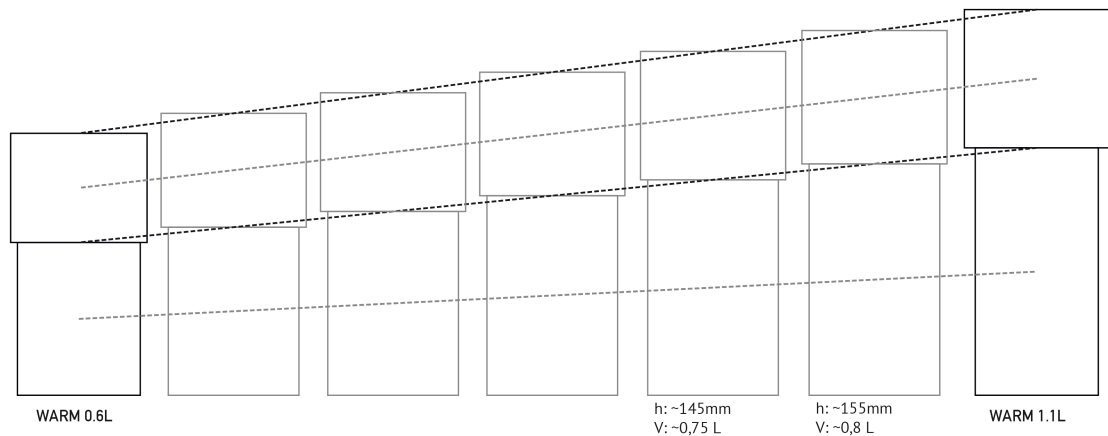


Figure 5. Analysis of WARM teapot's sizes (Virolainen 2015).

The second mock-up was made from wood. The form was defined based on the idea that the coffee press would work with a scoop. Size was determined by the earlier introduced scale-based product family design method. After showing the mock-up to the client, he decided that the coffee press would be about the same size as the existing teapot. This was justifiable, as it would be desirable to fit have the final coffee press to same box as the WARM 60 cl teapot, as this solution would save money in shipping costs. Also my idea about a coffee ground scoop was considered interesting, but something that fits better for some other purpose than this. The client also pointed out that touching the spout might be inappropriate, as the consumer might not like to drink coffee from it, as the scoop would have to be lifted from the spout.

#### 7.4 Development

In my client's opinion, it was more important to make product first as functional as possible and then look into details, as it would fit with the WARM series. It was decided that the next step in the process is to make CAD models with some adjustments, in order to give enough options to the client to choose from. Besides that the idea about scoop should be explored, a mock-up of the

scoop that works should be made. At the end, it might be that the scoop will not be included to coffee press anyway.

In the development stage, the form was researched again. The development process can be seen in Appendix 6. First, new full-scale sketches of coffee press' profile were made and then some of them were drawn and rendered with Rhinoceros. Three different ideas and 7 different variations out of 12 were shown to the client. These 7 coffee presses can be seen in Figure 6. Keaney was pleased with the visualisations, as they helped to clarify the ideas. A new direction to the process was determined and discussed. It seems that the chosen coffee press will have a wood handle, which will go all the way up. Like in Appendix 6 shows how wooden handle goes all the way up in the 4th and 5th coffee press examples. Other idea was to make coffee press where the rim curves but the wooden handle goes all the way up like in the 4th and 5th, not like in the 6th and 7th coffee press examples. Also, Keaney brought up that one of the visualisations' technical drawings could be sent to the manufacturer, and a prototype from glass could be made.

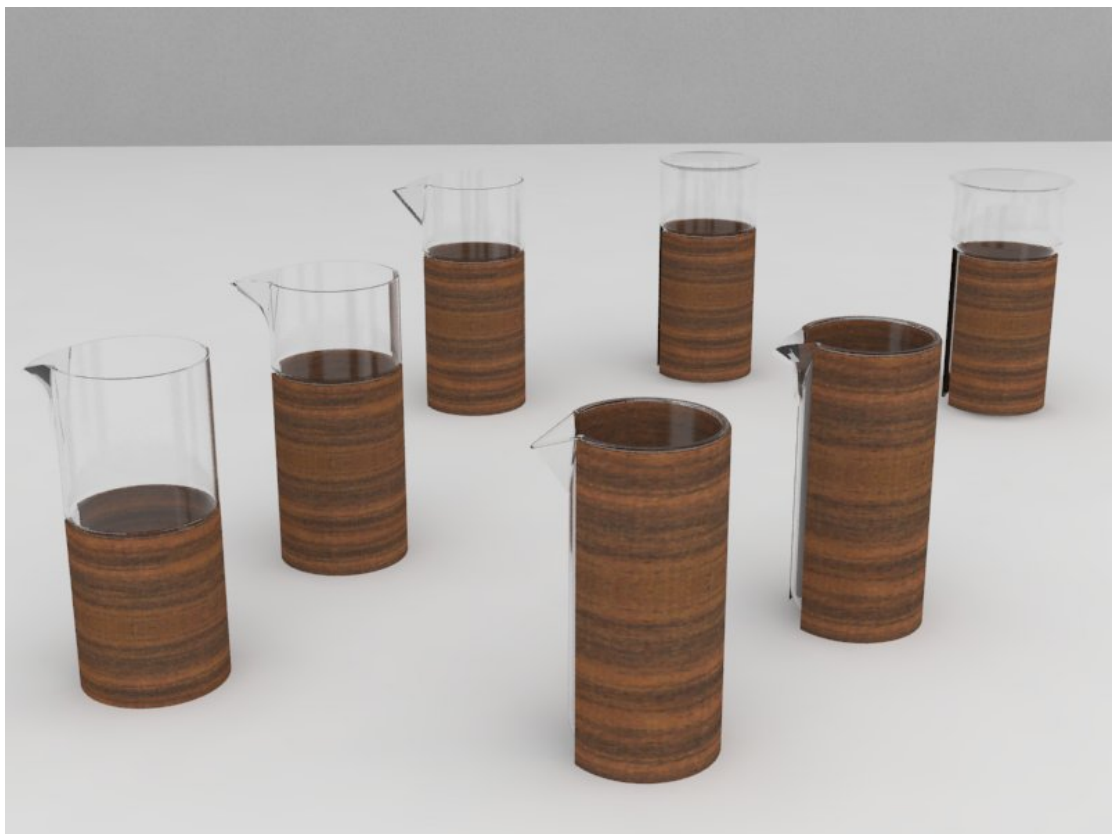


Figure 6. Coffee press visualisation drawn with Rhinoceros (Virolainen 2015).

It was also discussed if the bottom should be rounded as in WARM teapots. Rounded bottom would fit better to product family but would be more stable with straight bottom. Rounded bottom works better with wooden handle as it is easy to attach but rounded bottom affects to the volume of the pot. Usually there is in the coffee presses a part that stops the plunger to be pressed further. This might be because the material of the lid is not so strong. As it might be challenging designing the plunger in a rounded bottom coffee press, but it could function as the part that stops plunger to go any further it is supposed. From the rounded bottom might also be easier to scoop the used coffee grounds.

After discussion, new technical drawings were drawn. One was made with smaller spout that would fit in existing wooden handle, and in other the rim curves out. Also the first rendered visualisations from the lid were made with AutoCAD. The next stage in the process is to research the materials. For example, borosilicate glass is interesting for this thesis, and it is important to explore how production with heat-resistant glass differs with normal glass. Also technical drawing about chosen coffee press with rounded and more stable bottom was made so the client could choose between them.

Before the selection study of different spouts was made. Grading was 1 to 5, and spout got 5 if it worked perfectly without leaving any water drop, and 1 if it failed to pour and water dripped on the table. Test was made twice with one spout, first pouring fast, which worked usually better than when pouring slowly. In pouring experimenting was noticed that spout pours better if the rim in spout is thin or gets thinner even though spout would not be so curvy.

## 7.5 Materials

The final coffee press will be made of a heat-resistant glass, explicitly borosilicate glass. Glass is traditionally used in coffee presses so it feels suitable material also for this. It will also have the same wooden handle, as in the other objects in the WARM range. Glass fits nicely with the wooden handle and makes similar contrast that other objects in the WARM series have with porcelain.

One semester course in glass design in exchange year eased also the study of heat-resistant glass. In glass design course, the main point was designing

even though everybody could try to blow glass, which was hard. Still, basic knowledge and experience about glass design was received in Linnaeus University, Sweden from September 2013 to January 2014.

### **Borosilicate Glass**

In the 1880s, the German scientist Otto Schott invented borosilicate glass. The primary formers used are silica sand and boric acid. Boron makes borosilicate glass so exceptionally strong. Borosilicate glass is chemical, heat, and shock resistant. The properties of borosilicate glass are hardness, transparency, and chemical and thermal resistance. All these qualities make borosilicate glass a perfect material for cooking applications, thermometers, and laboratory equipment, both for its durability and visual appeal (How products are made 2015). Borosilicate glass can be made extremely thin. Of course, borosilicate glass also breaks under extreme conditions, but due to its remarkable quality, it is much more likely to crack or snap rather than shatter, making injuries less likely (Kaufmann Mercantile 2015).

First in the manufacturing process, a large batch of molten glass composition is made. The mixture typically requires up to 24 hours heating to remove excess bubbles that can lead to a weaker structure. Next, the molten glass is fed into the forming machines. The work has to be done quickly, because as the material cools, it becomes hard and unworkable. The forming process used depends on the final product. Typical glass processing machines blow, press, draw, and roll the glass into glass bottles, thicker containers, rods and sheets (How products are made 2015).

Glass blowing is used to create thin-walled products, when glass pressing is used to create thicker pieces of glass. In glass blowing, air is forced into the bubble inside the molten glass, and presses the glass against sides of the mould. The glass cools inside the mould and conforms to the shape. In glass pressing the molten glass is put into a mould and a plunger is lowered which forces the glass to spread and fill the mould. After the products are formed, they are cooled and polished. The product may then be decorated with various printings or markings and fitted with plastic pieces if necessary. After that the products can be decorated with a company logo or other markings. Finally, the glass products are checked for imperfections, put in protective boxes and shipped out to customers (How products are made 2015).

## 7.6 Selection

After seeing the new technical drawings, the selection was made. A collection of technical drawings is shown in Appendix 7. The client decided that coffee press is designed without the spout. Still, there was a lot to design in how the rim curves out. Another mock-up was made with lathe and showed to the client. Keaney said that it is good to feel and visualize the product but changes were still needed as when you would pour hot water to the pot, it would get heavy, and because the edge was extended too long, the pot might drop against the wooden handle so that the pot might burn the table or even customers hand. Still, Keaney was pleased with size, as it would fit to same box as 60 cl WARM teapot. Also, for the lid there is enough (2–3 cm) space left.

After meeting, new curves and technical drawings were made, and finally curve, which is 7 degrees and extends to 8 mm, was chosen. After making another mock-up was noticed that it is really hard to take wooden part off when having only 8 mm space to hold. This was already discussed in the first discussion but later forgotten. Still, when wooden handle gets looser on time, it might get easier. Also when the coffee press would not have spout, it is not clear to its user from where to pour. It could be marked on the lid, or maybe it does not matter if pouring works in every direction.

## 7.7 Details

Before final ideation, benchmark of lids was made, as in pictures it is hard to find out how the lid works. Figure 7 is drawn after this benchmark. Even though lid have been around, now was time to look more into it. The first lid in picture bellow works also as a spout. The second was in thermos bottle's lid, which was really smart as there was push mechanism, which opened the down part open so it would not give out the heat from the coffee. The third one was something that has been already thought about within this coffee press.

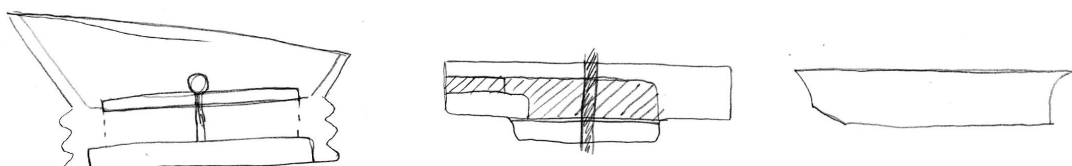


Figure 7. Ideation for the lid continues (Virolainen 2015).

Already in previous CAD drawings lid has been part of design. In these drawings the lid have been transparent brown, which would fit to walnut wooden handle as well as coffee. Transparent would fit with glass, and of course, if the customer needs to see the colour of the coffee. For the knob, the first thought of material was cork, as it would be elegant and would fit to Tonfisk Design's style. The client was not too keen on the cork stopper on top of the plunger in renderings so it was left out.

In Figure 8 shows options of the lid to all coffee presses made in the developing process. The client was not keen on the lids that go deep, which was designed so that the plunger could go smoothly. He also thought that the lid could be seen, instead of putting it hide inside the pot. The lid can be seen through in all cases, as the beaker is made of glass.

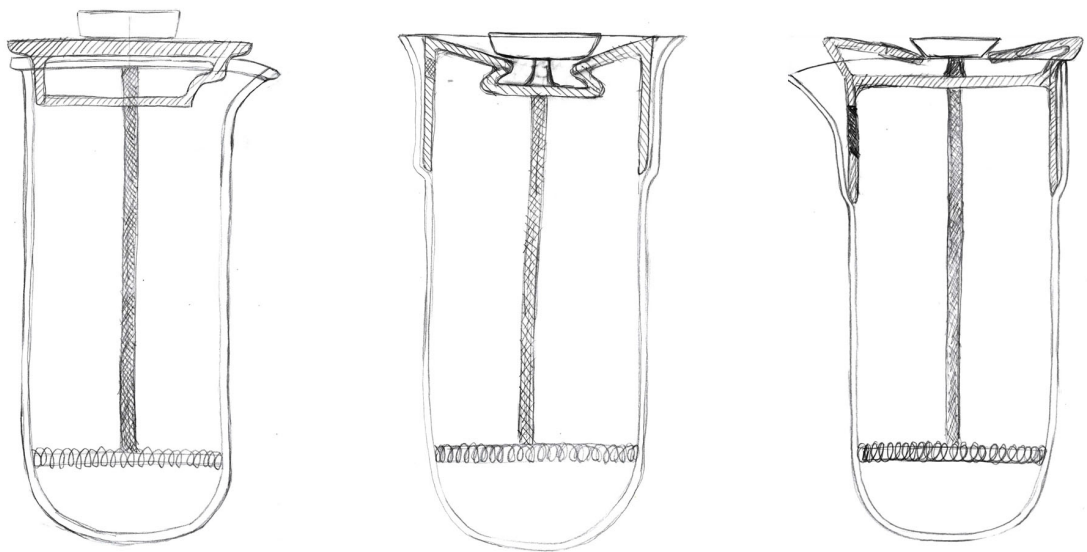


Figure 8. Designing the lid in the developing stage (Virolanen 2015).

The detailed drawing of the designed plunger is shown in Appendix 8. It is a typical plunger of a coffee press. The filter is consisting of three parts. The first one is pierced with holes, the second one is filtering mesh, and these two parts make a sandwich with third part. The filters are attached to a rod. There is also a spring, which goes round the filter, and screws that attach the filter to the rod. First, the plunger was supposed to be reused, and bought from manufacturer that produced plungers, and then design the coffee press within



those measurements. However, after searching for the manufacturer, and because there was nothing like that, it was decided to make a customised version of the plunger. As the plunger will be customised, instead of holes in the first filter part could be the brand logo. Material would be stainless steel.

## 7.8 Finalizing

In Figure 9 can also be seen a new idea of the lid of the coffee press. The designed lid follows the idea in Figure 7 in the middle. When coffee is ready to serve and the plunger is pressed down, coffee can be poured. Pressing down the plunger opens part, which allows the coffee to run through from the little hole. After discussion with client, concept was noticed not to be suitable. It was concerned that pressing the plunger down would make the lid collapse inside the beaker, off from its right position. This might work with right materials, but for this project, it was desired simpler solution, and that is why also this concept was left aside. It was decided that lid would be 95 mm diameter as the edge of the beaker so the lid can rest on top of the beaker. Still, the client was worried about the heat escaping through hole.



Figure 9. The new idea of lid was using same kind of mechanism as thermos bottle (Virolainen 2015).

Next, it was tested with competitive product how much a plastic lid insulates when it is closed and when it is open. The test was made five times and temperature measured after 3, 5, and 15 minutes. In three of the times lid was

closed and in other times it was open so pouring could be possible through hole even if it was not used in test. Still, every time temperature had decreased about 7 to 10 Celsius degrees after 15 minutes. The conclusion according the test was that lids position is not affecting to the insulation when times are short.

Another lid was designed, and mock-up made from cardboard. The diameter of lid is 95mm and it rests on top of the beaker. Also inside it, there is part that goes smoothly inside the beaker, which keeps the lid on right place. Instead of hole in the lid, there is form that allows pouring. This is also helpful to the user to realize where to pour. With this concept the client was pleased and praised the fact that lid brings nice personality to the product.

For the final task was to design knob that matches with WARM series but also expresses its use. It should express the function: Press here. The final knob should be ergonomic and functional. For that reason, it was convenient to move fast to mock-up making. It also helped to see how parts go together and how the overview looks like. In Figure 10 are few mock-ups made in the process. Also, earlier described lid can be seen in Figure 10 below.



Figure 10. The mock-ups of knobs were made so they could be tested (Virolainen 2015).

The roundish shapes felt too dominant and the one in down middle in Figure 10 was chosen for the final concept. The function (press) is clear but it was also easier to pull the knob up because of the space knob formed under it. Next step was to make final renderings with all the parts. Also a mock-up from ceramics was made by Keaney as the version from glass was not ready in time.

## 8 RESULT

The final result of this thesis' design project is seen in Figure 11. 1.1 litre teapot's wooden handle is utilized in the coffee press. In Appendix 9 is shown the measurements of the coffee press. Total height of the coffee press is now 178 mm as the glass beaker is 173 mm. There is 5 mm extra under the pot, for the sake of safety. It also eases taking off the wooden handle. Wooden handle is 170 mm and the pot extends to 8 mm with 7-degree curve. Rounding in the bottom is 5 degrees.



Figure 11. The final concept of coffee press (Virolainen 2015).

The coffee press is easy to recognise as a coffee press and also its use is easy to understand. The functional aspect, apart from that it uses wooden handle like others in its product family, was not achieved yet, but some kind of scoop or something to do with removing the coffee grounds easier could have been made. The final result will be technical drawings from all parts, so the technical drawings could just be sent to manufacturer to produce. As a part of the goal was to introduce the coffee press to the markets in 2016, a lot of work is still needed.

## 9 EVALUATION

The self-evaluation is an essential part of thesis work, and also a necessary tool for professional development. As the thesis prepares to graduation, the self-evaluation should not focus just on this thesis but should also focus on skills received for the future career. This thesis has been a learning process, which has given professional experience through the process. Of course, a designer in such early stage needs improvements.

The aim of the thesis was to design a coffee press to match with and be part of Tonfisk Design's WARM tea and coffee series. More specified requirements were listed in the design brief. These general requirements considered aesthetics, functions, and size, production, materials, and cost. One way to evaluate the thesis work is to assess how well these objectives have been accomplished. If the goal was to produce a coffee press, it was not achieved. The design process is still unfinished. Still, a potential outcome and formulated a possible solution have been designed, and the development will continue.

Because the process have been made in cooperation with Brian Keaney, who wrote the design brief at the first place, and the requirements have been changing from the original ones, this might not be the best way to evaluate the process. The design process has had such an impossible objectives that customisation have been necessary. For example, the volume about 1 litre, the diameter smaller than 79 mm, and size about the same as the smaller WARM teapot are requirements, which exclude each other. Of course, in this kind of project it is important to find the golden mean, as it is part of being professional designer.

The designer's goal was to take this as a great opportunity and experience to create and study something new. The designer was motivated for the task, as it was a real company with real customers. Also designing within an existing product family was exciting. This was also challenge to work with a real customer for the first time. For professional designer this kind of experience and needed skills are really important. Working with a real client taught a lot and its necessity in working life is huge.

In this thesis project, many concepts have been designed. Even though they were not implementable in client's opinion for this project, the designs may be useful to think through for some other purpose in the future. The idea of the scoop was an interesting idea, but its weaknesses outdid the opportunities. As an application, Keaney was pleased in the developing ideas stage, when discovering coffee press that would also work as WARM water carafe. This coffee press can be seen in Figure 12 below.



Figure 12. Possible upcoming WARM water carafe (Virolainen 2015).

The second goal was to produce new knowledge and skills. This thesis can help other students to design functional and distinctive design within an existing product family or for creating a new consistent one. The research was partly helpful for this design process as well. Overall, this was teaching experience, as the best you learn by doing.

## 10 CONCLUSION

The conclusion was written to make sure that all the research questions were answered. The thesis' main research question was "What kind of coffee press fits Tonfisk Design's WARM series?". Thesis' sub research questions were "What is coffee press? How to design within the product range? How to design within the brand identity? What is functionality in product design? How to stand out from the competitors?".

*What kind of coffee press fits Tonfisk Design's WARM series?*

The supporting feature in WARM series is its wooden handle, which has been the starting point in the design of the coffee press. Other feature is that WARM series has clear lines. The light colours, the use of wood, minimalism, and functionality gives WARM series its personality. Yet in spite of the symmetry and clarity, designs always radiate warm feeling. These special character need to include to the final coffee press. The final result can be seen in Figure 13 below.



Figure 13. What kind of coffee press fits Tonfisk Design's WARM series? (Virolainen 2015).

*What is coffee press?*

The coffee press was one of the first brewing methods in the 19th century. A coffee press is a coffee pot containing a plunger, with which the grounds are pushed to the bottom, when the coffee is ready to be poured (Oxford dictionaries 2015).

*How to design within the product range?*

When designing within an existing product family consistent product appearance, visual characters and usability should be set. Product families share a design language and style. Using such a visual style guide makes product family achieve a consistent look and feel (Kettunen 2000). For example, consistent colouring makes an identity stand out and adds consistency (Vihma 1995).

*How to design within the brand identity?*

A brand is the key attribute affecting on the product's appearance. In addition, design is used to reflect corporate values from defined attributes to show what the brand stands for (Karjalainen 2006). The name and logotype of the company are symbols, which refer to the company, and are known as direct identifiers. Often products carry these identifiers (Vihma 1995).

Brand experience is about the completeness and consistency across various marketing elements such as products. Consistency is important so that the customers know what the brand is going to deliver each and every time (Roscam 2010). This means that the company needs to develop their products consistency across the product range with familiar enough, in order to provide constant customer satisfaction (Karjalainen 2006).

*What is functionality in product design?*

When the "early" product view emphasised functionality, and the later focused on usability, now to a stronger attribution of the pleasure dimension has shifted to products. Therefore, also the aesthetic experience must be considered in the design development process (Karjalainen 2006). The

concept of pleasure in product use is just an expansion of usability of a product. The concept of pleasure in product use in relation to the usability of a product can be seen in Figure 14 (Kemp, Hartevelt 1995).

### Usability and Pleasure

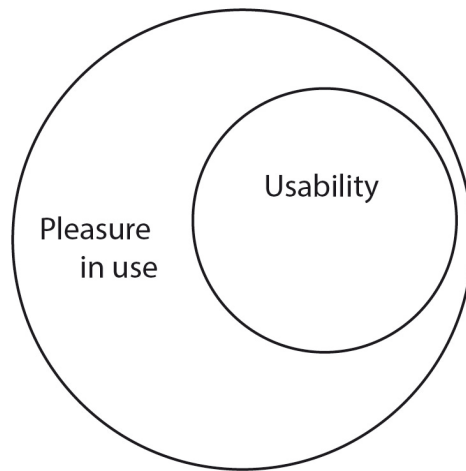


Figure 14. Usability and pleasure in use (Virolainen 2015).

#### *How to stand out from the competitors?*

In order to pursue distinctiveness, the acts of identification, aesthetic experience, and colours can help the company to stand out. Colours are good identifiers in product design because they stand out (Vihma 1995). Colour, texture, or feel can be a sort of "character" that gives a product its personality, making it more satisfying. Yet, the personality of a product is formulated by those who own or use it. Products are distinctive and have a personality when they resonate with tastes and aspirations of user group. Product's personality describes the associations and meaning that a product has for the user. It includes the lifestyle and aspirations of the consumer (Ashby, Johnson 2002).



## REFERENCES

- Ashby, M., Johnson, K. 2002. *Material and Design: The art and science of material selection in product design*. Oxford: Elsevier Ltd.
- Bodum. History Available at: <http://www.bodum.com/gb/en-us/cms/84/100137/> [Accessed: 3 April 2015].
- British Coffee Association. History of Coffee. Available at: [http://www.britishcoffeeassociation.org/about\\_coffee/history\\_of\\_coffee/](http://www.britishcoffeeassociation.org/about_coffee/history_of_coffee/) [Accessed: 3 April 2015].
- Brown, T. 2008. Design Thinking. *Harvard Business Review* (June 2008). Available at: [http://www.ideo.com/images/uploads/thoughts/IDEO\\_HBR\\_Design\\_Thinking.pdf](http://www.ideo.com/images/uploads/thoughts/IDEO_HBR_Design_Thinking.pdf) [Accessed: 5 April 2015].
- Coffee Makers. Ratios. Available at: <http://www.coffeemakers.it/en/collezione-mauro-carli-relazioni-base.php> [Accessed: 17 March 2015].
- Coffee Makers. Short history of coffee makers for home use. Available at: <http://www.coffeemakers.it/en/collezione-mauro-carli.php> [Accessed: 17 March 2015].
- Coffee Makers Etc. The Evolution of the French Press. Available at: <http://www.coffeemakersetc.com/blog/2011/11/the-evolution-of-the-french-press/> [Accessed: 17 March 2015].
- De'Longhi. A coffee journey around the world. Available at: <http://www.delonghi.com/en-ca/products/coffee-espresso/coffee-culture/history-of-coffee> [Accessed: 17 March 2015].
- Engber, D. 2014. Who Made That French Press? *The New York Times Magazine*, 30 May 2014. Available at: [http://www.nytimes.com/2014/06/01/magazine/who-made-that-french-press.html?\\_r=1&referrer=](http://www.nytimes.com/2014/06/01/magazine/who-made-that-french-press.html?_r=1&referrer=) [Accessed: 31 March 2015].
- Finnish Design Shop. Cafesolo coffee maker 1,4 l, black. Available at: <http://www.finnishdesignshop.com/tableware-coffee-tea-eva-solo-coffee-maker-cafesolo-coffee-maker-black-p-3930.html> [Accessed: 4 February 2015].
- Finnish Design Shop. Push coffee maker, soft grey. Available at: <http://www.finnishdesignshop.com/tableware-coffee-tea-muuto-push-push-coffee-maker-soft-grey-p-8856.html> [Accessed: 4 February 2015].
- How products are made. Pyrex. Available at: <http://www.madehow.com/Volume-7/Pyrex.html> [Accessed: 4 April 2015].
- International Coffee Organization. Roasting/Making coffee. Available at: [http://www.ico.org/making\\_coffee.asp?section=About\\_Coffee](http://www.ico.org/making_coffee.asp?section=About_Coffee) [Accessed: 13 February 2015].
- International Coffee Organization. The Story Of Coffee. Available at: [http://www.ico.org/coffee\\_story.asp](http://www.ico.org/coffee_story.asp) [Accessed: 13 February 2015].

- Kananen, J. 2013. Design Research as Thesis Research (Applied Action Research): A Practical Guide for Thesis Research. Tampere: Juvenes Print – Suomen Yliopistopaino Oy.
- Karjalainen, T-M. 2004. Semantic transformation in design: Communication strategic brand identity through product design references. Helsinki: Ilmari design publications.
- Kaufmann Mercantile. Borosilicate Glass. Available at: <http://kaufmann-mercantile.com/borosilicate-glass/> [Accessed: 4 April 2015].
- Kettunen, I. 2000. Muodon palapeli. Porvoo: WS Bookwell Oy.
- Kokkonen, R. 2012. Design Spotlight: Tonfisk enjoys worldwide success with innovative ideas to ceramics and tableware. VISIT HELSINKI BLOG, 21 January 2012. Available at: <http://blog.visithelsinki.fi/en/design-spotlight-tonfisk-enjoys-worldwide-success-with-innovative-ideas-to-ceramics-and-tableware/> [Accessed: 20 March 2015].
- McDonald, P. A. Tonfisk Warm: Tea & Coffee Cups. Patrick Altair McDonald Blog, no date. Available at: <http://www.patrickaltair.com/blog/tonfisk> [Accessed: 20 March 2015].
- Michael, N. 2000-2001. Elixir For The Soul. Coffee Times (Fall/Winter 2000-2001). Available at: <http://www.coffeetimes.com/elixer.htm> [Accessed: 31 March 2015].
- National Coffee Association USA. 2014 National Coffee Drinking Trends. Available at: <http://www.ncausa.org/i4a/pages/index.cfm?pageID=924> [Accessed: 3 April 2015].
- National Coffee Association USA. The History of Coffee. Available at: <http://ncausa.org/i4a/pages/index.cfm?pageid=68> [Accessed: 17 March 2015].
- Nordic Coffee Culture. A History of Coffee in Norway: Part One. Available at: <http://nordiccoffeeculture.com/a-history-of-coffee-in-norway-part-one/> [Accessed: 17 March 2015].
- Nordic Coffee Culture. A History of Coffee in Norway: Part Two. Available at: <http://nordiccoffeeculture.com/a-history-of-coffee-in-norway-part-two/> [Accessed: 17 March 2015].
- Nordic Coffee Culture. A History of Coffee in Norway: Part Five. Available at: <http://nordiccoffeeculture.com/a-history-of-coffee-in-norway-part-five/> [Accessed: 17 March 2015].
- Ong, S. K., Nee, A. Y. C. & Xu, Q. L. 2008. Design Reuse in Product Development Modeling, Analysis and Optimization. Singapore: World Scientific.
- Oxford dictionaries. “Cafetière”. Available at: <http://www.oxforddictionaries.com/definition/english/cafetiere> [Accessed: 28 January 2015].
- Oxo. French Press Coffee Maker - 8 Cup. Available at: <http://www.oxo.com/p-1392-french-press-coffee-maker-8-cup.aspx> [Accessed: 4 February 2015].

Restrepo, J. 2004. *Information Processing in Design*. Amsterdam: Delft University Press.

Roast & Post. *Cultivation in the Colonies*. Available at: <https://www.realcoffee.co.uk/coffee-encyclopedia/history/cultivation-in-the-colonies/> [Accessed: 2 April 2015].

Roscam, E. 2010. *Brand Driven Innovation: Strategies for Development and Design*. Singapore: AVA Publishing.

Serious eats. *Coffee History: The French Press*. Available at: <http://drinks.seriousseats.com/2012/03/coffee-history-who-invented-french-press.html> [Accessed: 31 March 2015].

Shinsuke, O. 2001. *The Development Process of Modern Household Objects: Coffee making devices for homes in the United States, 1900 – 1980*. The University of Shiga Prefecture. Available at: <http://www.shc.usp.ac.jp/omoya/lab/activities/papers/coffee-making-devices-for-homes-in-the-us.pdf> [Accessed: 4 April 2015].

Tonfisk Design. *Achievements*. Available at: <http://shop.tonfisk-design.fi/achievements> [Accessed: 17 March 2015].

Tonfisk Design. *Designers*. Available at: <http://shop.tonfisk-design.fi/designers-0> [Accessed: 17 March 2015].

Tonfisk Design. *FAQ*. Available at: <http://shop.tonfisk-design.fi/faq> [Accessed: 17 March 2015].

Tonfisk Design. *The company*. Available at: <http://shop.tonfisk-design.fi/company> [Accessed: 17 March 2015].

Tonfisk Design. *Warm*. Available at: <http://shop.tonfisk-design.fi/products/brand/Warm> [Accessed: 17 March 2015].

Ulrich, K.T. & Eppinger, S.D. 2012. *Product Design and Development*. 5th edition. New York: The McGraw-Hill Companies, Incorporated.

Vihma, S. 1995. *Product as representations: A semiotic and aesthetic study of design products*. Helsinki: University of Art and Design Helsinki.

Worldguide. *Scandinavian Design*. Available at: <http://www.worldguide.eu/wg/index.php?StoryID=148&ArticleID=23189> [Accessed: 20 March 2015].

Zuber-Skerritt, O. & Perry, C. 2002. *Action research within organisations and university thesis writing*. In Zuber-Skerritt, O (ed.). *Action learning, action research and process management*. Bradford: Emerald Group Publishing Ltd, 171–179.



Form follows function doesn't mean all objects have to look the same

Tonfisk Design Oy  
Ketaranti 31  
20100 Turku  
Finland

www.tonfisk-design.fi  
info@tonfisk-design.fi

Tel: +358 20 7571 330  
Fax: +358 2 231 6090  
VAT No. FI 1565004-9

15<sup>th</sup> January 2015

## Brief for Heini Virolainen

### Project

To design Coffee Press to suit Tonfisk Design brand.

### The Tonfisk Brand

'Form follows function doesn't means all objects have to look the same' is Tonfisk's slogan. This encapsulates the idea of the brand i.e. that the products are both functional but also distinctive. These are two major selling points for the company. Functionality means we can stand 100% behind our product. Distictiveness means that our products have a chance to be noticed in an already crowded market place. Also our target customers value both functionality as well as distinctiveness. They are people who are often concerned about visual matters and so value objects of visual interest.

### General Requirements

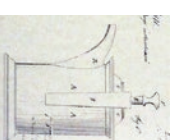
- The Coffee Press should be of 'normal' volume 0,35 – 1L
- the Press should match with and be part of the WARM tea & coffee series
- The Press should complement the rest of the Tonfisk range.
- The Coffee should be easy to recognise as a coffee press
- The press should be easy to understand how to use
- Press should take into account the dining aspect of its use and dining as a means of 'showing off' to guests.
- the design should try to find some interesting functional aspect. This may be to do with the functionality of pouring, storing, filtration or any other aspect regarding its use.
- Production technique and material are open but generally speaking glass and of course laminated wood. Porcelain may be an option but its suitability must be considered.
- The press can be designed to be sold separately
- The Press should be easy to fill
- The press should be easy to clean
- The press should pour well.
- Diameter of the 'handle' part should not exceed dimensions of WARM 60cl teapot. However preferably it could be a little smaller
- Ideally the Press would not use a new size of wood handle but utilize an already existing size of wood handle.
- Optimum solution would use minimum amount of parts as possible.
- Production difficulty should be relative to the possible perceived commercial value of the product. production cannot be difficult if design does not allow for consequently higher retail price.
- Retail price of set should be 60 – 75 eur. NOTE: Price of object is often affected by overall size. however in some case width can effect price more than height i.e greater height might make appear more valuable but not necessarily increase production cost.

# Timeline:

## History of coffee makers



1806 French Press



1852 French Press by Mayer and Delforge

### 15th century

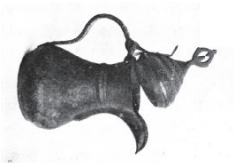


Ibrik



Cezve

### 18th century



Dutch coffee makers



1819 The Napolietana by Morize

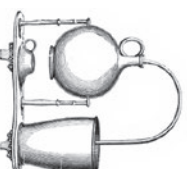


1830s

Vacuum coffee maker by Loeff



1840 The Napier Vacuum Machine



1889 Percolator



1890 Instant coffee

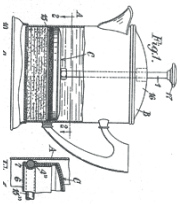


### 20th century

1909 Silex by



1909 Silex



1929 French Press by Atilio Calimani



1974 Bistro for Bodum

# 21th century



25 Sinto Marcks



1933 Moka pot by De Ponti for Bialetti



1941 Chemex by Schlumbohm



1957 Pehtoori by Antti Nurmesniemi



1987 Napoletena by Dalisi for Alessi



2006 AeroPress



2010 Softbrew by Sowden



1930s Sunbeam



1930s Coffee Robot for Farberware



1954 The Wigmomat by Gottlob Widmann



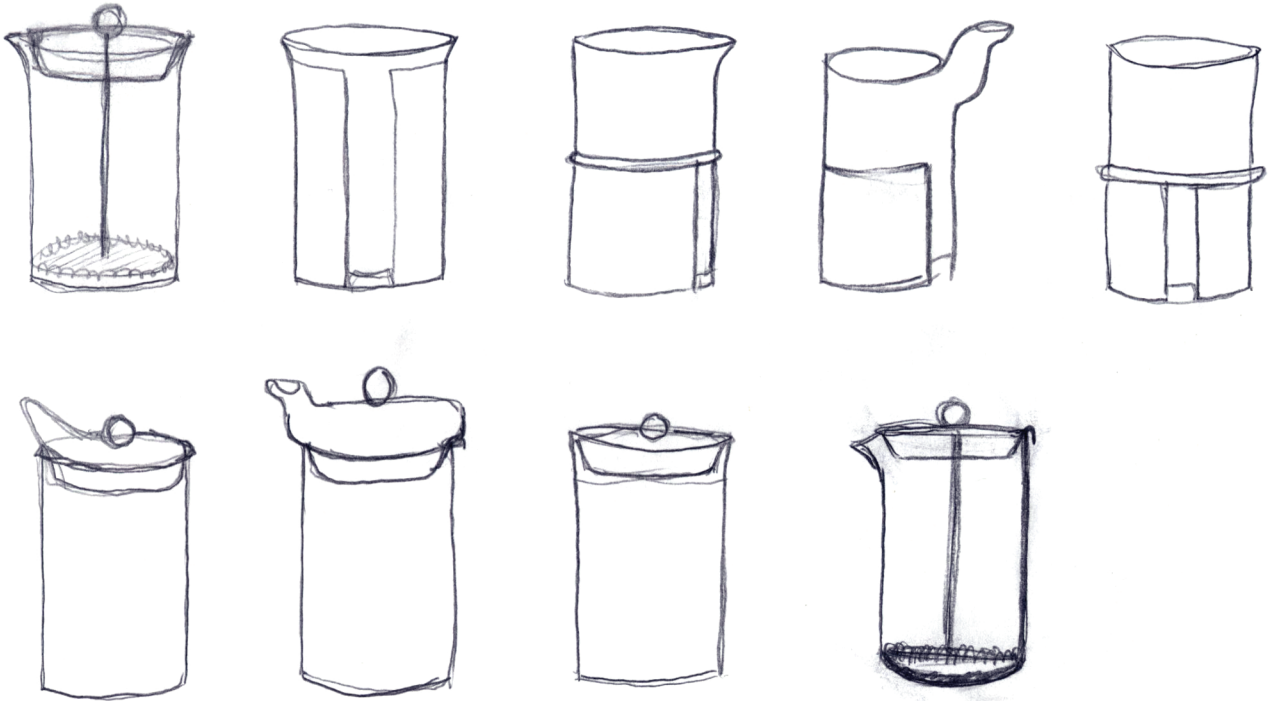
1970s Mr. Coffee



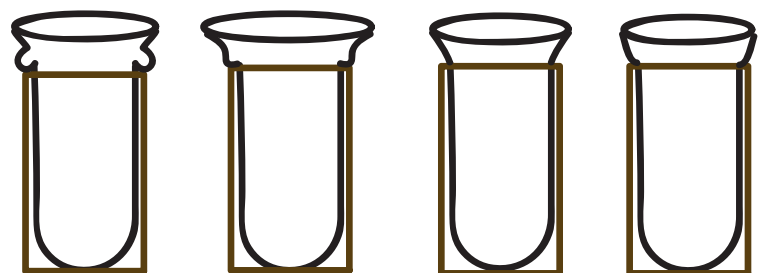
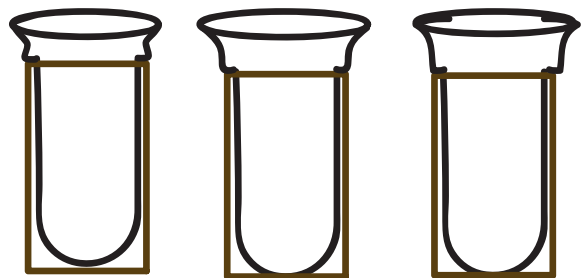
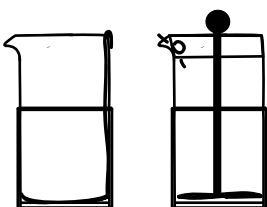
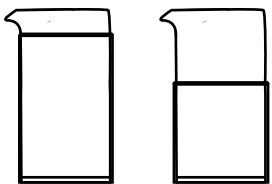
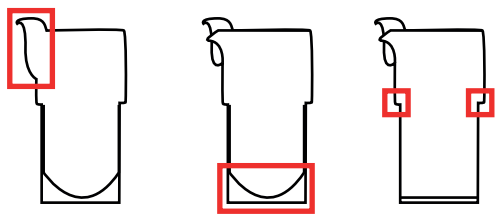
1958 Santos vacuum coffee maker for Bodum

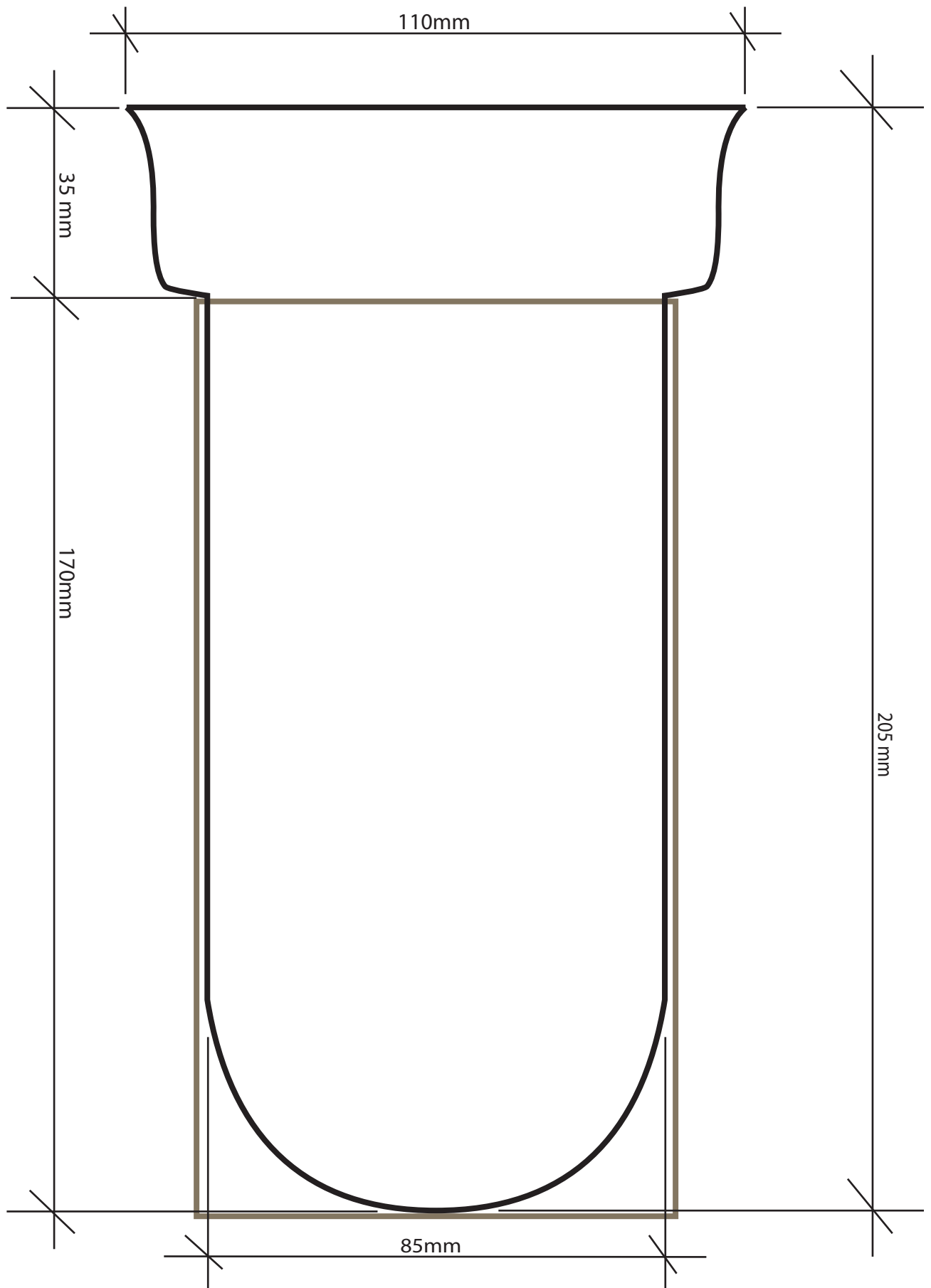


1997 single-cup brewer for Keurig



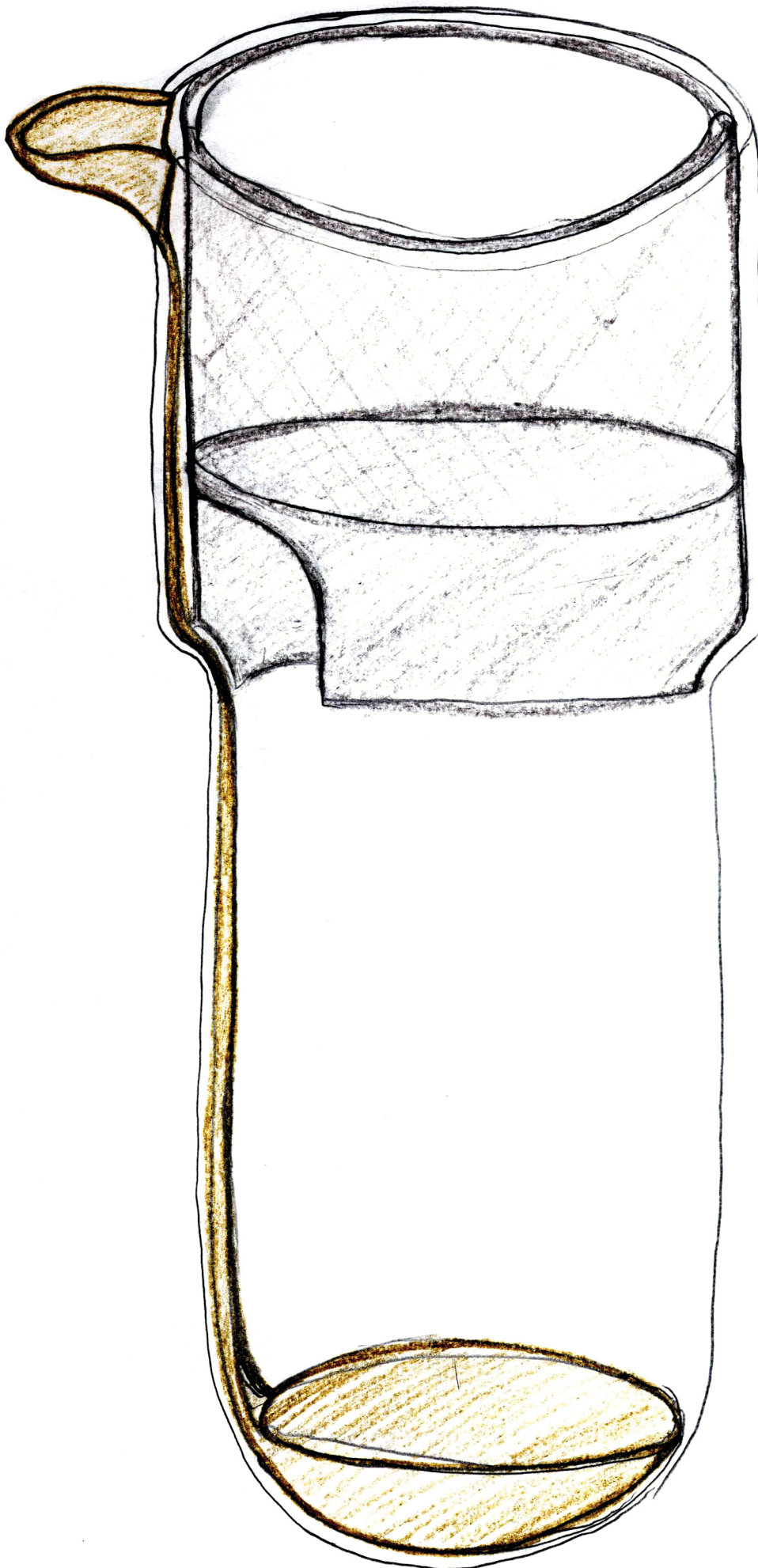
Chemex?

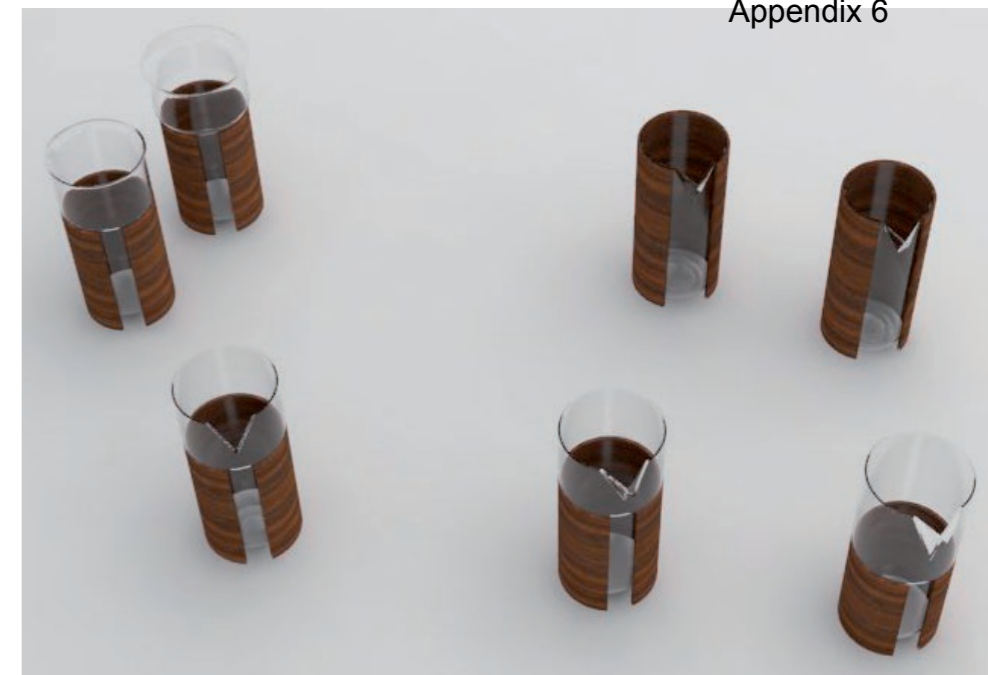
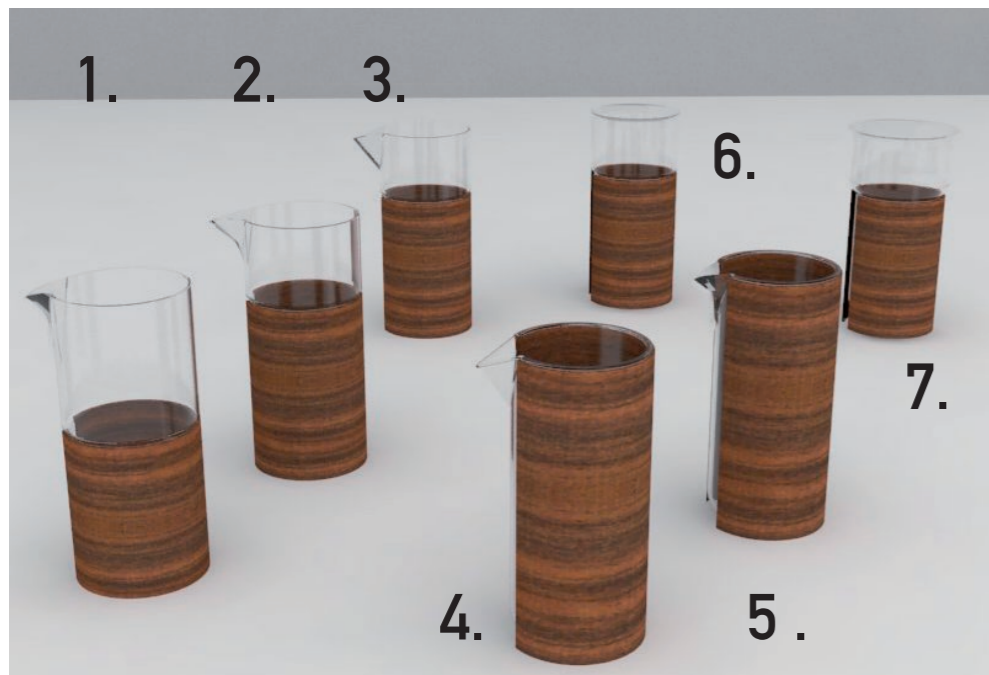




TONFISK DESIGN	Cafetière
1:1	Designer Heini Virolainen

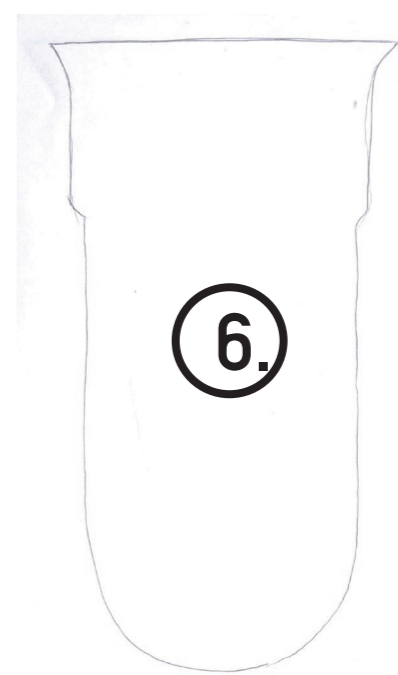
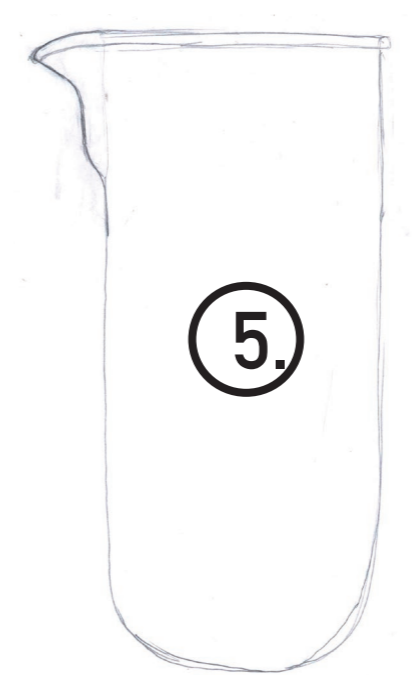
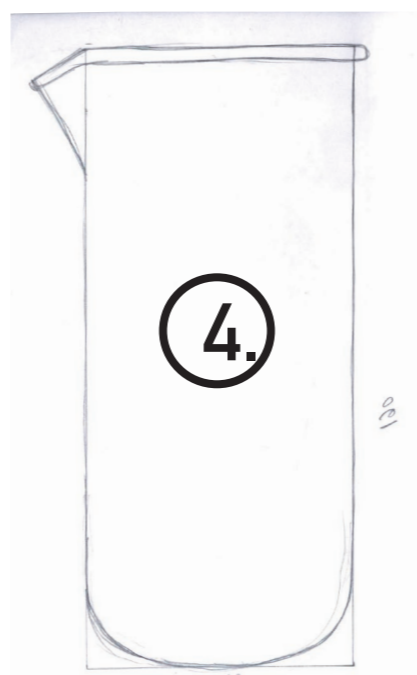
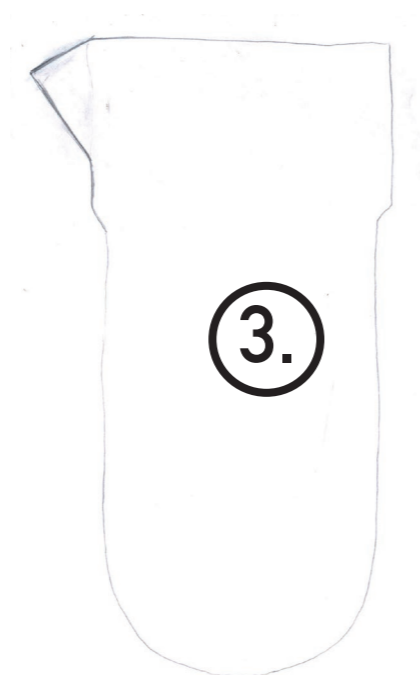
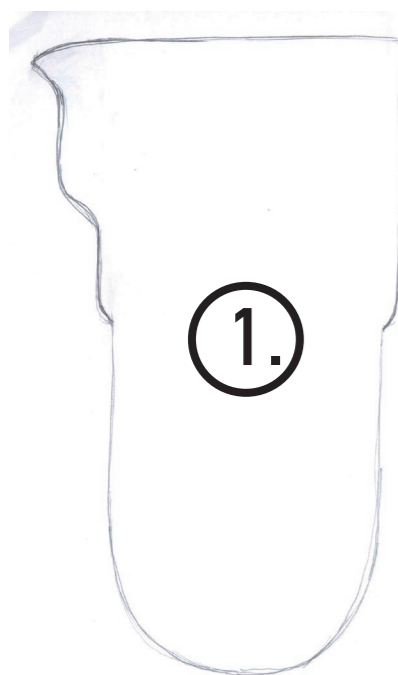


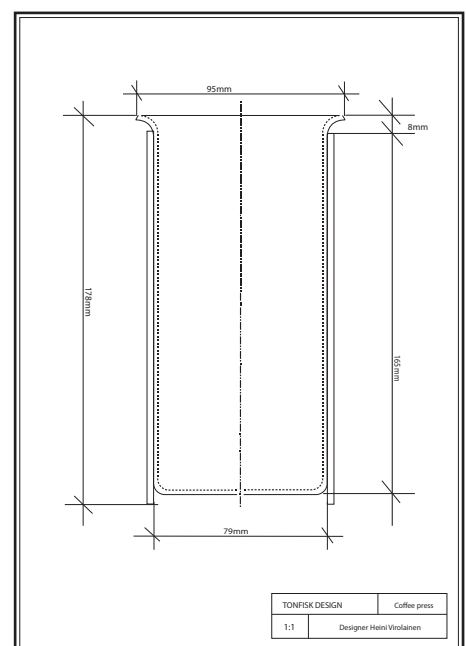
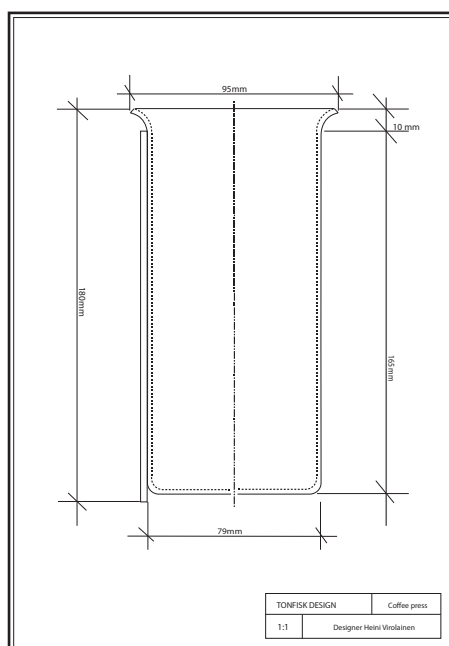
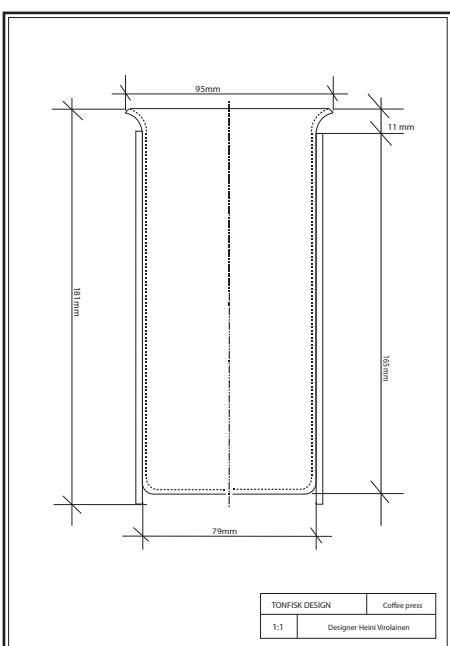
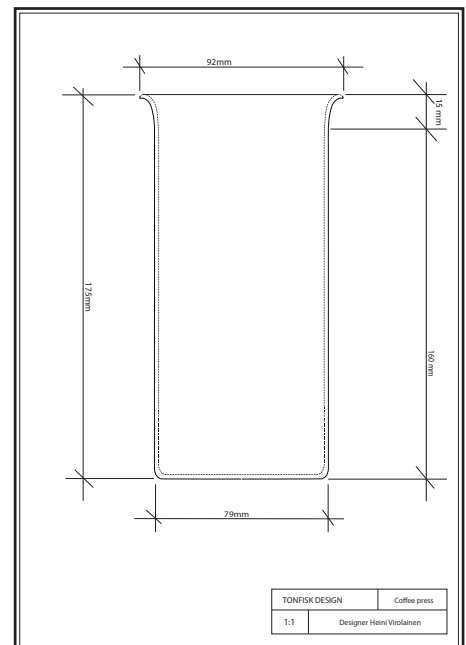
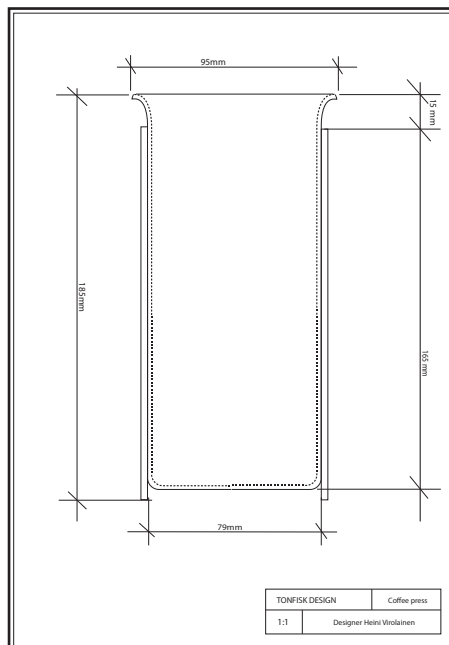
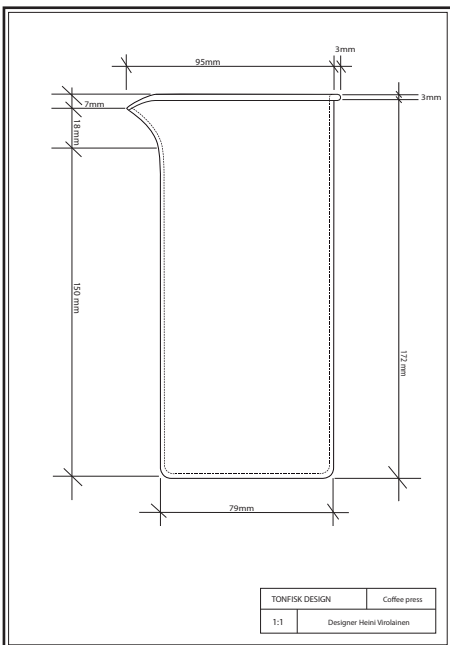
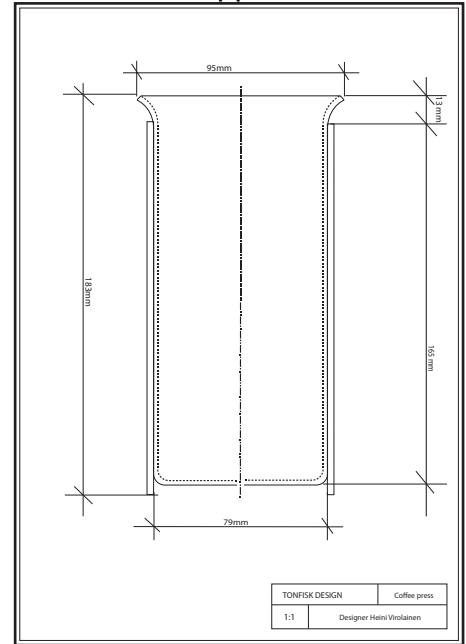
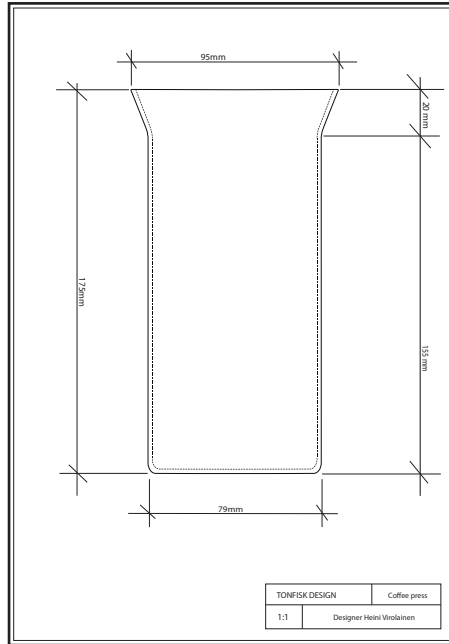
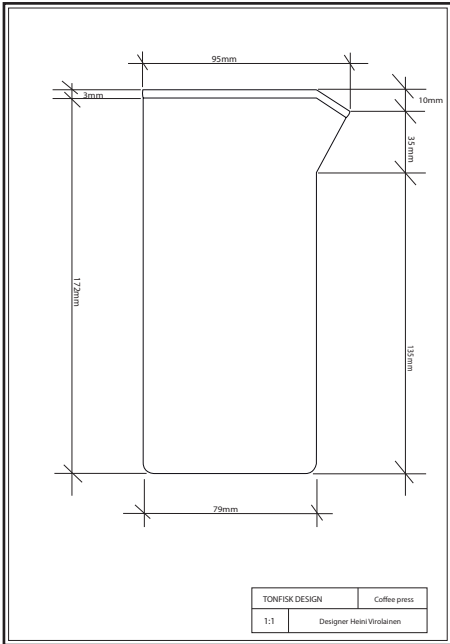


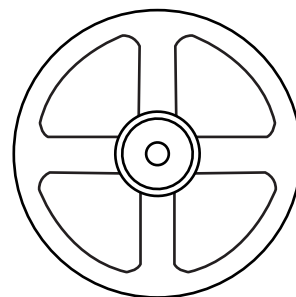
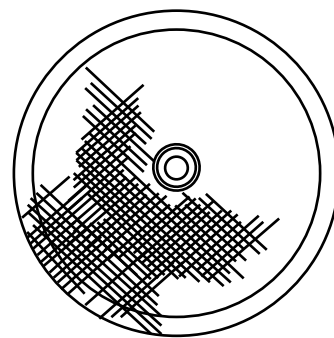
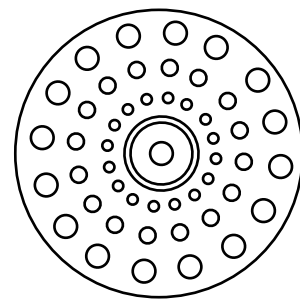
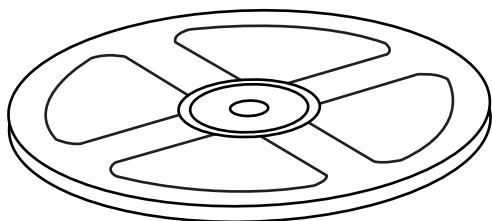
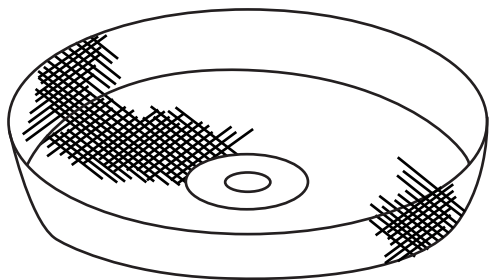
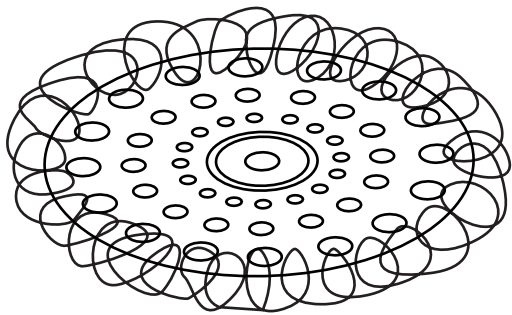


# WARM Coffee Press, Tonfisk Design

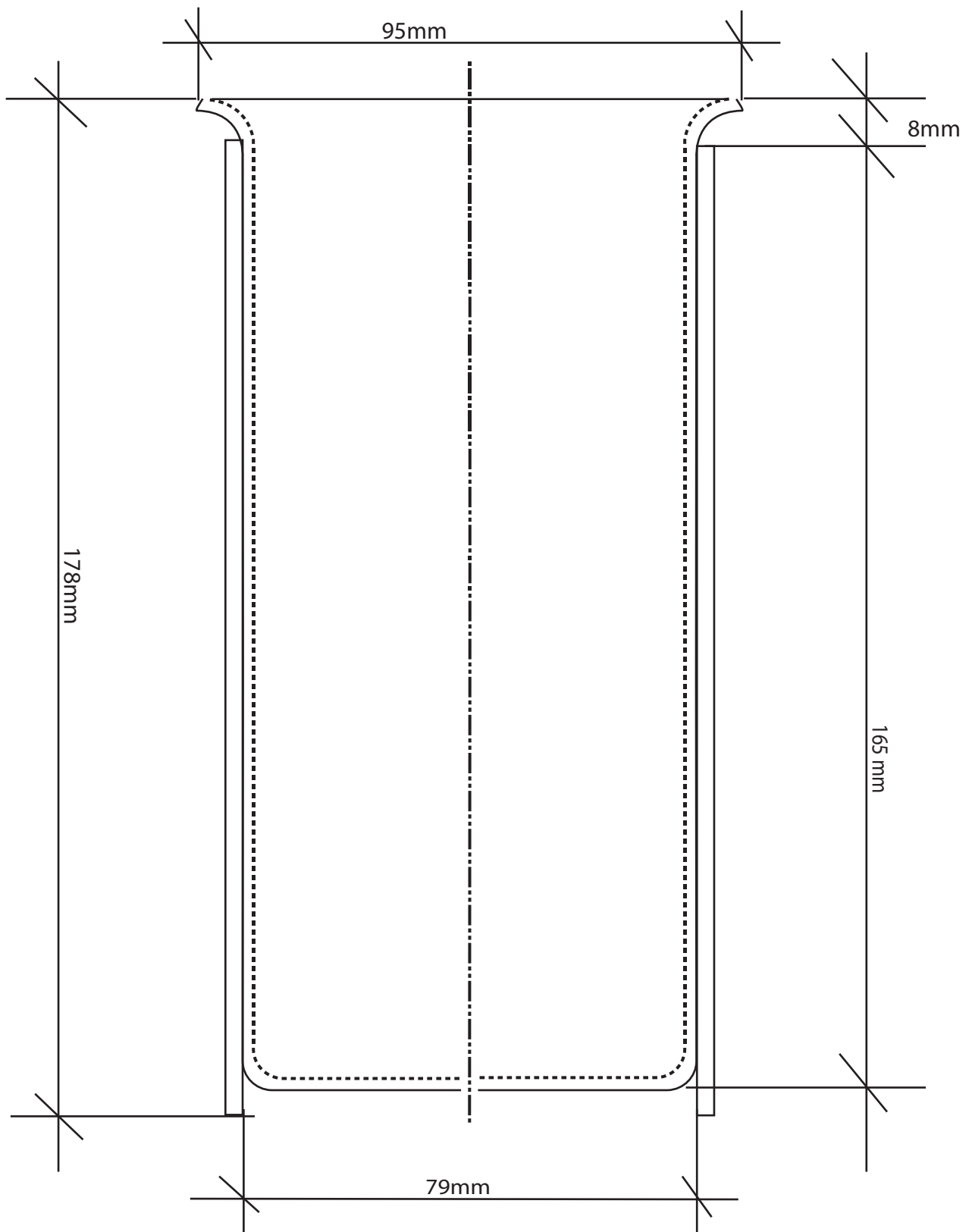
Design: Heini Virolainen



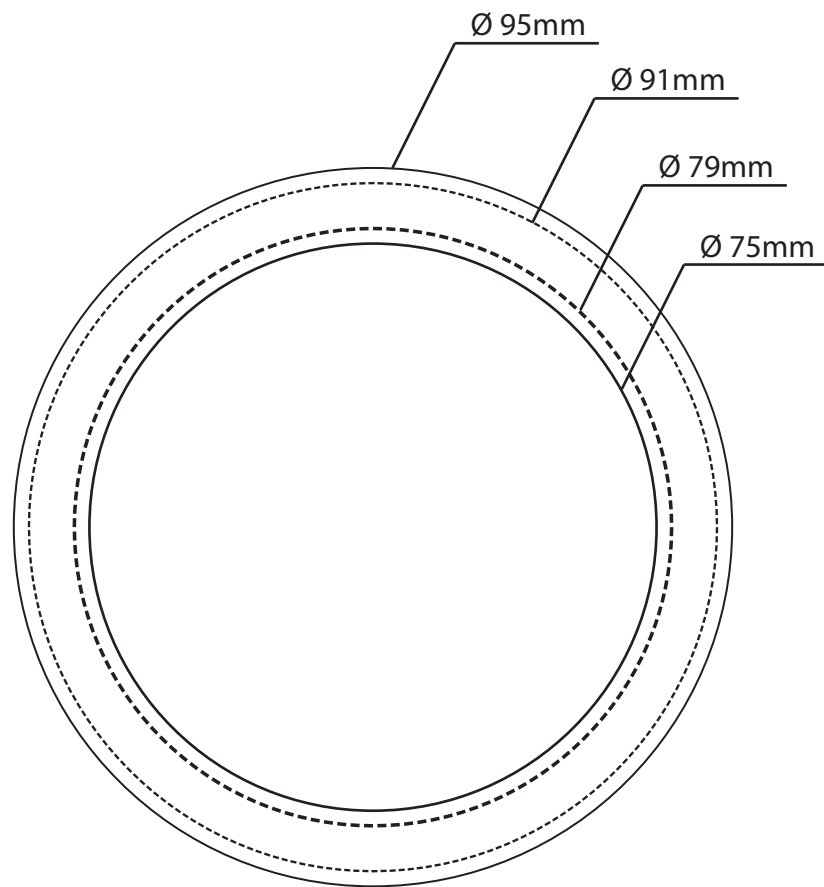




TONFISK DESIGN	Coffee press: Plunger
7.4.15	Designer Heini Virolainen



TONFISK DESIGN	Coffee press
1:1	Designer Heini Virolainen



TONFISK DESIGN	Coffee press
1:1	Designer Heini Virolainen