In my hands, in my heart

Change and Transformation in Product Design to Facilitate Emotional Attachment

Yueyun Song
2016

In my hands, in my heart

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Thesis presented in partial fulfillment of the requirements for the degree of Master of Fine Arts endorsed with Design at Massey University, Wellington, New Zealand.

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Abstract

The aim of this study was to demonstrate the design of objects that provide visceral enjoyment, good user experience and strong emotional attachment. This study considers attachment, emotions and transformation in the process of deciding how to introduce a stronger relationship between user and products, so people will want to keep them for the long term.

Using change and transformation, I worked with everyday objects – tableware - to introduce design elements to stimulate emotions and promote emotional attachment. The objects designed for this thesis are either enhancements to existing products, designed to be transformed in an innovative way, or innovative designs that can transform to change the nature or function of the object. I wanted to explore whether I could incorporate the potential for change or transformation initiated by the user, into a product design in a way that elicited positive emotions, and therefore, attachment to the objects I designed.

The thesis discusses four case studies: “Complete and Fragment”; “Construction through Destruction”; “Standing Liquid” and “Reset”. All designs featured objects that changed or transformed, in ways that ranged from passive, gradual or negligible, permanent and irreversible change to the appearance and function of an object, though to dramatic temporary, reversible, incomplete and complete repeatable transformation to the form and function of the object.

Each of the objects had the potential for the user to be involved, to add or not, their input to the design, to change the form or function, or appearance of the product to suit their own aesthetic and needs, thus encouraging the user to develop a long term relationship with the object.

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Preface

I want users to have a deep relationship with the products I design, to find something meaningful in them that encourages the user to develop emotional relationships with the objects.

My aspirations are fueled by working as a product designer in Guangzhou China since 2008, in an environment focused upon mass production. In China, product design is a service industry, led by engineers, market researchers or overseas trends, and a designer is generally used to solve a problem, adapt an existing design, or add marketability to a product. I believe a designer's job is not merely to solve a marketing or manufacturing problem, but to inspire people to think, feel, recall, so that the product sits in their heart.

A designer adds extra value for the user if they can create potential in an object for the user to discover or build their own story. I am seeking products that are in conversation with users. Instead of users only hearing my voice in the design of the product, I want to add the potential for users to express themselves through my products.

I am also concerned with the sustainability of our lifestyles. I enjoy designing the small, ordinary objects with which we fill our lives, but I am aware that mass production creates problems. Tableware, for example, is cheap and easy to produce for the mass market, but being easily disposed of and replaced leads to waste and greater use of increasingly rare resources. Mass production has encouraged development of a throwaway society, where product users are encouraged to buy new instead of retaining a product for ongoing use. If we want to live in a sustainable way, the wastefulness needs to stop.

My thesis research builds on my first year of Master of Fine Arts study, which led me to consider how art practice can contribute to product design. I explored cultural difference, consumer input in design, and the value of the unwanted, as in the case of "Tea Stain Cup" (Figure 1) mentioned later in this thesis. This study focused me upon how I can capture these values in my thesis case studies.

This year I have taken my thinking further to understand that the emotional experience of art that strengthens my design.

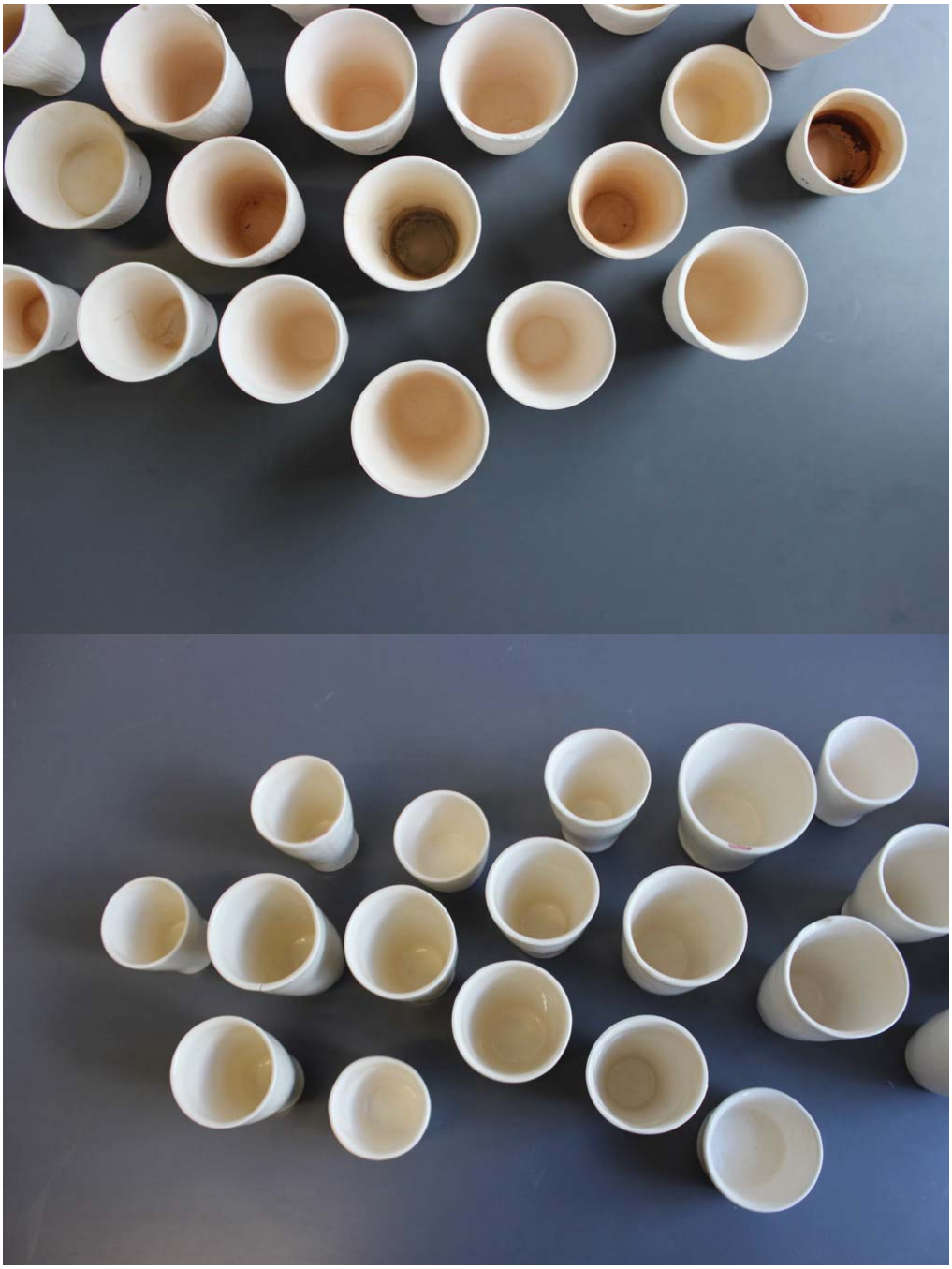


Figure 1
"Tea Stain Cup"
Yueyun Song, 2015

1 Introduction

I want to design products for people who will keep them for the long term because the products provide visceral enjoyment, good user experience and strong emotional attachment. This study considers attachment, emotions, and transformation in the process of deciding how to introduce a stronger relationship between user and products.

Taking inspiration from Norman [1] and Chapman [2], I looked for a more emotional perspective in design. Norman 1 identifies three levels of the cognitive and emotional system - visceral, behavioural and reflective. At the most visceral level we respond to the initial impact (appearance, touch and feel) of a product. The behavioral level is about use, the experience with a product, including facets such as function, performance, and usability. The reflective level, is where feelings emotions and cognition are at their highest, and, is most vulnerable to variability, through culture, experience and individual difference. I designed objects that included the potential for the user to become more attached to them at the behavioural level, through interaction with the object, being mindful of creating a greater degree of emotional resonance and symbolic exchange between users and object 3. As outlined in Chapter 2, positive experiences facilitate the user having an ongoing narrative with the object, and potentially engender emotional attachment.

The mechanism I chose to introduce the emotional attachment into an object was change or transformation, discussed in Chapter 3. Over time, people change, [3]. I wanted to design objects that also contained the potential for change; objects that could change in response to input from the user, or if the user chose to make them change. Change and transformation can occur in several ways. In my study I investigated the options of active and passive, barely noticeable (negligible) and dramatic, permanent and temporary, and reversible or irreversible change. I wanted to explore how to use these options in designs to give potential for the user to transform an object. Chapter 4 outlines the method used.

My intention was to create potential for change or transformation in the design of everyday objects, as a way to facilitate the emotional attachment between user and object discussed in Chapter 2. My focus was on producing emotions, rather than looking for a specific emotion, or measuring whether the level of emotions produced was sufficient to get emotional attachment. Case studies, described in Chapters 5, 6, 7 and 8, explored different ways of introducing change or transformation.

2 Attachment, Emotion and Experience

2.1 Attachment

Attachment is generally defined as a human-object relationship, an emotional bond between a person and a product [4]. Objects, as material symbols of culture, range in complexity and social function. They range from small, portable, everyday items - clothes, homeware and tableware; through to complex systems such as mass transportation, electronics and buildings. In encounters with objects, people build their connections with society, and facilitate and inter-define their lives.

Portable products are objects we intimately interact with. We decide whether or not to engage in a longer and deeper relationship with them. Some theorists believe that attachment is a durable engagement with products. Attachment affects the throw away attitude that threatens the sustainability of our environment [4]. Fewer items thrown away reduces waste production and uses fewer scarce resources [5]. Such attachment transcends the viewpoint of a sustainable field, to pioneer a more hopeful, meaningful and resilient form of material culture [3].

People may respond in different ways to the same products - according to the diversity of their interests, previous experiences, culture, values, gender and age [1,4], and may feel attached to or detached from those products. As a result, there is no absolute standard to predict whether people will feel an attachment to certain products, but two aspects can be used to describe the relationship a person has with a product – the phases of the attachment process, and the level of intensity.

In documenting the process from attachment to detachment, Ball and Tasaki [6] identify five phases: pre-acquisition, early ownership, mature ownership, pre-disposal, and post-disposal. For my study I wondered whether I could interrupt the phases between attachment and detachment, and whether I could add another step between mature ownership and pre-disposal, such as a transformation, whereby the owner has a new experience with the object, to extend the time allowed for attachment to develop.

Schifferstein and Zwartkruis-Pelgrim [5] describe three levels of intensity of attachment: irreplaceability, self-extension and indispensability. For indispensable products, Schifferstein and Zwartkruis-Pelgrim [5] state the cause of the indispensability "is often so for practical reasons, not for emotional reasons" (p.2) suggesting that utility takes priority, the product fulfills certain necessary functions, and people are constrained when the functions are lost.

According to Schifferstein and Zwartkruis-Pelgrim [5], discussing irreplaceability and self extension, some people will experience emotional loss if the product to which they are attached is lost. I wanted to focus on irreplaceability and self extension, by adding the potential for user involvement with the objects I design, as a step towards building emotions.

An irreplaceable object cannot be replaced by other products. Schifferstein and Zwartkruis-Pelgrim [5] state that 'when a product is judged to be irreplaceable, it has a symbolic meaning to its owner that is not present in other products' (p.2). The object may have been received from someone who plays an important role in the owner's life or been obtained on a special and meaningful occasion. Such contexts may elicit attachment. For example, we may hesitate to throw away birthday cards from our friends or family. The cards are the medium to transfer expressed wishes and love from the people who concern us.

Self extension (extension of self image) may occur as an intermediate step towards irreplaceability. Schifferstein and Zwartkruis-Pelgrim [5] note a more gradual emotional fluctuation, less loss but still memorable because the products are an extension of our self image.

Belk [7] suggests that our possessions contribute to our identities and also reflect it. Woodward [8] outlines how objects can be used as markers of value and identity. Ball and Tasaki [6] define the attachment as "the extent to which an object which is owned, expected to be owned, or previously owned by an individual, is used by that individual to maintain his or her self-concept" (p.158). Some people need objects which can exemplify their aesthetic taste; for others, attachment will give way to other factors depending on our interests or natures. We recognize ourselves by understanding how objects shape who we are and who we want to be. Our use of objects, particularly those to which we attach, also represents us to others, builds group relationships and gives us identity in the mass production society.

My focus in this study is the objects for which function is only part of the attachment. Attachment to these objects is an extension of self image, and my aim was to construct objects with the potential for people to build attachment through the emotions produced when the user interacts with the object.

2.2 Emotional Attachment

Schifferstein and Zwartkruis-Pelgrim [5] cite Greenwald's four facets as possible determinants of emotional attachment, in respect to self-extension. As a driver of attachment, the diffuse self includes pleasurable experiences related to usage and aesthetic appearance; the private self relates to an individual's internal standards, and differs from the public self that relates to seeking social identification. The collective self relates to how people strive to conform to reference groups that represent their life vision. The objects designed for my study do not specifically target any one of these drivers, but are more likely to engage the diffuse and private self.

Schifferstein and Zwartkruis-Pelgrim [5] suggest that people do not usually form an emotional attachment with frequently used everyday objects that are easily replaced unless the essential functions are lost or the object performs beyond our expectations [5]. This may explain why we use door handles many times per day, but do not pay attention to the handles until they break and make it difficult to open the doors. Door handles are a tool to speed our efficiency but not a recipient of our emotions.

However, we may build an attachment to a cup that fits our hand well, is a perfect size for a cup of espresso and is very easy to clean afterwards. The attachment to this frequently used every day object is due to the great feeling we get from the experience. Schifferstein and Zwartkruis-Pelgrim [5] consider that the primary function of products is unrelated to whether an emotional attachment is formed unless the functionality is extraordinarily good. I wanted to explore ways, other than functionality, to build attachment to mass produced, everyday objects, through user experiences with the objects.

My focus on small, mass-produced, everyday objects relates to my concerns about sustainability. Objects that are mass produced and relatively inexpensive are more likely to be thrown away, so building emotional attachment to them may be a way to circumvent that trend.

When investigating the products which people feel attached to, Schultz, Kleine and Kernan (cited in Schifferstein and Zwartkruis-Pelgrim [5]) counted 83 different emotions from 95 respondents. In most cases, the emotions were positive, but in certain cases the emotions were negative, such as remembering hard times. It is worthwhile to consider how to facilitate all kinds of emotions, including the negative ones, when designing in order to build an effective human-product attachment.

A product may be discarded when it can no longer function as expected [4]. The durability of products instills a sense of reliability in users, and is an important contributor to attachment [5]. However, in some instances we dispose of products that are still durable and functional at the time of disposal [5]. It is also worthwhile to note that some products we are attached to no longer function properly but are still retained and play meaningful and memorable roles in our life. Durability was not a focus when designing the objects for this study.

2.3 Emotions

In my study, I did not want to investigate how to elicit a specific emotion towards an object. My aim was for people to develop positive emotions towards the object, in order to facilitate an emotional attachment. I was not aiming for a durable object that people kept because it was sturdy or had outstanding performance. I wanted people to experience joy with the object. I also wanted to consider what negative emotions might be experienced, and consider how that negative emotion might affect emotional attachment.

Emotions are evoked by many things, not only objects, and an emotional response to an object/product may not result in attachment. Desmet and Hekkert [9] note that the emotions may relate to events, people or weather, and that eliciting emotions can be part of the design process. Although products can elicit many different kinds of emotions; emotions are subjective; and products can evoke 'mixed' emotions, Desmet [10] holds the view that emotions are less intangible when analysed on the level of the underlying process.

While a designer may not be able to ensure that they elicit a particular emotion, or even a specific intensity of emotion, they can include the potential for user involvement with the object in their design, thereby providing opportunity for emotions to be elicited. It is this potential that I explore in the objects created for this study.

The 'Basic Model of Emotions' introduced by Desmet [11] identifies three key variables in the process of eliciting emotion: *Concern*; *Stimulus*; and *Appraisal* (see Figure 2). The three variables mediate between products and the resulting emotions. Stimuli are construed as emotionally relevant only in the context of one's concerns, and appraisal represents an evaluation of the properties of the stimulus and the situation as it relates to the properties of the individual.

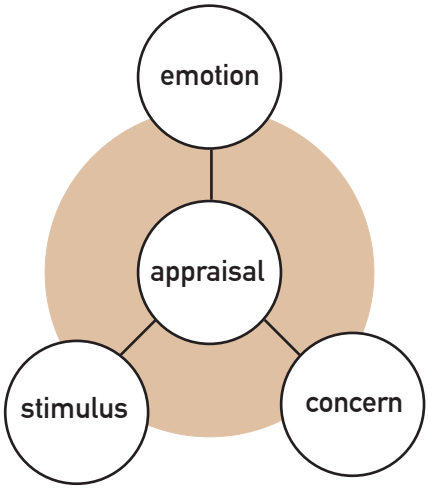


Figure 2
"Basic Model of Emotions"
(adapted from Desmet, 2002)

Desmet [10] consider that emotions stem from an appraisal. Stimuli are received, appraised, and evoke positive or negative emotions. A product appraisal is personal, not the same for everyone, and has three basic possible outcomes: the product is potentially beneficial; potentially harmful; or not relevant for personal well-being Desmet [10]. Although people can form different emotional responses to the same object or situation in their appraisal, there are some general similarities. Certain signals are largely common. For example, fire is hot and usually generates a positive emotion on a cold day. Desmet [10] argues that any change or event we perceived contains the possibility to elicit an emotion.

People receive stimuli through five sensory layouts: sight, touch, smell, taste and hearing. Desmet [11] says we elicit strong emotional stimuli through our senses, with vision taking precedence over other senses. While vision is the stimulus for future actions towards a product, touch mediates our most intimate contact with the external world [12]. Therefore, in considering the possible ways for creating stimulus in a product, to elicit an emotional response, triggering vision and touch become the main directions in my study.

"Gold Wedding Ring" (Figure 3) is an example of the direction I want to explore in order to introduce emotional attachment in my products. Scratch marks and wear change the appearance of the product, and may look ugly at first, changing from a clean silver surface to gradually reveal the gold underneath. It is a visual simile - scratch away (work) at your marriage and the gold will show through. Change may raise unpleasant emotions, but in the case of "Gold Wedding Ring", the scratch marks are the evidence of time and experience, faith in the marriage, and they build an attachment.

Emotion has been suggested as a way to motivate and control behavior (Rodríguez Ramírez, 2003). The emotions we elicit from the consequences of using a product can be various, because consequence can be expected or unexpected and both types of consequence can evoke positive or negative emotions. For instance, accidentally smashing a glass cup may drive an unpleasant emotion, intentionally smashing the cup may be a way to release tension or get a sense of satisfaction, peace or fun.

Emotion has been suggested as a way to motivate and control behaviour [13]. The emotions we elicit from the consequences of using a product can be various, because consequence can be expected or unexpected and both types of consequence can evoke positive or negative emotions. For instance, accidentally smashing a glass cup may drive an unpleasant emotion, intentionally smashing the cup may be a way to release tension or get a sense of satisfaction, peace or fun.

Emotion and behavior interact with each other, and emotions are a determinant of behaviour [13]. Behaviours contain the power of making change. When an intentional change, especially resulting in a change to the appearance or function of a product, is made, the user's experiences in using the product are enhanced. The user revisits the basic model of product emotions, created by Desmet [11], to re-consider, re-concern and re-appraise, due to the stimulus we received from the change.

Moods are lower intensity but longer in duration than emotion, and generally evolve from the effects of the surroundings, and not a particular object [10]. As mood influences human-product interaction and the process of evoking emotions, I looked for designs to evoke good moods. Sometimes we intentionally destroy things, as a way to release a bad mood [10]. I wanted to use the elements of change and transformation, and even intentional breakage, along with surprise, expectation and discovery, into my designs, to positively influence the mood of users.

Figure 3
"Gold Wedding Ring"
torafu architects, nd

Figure 4
"Subconscious Effect of Daylight"
Daniel Rybakken, 2008

Figure 5
"T-shirt"
Yueyun Song, 2016

Other designers have created objects that successfully influence mood. The “Subconscious Effect of Daylight” lamp (Figure 4) designed by Daniel Rybakken gives the illusion that daylight is coming into a room by projecting light and the pattern of a shadow onto the floor. The reflection of light is as lively as if it came from the sun, and the sunshine effect evokes the good mood of a sunny day.

My concept version of this effect, “T-shirt” (Figure 5), produced earlier this year, was designed to let people release their bad mood by tearing the T-shirt, without destroying its usefulness because it could still be used as a jacket or overshirt.

2.4 User Experience

In emotion theory [14,15], emotion is associated with all types of subjective experiences, pleasant or unpleasant, positive or negative. Russell [15,16] introduced the concept of "core-affect" (see Figure 6) to analyse the emotions that we always experience.

The intensity of emotions on the "core affect" diagram range from calm to vivid, and positive to negative, and Desmet and Hekkert [9] believe that we experience "core affect" from when we wake up till we fall asleep, in response to internal and external causes.

Our emotions are variable rather than frozen, because everything we experience many things during a day contains stimuli that inspire responses and form various emotions. Because of this, it is worthwhile to consider that negative effects, as well as positive, contribute to emotion building.

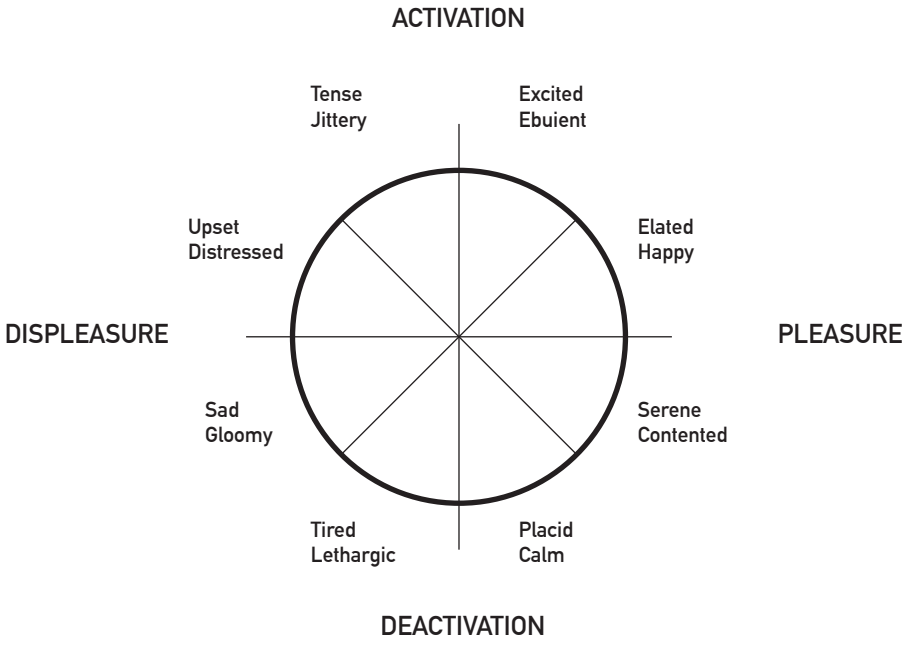


Figure 6
"Core affect"
(adapted from Russell, 2003)

2.5 Summary

Forming attachments with products depends on people's experiences with the products, and the emotional reactions those experiences elicit [4]. I am interested in working with everyday small objects such as tableware, to introduce design elements that go beyond durability and function, to stimulate emotions, and promote emotional attachment.

Desmet [10] considered that any change elicits emotions. This view led me to consider change or transformation of objects for my study.

3 Change and Transformation

I decided to consider the ways in which change or transformation could be used as ways to build emotional attachment. According to Chapman:

"The life expectancy of the love established between people and things is therefore limited and ordinarily fades once the gloss of newness has worn away." [3] (p.78)

Because people's emotions towards objects change, the intensity of emotional attachment takes the form of a parabola, with few initial expectations at the beginning, rising to fully filled passion, then dropping to end bored and disappointed. If the experience with a product is unpleasant or unsatisfying, people seldom show patience with the product, and find it hard to remember the passionate stage when they reach aesthetic fatigue. This phenomenon is described by Chapman [3] as a process, from the honeymoon period to the daily grind. Honeymoon periods are short-lived and eventually give way to other attractions, foreboding an end to the subject-object relationship. "Most emotional attachments are withdrawn once the honeymoon period draws to a close" [3] (p.75). Relationships with objects in the modern-day, rarely last.

I wondered whether I could design an object so that Chapman's honeymoon period is prolonged, by filling the daily grind stage with fun. I think there is a possibility to facilitate an emotional attachment between people and objects through change, enriching the experiences of emotion and usage. People's desires are often intangible, not always predictable, but looking for new and better options is a re-occurring goal for people.

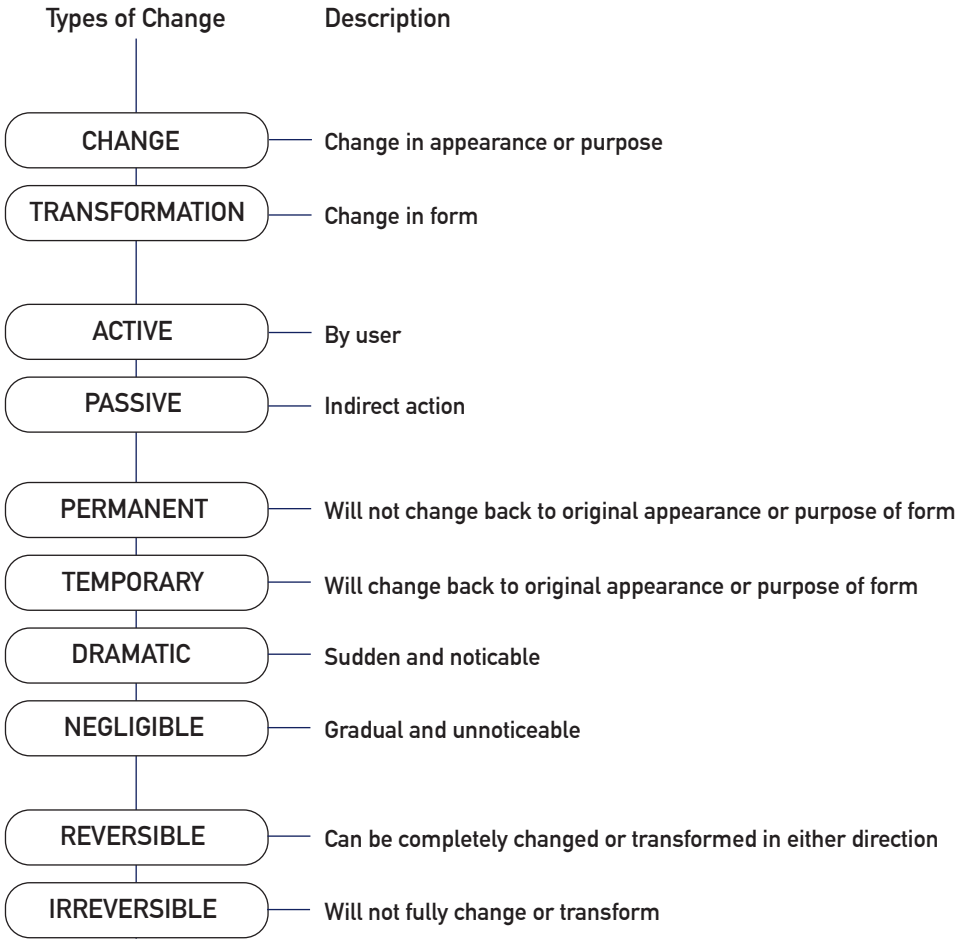


Figure 7
"Nature of Change in Products"
Yueyun Song, 2016

3.1 The Nature of Change

Change can be permanent or temporary, active or passive; happen in a sudden (dramatic) or gentle (negligible) way, be reversible or irreversible (Figure 7). Objects change by direct human action or indirectly through the results of human behavior, such as putting the object in sunshine, or exposing it other environments, such as wetness or dryness. Changes can affect the appearance of an object, or the purpose or function. The change allows us to shape our ideas for further behavior which can evoke more emotional responses.

Although the words change and transformation are often interchangeable, transformation always results in a change of form. In this exegesis, if the change that happens to an object is not a transformation, I refer to it as changed. If the form of an object has changed, I refer to it as transformed. For example, we may change a cup into a pencil holder without changing the form, but we transform timber into chairs.

Some changes and transformations described in my case studies are permanent. If the change or transformation is reversible, I refer to this as temporary. If the change is reversible but when reversed does not transform back with the exact same detailed appearance, I refer to the process as incomplete.

3.2 Why make a product that changes?

Most products we use are static, and do not usually update to keep pace with the way people change, unlike living plants, pets, and humans, which can react and adjust after received signals. The relationships between humans do not always survive the changes in the individuals involved. When discussing emotional attachment, the relationship counsellor Gray [17] (p.293) said: 'It is very common for two people who are madly in love one day to hate each other or fight the very next day. These sudden shifts are confusing; yet they are common.' People usually outgrow the products they own and look for a new model to meet their restless desires. I wanted to design objects the user could change as they change.

3.3 Expectation and Creativity

Another consideration in choosing change and transformation, is the contrast that exists between people's imagination and reality. People can overflow with hopes when they first encounter a new product. Imagination drives us to expect more than the product can offer. Expectation may be the trigger that urges us to judge the products we own with critical feedback. According to Chapman [3] (p.75) "...in most cases the withdrawal of emotional attachment and subsequent loss of empathy are caused by a noticeable discrepancy between actual and imagined realities." Imagination evokes our enthusiasm for new products and influences the ways that we treat the objects we have.

Sometimes a product will meet our expectations, sometimes it does not. Where the product does not meet expectations, a failed relationship between person and object may occur. Users may abandon the object, or attempt to modify it to come closer to their original expectations. Such modification occurs when we put a folded paper under a table leg in order to stabilise a table on an uneven floor. We use our creativity to solve the problem and prevent a negative emotional impact. If successful, our emotions adjust from negative to positive. If the paper does not work, the negative emotions remain. If the table legs automatically adjust we would surprised, positively impressed but also worried about a thinking table.

Change by the user, as a way to resolve the difference between a user's imagination and reality and to promote emotional attachment, may not always be a solution. If the design is inadequate or the user's creative abilities are limited, the user will only hold a conversation with the product until it is clear that modification cannot achieve the required result and the user decides to reject the product. User creativity is an element that impacts on whether user led changes can lead to products that suit their imaginations, and is an area over which the designer has little control.

The materials used in production of an object can influence a user's perception of the product. In the fast consumption world, people have the experience to discriminate between products that last and those that do not, led by cues such as material, quality, quantity and other aspects. These experiences affect our perception and anticipation of the lifespan of the product and affect our imagination of how it will improve our life. We unconsciously exaggerate the potential of a product, stimulated by producers, advertisement or positive feedback from others. Relationships with products are fragile when expectation and reality do not match, unless stimulated by uncertainty and imagination. I explore this dynamic in the modifications made in my design "Standing Liquid". The decision to transform an object could indicate that the user feels unsatisfied with its initial performance, and would adversely influence attachment to the object. In this study, transformation is used as a way to increase attachment - to keep the object in our life.

3.4 Responding to Stimuli

I intended to create stimuli in products, to motivate people to take certain actions after receiving visual signals. We subconsciously take action when we receive signals with which we are very familiar. We know from traffic lights that green represents safe to move while red means stop, danger. We know to be careful when we hold a cracked ceramic cup. We replace a toilet paper roll when the one we are using is close to the reel. Many new subconscious actions have developed from mass produced products. Without reading the packing instruction, we know how to open the plastic ice-cream box or tear the dotted line on a tissue box to extract tissues.

The signals we receive do not always predict good things and elicit positive emotions. An unexpected crack in a ceramic or glass object, or fading or shrinkage of new clothes, signal that the object is damaged. These signals are likely to evoke more negative emotions than positive emotions. According to appraisal theory [11], beneficial stimuli result in a positive appraisal and facilitate positive emotions, whereas detrimental concerns elicit negative emotions. Appraisal theory also connects emotion to behavior. If the appraisal is negative, and the emotion unpleasant, the person will engage in a withdrawal type of behavior. If the emotion is positive, the person will appreciate the stimulus [13].

I see the lifespan of a product running as a cycle driven by stimulus, behavior and emotion. The stimulus of a product evokes emotional impact and motivates us to action. This happens in much the same way when the room becomes dark. We feel uncertain so we turn the light on and draw the curtain. The actions we engage in are further stimulus to elicit emotions. I wanted to investigate the product lifespan cycle. Such a cycle can move in two different directions. Stimuli can evoke positive emotions, or negative emotions, depending on whether the original stimulus is harmful or beneficial. I looked to see whether a stimulus deemed to be a bad sign in certain contexts, might become a good sign when put in another context.

“Gold Wedding Ring”, discussed earlier in this thesis, is an example of a good outcome resulting from understanding the bad. Another example is a “water bottle” (Figure 8). We are unlikely to become attached to a plastic water bottle. because we need the water contained inside the bottle, not the bottle itself. Cracking open the seal to access the water elicits positive emotions such as expectation, enjoyment and satisfaction. On the other hand, if a water bottle is designed to do more than simply hold water, breaking the seal could elicit a totally different emotional response. If the water bottle is a collectable, the unsealing action could harm its collectability. If we unscrew the lid there are unpleasant and pleasant emotions - loss as well as fulfillment.

3.5 Types of Product Development

Products are generally designed for a specific purpose, and people buy them to fulfill that purpose. Norman [1] considers that there are two kinds of product development: enhancement and innovation. Product enhancement can be described as taking an existing product design and enhancing some aspect/s of it. An example of enhancement might be a more comfortable handle for a knife used to peel vegetables. Innovation would be designing a new product, such as a potato peeler, to meet the purpose, different in construction and form from the knife.

The objects I designed for this thesis are either enhancements to existing products, designed to be transformed in an innovative way, or innovative designs that can transform to change the nature or function of the object. I describe the process as creating potential and wanted to find out whether the user could be involved in making the change, and whether making the change could build an emotional attachment between user and object, through creation of an ongoing narrative.

I wanted to explore whether I could incorporate the potential for change or transformation, initiated by the user, into a product design in a way that elicited positive emotions and, therefore, attachment to the objects I designed.

Figure 8
"Water bottle"

4 Method

I took a pragmatic approach [18] to this study. I enjoy designing tableware and homeware, so focused on objects within these categories. I wanted to consider ways to promote emotional attachment in my designs and, after considering the literature, decided to focus on options that were not solely dependent on the object's functionality. Change or transformation is a method to evoke many emotions, including surprise. I was also inspired by the Chinese use of a single object, such as a cleaver, to undertake many different activities.

I am particularly interested in ways to increase emotional attachment to small, mass-produced objects, in a way that increases their attraction to the user. All the objects I designed were concept designs, prototypes or models, and were not mass-produced.

The first objects I designed were in the form of concept design drawings, mapping out the types of change and transformation I hoped to make. Some examples are included as Figure 9.

By experimenting with altering my initial concepts, I was able to refine the designs to produce three final objects for exhibition. However, on the way to the final objects, I experimented with many interim objects which could have been developed as final products.

This exegesis discusses four case studies. In "Complete and Fragment" I produced prototypes only. For "Construction through Destruction", I produced a prototype "Tape Vase", then digitally modelled "Jumbo Vase". For the remaining case studies, working models were produced. All designs featured objects that changed or transformed, in ways that ranged from passive, gradual or negligible, permanent and irreversible change to the appearance and function of an objects, through to dramatic, temporary, reversible, incomplete and complete repeatable transformation to the form and function of the object.

An important part of the design process was taking the objects to tutors and classmates for critique. I used the critique to further refine the designs where appropriate.

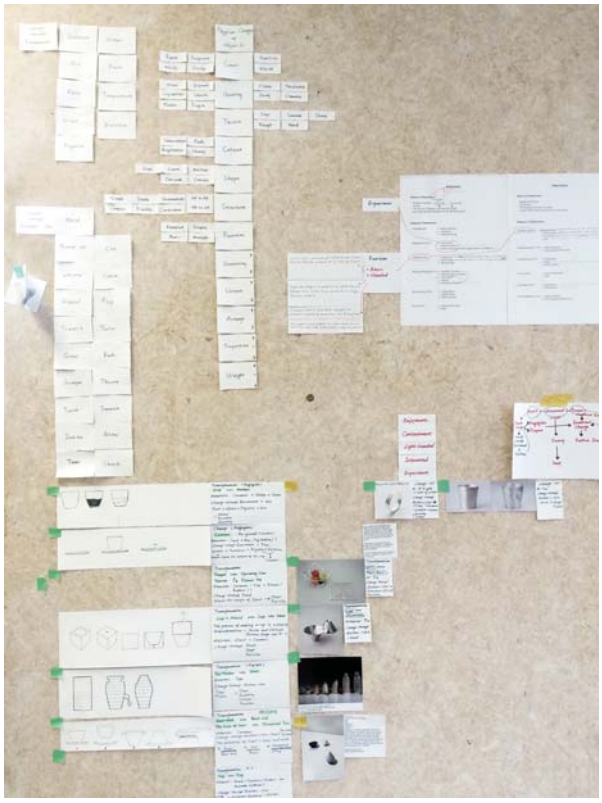


Figure 9
"Mapping change and transformation"
Yueyun Song, 2016

5 Complete or Fragment

Figure 10
"Complete or Fragment"
Yueyun Song, 2016

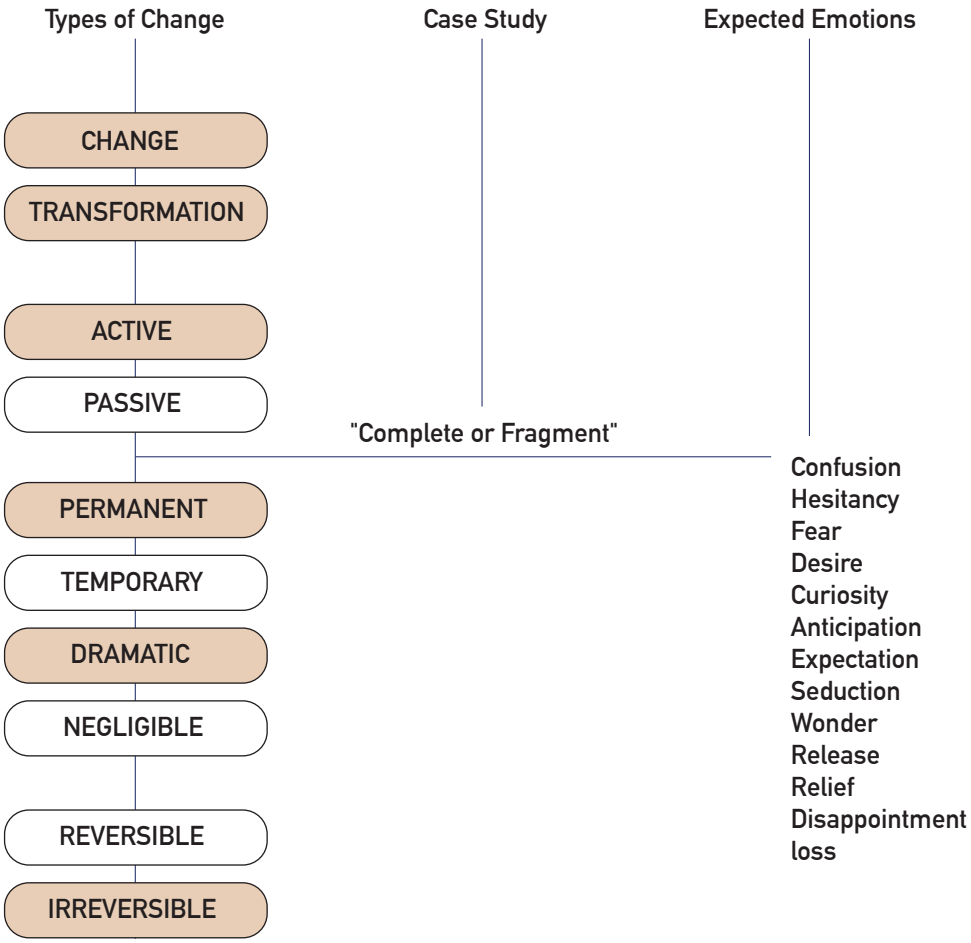


Figure 11
Design Intention of "Complete or Fragment"
Yueyun Song, 2016

5.1 Design Intention

The Chinese story “Good luck bad luck” - a narrative of loss and gain inspired “Complete or Fragment” (Figure 10). A farmer owned a horse to till his fields. The horse escaped into the hills one day. His neighbors sympathized over his bad luck until, a week later, the horse returned with a herd of other horses from the hills. Neighbours then congratulated the farmer on his good luck.

I wanted to make an object that would elicit emotions, whether good or bad, but hoping that by a positive outcome, more positive emotions occurred, building an attachment to an object that changed. The design intention was to discover whether a design featuring an active, dramatic, permanent and irreversible transformation, resulting in a change of function, would elicit a range of emotional experiences that the person experiencing them could use to build an emotional attachment with the designed object. The objects created for “Complete or Fragment” were inspired by the basic model of eliciting emotions [11].

In this study I was not focusing on a specific emotion, but in eliciting emotions by the transformation process. The transformation process for “Complete or Fragment” involved intentionally breaking the initial objects. I expected such emotions as: confusion (related to break marks on the objects); hesitancy, fear and the desire for a perfect result (about breaking the object); curiosity, anticipation, expectation, and seduction (deciding whether to make the break); wonder and release (the joy of breaking something); and relief (when the consequence of the breakage is a new, complete object). Less desirable, I expected disappointment if the new object was not useful (Figure 11).

The potential created in “Complete or Fragment” was an opportunity for users to engage with active change, a way to catch their attention and to make the decision to transform it a memorable occasion. According to Khaslavsky and Shedroff [19] enticement, relationships and fulfillment are concerned three steps for making objects seductive. The seduction of the object was not related to the utilitarian purpose of the object, but to the potential for transformation.

5.2 Design Execution

I designed a rice bowl with a lid, and an ice cream sundae dish (Figure 12) as the initial (before) objects which could be disassembled at deliberately created dotted lines or incomplete gaps (or cracks) between their connecting parts (Figure 13), by the user. When broken (after) they form, respectively: a flower pot and a chopstick holder: and a bowl, an egg cup, and a candle holder (Figure 14 and 15).

I indicated the potential hidden in the objects, to motivate users to change (break) from the initial intention of the object to the second intention. The changes to the objects in “Complete or Fragment” required two actions by the user: twist off and/or break off.

Aware that users needed clear signals about the desired actions to transform the object, I used the same signals as for the water bottle described in my chapter “Reasons for change”. By using blue foam coated with Polyfilla, I was trying to build a basic sample to allow the transformation to occur. Other materials that could be used for “Complete or Fragment” include porcelain or plastic.

Figure 12

Figure 13

Figure 14

Figure 15

5.3 Critique

Breaking an object would normally evoke negative emotions, but my hope was to trigger a positive emotional response, by making it clear that breaking the initial object will reveal another useful object. Even so, a user might experience hesitancy or reluctance to make the break, because they have known from their previous experience that breakages are usually destructive and will produce an irreversible result.

In “Complete or Fragment”, the action of breakage is a challenge for our existing understanding of breakage being an unpleasant emotion. As long as the breakage results in another object, the emotional experience will be enriched by the processes of concern, analysis of risk before changing the product, and making the break.

With the ‘before’ objects, curiosity may direct a carefully break action, and success may or may not result in establishing an emotional attachment with the transformed objects, in response to the success.

Another emotional response can occur with the involvement of creating the ‘after’ objects because the details will be different depending on the individual. The contribution to building emotional attachment not only relates to the transformation but also to adding personal mark on a mass product.

Feedback from tutors and fellow students was very positive. They seem to like the design and the transformation. I encouraged them to break the initial objects, without telling them what the transformation would be. Reactions included excitement and nervousness/reluctance. Because I asked them to, they all broke the initial object, but their hesitancy suggested that if they owned the product they might not choose to break it.

Some people were less convinced that emotional attachment would occur. One person compared the design to the multifunction of some Ikea products and queried whether people developed emotional attachment to those products. I agree with that perspective, but note that some of the Ikea brand loyalty may be due to the use of multifunctional products that match the Ikea “lifestyle”, and “before” and “after” could be considered multifunctional.

In terms of the signals to break the initial object, the gap/crack seemed to be clear to everyone, but the twist signal needed some refinement. Where two actions were required, I needed to make the signals more clear. The objects created by the break/s did not seem to be as well liked as the initial object or the process of breaking it. People seemed to be looking for an object that made the break worthwhile. I determined to make that a goal in the future.

5.4 Summary

I found the “Complete or Fragment” succeeded in its design intention and could have potential as mass produced item. It demonstrated the transformation I intended, and most observers felt it would elicit a range of emotions. Whether those emotions would facilitate attachment was less clear.

6 Construction through Deconstruction

The design process for “Construction through Deconstruction” occurred in two parts “Tape Vase” and “Jumbo Vase”. “Jumbo Vase” only appeared in its completed form as a computer generated product.

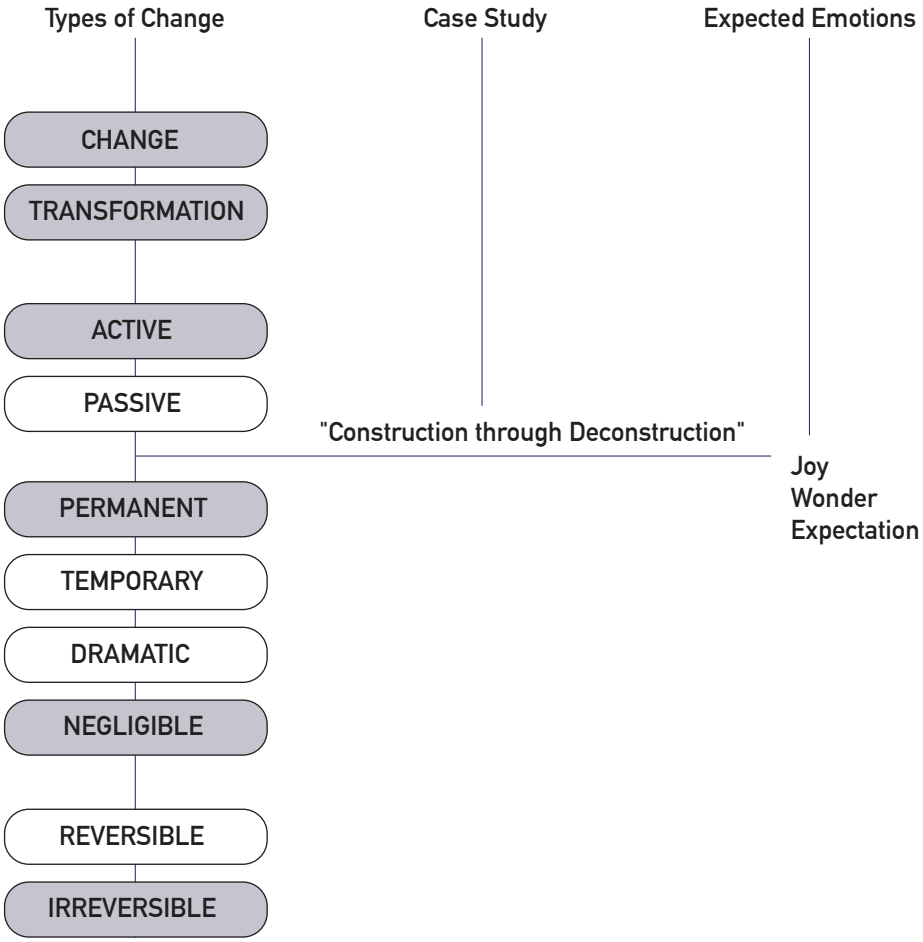


Figure 16
Design Intention of "Construction through Deconstruction"
Yueyun Song, 2016

6.1 Design Intention

“Construction through Deconstruction” explored whether there is a potential for a negligible change process, undertaken on one object, by the user, in order to construct a new object, in a way that might create an emotional attachment between owner and object. My design intention was transformation from one object (“before”) to another (“after”), by way of negligible change, giving a meaning to the discarded parts and allowing the remaining parts to form a unique product, a permanent transformation (Figure 16).

“Gold Wedding Ring”, mentioned earlier in this thesis inspired me to explore a change that occurred gradually, with the ongoing use of the initial product, so that a series of negligible (hardly noticeable) changes of appearance and function occurred, culminating in a product that could have a permanent and different use to the initial form. I was also inspired by “Sunset” (Figure 17) to explore a way of construction through deconstruction for permanent transformation. “Sunset” appears to be a normal white candle but the centre of the candle turns to different colors once lit. It not only provides illumination, but also signals the passage of time as the colour changes. The change happens quietly but elicits a strong emotional response once people notice.

I intended to give the user the power to unconsciously change the object I designed (before), over time, in order to elicit the emotions of joy, wonder and expectation as the second object (after) revealed itself. I wanted the user to recognise the value of the material and the power of repeated actions to make change.

I was also exploring a narrative of loss leading to gain, where the deconstruction of the before object resulted in benefit, and on completion of the initial deconstruction, the user was left with a new (after) object and the ongoing benefit of the initial purpose.

“Construction through Deconstruction” was also a way to potentially add value and, therefore, emotional attachment to a consumable, through change. Some everyday objects are deemed as consumable. They are ordinary and inexpensive, useful (resulting in some physical attachment) but easy to be substituted by other product brands with similar function (so without emotional attachment). Tape, paper notes and toilet paper are typical consumables. Being continually used and inexpensive, they are unlikely to be thought about until they need to be replaced.

Figure 17
"Sunset"
Nendo, 2016

6.2 Design Execution

"Tape Vase"

"Tape vase" (Figure 18) investigated the possibility of transforming a group of overlapped tape rolls into a covered vase constructed by removing tape. I began with five small rolls of electrical tape, stacked one upon the other, to form a cylinder. Almost any tape could have been used. I inserted some fat straws into the central hole to hold the rolls of tape together, and covered both ends with blue foam, to disguise the components from being recognized as rolls of tape, leaving only a hole for the mouth of the vase. Through repeated actions, pulling or peeling, the amount of the tape on the rolls (making change) gradually decreased to shape the vase (making negligible transformation with each removal of tape). Construction of the vase is the consequence of consuming each tape roll.

As a consumable everyday object, it is hard to establish an emotional attachment to tape. I wanted to investigate whether shaping a vase offer an opportunity for the user to develop an emotional bond with the tape in the form of a vase created by the user. Tape becomes a raw material for a vase that is complete when the user decides to stop removing layers of tape. I wanted to see if a vase created by the use of tape would elicit emotions and, therefore, emotional attachment. The slow change explores a narrative about disregarded details formed by habitual actions and time, and loss, replaced by the surprise of gaining a new, useful, object.

The work "Clock and Scarf" (Figure 19) is another way to express deconstruction (the disappearance of time) while constructing (the knitted rows of a scarf), with the two similar mechanical movements (moving hands and knitted rows) repeating.

"Jumbo Vase"

"Jumbo Vase" (Figure 20) is an improvement upon "Tape vase". It illustrates the same idea of construction from deconstruction but with more focus on the context of the passage of time, slowly building the shape of the vase, to allow time for emotional reflection.

"Jumbo Vase" began as six jumbo rolls of toilet paper, stacked one upon the other, and appearing as a large cylindrical vase. A stake in the centre maintained the structural integrity of the stack and acted as a spindle when the user pulled off pieces of paper. To shape the vase, cuts built into each of the rolls limited the area and amount of toilet paper that could be used at any one time. As the cut shape of the used rolls was revealed the user could choose which part of which roll to use, thereby choosing how the shape evolved. The user could use the initial stack of rolls as a vase for dried flowers or, as the user removed pieces of toilet paper for its usual use, transform the shape of the stack into a shaped vase.

In contrast to the sudden, dramatic method of complete destruction of the original objects in "Complete or Fragment", the construction of "Jumbo Vase" is gradual, relatively invisible, imperceptible. The transformation is slow and persistent, rather than going straight to a result. The narrative of negligible change and transformation requires patience, and ongoing behaviour to realize the transformation.

Figure 18
"Tape Vase"
Yueyun Song, 2016

Figure 19
"Clock and Scarf"
SirenElise Wilhelmsen,2012

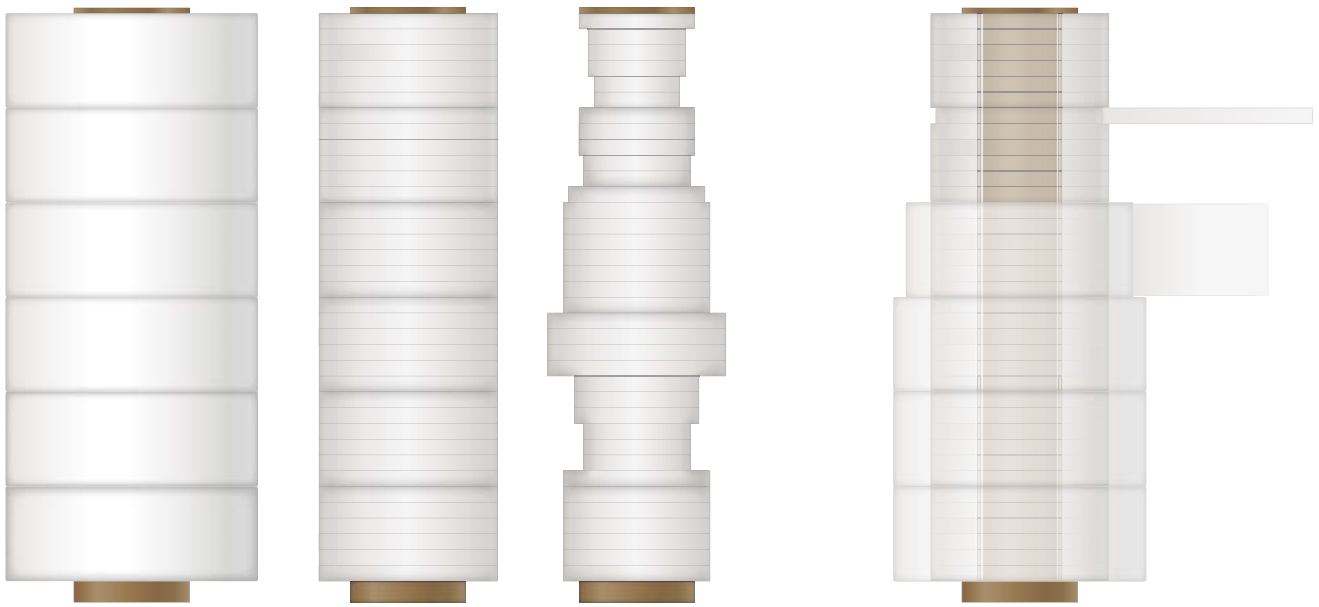


Figure 20
"Jumbo Vase"
Yueyun Song,2016

6.3 Critique

“Jumbo Vase” has some potential disadvantages. In terms of considering the negatives, users may experience a sense of expectation and wonder as the vase is formed, but being formed in the toilet may hold unpleasant connotations.

Even though the toilet paper vase only existed in my description and digitally, “Construction through Deconstruction” answered my questions. People understood the design from my description, and said they would be quite keen to use the process to create their own “Jumbo Vase” if the product had actually been available. “Tape Vase” was less well received, possibly because tape is not as integral a part of everyone’s life, as toilet paper is.

While “Jumbo Vase” triggered people’s imagination, the fact that they wanted to keep playing with it, suggested that the life of toilet paper would not be extended long enough for emotional attachment to occur.

It is noteworthy that the final appearance of “Jumbo Vase” could differ depending on where it is initially located. In a public toilet, it would be a cooperative work filled with fun because the participants have no responsibility to use the roll conservatively. Located in a private toilet, where the user pays for the roll and can decide whether they see it as a self-extension, there may be more opportunity to build an individual emotional attachment to “Jumbo Vase”.

A design intention of “Construction through Destruction” was to deliver an invitation to users to co-construct the product. By inducing personal creations from users and their habitual actions, I left room for users to be involved in a gradual process to complete the second object. Feedback from Tutors and students suggested that “Jumbo Vase” met that objective.

To form “Jumbo Vase” takes time and repeated actions. That time, combined with many repeated actions and negligible change with each, could give the time needed to build an emotional attachment.

6.4 Summary

I achieved my aim to explore passive transformation resulted from a negligible change by construction through deconstruction. The two versions challenge the stereotypes about the use and value of consumables.

Product lifespan is related to whether attachment will occur, according to Schifferstein and Zwartkruis-Pelgrim [5], between one and twenty years. It is impossible for a designer to know how long that the user will keep the product, but negligible change is a way to expand the product lifespan.

7 Standing Liquid

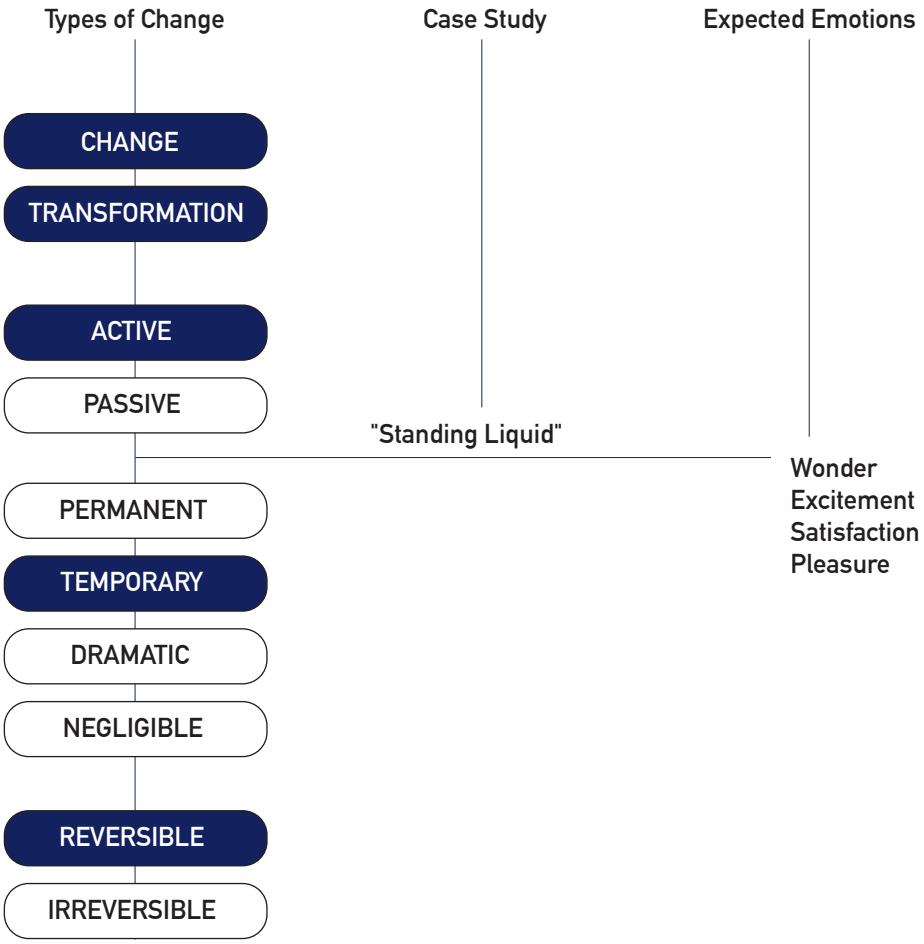


Figure 21
Design Intention of "Standing Liquid"
Yueyun Song, 2016

Figure 23

7.1 Design Intention

“Standing Liquid” (Figure 21,22,23) continued my experiments with tableware, to answer whether, through a temporary change or transformation, users could experience wonder or appeal with less loss than when the transformation was permanent. I wanted to see if less loss would reduce negative emotions and increase the positive emotions that could lead to emotional attachment. I expected to see a range of other emotions as well, including; the excitement of discovery; satisfaction from the options; and pleasure from the potential usefulness.

An example of a temporary change of purpose but not change of form is "Floyd Fuji Choco Couple BL" (Figure 24), ostensibly a tea cup in Japanese style, when reversed its shape and design resembling Mt. Fiji. The purpose of the object changes depending on how it is placed on a surface - as a cup or a purely decorative object.

My design intention for “Standing Liquid” was to offer potential for temporary change and transformation within my object, encompassing changes of form and purpose. I produced a vase (form 1) that could would be used as a vase or a responsive piece of sculpture. By rolling or folding, the vase becomes a shallower vase or a bowl (form 2). Turning the vessel inside-out forms a vase with a different shape (form 3), with the grooves as ornamentation on the outside, rather than fold lines (as when they are hidden inside the vase). A wavy line indicates the safe water level. A further change in shape happens when the bottom of the inside out vase is pushed down (form 4), a vacuum forms under the vessel to stabilize it. I was also interested in whether users would find other forms and purposes as they experimented with the very flexible design.

“Standing liquid” also investigated how temporary change and transformation could be effected in an object, with active rather than passive involvement by the user. I was looking for differences to those emotions elicited by objects with permanent change caused in either a dramatic or negligible way, to observe the emotional impact.

7.2 Design Execution

The idea of “Standing Liquid” evolved from considering why people a particular piece of tableware from a range of different shapes and sizes, and the way we use the same tableware in different contexts. I intended to investigate the relationship between the size and purpose of tableware, in order to form an idea for using the same piece in a range of situations, as an expression of temporary change of purpose or use.

People may not consciously know why they choose certain tableware, but we all have our own opinions and taste. Moreover, we all have the ability to gauge whether certain tableware will suit the size, quantity and amount of the food being presented. This awareness goes before our aesthetic appreciation when we evaluate an object. Norman [1] observes that people have a visceral recognition. We decide on a container that is deep or wide enough. Beyond that, our aesthetic or urgency takes over. People often use glassware to present a salad’s fresh colour, but no matter how much some

people care about food presentation, most of us are not too inflexible to use a coffee cup to contain water, or a plate rather than a bowl for rice. We changes to meet needs and create fun.

The object created in “Standing Liquid” was a silicon rubber vessel that could be shaped to form different sizes of container, including a vase. The vessel could be changed to different sizes and shapes of container to meet those needs.

Figure 24
"Floyd Fuji Choco Couple BL"
Floyd,nd

7.3 Design Practice

The design needed a very flexible material, and I experimented with various mixtures of silicone gap filler and cornflour to test whether they would fold or roll easily (EXP# 1, 2, 3, 4. 5 Figure 25).

Although the mixtures were foldable, and looked similar to silicone rubber, the mixtures dried too fast, and were less flexible and easy to break. EXP#4 included grooves, to make the folding process easier and the resultant fold more stable, and had the added benefit that the grooves could be used as in a measuring cup and could also indicate the places to fold the product and customise size to use. The mixtures were not suitable to execute the design I wanted.

In EXP#6,7,8,9 (Figure 25), I used silicone rubber (Nuplex, data 4503) to prototype the design. The shore hardness of the silicone rubber had to allow the vase to be stable as it stood, but soft enough to easily fold. Both the shore hardness and the thickness of the vase wall would contribute to the design application.

EXP#8,9 (Figure 25) was an improvement on EXP#6,7. The grooves were changed from straight to wavy, as an indication that the fold also signals the maximum water level for stability.

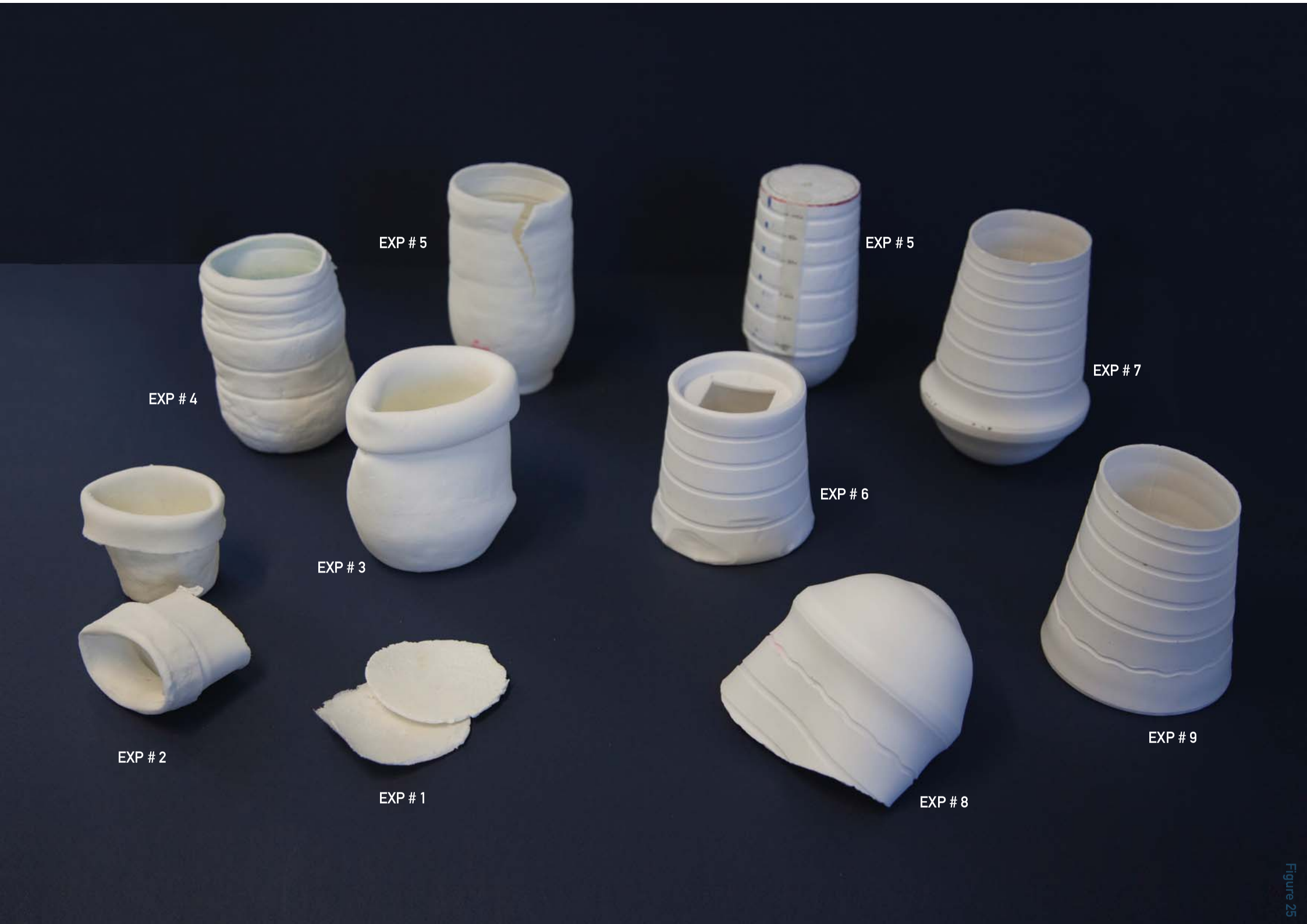


Figure 25

7.4 Critique

“Standing Liquid” succeeded as an experiment to see whether a greater range of emotions would be experienced as the user physically transforms the object, and because it could react to touch.

The vase holds the potential to engage in a conversation with the user due to the response that occurs when users lightly touch its body. When the vase is wobbling, it is like a person responding to your tickle - smiling, laughing, moving away, or so ticklish as to fall down like a deflated balloon. It behaves as if it is alive and responding in a comical way, and almost calls the user to keep touching it. It also has a temper, and will fall down when pushed too far, or overfed (filled with too much water).

I think “Standing Liquid” was largely successful in achieving my intention. Ability to adjust the shape and depth of a container – changing its potential - allowed the vessel to satisfy a range of aesthetics or functions. This flexibility would help users to form an emotional attachment. By adjusting the height, the product can range from a vase to a bowl. Users can form the size or shape they want, without the form being set by the designer. The method for adjusting the height was inspired by the way of rolling up a sleeve or rolling down stockings.

Soft, yet strong enough to stand without assistance, “Standing Liquid” responds to a user’s touch. Foldable in ways that may or may not have function, its flexibility allows users to experiment with it without responsibility, because it can turn back to the original shape. People thought the object produced was beautiful. They wanted to touch it. A limitation of the prototype was that holes at the fold lines occurred during production, causing people to be reluctant to use it in case it broke. If it were to be mass produced, this limitation would need to be resolved.

Standing liquid satisfied my desire to produce an object that could be mass-produced, involving a temporary transformation, but with a long attraction, giving more time for the user to develop an emotional attachment to it.

7.5 Summary

Standing liquid allows users engage with an object in many contexts, and transform it in a temporary and reversible way. Users could respond to the way that the vase moves with touch, and build an emotional engagement with the vase. The relationship between “Standing Liquid” and its users is close and, because the change is temporary, the wonder element would be greater than the fear of the permanent change that is the potential of “Complete or Fragment”.

8 Reset

The design process for “Reset” consisted of four parts, as I first experimented with an initial concept, then experimented and refined the work using a new material.

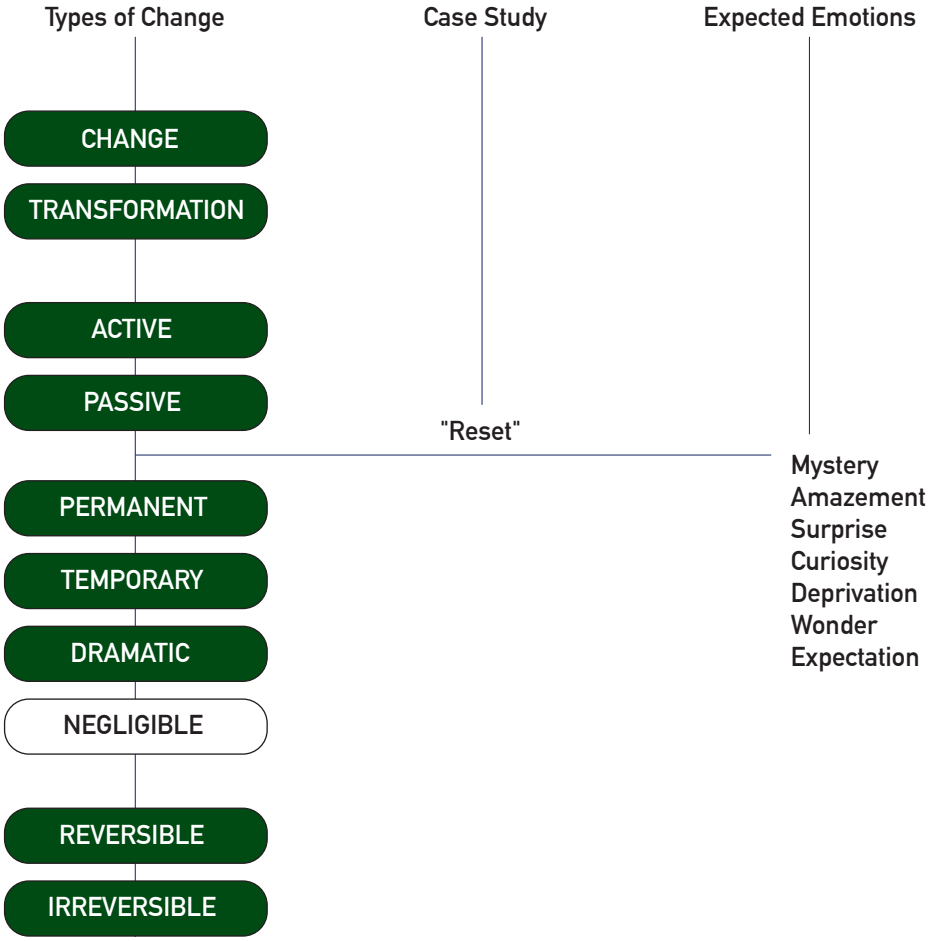


Figure 26
Design Intention of "Reset"
Yueyun Song, 2016

Figure 27

Figure 28

8.1 Design Intention

In “Reset” I wanted to build on the inspiration of the movement in “Standing Liquid”, by creating a design with a material that allowed a more substantive change than that produced by folding the edges or turning the object inside out. I wanted people to make a transformation that appeared permanent, but was reversible. I planned to discover whether a temporary transformation in form of an object, with the emotional effects of mystery, amazement and surprise, could challenge people’s understanding of a familiar everyday object, and be used to create an emotional attachment to the object through that memorable experience and the emotions it elicits. A similar temporary change, but in appearance rather than form, occurs when clean clothes become dirty and wrinkled, then are transformed by laundering and ironing them (Figure 26).

By using the inbuilt properties of the material used to construct the object, I planned to create the potential for passive temporary change to occur unintentionally, without intentional human intervention by, for example, temperature or the environment or casual touch. I wanted people to feel a sense of deprivation at the loss of the original form, and a sense of wonder when it transforms.

“Reset Part 1” experimented with wax to investigate a concept design, but wax did not have the properties I required. I investigated further and discovered that materials existed that allowed me to explore even more types of transformation and change.

In “Reset Part 2”, I used a new material, cold forming plastic, that inherently contains the potential for change, and chose it particularly for its potential to evoke emotions. With the new material I constructed the first prototype. Cold forming plastic has the appearance of clear glass and I wanted users to experience amazement, surprise and excitement when they were able to fold what appeared to be glass.

“Reset Part 3” followed further experimentation and allowed me to construct a second prototype, with better reversibility from Form 1 to Form 3 than in “Reset Part 2”.

“Reset Part 4” (Figure 27 and 28) incorporates dramatic, intentional and passive change and transformation; temporary and permanent transformation, and both reversibility and irreversibility. As with “Reset Part 2” and “Reset Part 3”, I was experimenting with temporary transformation as a way to increase the length of time a user engaged with an object, to increase the emotional attachment. I also wanted to take advantage of one of the other properties of the cold forming plastic, to add appeal and deepen the transformation experience inspired by “Shallows” (Figure 29).

From a distance, the “Shallows” appears to be a glass of water, with a plant. Closer, the solid crystal vase has a narrow tube for water, with a small hole in which to insert the water and the plant. The design elicits emotions of curiosity and surprise. It challenges people’s previous experience and understanding of form and material.

A pattern pressed into cold forming plastic can give the appearance of textured glass. Textured glass cannot be transformed to clear glass without an industrial process, but the pressed cold formed plastic can. I wanted to strengthen the mystery of the user experience in two ways. To have the experience of washing away the pattern, as well as the experience of folding what appears to be a piece of glass. I discuss the progression from Part 1 to Part 4 under design execution.

8.2 Design Execution – Reset Part 1

I started by investigating a biological material (wax), intending to make a cup that would change to mold to the shape of the holder's hand while being held, but when placed in water or a dishwasher would return to its original shape - a cup that responded to the user.

Holding the cup and seeing the change, would be like engaging in conversation. You could decide to experiment to change the cup further, in your own way. The designer created the potential for change, but the person using the cup makes the change and determines its extent - writes their own narrative within the cup. My expectation, triggered by the responses of users to the Tea Stain Cup (Figure 1). I created in the first year of my Masters study (Song, 2015) was that each cup would reflect something of the personality of its user.

My design changed, however, when the various waxes I tried, even when combined with other materials such as cotton, would mold to the grip, but would not return to the cup shape on exposure to liquids or washing (Figure 30).

8.3 Critique of Reset Part 1

Wax, as the material for the cup, allowed me to impress my finger marks (the transformation), but was not successful in reversibility, as the wax melted rather than resumed the original cup shape. My idea of the potential of such a design was vindicated, however, when I later found a design "Tumbler-NAJIMI" produced by Nousaku (Figure 31). "Tumbler-NAJIMI" used tin as the material of a cup to create the similar effect. I decided to look for a more suitable material to effect the change.

8.4 Design Execution – Reset Part 2

Further research identified that there were new materials such as cold forming plastic and shape memory polymer, that would accomplish the desired effect. I wanted a temporary (reversible) transformation, with the sense of loss that the transformation could produce supplanted by a sense of wonder when they saw the potential of the new form, and again when it was able to change back.

I obtained some cold forming plastic and began to experiment with the temporary shape change. I planned to make a placemat (form 1) that could be folded into one of a series of possible bowls (form 2), and be returned to the placemat (form 1) when placed in boiling water. Unlike most transformations that only go in one direction, using this smart material a user could make the first transformation by folding, and make the second transformation (back to form 1) in a different way. Reversibility, I hoped would allow the user to engage more with the product and experience a strong range of emotions, resulting in a stronger emotional attachment.

I came to understand that the material had three limitations. Cold forming plastic is a 2D material. To overcome the first limitation, I used folding, an accepted method in industrial design to transform a 2D object to 3D. KAGO, (Figure 32) had used tin as their material in a similar design, and pulled their design (a trivet or placemat shape) into a bowl-like shape, using the pliability of the material.
According to its physical and chemical data (properties), cold forming plastic is foldable at hand

Figure 29
"Shallows"
Kazunaga Sakashita,nd

Figure 30
Wax test

Figure 31
"Tumbler-NAJIMI"
Nousaku,nd

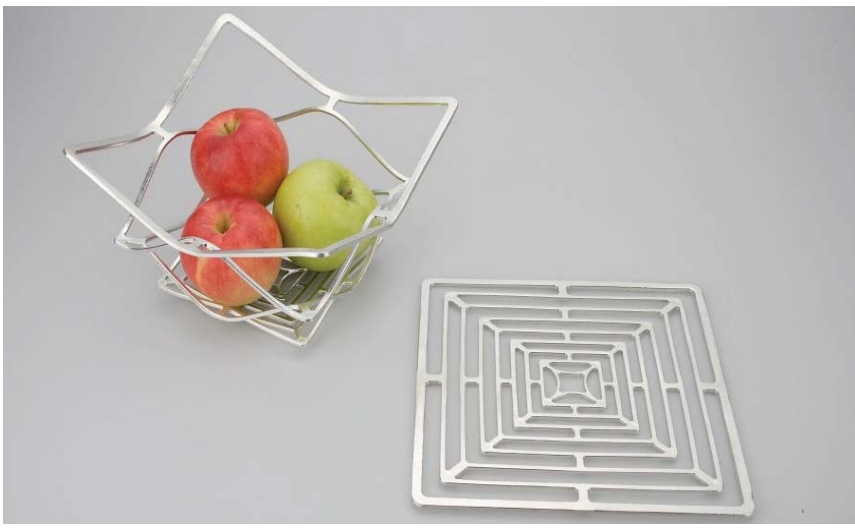


Figure 32
"KAGO-Flexible Wares"
Nousaku,nd

temperature, and returns to its original shape in boiling water. This second limitation meant that the material was not suitable for use in a vessel to hold boiling hot liquids, but there it was a possibility to use making a bowl for solids or cooler liquids.

The third limitation, the 3mm thickness, meant the material was not easily folded in the way indicated in its advertising material. To facilitate folding by hand, grooves at the fold lines were needed. I used a press to make the grooves (Figure 33).

After making the grooves, the original sheet of material appeared as a circular decorated place mat (form 1). When folded it could take the form of a bowl (form 2). Adding more grooves added potential for the user to choose from a range of bowl shapes and sizes (Figure 34). Still more experimentation, however found the folded bowl shape was temporary. When placed in hot water, the bowl returned to the flat placemat shape – was reset - but the pressed grooves disappeared (form 3).

8.5 Critique of Reset Part 2

A limitation of “Reset part 2” was that pressed grooves were lost in the transformation back to the placemat, and could not be refolded back into a bowl, so the reset change became permanent. This inspired me to find a way to make the grooves that would not be lost when reset.

I also found that a greater number of grooves increased the difficulty for users to make the bowl to the size they want. Once made, a wrong fold could only be corrected by resetting the material back to the placemat form, and on doing so, the pressed grooves would disappear. If such a mistake happened, wrong folding could result in a negative emotional response, rather than the positive one elicited from achieving a successful result. For that reason, the product instructions should warn the user to carefully follow the directions to achieve certain shapes. As long as the users know how the product performs, they can decide whether to closely follow directions or take a more casual or experimental approach.

Before boiling water

After boiling water

EXP#1

Test Piece: 45x15x3 mm
Method:Metal sheetbender
not hand foldable

EXP#2

Test Piece: 45x15x3 mm
Method:Press,
10 Tons pressure into 2.5mm thickness.
hand foldable

EXP#3

Test Piece: 45x15x3 mm
Method: Heat Gun
hand foldable

EXP#4

Test Piece: 45x15x3 mm
Method: Flypress
to make 1.5mm grooves.
hand foldable

Figure 33
Material test

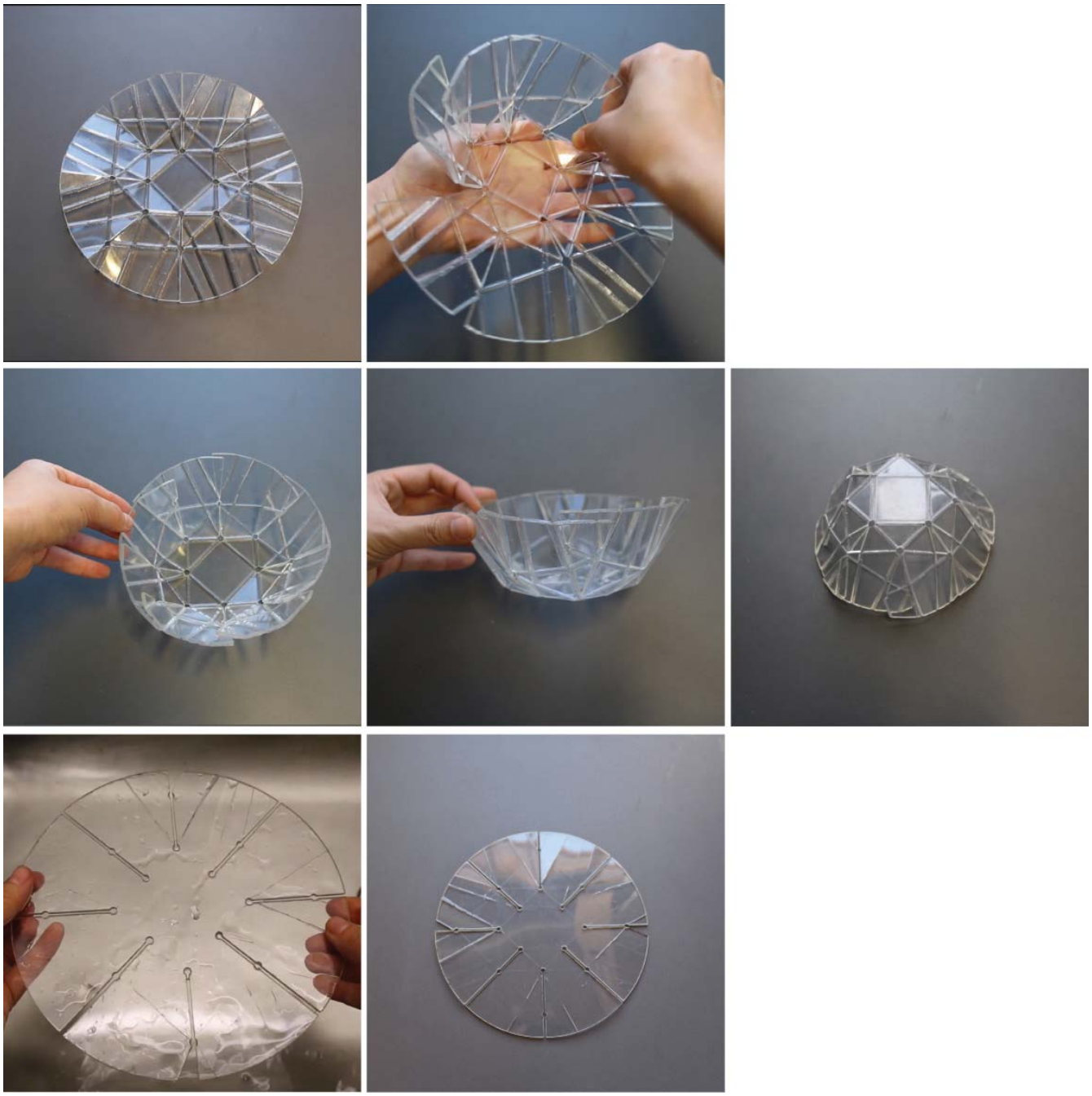


Figure 34
"Reset Part 2"

8.6 Design Execution – Reset Part 3

I wanted a design that contained less loss than my previous attempt. I considered the feeling I had when I saw “Missing” (Figure 35). “Missing”is a vase into the front of which the form of an antique vase is impressed, to remember that earlier vase. It reminded me of the feeling of losing something. Loss seldom leaves positive emotions, so I experimented with changing the method for making the grooves more permanent to eliminate or reduce the loss.

Figure 35
"Missing"
Sovrappensiero
design studio,2010

I found that when the grooves in the material were machine cut (excised), they remained when reset in boiling water. The potential for refolding remained, giving the temporary change I desired. In testing the use of machine cut grooves, I experimented with different depths of groove (Figure 36). A depth of 1.5mm gave optimal folding in a prototype, but I found it was too weak when used in a full size model, and further experiments would be required if the design were to be used commercially.

I followed a similar process in forming the placemats as in “Reset” Part 2, but now using both cut and pressed grooves. Further experimentation showed that many fold lines cut into the placemat increased its decoration as well as giving the potential for different sizes of bowl. I found that if some of the grooves for the fold lines were machine cut and others pressed, only the pressed grooves were lost when the bowl was reset (Figure 37). If pressed grooves were used in the first folding (form 1 to form 2), then reset (form 2 to form 1), refolding did not allow the user to return to the first folded shape but, using the remaining cut grooves, another bowl could be formed (form 1 to form 3). The different properties of the grooves allowed me to introducing a more random element to the user’s creation.

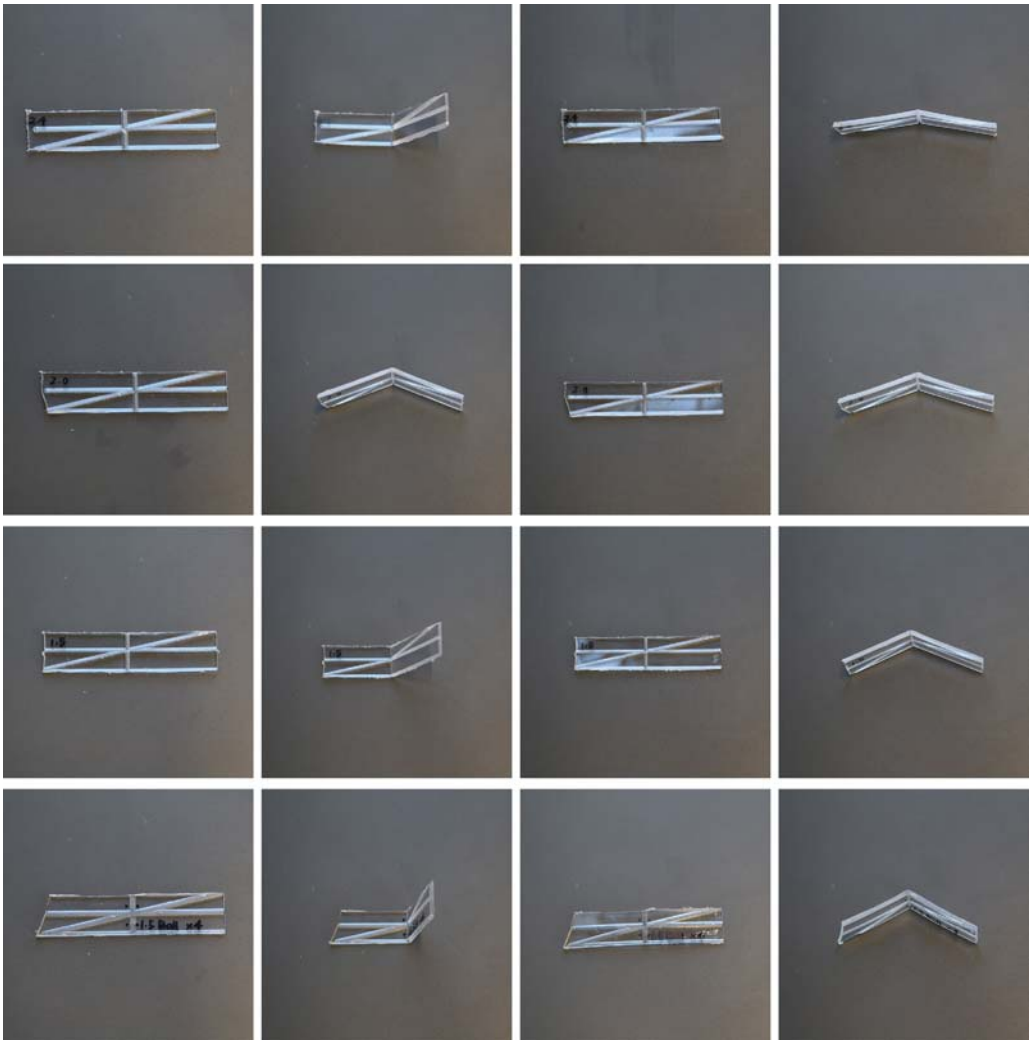
8.7 Critique of Reset Part 3

The narrative for “Reset” part 3 included the user led discovery of the potential of a tablemat to become a bowl. There was a potential to feel loss when a bowl, created using pressed folds, was unable to be returned to its original folds after being reset. Nevertheless, if the user followed the machined grooves that were not lost in the boiling water, the potential to create another bowl remained, even after the tablemat was reset.

The process of building the containers is somewhat like assembling a jigsaw puzzle. Achieving the completed picture is the goal, and although the pieces may be joined in many ways, only one combination achieves the goal of a complete picture. The more pieces a jigsaw puzzle contains the more complicated it is. People engage with the complexity of matching pieces and the experience is richer because complexity needs extra patience to find out the right pieces. Emotions can include frustration, suffering and annoyance, even regret or doubt, replaced by pride when a complex goal has been successfully achieved. The range of emotional responses experienced, culminating with success, makes the suffering fun and memorable, and establishes an emotional attachment with games such as the jigsaw puzzle.

Before boiling water

After boiling water



EXP#1

Test Piece: 90x20x3 mm
Method:Shopbot
angle tool to make 2.4 mm grooves

EXP#2

Test Piece: 90x20x3 mm
Method:Shopbot
angle tool to make 2.0 mm grooves

EXP#3

Test Piece: 90x20x3 mm
Method:Shopbot
angle tool to make 1.5 mm grooves

EXP#4

Test Piece: 90x20x3 mm
Method:Shopbot
ball tool to make 1.5 mm grooves

Figure 36
Material test

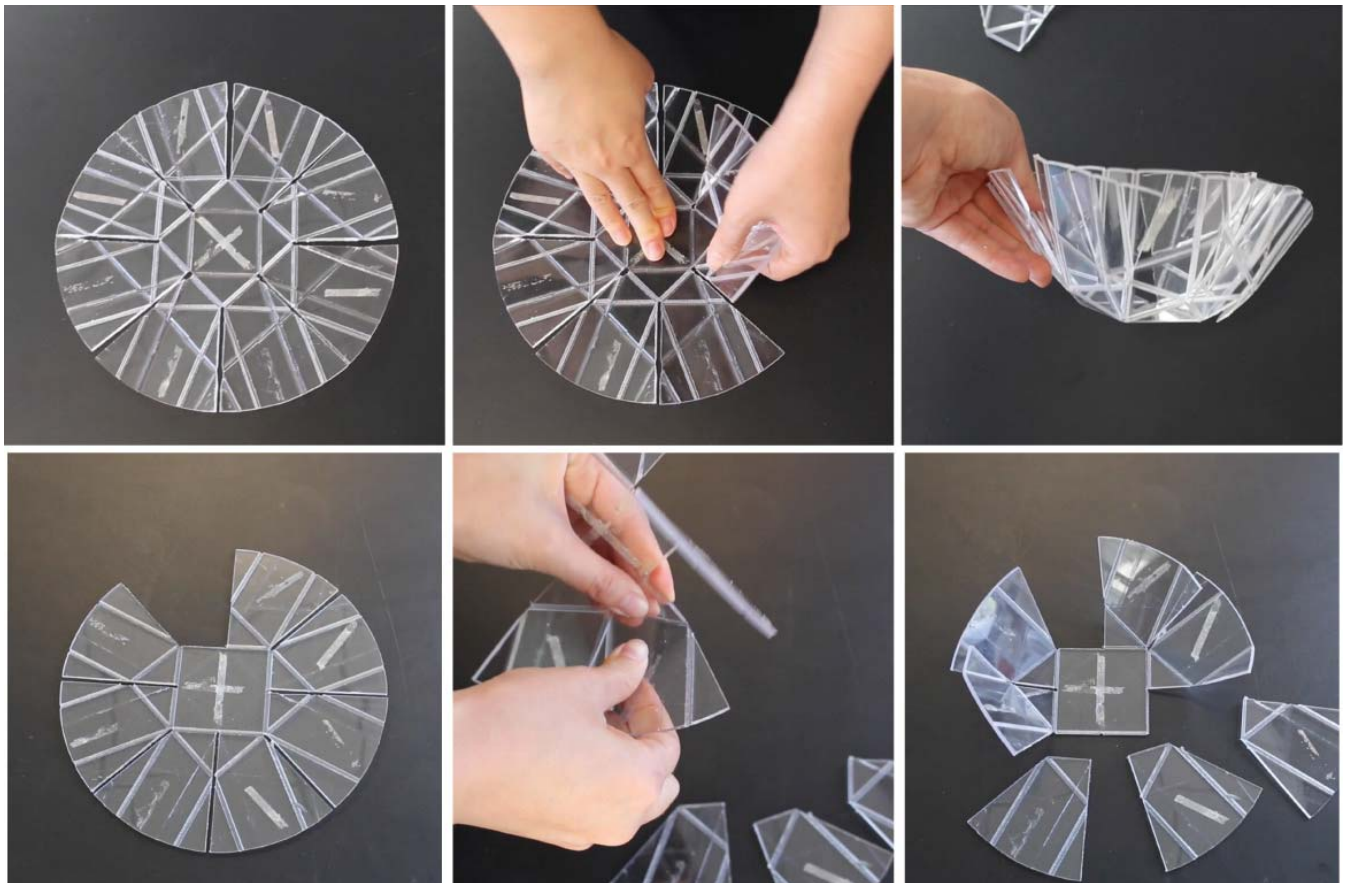


Figure 37
"Reset Part 3"

8.8 Design Execution - Reset Part 4

I made a placemat with pressed pattern and machined lines (form 1a), which could be transformed into an octagon shape by folding (form 2). In the production of this version of “Reset”, I made use of the potential of the transforming properties of cold forming plastic to evoke emotion, but lose the complexity of multiple folds and concentrate on folds that make a single form. I wanted the user to focus on the transformation, rather than the complex decisions of which folds to make.

I used machined grooves in a placemat-sized piece of the material, to make the fold lines, and decorated it with a pressed design to give it the appearance of textured glass. I then made folds in the cold forming plastic, so that when folded it formed an octagonal cylinder. With the addition of a waterproof base, into which the vase slots, “Reset Vase” becomes a vase suitable for holding cut flowers (Figure 38).

Although the pressed glass effect was lost when the vase was reset, and appeared to become clear glass (Figures 39, 40, 41), the vase was fully able to be returned to the placemat form(form 1b) , then back again to a vase (form 2a).

8.9 Critique of Reset Part 4

If mass-produced, “Reset Part 4” would expose its owners to a story about loss and gain. People would experience the loss of the placemat if they choose to fold it into a vase, but that feeling would largely be supplanted by gaining the vase. Moreover, they can reset the vase to placemat when they choose, and even fold it back into a vase again, but without the pattern so any loss is mostly temporary.

The choice to transform the object, possibly evoked by curiosity, would be made if the owner wanted to verify whether such a change could be made, or to gain a new experience. Each transformation changes the function, with the associated emotions of wonder, excitement and success. In making the transformation, people satisfy their expectation and their curiosity, in a memorable experience.
I consider the loss of pattern between the first and second sets of transformation (the pressed pattern) was offset by the excitement of a new appearance.

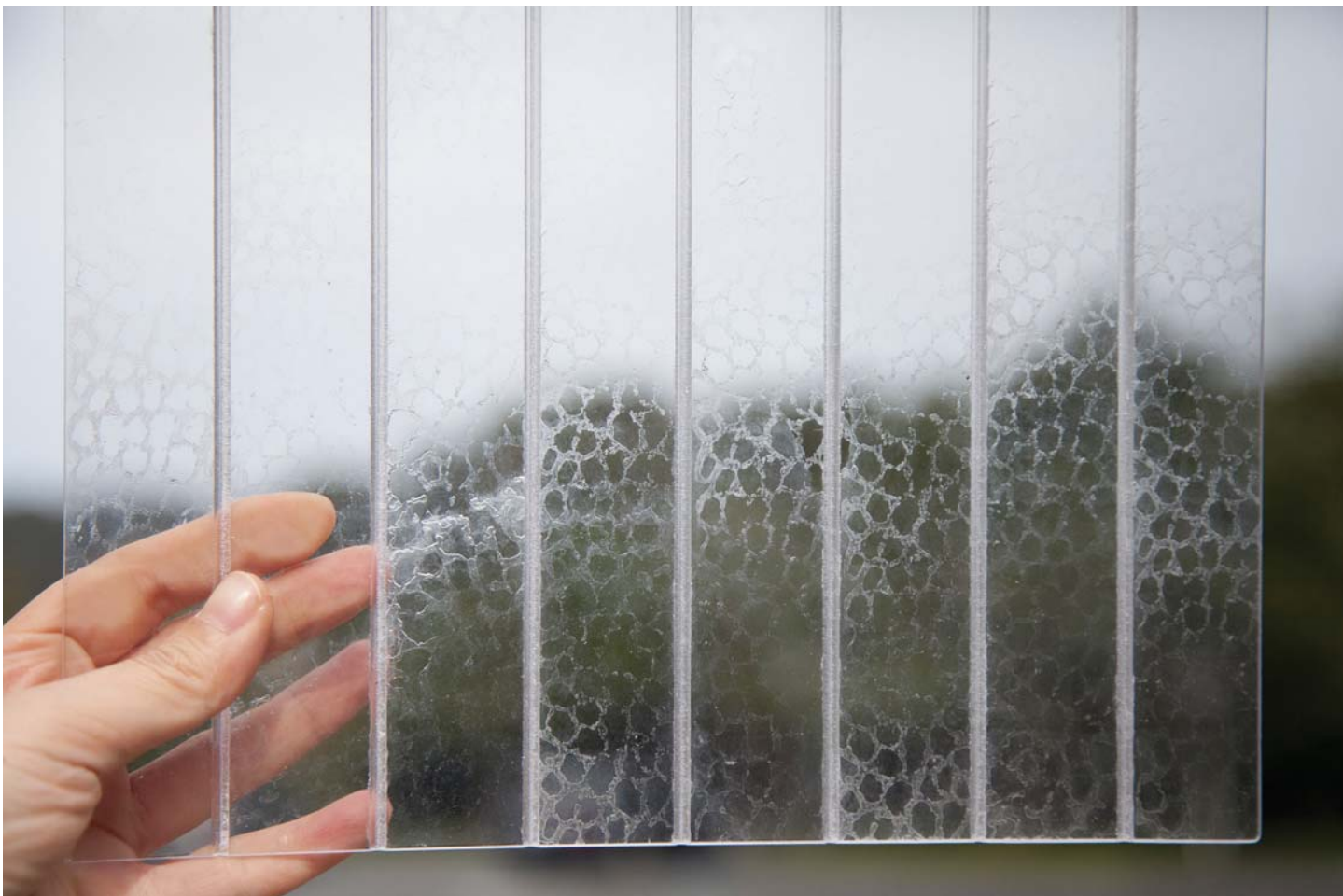
The people with whom I shared “Reset” were excited by the potential of the cold forming plastic, its appearance of glass, and the transformations that could be produced. While I felt Part 4 most nearly expressed my design intention, some people liked the wider range of forms in Parts 2 and 3. I was delighted with the range of emotions people expressed.

8.10 Summary

“Reset” exceeded my expectations. I found a material that fully expressed my initial design intention, and which inspired me to introduce a wider range of changes and transformations in my design practice, and that I was able to use to elicit a wider range of emotions. I clearly demonstrated that it is possible to create objects like tableware that could elicit the intense emotions in users

Figure 38

Figure 39



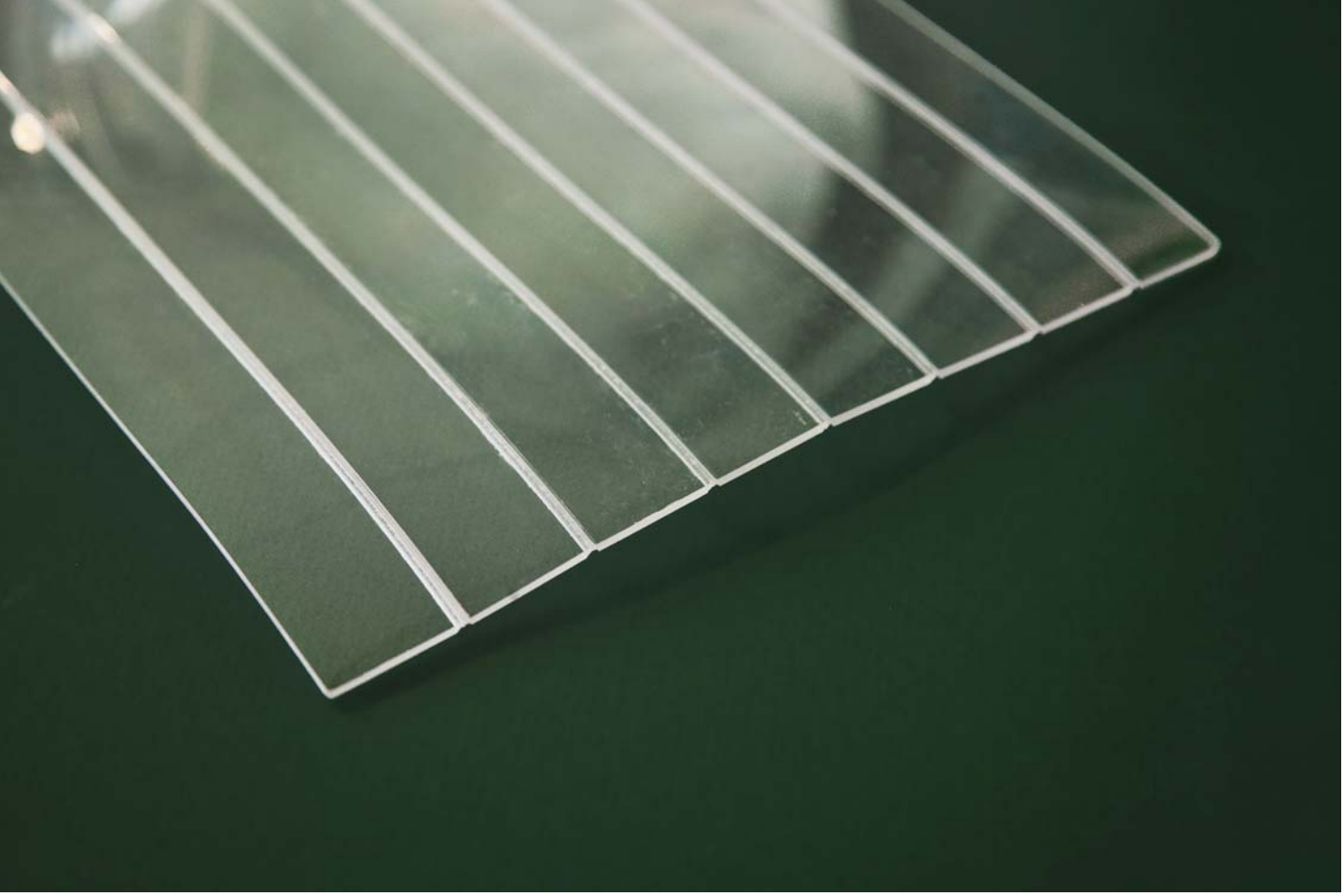
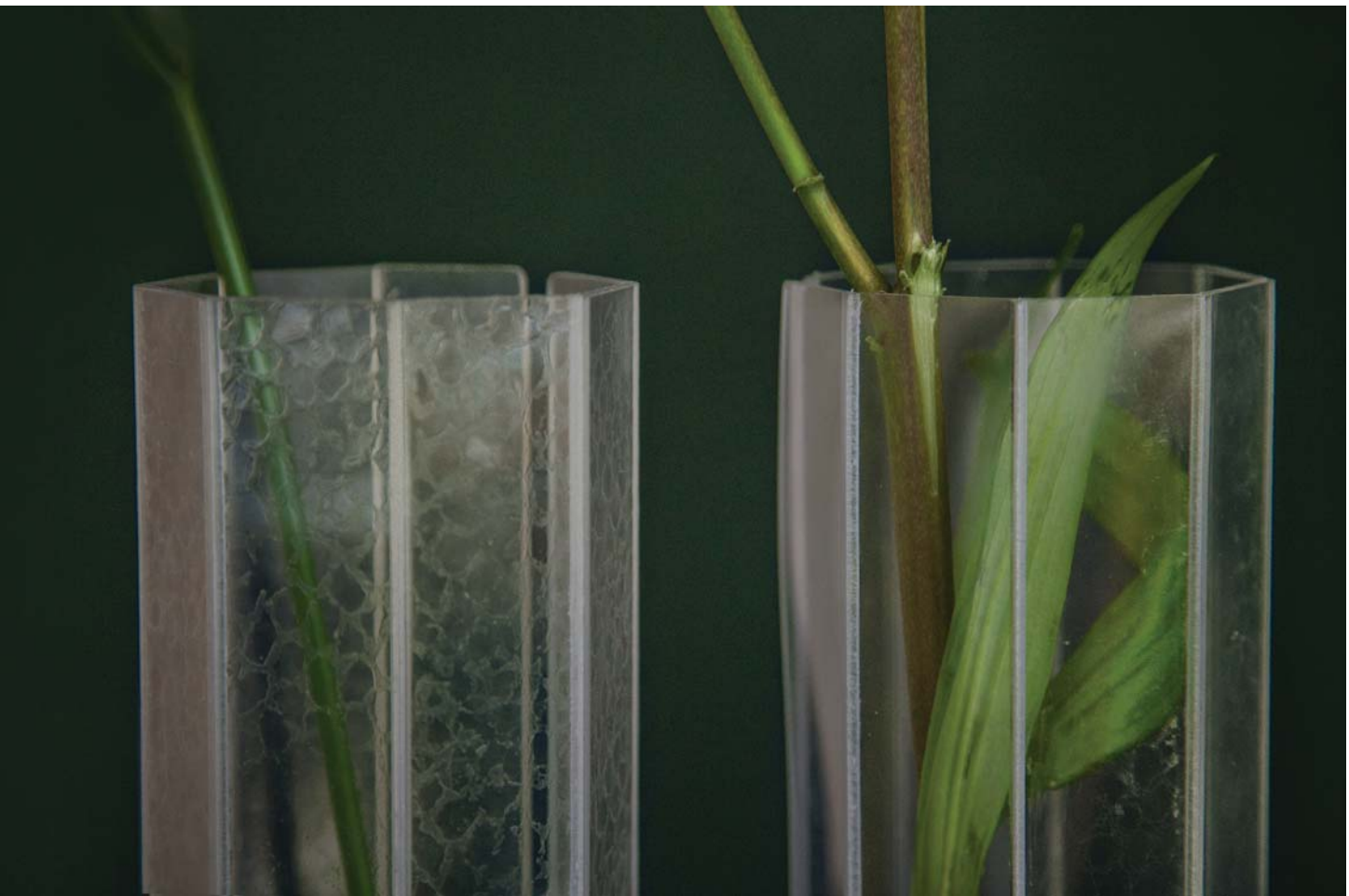


Figure 40

Figure 41



9 Conclusion

The designs discussed in this thesis allowed me to explore ways I could use change to facilitate emotional attachment to objects I designed. I wanted people to experience enriched emotional experiences that would facilitate engagement with the objects. I use the words facilitate and potential because I recognize that people react to experiences in many ways. My intention was that the objects would contain a potential for change, as the element that facilitated a narrative experiences that would be positive wherever possible.

The designs I created allowed me to introduce both positive and negative experiences with the objects, to explore the ways the potential could facilitate an emotional attachment. My belief is that the narrative of change or transformation, intrinsic in each design would help people deepen their relationship with the object. Each of the objects had the potential for the user to be involved, to add, or not, their input to the design, to change the form or function, or appearance, or even the narrative of the product to suit their own aesthetic and needs. I met my objective of not designing to solve a problem, but to allow the user to contribute to the design, with the potential of developing an emotional attachment through their narrative.

I was unable to test the ability of any of the objects I produced to form emotional attachment with users. User and ownership testing was not possible in the time available. I would like to experiment further – to try, for example, different types of silicone with “Standing Liquid” - and to experiment with how I can improve the objects.

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