B.G.E. Goosink

Graceful Ageing of Products

A framework on how to create relations between users, their products, and the everyday.

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Norwegian University of
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abstract

Products, regardless of their utility, face the challenge of time. Whether it is through wear and tear, changes in personal and societal values, or incompatibility with unforeseen technological advancement, very few designs last a life time. This thesis title proposes to challenge this convention, exploring the principles of design that encourage the graceful ageing of products. This refers to products that stand the test of time by keeping hold of their value in the eyes of their owner and user, being or becoming keep-worthy.

Focus of this thesis lies on the aspects of design that impact the perceived worth of products as they age. The emphasis of this research lies on uncovering factors that improve a product beyond aspects initially considered by users during purchase.

The motivation for this thesis proposal is two fold. Firstly, it is about understanding graceful ageing of products in the pursuit of good design. Secondly, items that last confront today's standard product lifecycle and consumeristic lifestyle. Lasting products create less need for replacement. Gracefully ageing products create less want for replacement, encouraging a mindset of fostering and repair. In the wake of climate change, a mindset shift in consumeristic behaviour would be an encouragement in the right direction.

The outcome of this thesis is a framework that constitutes the elements needed in design to enable graceful ageing. The principle hypothesis of the framework is the notion that the stories we build around our everyday items makes them unique, and that this uniqueness makes our products worth keeping. The framework proposes building aesthetic interaction on the existing ideas around 'good design', namely user values, utility, and emotion. Products often loose their novelty after several use cases, and fade into the background of everyday life. Aesthetic interaction is proposed as a method to preserve salience, for the user to have enough awareness of the products presence in their daily activities, enabling the product to eventually become part of the all important user narratives, memories and stories.

Contents

1

TOPIC AND PROPOSAL

topic and proposal

This thesis is on the topic of graceful ageing of products. Products become old, they go out of fashion, or become irrelevant to the owner. Owners find replacement, either tossing or shelving the older product, eventually landing them in dumps. This is not only a waste of resources, it is also a missed opportunity to improve the life of product owners. Through the lens of graceful ageing, this thesis explores how short product life cycles can be avoided, as well as how to bring more joy to those that own them.

The outcome of this exploration is a framework that constitutes the elements needed in design to enable graceful ageing. Its purpose is to find out what the enabling conditions are for graceful ageing, and how a designer could go about recreating these in their products. The original thesis proposal is displayed to the left.

NTNU
Fakultet for arkitektur og design
Institutt for design

Master's Thesis for Bram Goosink

Designing for the graceful ageing of products

Products, regardless of their utility, face the challenge of time. Whether it is through wear and tear, changes in personal and societal values, or incompatibility with unforeseen technological advancement, very few designs last a life time. This thesis title proposes to challenge this convention, exploring the principles of design that encourage the graceful ageing of products. This refers to products that stand the test of time by keeping hold of their value in the eyes of their owner and user, being or becoming keep worthy.

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If designers understand how to make products live through time, adapting to an ever changing social, cultural and technological environment, these motivations may just be met.

Proposed Activities
- generate insight on the elements of products that support graceful ageing
- experiment with elements of graceful ageing through prototyping
- translate insights into recommendations for designing keep worthy products

This project is executed in accordance with "Retningslinjer for masteroppgaver i Industriell design".

Course supervisor (from ID): Trond Are Øritsland
Starting date: 9th January 2020
Due date: 4th June 2020

Trondheim, NTNU, January 8th 2020

Trond Are Øritsland   **Ole Andreas Alsos**
Course supervisor   Head of department

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DOCUMENT SETUP

how to read this document

This thesis is set up in an unusual manner. It is divided in two parts. The first is a description of the design framework leading to graceful ageing - the deliverable of this thesis. It describes the various components of the framework and supports them with existing theories and literature. The second part describes the process that lead towards the composition of the framework followed by a discussion. Due to the covid-19 lockdowns in effect during this thesis, access to workshops and potential users was limited. The consequence of said lockdown are an inability to produce prototypes, and so the bulk of the framework is supported by literature rather than a fully fledged design process and the related prototyping.

3

DEFINING GRACEFUL AGEING

definition

What is meant by graceful ageing of products? Generally speaking, it is a product possessing a keep worthy value that, in the eyes of its owner, makes the usual degradation through time irrelevant. Be it degradation by physical means such as scratches and dents, or through more intangible ways akin to technological advancements or the passing of trends, the graceful ageing product holds its value despite these developments. This means that in the face of objectively better replacements that will inevitably appear over time, the graceful ageing product relies on the subjective value placed on it by the owner.

There are two components that can be observed in products with the capacity to age gracefully: keep-worthiness and long potential lifespans.

Potential lifespan is the amount of time a product can function as intended before wear and tear renders it a total loss. Note that this does not mean a broken product is at the end of its lifespan necessarily, as a repair may put it back in operation. Only once a repair is impossible, or deemed unable to restore original functionality, does a product reach the end of its potential lifespan.

Keep-worthiness determines how usable a products value proposition is to a user. This value can be related to product utility, it can be sentimental, or something else. The keep-worthiness and perceived value of a product is subjective, depending on the user's beliefs and assumptions.

graceful
ageing

keep
worthiness
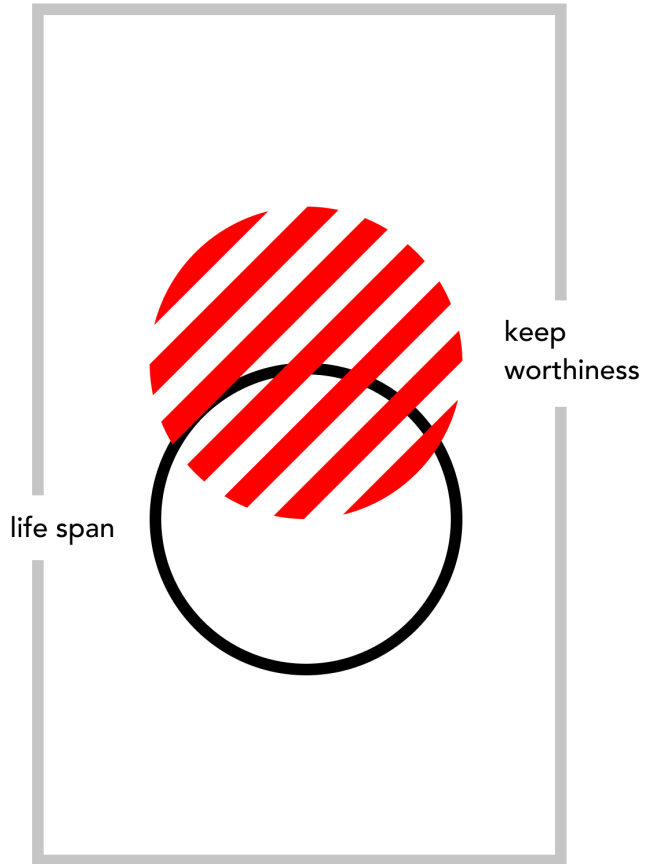
life span

It should be noted that these two components do not stand entirely separate from each other, there is overlap to be found. Design elements that make for longer product lifespan, such as robust material choice, may also impact the keep worthiness of a product. In general, perceiving a product as reliable and long lasting will improve its perceived keep-worthiness. Take the effect of making a product out of low quality plastics as apposed to aluminium as an example, even if functionality is unaffected, the emotional value of aluminium creates a higher keep-worthiness factor.

4

SCOPE AND LIMITS

The explored and unexplored domain of graceful ageing products is vast, too hefty to explore in one thesis session. To bring the scope to a manageable size, and produce an outcome that's not lost in abstraction and generalisation, the aforementioned lack of literature on keep-worthiness was taken as a starting point.

scope

The scope of this thesis within graceful ageing is that of product keep-worthiness. This includes an exploration of what keep-worthiness entails, as well as a look at how keep-worthiness may manifest itself in a design process.

As defined earlier, keep-worthiness is the subjectively evaluated condition of graceful ageing. This places the focus on aspects that generate experiences, as well as touching on what motivates owners to keep a product. Aspects that increase life span are only included when they overlap with keep-worthiness. Anything from manufacturing methodology to legacy support in systems falls beyond the scope.

life span

keep
worthiness

scope
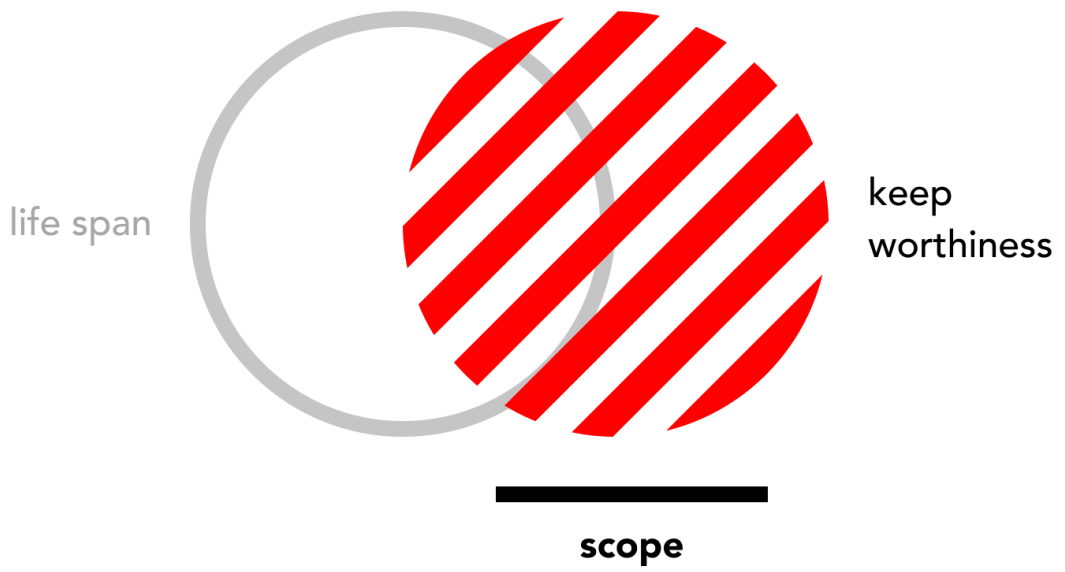
delimitations

This thesis aims to assist the designer in creating keep-worthy products, its insights must apply to the context of a designer in their studio. Keep-worthiness is likely to be affected by a great variety of variables, from form and function to pricing and marketing. This work limits itself to the variables within the control of a designer, expelling factors such as the example of pricing strategy. This also eliminates the sentimental value obtained by products before use, such as sentiment derived from gifts or souvenirs. This too, is beyond the designer's control.

**domain of
keep-worthiness**

designer
influence
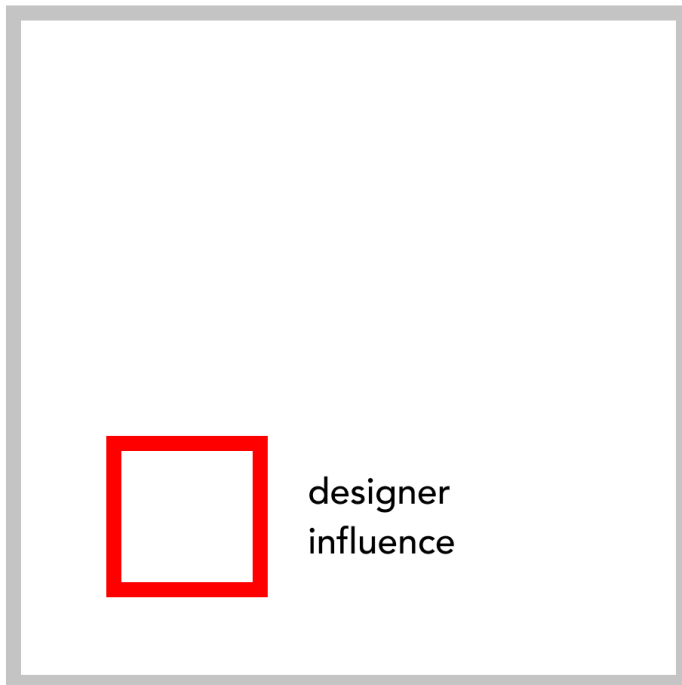
5

STORY

product stories

In the hunt for keep-worthy design, the most universal characteristic among long kept products is the stories and memories they encapsulate. When asking people to present their prized possessions, it always comes accompanied with an enthusiastic tale. Such tales are often spun around memories, sentiment and personal values. The contents of each story is not necessarily important to keep-worthy design, what is important is the capacity to create story. Once a product possesses such capacity, a story will establish itself in time through the experiences of product use.

Story plays an important role in keep-worthy design because it is what makes a product unique. A unique product is irreplaceable, so even in the face of objectively better alternatives, the unique product is subjectively valued higher and kept. As the term implies, this subjective value is personal to the owner. It is of an emotional nature and attributed to sentiment. If the joy of using a good, keep-worthy product is what entices the creation of story, it is the uniqueness of the story that brings about the feeling of loss if the product were to be replaced.

What is also apparent when hearing owners talk of their prized possessions is that there stories vary widely. This variation brings into view the aspect of chance in keep-worthy design. The experiences that underlie the creation of stories are context dependent, and factor in variables wildly beyond the designers control.

The following pages present a theoretical framework of the design elements leading to keep-worthy design. It spearheads the capacity to create story as the leading design element. Factoring in the aspect of chance described above, the framework is not an outright answer to what keep-worthy design is, but rather describes what design elements lead to greatest chance of story creation.

6

THE
PYRAMID

a framework

Keep-worthy products are products with a story, memories, and sentimental value. The question is, how can designers create products that can be imbued with stories and memories? The framework described here lays out the design factors that are most likely to lead to this story making capacity in a product (fig. 1).

stories in the everyday

To begin with, we must observe the context in which stories and memories are made: the everyday. The everyday is where our lives run their course, where we go about our routines, where we feel and dream. The everyday in general is also banal and feels mundane, yet the experiences we encounter here are the building blocks of the memories we retain. Experiences and memories that we eventually select from when creating and telling stories.
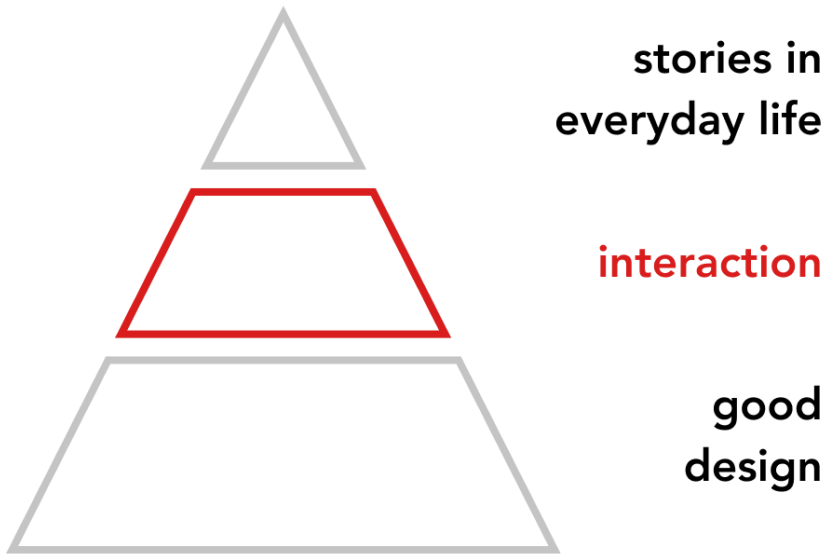
stories in everyday life

interaction

good design

Fig. 1 Good design making an impact on everyday life through thoughtful interactions

interaction

Story making is a conscious, reflective process for which we select meaningful memories and experiences. The experiences brought about by a product are based on our interactions with it. Hence, the interaction with a product must be meaningful, both on a personal and social level, to be included in the stories we spin around our everyday life experiences.

For interaction to be meaningful, it must be *aesthetic* interaction (Overbeeke et. al., 2002) or *resonant* interaction (Hummels et. al., 2003). Such interaction is not concerned with an aesthetic appearance, but the aesthetics of use (Locher et. al., 2010).

good design

For interaction to be able to convey a good experience, good aesthetics or resonance are not sufficient. These concepts rely on the underlying product being well designed to begin with. It must understand the values held by the user, both catering to pragmatic needs (being the right tool for the job) and being emotionally suitable (having aesthetic appearance, and being convenient in use). For the purposes of this framework, this will be labelled as 'good design'.

Taking a step back, we can identify three elements in the pursuit of keep-worthiness: good design, interaction, and stories. These are the principle components that make up this framework (fig X). Stories being the driver of keep-worthiness. Good design encapsulating the values of the user. Interaction being the bridging element between the two, making the user enjoy, notice and reflect on the experiences bought about by good design in the everyday.

good design

Having described the relationship between good design, interaction, and story, the arbitrary nature of the term 'good design' needs to be addressed. Within this framework, good design refers to the fundamentals of making a product work towards successfully tending its purpose. Several descriptions of such fundamentals can be found in literature (Aaron, 2012).

Within the context of keep-worthiness, the fundamentals of good design have to do with understanding the user and context, exhibited by an understanding of the believes and values these manifest. Values is the first fundament in good design. Good design builds on the understanding of values, identifying and solving a problem in accordance to them. This can be referred to as utility, and is the second fundament of good design. Lastly, the product must evoke certain emotional pleasure, this is what sets apart a ceramic mug from a paper cup. Emotion is the final fundament.

Adding the three fundaments to the framework for keep-worthy design produces the in fig X. Each level builds on elements of its lower sibling, enhancing the product as it scales the pyramid.
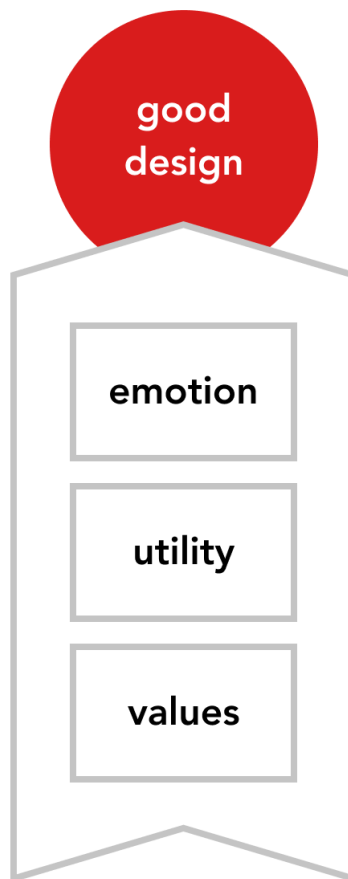

Fig. 2
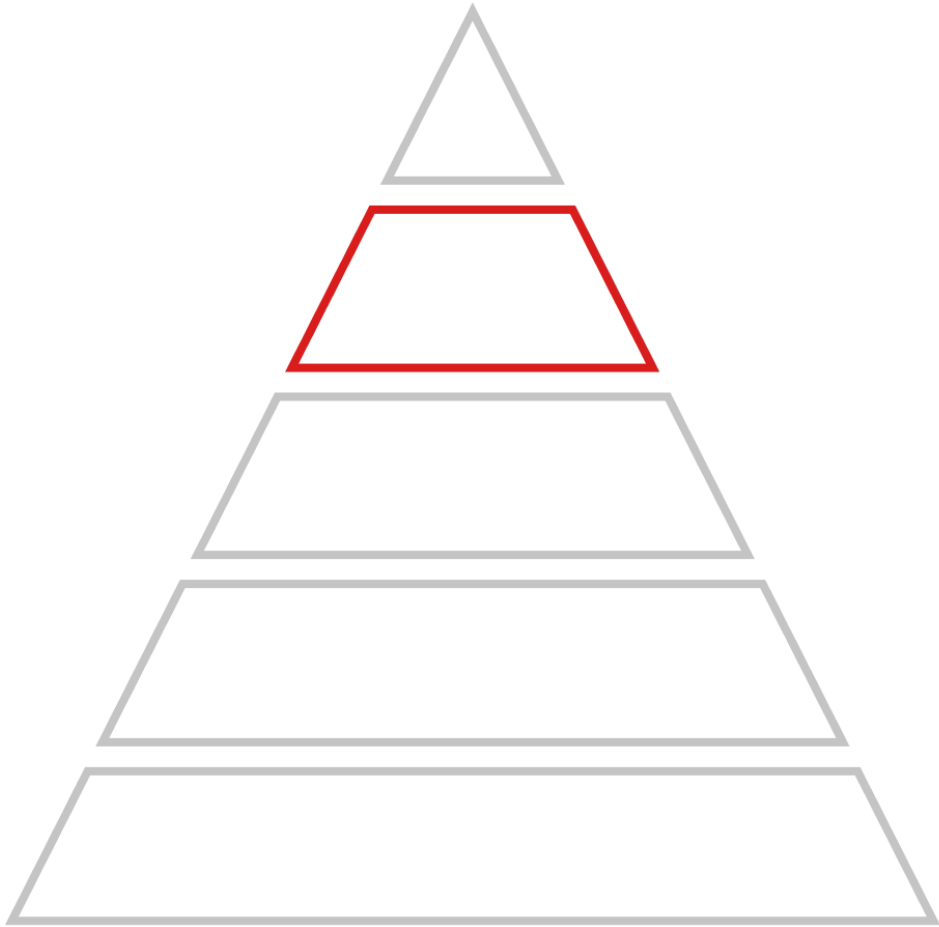
Fig. 3 the pyramid of keep-worthiness.

tory

The forming of stories and memories around the product due to the noticeable interactions it features during each use case.

everyday life

tion

Interactions designed to highlight the product's emotional qualities, creating awareness of these pleasantries momentarily.

interaction

tion

Emotions stirred up by the product, either directly through use, or indirectly though thought and reflection after use.

good design

tility

A product that effectively fulfils its purpose to the expectations of the user whilst being intuitive and ergonomic in use.

lues

Commonly held customs and mannerisms as well as the understanding of what makes one refined.

The pyramid

The complete pyramid of keep-worthiness is displayed in fig 3. It is accompanied by a short description of each level. In the chapters to follow, each level will be further explored, seeking validation and criticism through comparison with existing relevant literature.

Values

All design is based on a set of values derived from the context of use. Values can be personal, originating from individual preference. Values can also be shared across friend groups or entire societies, dictation what is considered cultured or acceptable.

Utility

The efficacy with which a product fulfils its purpose and raison d'être. Good design does so through being user friendly and by meeting expectations. Personal and shared values identified in the previous level are used to guide design to be context specific, providing a solution specific to the problem at hand.

Emotion

The ability of a product to tap into emotions and evoke feelings. Where the previous level focussed on problem solving, this level looks enhance this with positive feelings. The first step towards creating experiences and memories.

Interaction

Using interactions that are designed around the emotional aspects of a product, that create awareness of its emotional value. These interactions are about linking form and function, but also about how the interactions fit in the context of everyday activity and rituals. The interactions act as a bridge between the more cognitively subconscious activity going on during product use, and the conscious reflection that is needed for stories to form.

Story

The creation of stories around product is the final step towards keep-worthy design.

7

GOOD DESIGN

Good design?

What is good design? Taking inspiration from existing literature on the topic, there seems to be a great many opinions. Some based on scientific method, others on anecdotal evidence and experience. Some of the more (in)famous principles of good design are those described by Don Norman (Norman, 2013), Dieter Rams (Rams, 2009). None of these principles are entirely right or wrong, instead they take certain stances on the priorities and intentions of design. One places emphasis on pure usability, the other throws aesthetics into the mix. Similar reasoning can be applied to the principles of good design described here. The framework champions story and interaction as drivers of keep-worthiness. The principles of good design within the framework may not be universally applicable - they are not any better than the existing literature - but they prioritise the aspects of design that enable story creation.

principle I - values

User values in terms of what we believe to be important and virtuous, as apposed to a measure of worth, are the founding principles of making design decisions for keep-worthiness. The values we hold determine our perception of products appropriateness and usefulness. They set the bar as to what is expected from a product, how it should behave, and how it reflects the user in the eyes of others. Values can be placed on a continuum between those held individually and those held collectively. Collective values are those held up by a group, a community, or entire nations. The most extreme example would be that of cultural norms, and the understanding of what it means to be cultured. These are the most extrinsic form of value that influence a product owner's perceptions, and the hardest ones to change as a designer. Individual values are, as the term implies, more personal. These are distinct between users, and define their preferences intrinsically. There can be conflict between personal and collective values, sometimes intentionally rebellious.

Collective

Individual
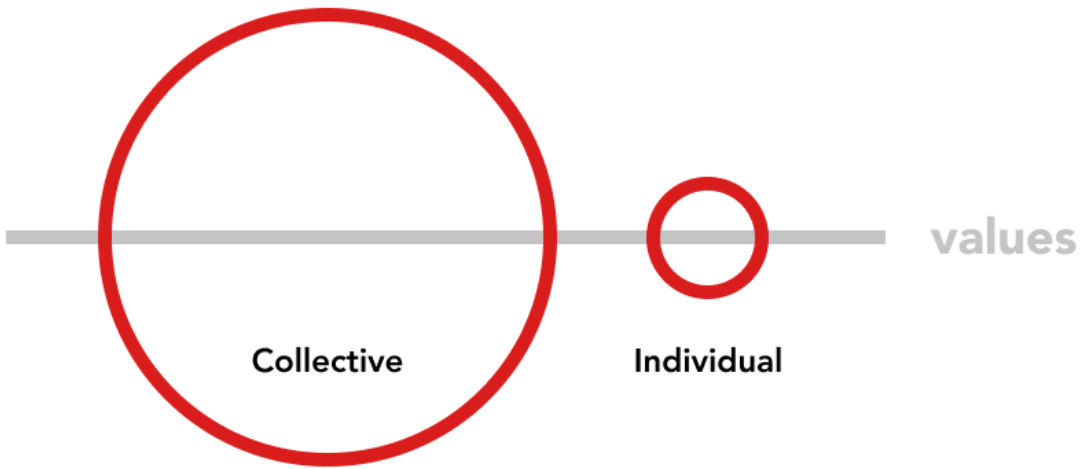
values

Taking an avid fountain pen collector as an example, it is possible to see the various forms of values that have an impact on the collectors preferences in pens. Universally, there is an expectation of what a fountain pen is, how it looks like, and when it is appropriate to use. The notion of owning a fountain pen also brings with it certain preconceptions of the owner. These collectively held values will need to be accepted by the collector, or possibly even adapted to, for fountain pens to be a desirous possession to have. Here the question of what it means to own a fountain pen can be asked.

Taking a step closer to individual values, there are likely sub categories of fountain pens with their own communities holding up their own believes. One group may be motivated by elegant cases and extravagant looks, the other may prioritise ink flow and feel provided by the nib. For each of these groups, the interpretation of good design in fountain pens will differ. Here the question of relevance is what makes a good fountain pen.

On an individual level, the collector will have a set of values unique to them. Based on experiences, or as an inspiration from various heard opinions trickling down into a personal assessment, these values are held intrinsically and are most specific. Examples include colour preferences, writing fluidity, or even the smell of the pen case plastic. Being very personal, these values are often most influential in the collectors perception of good fountain pen design. Here the question one might ask is what do you look for in a fountain pen.

A key take away here is that the perception of good design is subjective, influenced partially by external norms and customs on the one side and personal preferences on the other. For a design to be perceived as good it must be guided by these values, and in some cases, challenge them to novel grounds. To help understand more concretely how values can guide design decisions, three mechanism are presented here: categorical perception (Vanderbilt, 2016), contextual taste (ibid), and familiarity and novelty.

categorical perception

Categorical perception is the human tendency to group objects according to perceived similarities, even if such similarities may not be present (Fugate, 2013). This behaviour can be recognised when looking at a rainbow, it is common to see and describe it as individual bands of colours, rather than a continuous spectrum of light from violet to red.

The categorisation of objects can skew the perception of how similar, or dissimilar objects are. Objects that may have otherwise seemed similar are judged to be more dissimilar when placed in different categories (Vanderbilt, 2016). A song categorised as *metal* will be held up to the standards of that genre, as well as all the associations that come with it. Even if the song is more similar to the edge cases of a neighbouring genre than *metal*, the affect of categorical perception will create an impression of dissimilarity.

In respect to good design, the values and beliefs through which users judge products are partially upheld by the categories they are placed in. Knowing this the designer can guide the design to fit these values, or in some cases, identify ways to challenge the established categories of products. When designing a wrist watch, designers may face categories such

as sophisticated and elegant mechanical watches, or sporty and robust digital watches. Understanding that users will place a new design among these two categories, the designer can select product features to match the desired category. The product will then uphold the values of that category, at least in the eyes of the user.

By example, a sporty and robust digital watch will be judged according to that, how sporty and robust it is. A digital watch that is elegant rather than suddenly falls between the cracks. As a digital watch it may be judged according to its robustness, doing its elegance no justice.

Having a greater variety of categories to asses a product with increases the chance of enjoying a product. Vanderbilt (2016) uses the example of beer and its many different classifications. Someone who can distinguish between these categories (pilsner, IPA, porter, etc) understands what to enjoy and look for in the various beers. Someone who perceives all beer as one and the same will potentially miss out on this experience.

contextual taste

Contextual taste refers to the environment of an object impacting how it is valued (Vanderbilt, 2016). As an example, an average cup of coffee may be perceived as good when bought at a road side gas station, but terrible when bought from a city centre cafe. At the end of the day, the gas station coffee will have caused much greater joy than the disappointment at the cafe. It may only be gas-station coffee, but it is really good for gas station coffee. The context establishes certain expectations which can be exploited to improve the value perception of a design.

When combined with the notion of categorical perception, contextual taste plays a role within categories too. Looking back at the example of designing a wrist watches, we can assume that elegant mechanical watches will be valued higher than sports watches. In the same way that the average coffee from a gas station gives the impression of being good, a good sports watch can b

ring greater joy than a bad mechanical watch. Despite being part of a product category valued lower than the mechanical watch, a good sports watch benefits from contextual taste.

coffee | **contextual expectation**
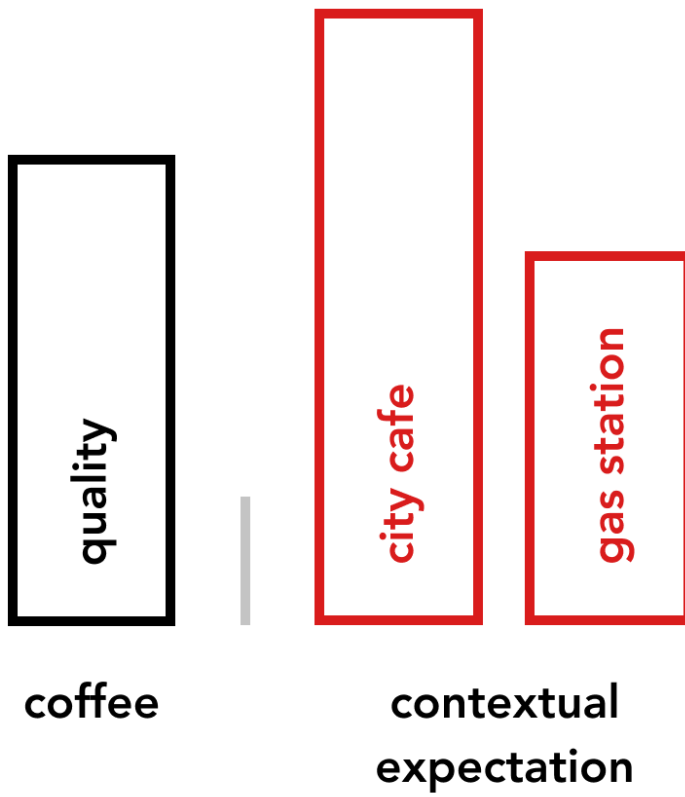
familiarity and novelty

Finally, values help designers make the trade off between familiarity and novelty. Scholarly articles have had trouble identifying a universal rule on whether humans prefer familiar or novel situations (Liao et. al., 2011), finding it to be context dependent. Pop science writer Vanderbilt (2016) describes an internal regulatory thermostat that eventually forces us to become tired of the familiar and move on to find novel experiences (Beck, 2016). This is based on the idea that humans instinctually prefer the easy and understandable, rather than expend energy trying something new. Vanderbilt's theory can be used to guide design, framing novel product features within old familiar designs. Something old with something new.

principle II - utility

Utility is the aspect of design that focusses on problem solving. Judging design through the lens of utility is judging how efficiently it identifies and solves a design challenge. This means the product must target relevant issues faced by the user, as well as actually solve said issue, whilst being intuitive and easy to use. This notion of solving the right problem lies at the heart of almost all design processes, a selection of which is used here to explain utility.

It is worth noting that utility and emotion are seen as somewhat inseparable in modern design. How utile a design is impacts the emotions it evokes, and the emotions experienced using a product influence how utile it is. Nevertheless, there is a distinction between the two, and design without purpose is not design, even if it stirs up emotion. Utility is therefore seen as the preliminary principle to designing emotion.

A current staple in design processes is the double diamond process (Ball, 2019). Whilst under rightful criticism of being too linear, the process does establishes a clear pathway to making utile design. More importantly it demonstrates the two requirements for utile design by distinguishing two phases within the process. The first phase focusses on creating a design brief, illustrating the need to understand the context at hand and its underlying architecture of problems. The second phase takes this design brief and evolves it into a usable product solution.

In creating an accurate design brief, designers need to understand the needs if their users and the context of use. These needs are partially user value based, hence the first principle in this framework being values. The human-centred design process also encapsulates exploring user needs and values (ISO, 2019).

Besides a proper design brief, the functionality of the designed solution needs to be conveyed to the user. This is where the usability aspect of utility falls into place. Again there is abundant research on this topic, but many stem from Gibon's affordances (1977) and how the action possibilities within are communicated to the user. Krippendorff and Butter's (1984) product semantics explore how product form can convey these action possibilities to encourage intended interactions. Conveying action possibilities, mapping action with function, and constraining unwanted interaction are part of Norman's (2013) seven design principles that further elaborate on usability.

In light of designing for keep-worthiness, there is one additional point of attention. Utility focusses on creating usable product features, turning them into pleasurable experiences is a thought for the next design principle: emotion. However, to be able to create pleasurable experiences the product cannot propagate negative feelings. Negative impressions greatly hinder, if not completely deter, pleasurable experiences (Sheldon et. al., 2001). For keep-worthiness, utility does not only ensure the product is relevant in solving problems, but also to ensure interaction with the product does not lead to friction and irritation.

principle III - emotion

Emotion in good design is about creating pleasurable experiences in product use. The power of emotion is often overlooked, yet it plays a key role in users assigning value to a product. Whilst analysing the utility of products can be attributed to logic and reasoning, emotion is used for value judgement. It gives a sense of what is important and what is not. A logically better decision can be overruled by one with better emotional merit.

As with the previous principle of utility, emotion is a huge field within design. There is a wide variety of frameworks, models, and definitions on the matter. Leading theories are combined here to create a coherent interpretation of using emotion in the hunt for keep-worthiness.

Emotions are shaped by the characteristics of a user - their values - and those of the product (Desmet & Hekkert, 2007). The context of use also plays a role here, contextual taste being an example of this. The emotional impact of product characteristics will be defined by the users values and the influence context has over feelings. The range of these feelings and emotions is far reaching, to cover the variations several 'wheels of emotion' exist. Most notable is Plutchik (2001) that covers 8 basic emotional states.
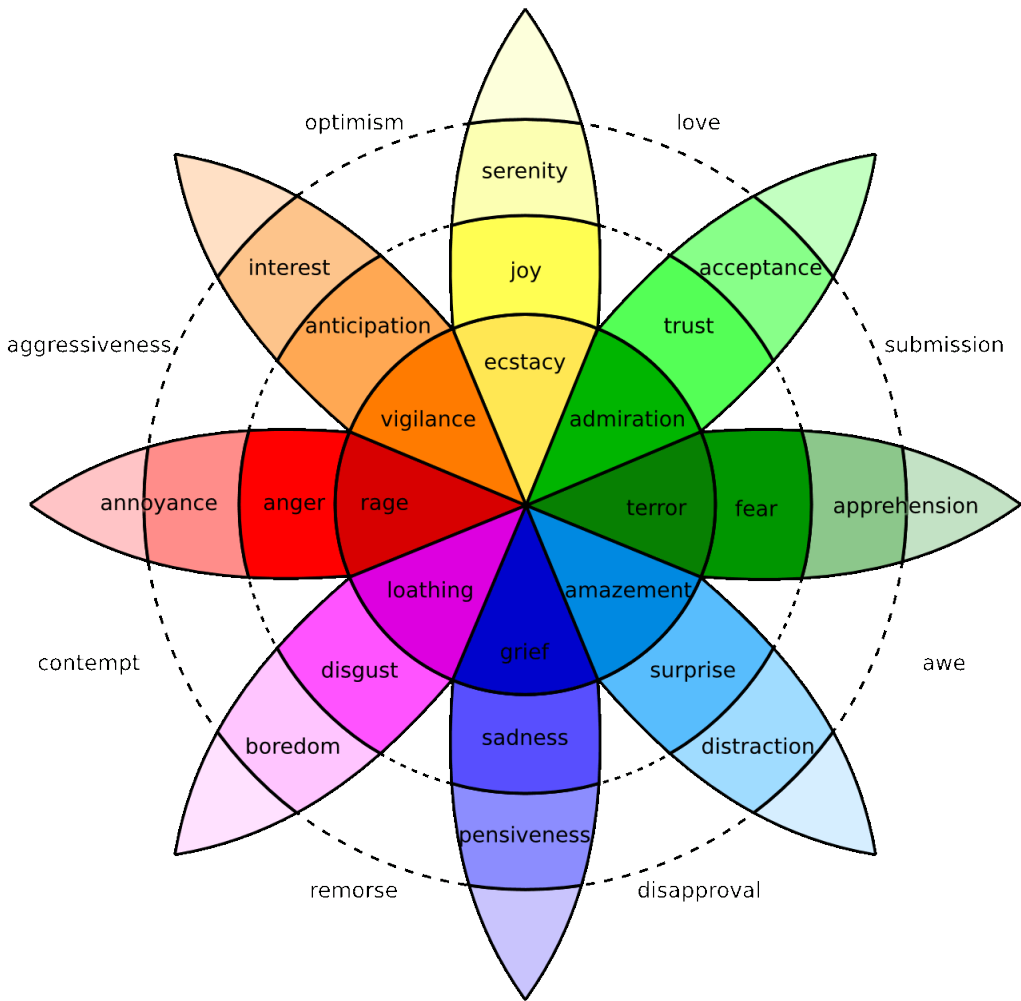
Fig. 4 Plutchik's wheel of emotions (2001)
via wikicommons

According to Desmet and Hekkert (2007), these emotions can manifest themselves in three ways: (1) aesthetic experience, (2) experience of meaning, and (3) emotional experience. Aesthetic experiences are those related to moments of joy through sensory inputs. Emotional experience is the instinctual emotional response that occurs during events of product use. Experience of meaning occurs through semantic interpretation and symbolic association (Crilly et. al., 2004) - finding relatability in the values user's perceive to be embodied by a product.

Norman's (2004) model of emotional design takes a different route on describing the elicitation of emotions through design. The model describes emotional processing to be visceral, behavioural, or reflective. The important contribution of this model is that it emphasises emotional processing to be both conscious and subconscious. Visceral and behavioural processes are subconscious, reflective process are conscious. The subconscious processes, since they are instinctive, play a large role during use and in creating initial impressions. Reflective processing of emotions, being cognitive and so much slower then its counterparts, is stronger after product use. When reflecting upon action is when we assign value to

a product, when we become aware of the feelings bought up by the subconscious processes. Reflective processing is also the stage for creating memories and stories.

Looking at emotion to be more purpose driven, Hassenzahl (2007) delineates the effect of hedonic and pragmatic needs. Pragmatic needs occur when a user is looking to complete a goal oriented task whilst hedonic needs are related to finding joy in product use. Complimenting these needs are *act* and s*elf* products respectively (Hassenzahl, 2018). Act products are linked to the users behavioural goals and their value depends on the importance of the goal. The need for these products seizes to exist when the goal is no longer relevant. Self products are linked to the user's values and self identity, and reflect Desmet and Hekkert's (2007) *experience of meaning* described above. The value of self products is inherently more stable, since it requires a change in the user's self image to falter.

Bringing this all together in the interest of keep-worthiness. Stories and memories are generated through the conscious *reflective* processing of emotions. This phenomena occurs most strongly in so called *self* products - products that resonate with a user's values. By embodying the user's values, the product creates an *experience of meaning*.

This is not to disregard the more subconscious processes that lead to *aesthetic* and *emotional experiences*. Visceral and behavioural processes may not lead directly to story, but the raw emotions they generate influence the assigning of value during the reflective process (Norman, 2004). In fact, the ability of *aesthetic* experiences to generate meaning and reflection is the footing for the role of interaction in this framework.

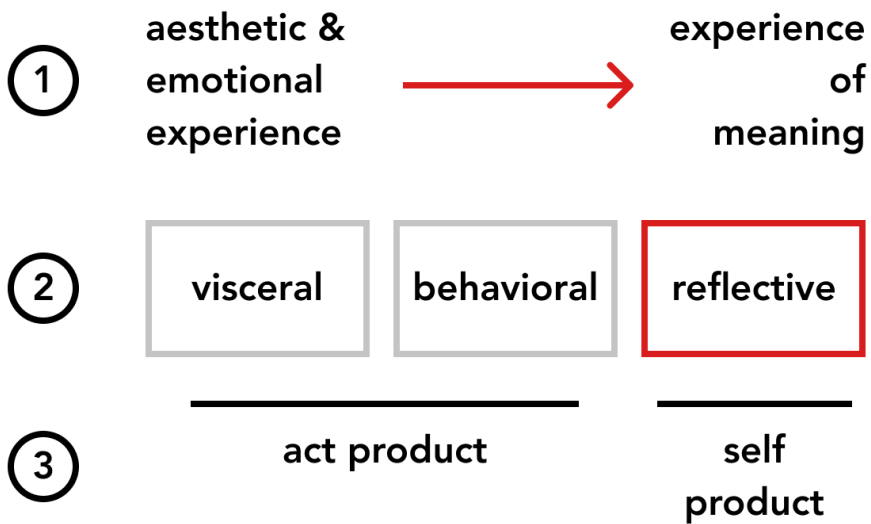|			
①	aesthetic & emotional experience	⟶	experience of meaning
②	visceral	behavioral	reflective
③	act product		self product

Fig. 5 summary of emotion theory

    1 - Desmet and Hekkert (2007)

    2 - Norman (2004)

    3 - Hassenzahl (2007)

8

EVERYDAY LIFE

the everyday

Everyday life is the stage of use for all products, it is where memories form, and stories are made. For such an important aspect of design, it is astonishing that theoretical works on the matter are scarce when it comes to products. This may be because pin pointing what exactly everyday life is, what it entails beyond a recursive definition, is a challenge. Yet, everyday life is where our products become keep-worthy. As a context for keep-worthiness in the making, it is of interest to understand the composition of everyday life.

Everyday life is banal and repetitive, we have habitual ways of going about our tasks and leisure activities. This notion of repeated activity is captured by Levy (2015) who introduced the concept of routines and rituals in the lens of everyday life. Levi argues that rituals and routines make up our everyday life, from our morning hygiene habits, to making coffee, or tying ones shoe laces.

awaken

alarm clock
curtain
slippers

make coffee

coffee grinder
view through window
mug

get dressed

favourite tie
dirty shirt

ritual:

"an established
series of events,
actions and
activities from
which experiential
meaning emerges,
and by which
personal values
are expressed"

- (Levy, 2015)

the passing
of time

rituals

Rituals are "an established series of events, actions and activities from which experiential meaning emerges, and by which personal values are expressed" (Levy, 2015). Rituals distinguish themselves from routines due to the value placed on them and the focus required for completion (ibid). For example, the ritual of cooking requires focus and the activity is engages its undertakers, as apposed to the routine of preparing microwave meals, which requires little effort and is unlikely to be the highlight of anyones day. This also differentiates how routines and rituals are judged by their undertaker. Routines, being a means to an end, are appreciated for being as efficient as possible. In contrast, rituals are amiable for the experience they conjure, where the ultimate goal of the ritual is just as important as the means of getting there. It is thus "the beauty of the process that leads to the result, and the result itself" that are of importance to rituals (Levy, 2018).

Rituals & Emotions

Routines and rituals overlap with Hassenzahl's (2018) notion of act and self products respectively, found under the emotional principle of good design. Rituals express the individual and cultural values, effecting participants and how they engage with the ritual (Rozendaal et al., 2009) in the same way that self products engage a user's values and self identity. Routines are goal oriented in the same way that act products are emotional valuable for reaching behavioural goals. Once the goal disappears, so does the need for the routine.
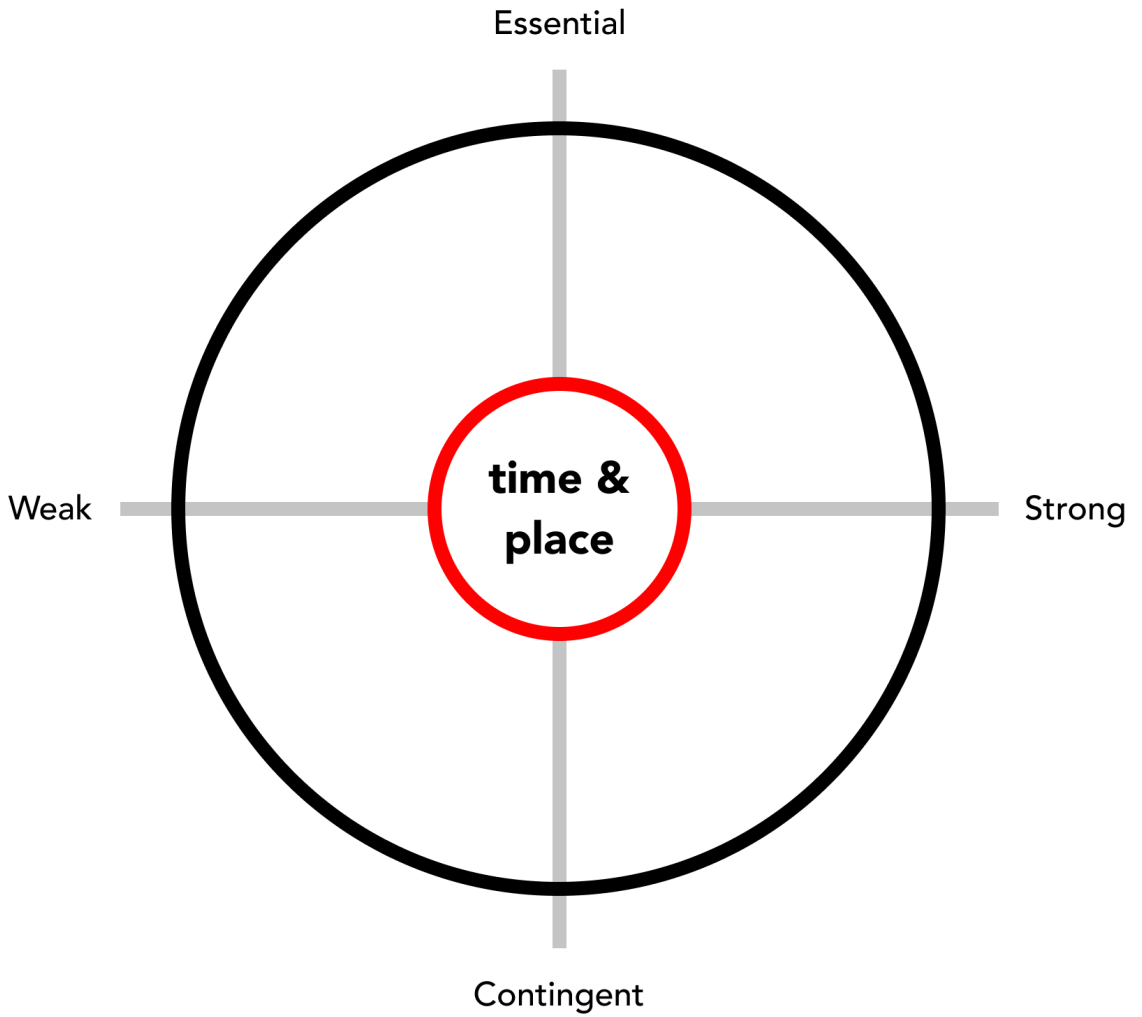
Fig. 6 Visualisation of Levy's
ritual framework (2018)

A framework exists explaining the interplay between the various elements of a ritual (Levy, 2018). This framework helps the designer define the context, identifying which elements can be changed, and which must remain untouched. It is important to note that elements within a ritual do not limit themselves to physical items, but also to the actions and (social) interactions that occur.

Place and time

Rituals are time and place dependent. Place defines both the location as well as what is present within that location that supports the ritual. The ritual of making coffee is limited to occur in the kitchen, where the coffee, french press, kettle and other necessary equipment is stored. Non material properties related to location also play a role, such as the view out window whilst making coffee, the sound of morning rush our, or conversation with a partner. Time defines how the ritual is nested within the everyday. Defining what activities, routines, and rituals occur before and after the making of coffee. The coinciding of place and time is responsible for the trigger of a ritual. Walking into the kitchen after a morning shower and before preparing breakfast is the trigger for making coffee.

In short, the elements in a ritual, whether essential, contingent, strong or weak, are derived from the place and time in which the ritual occurs.

Essential and contingent elements

Essential elements of a ritual are those whose presence is required for the ritual to occur. When brewing tea, this includes the tea, tea egg, kettle, and mug. Without these elements it would be impossible to conduct the ritual of tea brewing. Contingent items are elements whose absence would not deteriorate the value of the experience, and the ritual would stay intact without them. In the case of tea, this may be a timer to measure brewing time, or the addition of milk. The classification of elements is highly personal. For example, for some tea brewers, the adding of milk to tea may be essential to the routine, and tea without milk may not be considered tea at all.

Strong and weak elements

This defines the emotional impact of the elements. Strong elements have emotional value within a ritual. When making tea, the exact tea mug used may be a strong element, drinking tea with a different mug may keep the ritual intact, but the emotional value of the ritual and drinking the tea drops. Weak elements on the other hand are more easily swapped due to their lower emotional value. The brand of tea, or shape of tea egg may fall under this category. Change in these elements may not even be noticed by the user in the case of very weak elements.

Note that it is possible for a weak element to be essential, or a strong element to be contingent. It may be essential to have milk present in a tea brewing routine, but if the type of milk has no impact on the routine whatsoever, it is a weak but essential element.

salience and flatness

Rituals are sustained by their psychological salience (Schelling, 1980), having noticeably unique properties to those involved (Coyne & Mathers, 2011). The order of activities and the objects used are rigid due to path dependence, and the attributed values and identity represented by it.

A rituals psychological salience and rigidness are properties of interest in creating keep-worthy design. The unique properties of a ritual are so because they are shaped by the user. A designer can create interaction that hint at a certain order of actions, but it is the user that embeds these into the context of their environment and everyday life, making them unique. It is here where the values of a design are given a place. It is also here where the designer has a degree of influence, making sure that product features make for psychological salience in the ritual.

To understand salience, it is necessary to understand the forces that appose it. Whilst using a product in everyday routines makes advances towards keep-worthiness, the banality of the everyday also risks to wear away at its salience. Levy (2019) refers to this as a product becoming *flat*. To explain this, he uses the example of a smartphone.

A well designed smartphone, when first entering our lives, is appreciated for the functionality and services it brings with it. It is new and unfamiliar, providing the incentive to explore the unexpected possibilities and features it provides. However, over time, the unfamiliar becomes familiar, the new becomes banal, and the phone fades into the background of the everyday routines it is part of. The phone looses it's ability to stand out and be noticed, it is no loner the product that brings salience to a routine.

In the example of the smartphone, or any objects with a certain amount of intelligence and automation to them, there is an additional aspect to *flatness* to consider. Such products are able to remove some of the burden of operation, completing tasks without the user needing to pay attention to them. Music can be streamed, coffee can be ground and brewed automatically, lights can be dimmed according to time of day, all without user intervention. This decreases salience even further, the product further fades into the background of everyday life, becoming more invisible.

salience or flatness

In the lens of good design, invisibility (Rams, 2009) and familiarity (Levy, 2019) is often desirable, but it may come at the cost flatness, psychological salience, and ultimately keep-worthiness. This is where literature on rituals reaches an inconsistency. Products must be familiar to be adopted by the users into their everyday life. A product that is always unfamiliar, that cannot be quotidianised (Levy, 2019), will not fit within the everyday. Yet at the same time a product must have elements seem unfamiliar, to keep the user's interest and remain a noticeable component of a ritual.

Ultimately, it is the task of the designer to time moment's of salience and unfamiliarity to appear at the appropriate moment in a familiar ritual. These moments of salience can be characterised as interactions that entice the user to either explore new possibilities, or require a degree of practice, competence and concentration. This can be achieved by designing for interaction that engages the user to *reflect-in-action*. Designing interactions, that through their salience, make the user aware of the product and its 'good' design. The awareness and reflection bought about by these interactions is what makes the product noticeable in a ritual, and eventually, what cements its place in memories and stories.

Fig. 7 the moka pot: fits the banality of the everyday coffee ritual whilst simultaneously offering moments of salience (smell and sound during use) and exploration towards making the perfect brew.
Via unsplash.

interaction in rituals

Having learned that routines are the most favourable components in everyday life for story development, the question is how to involve designs in these routines. Levy's (2018) breakdown of routines shows that 'strong' elements are those most valued by the ritual undertaker. Due to their higher value, products representing strong elements are an excellent starting point for designers aiming to create keep-worthy products. It also highlights the importance of constructing a ritual, rather than a routine, around a product.

ritual

story

interaction
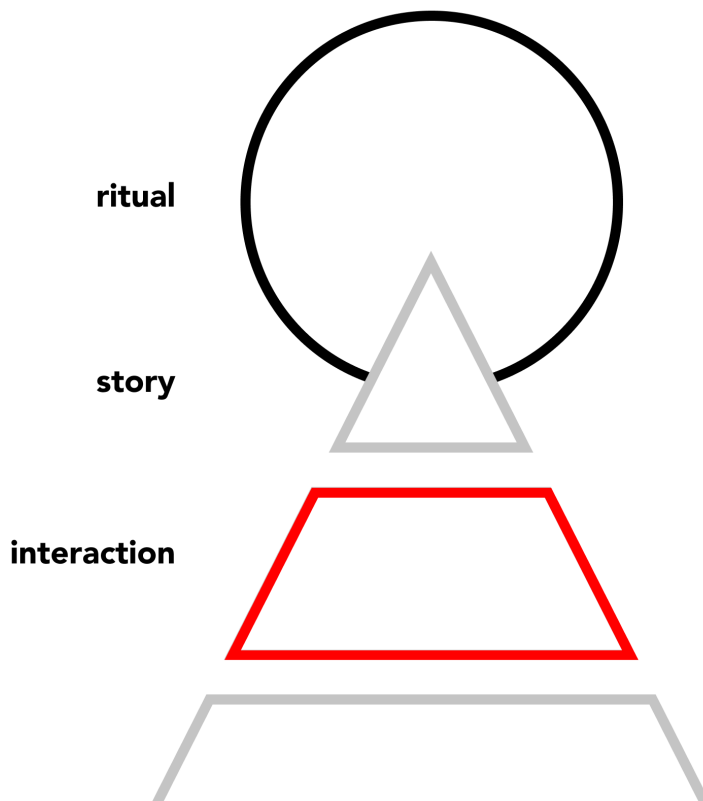
Salience and the resulting reflection thereof are crucial in moving an item from the banality of the everyday into the stories we construct. Salience is also an implied component of 'strong' elements. This means a product cannot be 'flat', and this shifts focus from a products purpose within a routine, to its ability to remain interesting through time. A shift of focus from looking at purely 'good design' to that of experiences generated by a product. Previous research (Lévy & Wakabayashi, 2008; Rozendaal et al., 2008) shows that the involvement of senses and of skills, the possibility of choices, and the social dimension impacts, as well as the qualities of the result of the artefacts impacts the experienced quality of the ritual. Senses, skills, social dimensions are all manifested through interaction, and this leads to the final component of the framework: interaction as a bridge between good design and the everyday life.

9

GOOD DESIGN IN EVERYDAY LIFE

the role of interaction

So far, we have described what is seen as 'good design' in the lens of keep-worthiness. We have also seen how story is the driving force behind keep-worthiness, being responsible for the sentimental value held by our favourite things. Lastly, we have seen how our everyday life acts as the stage for story creation. Everyday life being where our routines and rituals play out, and form the experiences on which our stories are based. What remains untold is how the products we design can become central to these rituals and experiences. How can products elevate the experience of a ritual to have a noteworthy presence in the users everyday life. How can we bridge the gap between products that follow all the notions of 'good design' and the hustle and bustle of the day to day.

It is probably not surprising that the answer lies in interaction between products and users. Interaction lies at the heart of experiences, conveying the values of a product for user operation. However, because interaction is often seen as the vehicle of functional value, interactions are focussed on being efficient, intuitive, and quick. This overlooks how interaction can form experiences beyond convenience. It negates how interaction can also be a vehicle of emotional value, and that the very design of the interaction itself

embodies user values and ideals. Looking at literature on rituals alone, we see how the involvement of senses, skills, choices, and social dimensions impact the quality of the experience (Lévy & Wakabayashi, 2008).

This is not to say that the sole purpose of a design should be emotional value. Rituals are judged for both the quality of the results they bring about as well as the quality of the ritual experience (Rozendaal et al., 2008). However, in the context of this framework for keep-worthy design, it is assumed that the utilitarian aspect of interaction is covered within the principles of 'good design'. The purpose of exploring interaction design here is to digress past practicality, and observe how interactions can engage users in the everyday for story making potential.

interaction and reflection

For interaction to shift from a practical paradigm to that of keep-worthiness, the focus needs to shift from pure usability to meaningful action. Meaningful action being interaction that provokes the following reflection in and on action. Terms borrowed from Schon's (1984) model of reflection in epistemology.

reflection in action: Occurs simultaneously to the (inter)action. It is the thought processes that allows us to analyse and adapt to a situation in real time. It is where we plan our next steps, when we think on our feet, going through plausible approaches to handle a situation. Reflection in action is often bought about by surprise, puzzlement, or confusion, forcing the user to figure out why things did not go as expected. It allows the user to test their assumptions and existing mental models, adapting these as necessary.

reflection on action: Occurs in retrospect to the (inter) action. It allows for the ordering and analysing of events, assessing why we behaved the way we did. It is where information turns into knowledge as we link the dots between what occurred during the action with why they did. In reflecting on action, we become aware of elements that influenced our behaviour that otherwise remained outside our (situational) awareness during an action.

task at
hand

step 1

relfect

step 2

in-action

relfect

step 3

relfect

on-action

passing of
time
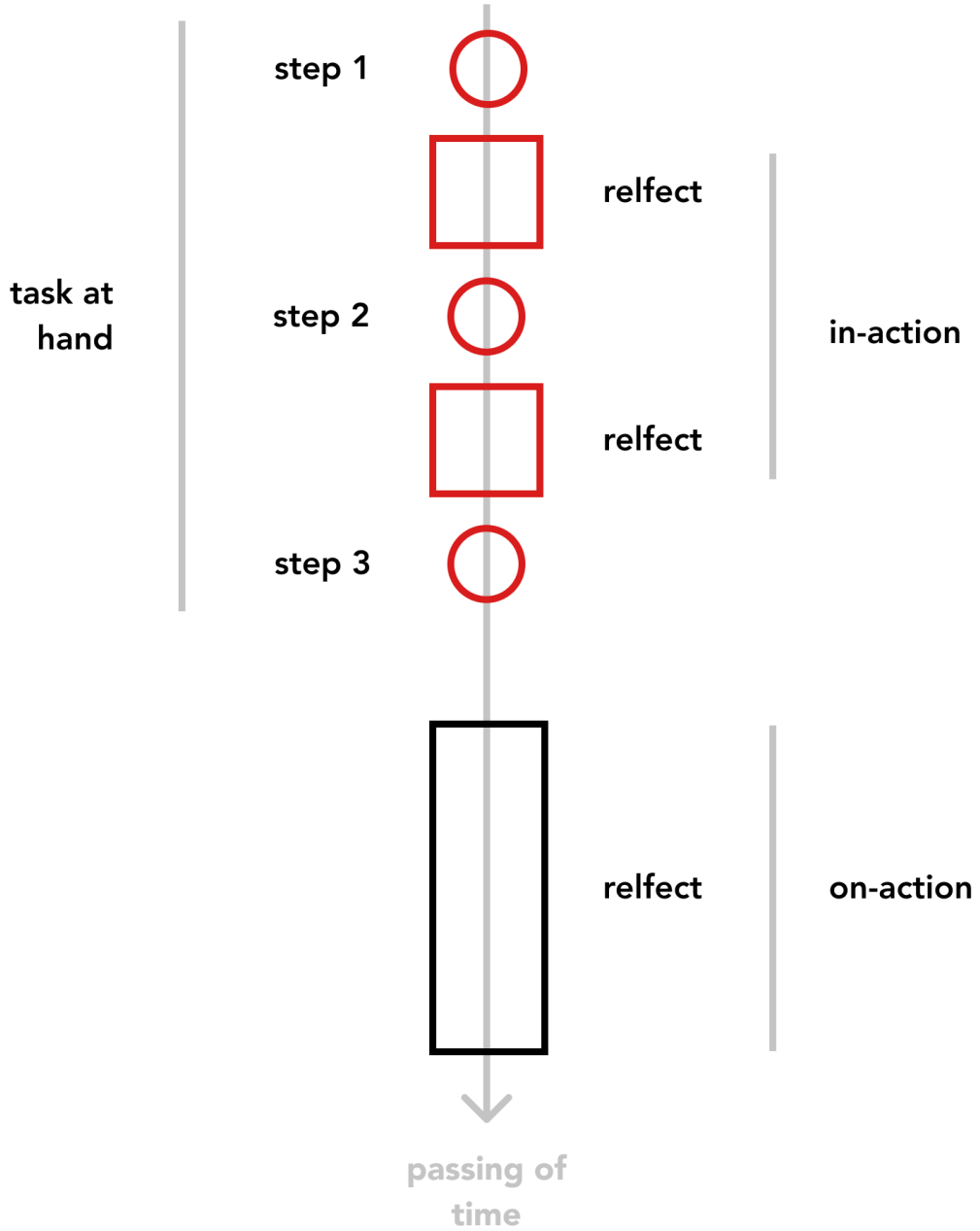
These terms are borrowed from epistemology, they are intended to describe how professionals learn. So how do they match up with design and keep-worthiness? Through reflection we become aware of our experiences and their causes. Referring back to Norman's (2004) model of emotion in design, it is during reflection that we assign value to an item, and ground our reasoning for the assignment of value in the emotions experienced during use. Reflection is when we construct a narrative around why we like an object, where story forms. Reflection is also a sign of product salience, the requirement for a product to be a strong element in a routine, in day to day life.

Noteworthy here is that reflection follows action, not the other way around (Hummels & Overbeeke, 2010). This makes action the starting point for the making of memories, of stories, of what eventually makes an artefact keep-worthy.

In short, through reflection in and on meaningful (inter)action we assign value to an product. We deem the product keep-worthy if well designed by our judgement, developing our own personal narrative as to why this item is important in our lives. The bridge between good design and story is reflection through interaction.

meaning in action

If interaction is to encourage reflection in order for stories to form, than it must be engaging and meaningful. This means it must be more than just intuitive and easy to use. Interaction must have salience and uniqueness about it in the same way that strong elements in rituals also have salience. According to Dourish (2001), Overbeeke et. al. (2002), and by that extend Merlaeu Ponty (1996), action is inherently meaningful, inherently salient. In their context, action refers to physical bodily movement and the sensing that accompanies it. When talking about meaning in action, it refers to action leading to perception and understanding of the world around us (Merleau Ponty, 1996). If action is inherently meaningful, it's manifestation within interaction can be used to encourage reflection, and generate story.
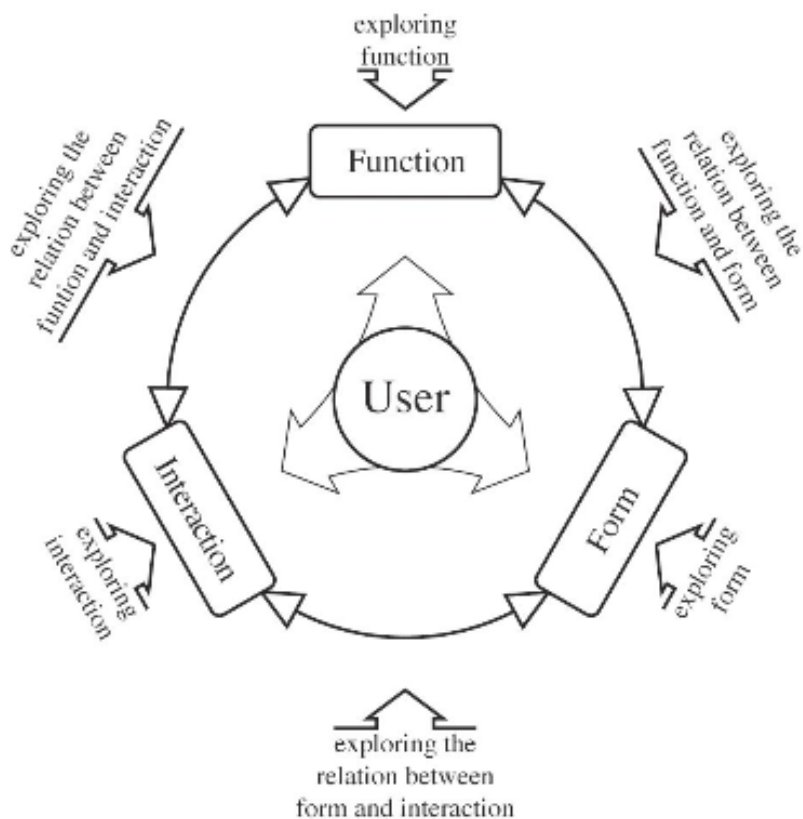
Fig. 8 the components of rich interaction, from Frens (2006)

Aesthetic Interaction

There are several frameworks that take action, as described above, as the central aspect to design interaction around. The two frameworks of interest are the theory of rich interaction (Frens, 2006) and the frogger framework (Wensveen, 2004). These frameworks herald the notion of aesthetic interaction, interaction that is pleasing to the senses (Locher et. al., 2010). Aesthetic interaction takes to heart that users are not only encouraged to use a product because it is intuitive, makes proper use of affordances, and is easy to use. It argues that "users can also be attracted to act, even irresistibly, through the expectation of beauty of interaction" (Djajadiningrat etal., 2000). In the lens of keep-worthy design, such (inter)action creates not only meaning, but pleasant experiences to reflect upon.

Rich Interaction

Rich interaction (Frens, 2006) is about the coupling between a product's form, function and interaction. It explores how each of these product aspects can be designed so they support each other. How can form reflect possible interactions? How can functions be embodied by interactions? This is the train of though rich interaction provokes in the designer. Refer to figure 8 for a visualisation of the relation between the three aspects.

These considerations are not necessarily new in design, however, their proper use seems to demising the more 'intelligent' a product becomes, as argued by Frens. This can be seen in items such as remotes, smart phones, cameras. Especially cameras are a good example, where over time the tangible levers, knobs and gears were replaced by screens. These screens became the centre of interaction with the camera, through which almost all functionality is accessed. Frens has designed a digital camera that reverses this, making sure functions each have there own dedicated interaction and related form. The camera is depicted in fig 9.
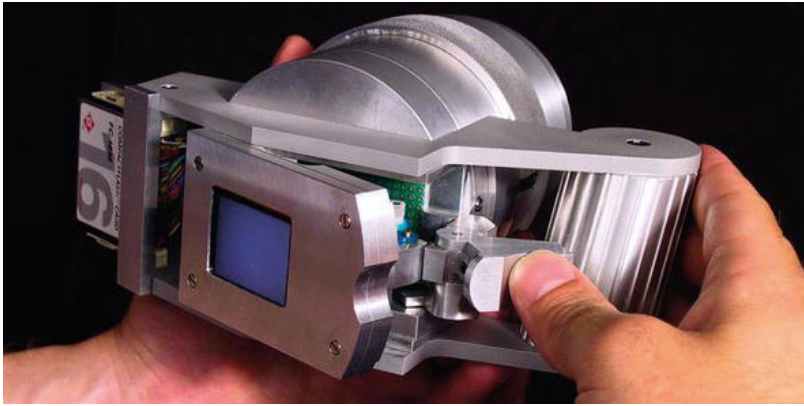
Fig. 9 Frens' (2017) digital camera based on the principles of rich interaction. Instead of having a static button as trigger, the latch to the right of the screen is pressed when taking a picture. This releases the screen from the camera, embodying the capturing of an image. The image can then be moved to permanent storage by sliding the screen towards the memory card on the left.
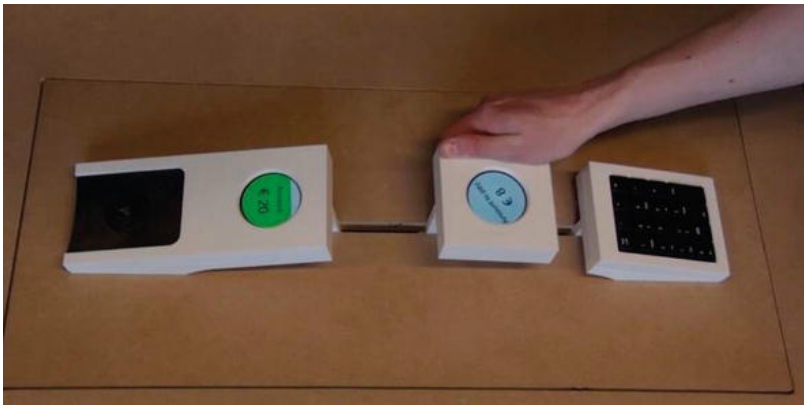
Fig. 10 A payment system that embodies the interaction of payment (Frens, 2017)

Another such example is the redesign of in store payment systems in figure 10 (Frens, 2017). Here the process of a monetary transaction has been embodied by a box that transports the payment from the client terminal to the vendor terminal. The (inter) action required to activate a payment within the product models the natural reaction one would have in everyday life: physically passing money from hand to hand.

Interaction Frogger

The frogger framework takes an alternative stand on designing for aesthetic interaction. At the centre of this framework is the notion that we base our interactions on feedback and feedforward. These can be classified as functional, augmented or inherent feedback / feedforward. The most important of these is inherent feedback / feedforward, which is the "information that is returned from acting on the action possibilities and therefore appeals primarily to the perceptual motor skills of the user" (Wensveen, 2004). An example would be the feedback provided by pushing the plunger in a coffee press: you feel the resistance of the filter as it moves along the glass wall, you observe how the plunger disappears into the lid until almost at the bottom.

the everyday

Both frameworks demonstrate how designers can aim for aesthetics in interaction. In the lens of keep-worthiness, this is a step towards salience in everyday rituals. It is also an attempt at turning routines into rituals, where the process of interacting with a product can be as satisfying as the results its functionality provides. However, whilst aesthetic interaction creates salience, it may falter in the face of time, as the novelty of the interaction wears of. There is a second element to interaction that may make up for this. So far we have looked at the how a product may facilitate interaction, however, the skills unique to each individual user are an essential part of the equation.

skills and learning

According to Norman (2004), there are two requirements for designs to provide continued pleasure. The first is the ability of the designer to create rich and meaningful experience, the second is the user's ability to recognise this richness. The user must be able to perceive the underlying value and aesthetics of an interaction to be able to enjoy it. Locher et al (2010) refer to this dimension of interaction as the *personal context*. This is "the user's cognitive structure, which contains several types of information (semantic, episodic, and strategic) acquired throughout his or her life" (ibid).

This may explain why some coffee drinkers care reverently about the specifics of their coffee making routines, understanding and being able to perform all the different forms of coffee making, whilst others 'just' want coffee no matter the crafting procedure. The avid coffee drinker has build up a repertoire of techniques, and the experience to taste the difference. It also refers back to the principle of categorical perception, where the size of one's array of categories (through which coffee can be identified) will likely increase the ability to enjoy an experience.

Ability and skill is an ambiguous term. Overbeeke (2007) finds structure by splitting up the user abilities related to interaction as perceptual-motor skill, emotional skill, cognitive skill and social skill. Designers that wish for their products interaction possibilities to be well received must adapt them to the skills of the user, or make it possible for the user to learn the required skill.

This shows how the concept of skill brings with it the need to learn. This can have both a positive and negative impact on the keep-worthiness of the product. Make an interaction too difficult to master or understand, and the negative emotions related to the difficulty are likely discourage product use. Making an interaction too easy and simple will make it banal, flat, and will likely not be aesthetic to begin with. Instead the interaction should aim to offer just enough of a challenge to involve the user.

This idea can be found in flow theory (Czikszentmihalyi, 1990). Flow is a state of pleasure derived from being completely emerged in an activity. Flow can be derived from balancing challenge and skill, as described above.

Social interaction

Now we have observed how products can procure aesthetic interaction and how the skill of the user impacts it. One final aspect remains under considered, the social side. As designers we often look at interaction as an occurrence between user and product. This negates how interaction has a social impact. The experience of interaction is not only about the user, it "is also about how what you do is experienced by someone else, and of how you know that other people are seeing and experiencing that you are experiencing something" (Dalsgaard & Hansen, 2008).

Fig. 11 boston shaker: a fairly extreme example of the social in interaction. Observers are able to enjoy seeing a user shaking a drink, as well as the user being aware that others can see the interaction.
Via prconline.

10

PROCESS

design process

Whilst a significant portion of the pyramid is grounded through theory, establishing and identifying the various levels that make up the pyramid were derived from interviews and observations. This section is devoted to the process underlying the making of the pyramid as well as the impact of the covid-19 lockdown.

Graceful ageing falls under many domains, hence the initial efforts aimed to establish a scope manageable within the thesis time frame. This consisted of preliminary literature reviews and interviews. This will be referred to as the 'exploring' phase. Here a working definition of the term graceful ageing is formed, underlying factors identified, and ends with the forming of early hypothesis.

The early hypothesis of the 'exploring' phase would have been used to build various prototypes. This approach follows the notion of *research through design.* Research through design is an approach to design problems that emphasises the act of making and prototyping. The belief is that design is about making, and so research within the field should occur through the same hands on approach. By making things we learn about aspects of research and design that would have otherwise remained unobservable.

Unfortunately, the covid-19 lockdown made this approach impossible. At this point a scope had been set out, early iteration of the pyramid were coming along, and ideas for prototypes were in the making. This is when the lockdown occurred and the university closed. No more access to workshops, no more making. Instead of approaching graceful ageing with research through design, existing literature would be used to compliment work up to that point. This will be referred to as the "theory" phase. An overview of the process is presentedon the following page.

defining graceful ageing

exploring factors of keep-worthiness

following product stories

develo
e

explore

early iteration pyramid

lockdown

literature researh
to validate pyramid

trialing
pyramid with designers

theory

Exploring

The initial phase, dedicated to exploring the field of graceful ageing. Interviews with participants talking about their prized possessions were conducted throughout this phase. These provided valuable input on which initial hypothesis were based.

defining graceful ageing

To create a solid base on which to build ideas, a working definition of graceful ageing was needed. By sifting through interview results, it became apparent that factors had one of two influences on the product, either on its life span, or on its keep-worthiness.

factors of keep-worthiness

Based on the definition of graceful ageing, different design factors contributing towards graceful ageing and keep-worthiness were generated. Two versions of these factors existed, one based on the researchers personal experiences in designing, the other based on findings from the interviews. The former being used as a primer to help identify factors of interest during interviews, forming the latter list.

Interviews

Participants were asked to bring two of their favourite items. Earlier interviews asked for one long kept-prized possession, and one recently purchased item that was planned to be kept for a long time. Later interviews shifted to asking for two prized possessions, since these generated much more data.

Method

1. Ask interviewees to explain the reason for bringing their selected items, focussing on why they were prized possessions.
2. Whilst participants are explaining their reasoning, factors specific to their explanation were noted down on post-it notes. Examples of such factors are 'birthday gift', 'works well', 'gives safe feeling'.
3. Upon completion of interview, ask participant to verify content of post it notes.
4. Ask interviewees to select three most important factors.

Summaries of the participant's stories as well as the ranked factors can be found in the appendix.

The factors identified during interviews were grouped together to form categories. For example, factors along the lines of 'pretty', 'good colour', or 'nice to look at' were grouped under the category of 'aesthetics'. These result of this grouping can be seen in fig 12.

product stories

The fluency with which interview participants procured stories about their belongings became noticeable after several interviews. This sparked the idea of story as the driver of keep-worthiness. Stories about products were often a reflection of user values. Stories about products were stories about the users themselves.

early pyramid

Knowing story to be the driver of keep-worthiness, steps towards understanding how a product could generate narratives were made. This involved looking at the factors of keep-worthiness identified during the interviews, and assuming the perquisites to story making were to be found there. This lead to hypothesising about the priority of each perquisite in order to create story.

unique - 14

memories - 11

history - 4

story

↑ reflection &
interaction

aesthetics - 14

material - 5

emotion

quality - 18

useful - 14

versatile - 5

reliable - 4

practical - 7

utility

values - 8

personalized - 3
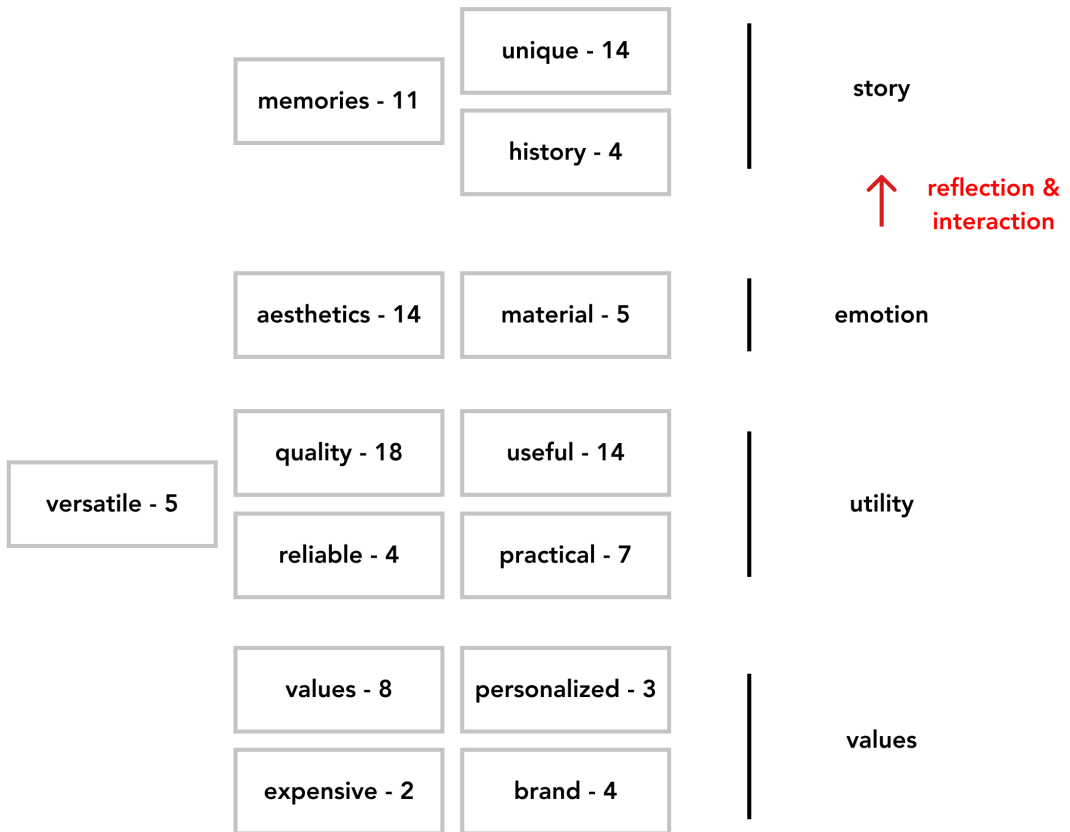
expensive - 2

brand - 4

values

Fig. 12 Clustering factors of keep-worthiness according to there similarity and the levels of the pyramid. The numbers represent how many factors are represented per category.

the everyday

The prospect of story generation added the prospect of time to the formula of keep-worthiness. Stories appear over time, as the result of use and the formation of memories. This pointed towards the context of the everyday, a context that involves the passing of time. This kick started the search for how to define the everyday, and how it impacted the pyramid.
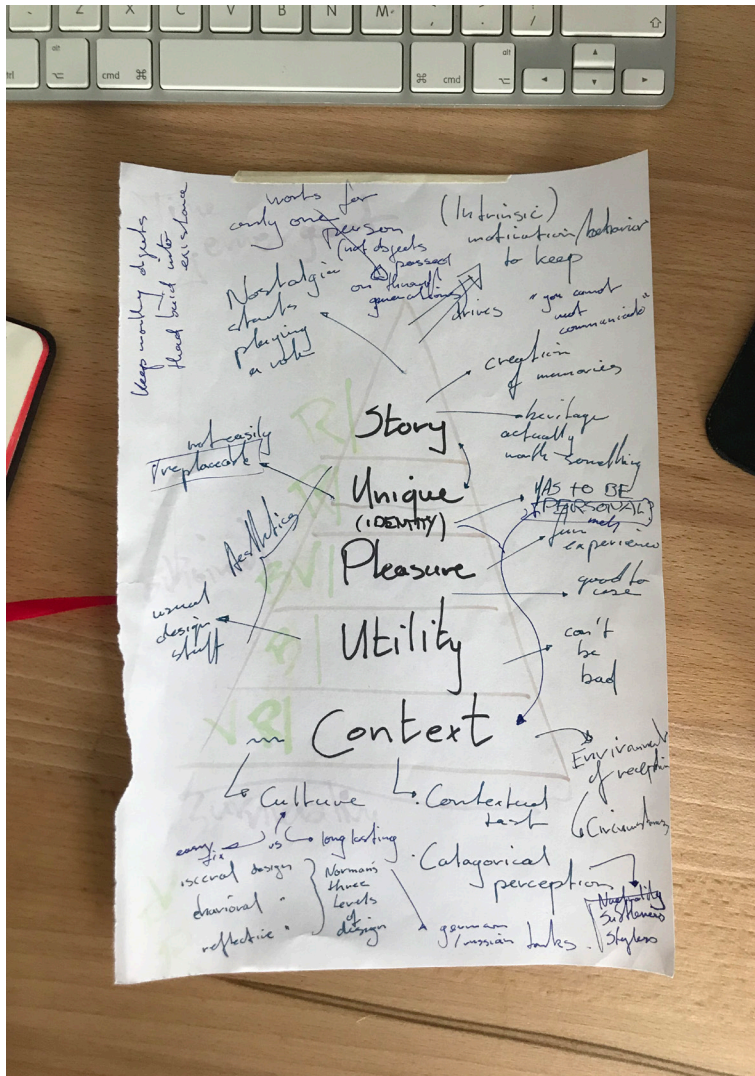
literature

Originally, the making of prototypes that exhibited features from the early pyramid would have been the next step. At the time the items under consideration included alarm clocks and remote controls (a bit of a cliche, but cliche for a reason). These prototypes would have been of fairly low fidelity, focussing mostly on demoing the various levels within the pyramid. The designing and making of concepts akin to these variables would have allowed for creating real world experiences, as well as placing them in front of potential users for feedback. This would have been especially useful considering the main component of the pyramid ended up being interaction and its aesthetics. These need to be experienced, and are practically impossible to convey through sketches. Unfortunately we were struck by covid-19 lockdowns.

Instead the approach shifted to looking at existing work to validate and expand the pyramid with. For each level in the pyramid, collections of related papers were found. The papers were compared with each level for similarities and differences. These inspired tweaks within the pyramid when major differences were found, or otherwise used in support of the levels. When possible, examples of real world designs were used to concretise the usually abstract theory. The result of this process is the pyramid described at the beginning of this document.

trialing

With the lockdown easing up towards the end of the thesis period, it became possible to trial the pyramid. With limited time, making physical prototypes remained out of the question. Instead, the effect of the pyramid would be tested on the workflow of designers. The purpose was to understand if the framework could be conveyed to designers through a short explanation and diagram, and whether this would impact their thinking.

Participants were given the task to design one of three items in 30 minutes. The item choice consisted of a hand held blender, a bedside alarm clock, or a french coffee press. Half the participants were offered a the framework diagram with an explanation, the other half could start as they please, without the framework. The only specification given was that the design was intended to become keep-worthy.

During the design sessions, the process undertaken by the designers was documented. The accuracy of the documentation was discussed at the end.
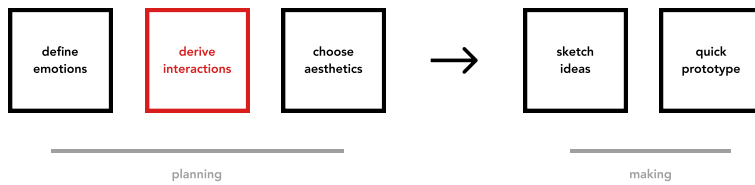
See next page for results.

Looking at the results, it is interesting to see that all designers approached the challenge in two phases. The first to explore the question, context at hand, and ideation so to make a plan of attack. The second phase is dedicated to executing their ideas, developing and making their ideas.

A distinction between the groups is the time at which interaction is considered. Those working with the framework at hand were more likely to include interaction during their ideation. Those without the framework left it till the end, often preferring to focus on form and functions first.

In this sense, the group without the framework appears to be working towards the various notions of 'good design' - values, utility, and to some extend, emotion. The group with the framework considers how the interactions could fit the flow of everyday life. Whilst the sample of participants is small, it indicates the framework brings interaction to the attention of the designer. It is, however, difficult to tell if this includes the aesthetics of interaction.

Designing with Framework

Case 1 - alarm clock

define emotions	derive interactions	choose aesthetics	→	sketch ideas	quick prototype

planning · making

Case 2 - alarm clock

look at existing designs	personal experiences	define emotions	→	design interactions	sketch ideas

planning · making

Case 3 - alarm clock

explore problems	derive solution	find right interaction	→	sketch ideas

planning · making

Case 4 - french press

analyse existing design	explore problems	→	design solutions	add interactions
	explore interactions	→	redesign form	

planning · making

Designing without Framework

Case 1 - hand blender

| identify keepworthy factors | add to existing utility | → | sketch form | add interaction |

planning   making

Case 2 - alarm clock

| look at existing designs | look at existing aesthetics | → | sketch form | add interactions |

planning   making

Case 3 - all three

explore utility

| identify keepworthy factors | explore aesthetics and matearial | → | describe required features |

explore survivability

planning   making

11
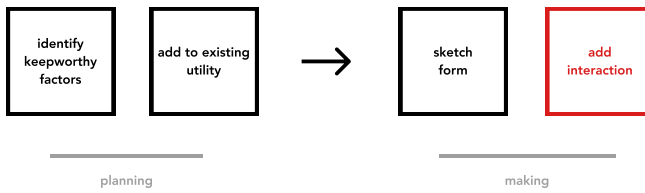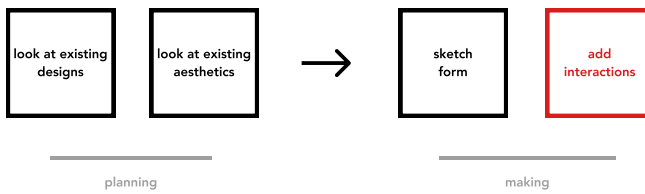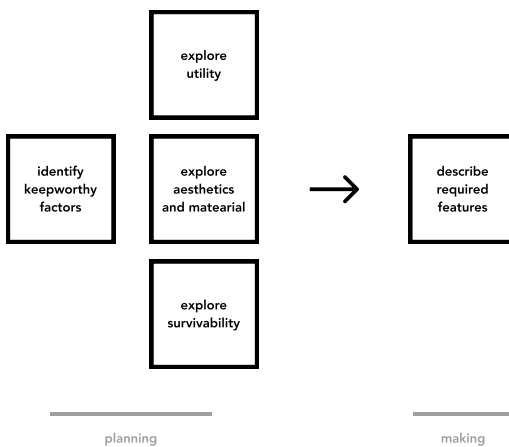
DISCUSSION AND REFLECTION

As with any theory, there are points of discussion, and the pyramid described in this document is no exception. Below I outline these points together with personal reflections and observations.

Does everything need a story?
Story is heralded as the maker of keep-worthy products throughout this thesis. This is based on the enthusiasm with which all interviewees spoke about their favourite belongings. Not one participant struggled to express why they liked their objects. However, by asking participants to bring their most prized possessions, it is possible they glossed over their belongings and only presented those most appealing to talk about. This negates items with a lesser romantic appeal. Items such as cutlery, tools, backpacks, or anything beyond the items presented to me. There may be an assortment of possessions we keep for a long time despite not having a story, kept for reasons undetected in the interviews.

It also raises another point of interest. Were participants aware of the stories epitomised by their belongings before considering them for the interview? In some cases it can be said with near certainty that participants were fully aware as to why they valued

their item. In other cases, participants admitted that by telling their stories, they reflected about their relationship with the product in ways that had not occurred to them before, and this lead to new appraisal for their belongings. One participant bought a cast iron pot which they enjoyed cooking with. They commented that more and more reasons, which were previously unobserved, came to mind as to why the pot was so special whilst talking about it.

The need to fit in
The feeling of belonging, fitting in, and relatedness are powerful motivators of behaviour. Relatedness features as one of basic psychological needs of self determination theory (White, 1959). One of my criticism of the pyramid is that the phenomena of belonging and relatedness are inadequately represented. A significant portion of the pyramid is dedicated to the relationship between user and product, very little time is spend on how these interact with social contexts. The concept of the social does reveal itself in the framework from time to time - the aspect of cultural and collective values, the social impact of aesthetic interaction, or social recognition of rituals - but remains a background aspect. Future work on graceful ageing products would need to take relatedness into account.

Second hand

Graceful ageing has been defined in the lens of keep-worthiness: the product owner wanting to keep their item. This embraces the relationship between product and the individual owner. Another way of looking at graceful ageing would be to move away from a products relationship with the individual, but instead the relationship with the collective. Products may loose their keep-worthiness in the eyes of one user, but still be valuable to another. It can be sold on to the next owner. An item doesn't have to be the possession of one individual during its entire lifespan for graceful ageing to occur, it can pass between multiple owners and live just as long.

Uncontrollable factors

Why does one individual keep there first guitar whilst the other never looks back at throwing it way? Why do some people hoard their old electronics? Why do others keep mason jars even though they have a stockpile already? Story and personal values are two very important aspects in making an item keep-worthy, but there are many more. This thesis focusses on aspects that can be explored and designed for by the designer, from their studio, from their position of influence. This negates the many other factors of influences on keep-worthiness. It negates the impact of services and maintenance infrastructures - as seen with bikes and cars. It negates the effect of pricing and marketing - one way of improving keep-worthiness may be to make consumers aware of the fact that they bought a product intended to be long-lasting. Not all answers lie in design.

closing words

In conclusion, graceful ageing appears to be an achievable state for products, one that can be designed for. Although it may not be easy, making products that spurs users to spin stories around makes a product unique. To the user, there are no other items with the same story. The framework proposed argues that this can be achieved by bridging the gap between everyday life and products through aesthetic interaction. Interactions that, besides being intuitive, are a joy to carry out. Such interaction create a salient experience, and are ripe for the making of memories and eventually stories.

A product does not age gracefully alone, it ages with us, becoming part of what makes up the everyday, embodying the memories, experiences, and values we accumulate through the passing of time.

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images:

Figure 4 taken from https://en.wikipedia.org/wiki/Robert_Plutchik#/media/File:Plutchik-wheel.svg

Figure 7 taken from https://unsplash.com/photos/mn2tsPe6Oe8

Figure 11 taken from https://prconline.co.uk/ekmps/shops/prcdispo/images/barbits-boston-shaker-set-8995-p.jpg

APPENDIX

Japanese Kitchen Knife

Bought three years ago. Damascus steal Japanese kitchen knife obtained during visit to Japan. It has his name engraved in Japanese. Together with a friend, the owner planned a trip to a Japanese city specially for its knife store. Here he received extensive explanations and stories about the various knives on sale as well as the possibility to trial them.

Knife used on a daily basis in cooking activities. Owner is fond of cooking and believes the knife and the sharpness associated with it enhances the activity, being able to prepare food in a way otherwise impossible. To keep it this way maintenance plays an important role by use of sandstone. This is a tedious process but the owner enjoys this (ritual). There are slight damages to the knife that hurt the owner, such as the damaged tip which also carries the message of improper use to knife connoisseurs.

Top features:
- Good knife / additional utility
- Unique / personalised
- Story (memories/cuisine/heritage)

The rest:
- Heritage
- Aesthetics
- Material choice
- Weight
- Feel
- Character

- Memories of purchase (experience)
- Enhancement cooking
- Motivates to cook
- Respect for knife
- Associated Japanese cuisine
- Share the joy of good knife
- Memories of use

Cast Iron Dutch Oven

A gift given by the owners close friends. The pot is from an expensive brand Le Creuset. Owner fond of the fact that friends bought the colour they thought best suited him, rather than buying a pot of different colour that was on sale. This makes the present feel extra personal.

The pot is only used when cooking for more people than just himself, meaning the pot is associated with special occasions when friends are over. The pot is too bulky and heavy to be used on day to day basis. There are stains on the inside and outside from use over time, these have both a positive and negative connotation to the owner. On the bright side they remind him that the pot is used, rather than just an expensive pan. In some ways it justifies owning an expensive pot. On the other hand he is scared the stains will leave a negative impression of uncleanliness on his guests.

Top features:
- Quality
- Personal gift
- Memories

The rest:
- Maintenance
- (Feels like) Improves cooking and taste
- Stains create personality
- Aesthetic
- Nice to put on table
- Brand
- Use case particular to cooking for others

Bass Guitar

The owner's first bass guitar. Bought for him by his father for his birthday in his early teens. The bass is a cheaper copy of a music man bass (expensive good brand) made of cheap but quality materials (eg pine, lacquer). Before this bass the owner had to borrow his father's right handed bass with mirrored strings. The bass took several months to arrive after the birthday and the anticipation leading to its arrival increased over time.

During the years of ownership the bass was personalised and upgraded by the owner. With new pickups the bass sounded much better, increasing the value to the owner not just due to the sound, but also the knowledge that his personal efforts lead to a bass guitar being much better than it's price tag. The time spend slowly discovering electronics, guitars and soldering whilst tinkering with the guitar also carries value to the owner.

In the personal to social scale of values, the owner noted how certain factors that were originally of personal importance - such as subtle aesthetics - became part of his personality / identity as a musician. Considering that his identity plays a role in a social context, the owner described that almost all personal factors of keep-worthiness became social over time.

Bass Guitar (continued)

Top features:
- Left handed bass
- Subtle Aesthetics
- Time invested in understanding instrument

The rest:
- First owned instrument
- Personal modifications
- Hard to find
- Jack of all trades
- Creates and reflects personal identity
- Owned for long time
- Specially gifted for owner's needs
- Humble - cheap but good - material choice
- Upgradable
- Repairable
- Good cheap copy of good expensive bass
- Frugal but good craftsmanship

Leather Boots

Recently purchased red wing boots. Boots purchased second hand in almost unused condition, still needing to be broken in. The feeling of needing to break in the boot provided the owner with much satisfaction. It appeared to act as both as indicator of quality as well as creating a personal fit the owner appreciated. The act of breaking it in also meant there was need of some sacrifice / investment of time to make the product closer to perfect. The ability to repair and replace components was played an important role in choosing to purchase the boots. After purchase the owner made his boots darker with oil / wax.

Top features:
- Craftsmanship
- Good fit
- Quality

The rest:
- Roughish Aesthetics
- Heritage
- Retro look
- Brand
- Robust
- Maintainable
- Projected identity
- Break-in period

Coffee Mug

A common black coffee mug with the logo of the company at which he has been employed for several semesters. It was given to him when he started working at said company and since has invested significant time there. Being fond of the company, the mug reminds him of this time as well as being symbolic to being part the community there.

Top features:
- Group belonging
- Useful
- Memories of shared experiences

The rest:
- Symbolic
- Unique
- Part of identity
- Good to use
- Part of everyday life

(Sony) Noise Canceling Headphones

First expensive headphones bought by owner 5 years ago.
Bought due to reading many good reviews, good aesthetics and
as opposition to the leading brand Bose. Expectation were of a
good headphones that would survive two or three years of use.
Intention was to use whilst running. After purchase sound quality
was beyond expectations, but importantly the robustness and
quality was more than what owner could have ever expected.
Telling me stories about how it survived multiple drops during
all kinds of activities, from running to snowboarding. Proudly
telling me that they survived after falling in the snow and being
drenched in water upon recovery. The many incidents that
headphones survived have created the bond between the owner
and the object, and the fact that it surpassed expectations to
an extend that they feel special, speculating the possibility of
a fault in manufacturing making them too good. Besides the
ability of the headphones to be used and survive man activities,
the presence of buttons makes them excellent during rainy
days, as they work no matter what. This in contrast to the newer
headphones which operate with capacitive touch - failing in
humid and wet conditions.

The headphones have now been largely replaced by noise
canceling earbuds, but the owner wants to keep the headphones
as long as possible, stating that it would hurt to them break. He
does happily lend out his headphones to housemates, without
telling them the stories and appreciation

Noise Canceling Headphones (continued)

he has for the object. Like this the housemates use them as they would any other headphones - as opposed to treating them with too much respect and care - which makes the owner happy to see that they are still in use.

The owner highlighter that the combination / interplay of the three most important aspect is crucial to the items appeal. If one of the three is missing the the headphones would have never obtained the same personal value.

Top features:
- Rugged and robust
- Good sound Quality
- Works during all (sports) activities and occasions

The rest:
- Been through a lot (use and abuse)
- Buttons (good for all weather use)
- Reliable
- Better than expected
- Proud owner
- Aesthetics

(Sony) Noise Canceling Earbuds

Recently purchased to compliment headphones. Earbuds offer greater mobility as they are less clunky and smaller. Owner decided to purchase this model due to the good experience with brand from previously mentioned headphones. The earbuds also had very good reviews online as well as a wide range of earbud tip size - an important aspect to the owner who believes himself to have smaller ear canals than most. The expectation however is that they will not last as long as the headphones. Since purchase the owner has become fond of the earbud's battery life as well as their comfort. The box / case is designed in a way that makes it easy to quickly stow the buds, making it possible to stop using them when someone wishes to enter a conversation with the owner. The aesthetics of of the object are also appreciated.

Top features:
- Utility
- Brand loyalty
- Better than expected sound quality

The rest:
- Customisable fit
- Aesthetics
- Good battery life
- Comfortable
- Good case (with satisfying interaction)
- Good noise cancelling
- Mobile / easy to carry around / small

Apple Wireless Earbuds

Recent purchase of Apple ear pods pro. After using headphones with unsatisfactory fit for a while, the owner decided to replace these with new sound canceling ear buds. The main reason of purchase is the sound quality and the fit with the apple eco system. However use appears to bing certain stinging to the ear canal. Upon asking why the owner planned on keeping them for a long time, the reluctant answer was that the cost of purchase has him locked in, and the product should serve him for some time to justify the cost.

Features:
- Investment
- Apple ecosystem
- Sleek aesthetics
- Better than previous owned alternative
- Dislike: social connotations

Pulp Fiction Wallet

Owner's first wallet, self bought. Leather "Bad Mother Fucker" from pulp fiction and so features no coin pocket. This was a slight issue at the beginning but over time the owner stopped using coins. Wallet feels familiar and comfortable in pockets and is easy to use when paying and using containing bank cards. Owner was given a replacement wallet by father but kept using this older one. The new wallet was uncomfortable to use since the seems contained a hard plastic edge, digging into the skin when removing bank cards. The worn look is appreciated, giving the owner a sense of pride that his wallet has survived so long. This shows other people that he doesn't just throw away items for the sake of something new. The wallet has never needed repair, nor has it been maintained other than the occasional sorting of contents. The owner says that in the event of a breakage, he would try to fix it best he can.

Top features:
- Used for a long time (six years)
- Works well
- Used to the wallet (and pocket feel)

The rest:
- First owned wallet
- Aesthetics
- Proud Owner
- Pulp Fiction reference
- Worn look
- Genuine leather

Sport Wireless Earbuds

A gift from last Christmas. The earbuds are a "sports" variant and incorporate a sensor to measure heart rate. There is also an accompanying app to visualise the sensor measurements as well as manage settings. The earbuds themselves have several touch buttons on their surface for operation. The owner uses them when traveling and when running. He is happy with the sound quality but laments the comfort. When worn in a fashion to ensure proper contact between the skin and heart rate sensor the buds apply a lot of pressure to the ear lobe. As a result the buds are often worn in a more comfortable manner without proper sensor use. However, even when worn properly, the heart rate measurements are inaccurate during running, possibly due to the extra movement it has to cope with. The case of the buds has proven to be the most careless aspect of the design. It is difficult to tell which side is up, and so the owner as often opened the case in an upside down position resulting in the bids falling out. The case also features no magnets to hold the buds in place so even when opened right way up, its contents is easily knocked out. The owner is also disappointed by the choice of sacrificing the room for the "skip song" button for one that opens the dedicated support app. A important aspect of the buds is that they are less clunky and clumsy than headphones.

Top features:
- Easy to use
- Good sound
- Less restrictive than headphones

The rest:
- New
- Expensive
- Christmas present
- Mobile and versatile in use
- Aesthetic

Hand Bag

Bought 5 years ago as a cheaper, neutral, humble handbag to wear with everything. Made of pleather, plastics and low quality zippers. Despite this the bag is cherished by the owner for its practicality and versatility. It fits her philosophy of balancing utility with style, where utility should not be compromised for the sake of style. In this sense, the bag is very usable due to its large volume yet compact sleek appearance. The shoulder strap can also be tightened to fit around the waste to wear the bag at hip level. This makes it adaptable to the situation. The low cost of the piece means that there is no feeling for anxiety, or need for extreme care, when wearing it. The zips are difficult to open, which is both a nuisance as well as providing an additional sense of safety, since others will find it difficult to open too. Because of the bags versatility, the owner find it very difficult to spot potential replacements. If offered the same bag mad of better quality materials, she would purchase it today. However, this is only the case because she knows how much she values this model handbag and has the positive experience with this cheaper one.

Top features:
- Versatile
- Anonymous aesthetics
- Nanny McFee Bag

The rest:
- Fits needs

- Don't have to worry about it (cheap)
- Don't have to plan ahead to use it
- Hard to replace
- Fascinating
- Secure feeling (zips)
- Use object (bruksgjenstand)
- Long shoulder strap§
- Embodies philosophy (function over form)

Dry bag (foldable top)

Dry bag recently purchased on surfing holiday in Portugal. Used in both everyday situations as well as specifically for surfing and the likes. This versatility is appreciated by the owner, and again fits the 'function over form' philosophy. The idea to purchase such a bag had arisen long before purchase, however during a slight drunk moment, the decision to buy it was made. The value of this memory and the association with the holiday in Portugal emerged as a while after coming home. The memories have both personal value as well as social, where the ability to share them is important to the owner.

Top features:
- Good quality
- Useful Souvenir (reflects personal philosophy)
- Fits sporty and casual occasions

The rest:
- Waterproof
- Good reviews
- Embodies philosophy (function over form)
- Colour
- Drunk decision
- Social identifier
- Practical
- Memories of holiday

Coffee Maker

Sizeable coffee machine gifted by her dad when moving into new student collective. Surprisingly little additional story. Appreciates that it makes good coffee and that it is simple to use, not just for her, but also for her friends when its their turn to make coffee. Machine is used by all house tenants.

Top features:
- Makes good coffee
- Present from dad
- Part of everyday routine

The rest:
- Timer feature for auto coffee
- Clock (only one in kitchen)
- Looks good / aesthetics
- Easy to use

Ibanez Gio Electric Guitar

First owned electric guitar. Owned a classical guitar before on which he learned to play. The guitar is almost ten years old and has some damage on the bottom corner from a fall. The jack has been replaced also. Even if the guitar was no longer functional, the owner would keep it.

Top features:
- First electric guitar
- Owned for a long time
- Memories of learning and jazz band

The rest:
- Sounds good, especially for rock music
- Related to guitar teachers
- Looks good / aesthetics
- Damage is part of the guitar with story

Collection of old phones and game consoles

Since owning his first ipod shuffle (2005), owner has kept all expensive electronics he has bought for himself. Even if they broke or were otherwise incompatible with his daily life. Whilst he does not actively use them, or present them in any way, stumbling upon them brings back memories. This has made it impossible to throw them away.

Top features:
- Token of specific memories and nostalgia
- Fun to play old games
- Unique, can't be purchased anymore

The rest:
- Intention to keep
- Look good / Aesthetics
- Were used every day

Book: getting to yes by Fisher and Ury

A book received and read whilst taking part in model united nations across the globe. The book bought new insight into how to conduct oneself at these events for best results. One of the few books the owner has read cover to cover, partially due to dyslexia. Brings specific memories of MUN in Boston, and the realisation of how different Europe and the States are. The book is also occasionally used for quick reference, featuring a useful index to suite this use case.

Top features:
- Representation of time spend at MUN organisation
- Learned a lot from book
- Stand behind the contents of the book, suggestible to others

The rest:
- Passionate about subject matter in book
- Easy to find the right information when you need it
- Useful book
- One of the few books read cover to cover
- Its around owner often (in living room)
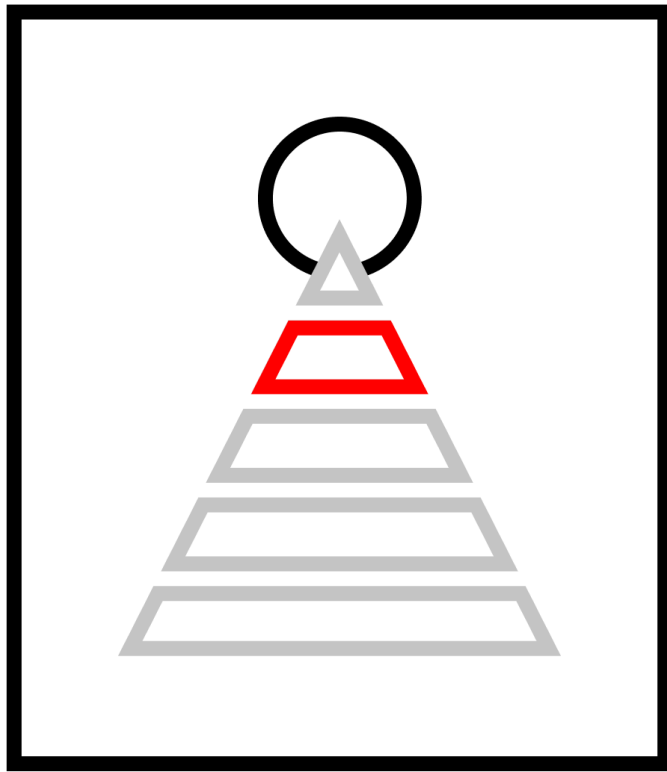- Will last a lifetime (both knowledge and book)

Chromecast

A Chromecast plugged into an older TV. Often used with phone or laptop. No other media playing device is connected to TV. Playing content from youtube and other online media is a major leisure activity for owner, as well as casting educational material.

Top features:
- Can't live without a TV with casting feature
- Cost effective
- Very reliable

The rest:
- Upgrades old TV
- Indirect sense of gratitude for making TV more usable
- Trust in brand and works well with google eco-system
- Always works (almost)
- No nonsense
- Occasional errors are forgivable

Summer 2020

B.G.E Goosink

Graceful Ageing of Products

NTNU

Norwegian University of
Science and Technology