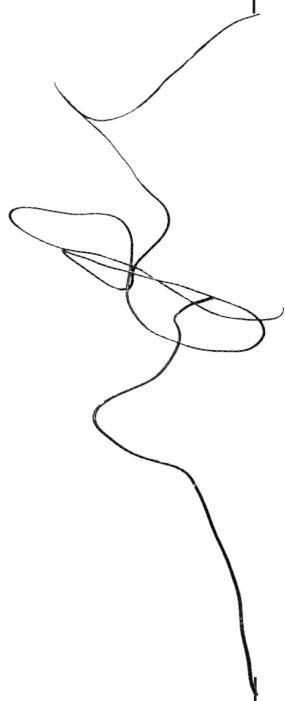


THE USE OF METAPHORS IN AUTHOR DRIVEN DESIGN

SCIENTIFIC CHALLENGES
INDUSTRIAL DESIGN ENGINEERING



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SCIENTIFIC CHALLENGES

Author Driven Design Project

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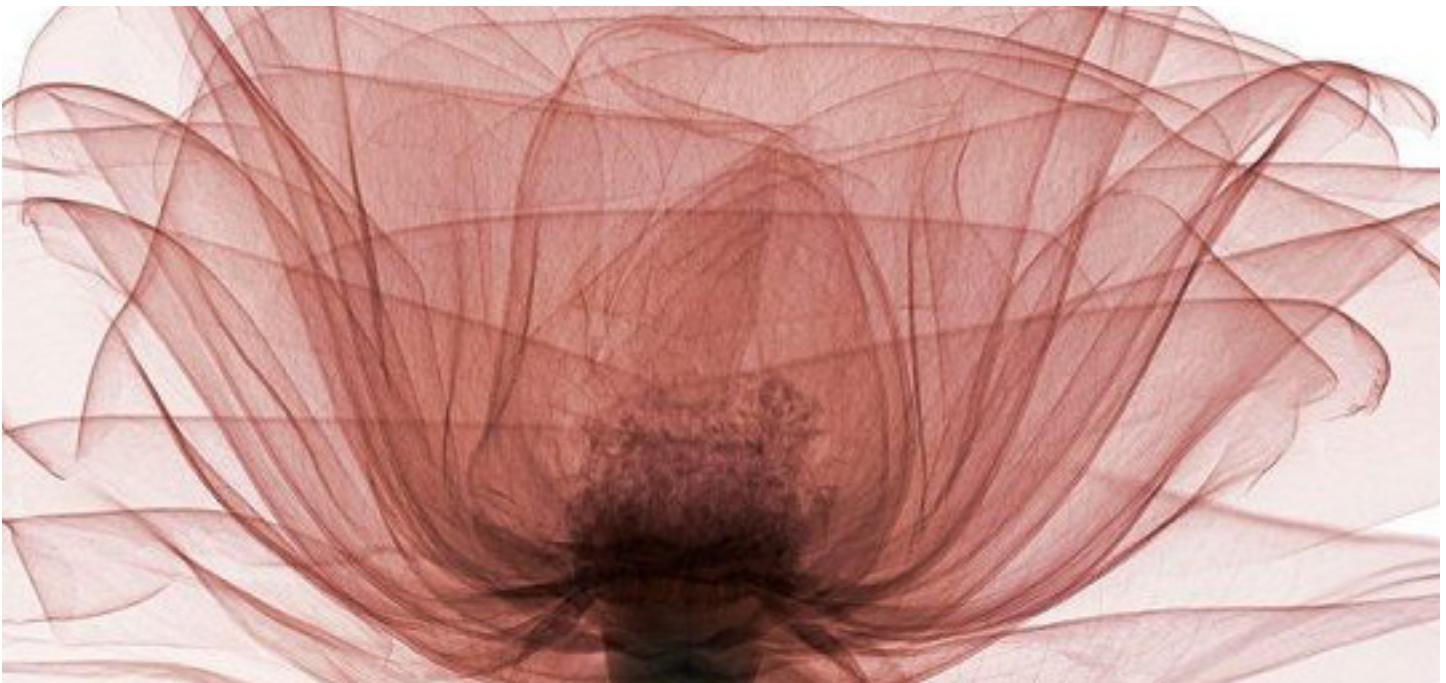


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INTRODUCTION

When I first came across the scientific challenges, the idea of an author driven design project was something I was a bit insecure about. During my education most projects and assignments consisted of clear demands and thus clear guidelines of the process one should follow. Typical for demand driven design. However, some subjects such as 'Discovery' and "Vormmethodieke" had a more open and personal approach. Looking back at these classes, it gave the incentive to start the Author Driven Design assignment. Since the outcomes of these classes always created more artistic and authentic works, this instantly makes it more appealing to me. Obviously, Author Driven Design is a very interesting project, also since you can put all your creativity in it as a designer. Whereas in most Demand Driven Design projects this gets limited by meeting demands or other restrictions, this project is personal and can go any direction the author wishes. Therefore the phrase to define this project "designing from your own intrinsic motivation" sounded both challenging and appealing to me. It might be comfortable to stay in the DDD area, but this ADD project teaches another, more personal approach, which in my view is no less important as a designer to learn and be aware of than any other subject.

Because of the personal approach of this project, sometimes, despite the effort to avoid it in general, personal perspective was used when writing this report. This personal perspective is mostly being used on purpose when explaining personal choices and insights that are relevant to the process.

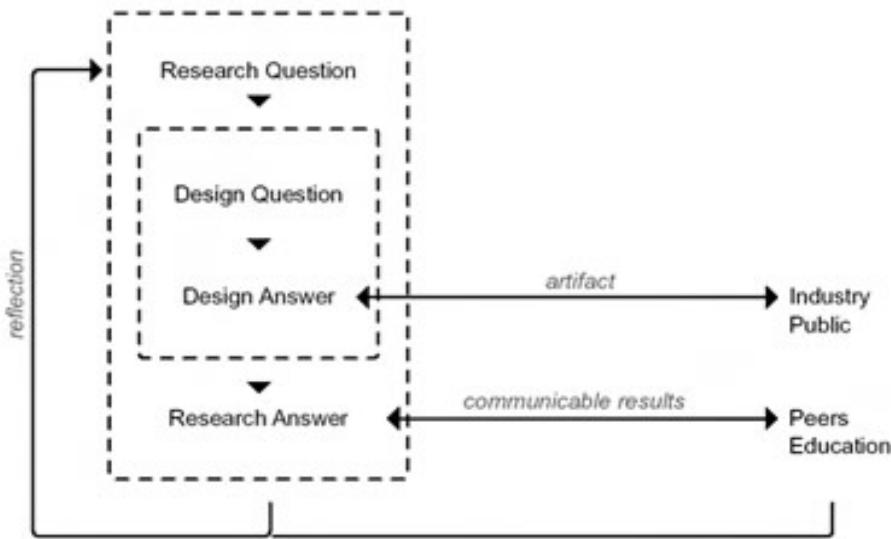


FIGURE 1 Findeli's framework for research through design (Findeli, 2010)

RESEARCH

PROPOSAL

Since the author driven design project is in fact a scientific challenge, a research is built around the design assignment itself. First of all, this research needs a research question. Because the setting of this scientific challenge is an ADD framework, this would naturally be something that should be taken into the design question. To stay in topic, I chose something that interests me, the author, to investigate. One of the various proposals was to focus on metaphors. Metaphors are a very broad area to investigate and there are many aspects to take into account. The aspect I chose to focus on, was in my opinion a good indicator for the distinction between ADD and DDD; namely the usefulness. The full project proposal including the approach can be found in appendix A.1.

RESEARCH APPROACH

The RESEARCH QUESTION is formulated as:

"To what extent can, looking from the designer's perspective, the implementation of metaphors in Author Driven Design be useful in comparison to Demand Driven Design?"

From my own motivation it was interesting to answer the question what makes the use of metaphors in both approaches appealing and how they are being used. What is the added value and the difference in implementation of these metaphors, taking into account the different goals of both approaches?

This is a research through design case (Frayling, 1993), meaning that the design (process) itself will be needed in order to solve the research question. This research will be done in Findeli's framework of research through

design (Figure 1). In this scenario the research will revolve around a design case. Within this research frame a research question is formulated. The design case will be handled in an author driven design method. The process will be recorded in order to reflect on it and compare it to previous demand driven design processes afterwards. In this research reflection the answer to the research question is discussed.

Within the design case the goal is to answer the design question. The design question contains the mission statement of the assignment itself. In the design reflection the outcome of the project itself and the answer to this question are discussed. This is the reflection more focussed on the content of the project, whereas the research reflection is focussed on the process and research question.

To summarize the approach more precisely, a personal analysis will provide what exactly one wants to achieve and what personal values one would want to implement in this research through design. After that the literature analysis will be focused on the value and use of metaphors in design and how they are reached from a designer's point of view. The actual design will be used to implement the metaphor itself. After the representation the reflection, the design and research question can be answered respectively by reflecting on the design with the implemented metaphor and comparing the design process of the Author Driven Design with previous Demand Driven Design processes.

Demand Driven	Author Driven
Style of the client	Style of the maker
Makes inherent	Makes special
Guided by marketing and communication	Individual and intuitive decisions
Structured by processes and methods	Dependent on creative finds
'Invisible' design	Fashionable and showy

FIGURE 2 Differences between ADD and DDD (Eggink, 2009)

RESEARCH

LITERATURE RESEARCH

Author driven design (ADD) is being defined by Eggink as an emotion driven design approach in which the designer himself is the motivator (2009). This approach can be seen as the counterpart of *Demand Driven Design* (DDD), which is driven by an external problem or client. By the following differences between both approaches (figure 2), it becomes clear that the designer's intention in ADD differs quite a lot from DDD.

Metaphors The use of metaphors is visible in multiple disciplines. Therefore, the definition of a metaphor can differ from situation to situation. The type of metaphor that is interesting in this context is the visual metaphor, which a designer uses in product design. They may implicate some deeper meaning for the user to interpret individually or they are very apparent and provide the user with practical use cues or affordances. This depends on the designer's intended goal. Since Author Driven Design has different features and goals than Demand Driven Design (see figure 2), the focus in this research lies with how this difference affects the implementation of metaphors in product design. Eventually this can lead back to the research question as to what extend the implementation of metaphors could be useful to both approaches. Useful can in this case be interpreted as satisfying a certain goal. Meaning this goal could concern effectiveness in the product language, but the goal could also be about reaching the most effective design process. Since this research is a research through design case and not a research for design, the use of metaphors in the design process itself is being left out.

Even in this clear context there are iterations to the meaning of the word metaphor. First of all, it is ne-

cessary to review what a metaphor is exactly. Cila and Hekkert defines a metaphor as "understanding and experiencing one kind of things in terms of another" (2009). For this research this broad definition is sufficient, however the focus should be more elaborated on which method satisfies what goal. To find these aspects, the framework provided by Cila et al. (2012) is being used, in order to guide the design towards the right combination of goal and implementation of the metaphor. In other words, questioning how metaphors are best implemented in specific situations.

In this framework for metaphor mapping, the metaphors consist of a *source* and a *target*. The source is the object or term the metaphor is extracted from and the target then object it will be implanted or "mapped" on. The mapping of metaphors can be done in 4 categories; Explicit-Literal, Explicit-Abstract, Implicit-Literal, Implicit-Abstract. In reality these categories' borders are very vague and it could better be visualised as a scale of abstractness versus explicitness. The explicitness has to do with the extend to which the original metaphor is recognizable without prior knowledge, thus how much of the source is mapped upon the target. The abstractness has to do with the way the metaphor is implemented. The question here is whether certain features from this source were literally copied or abstracted in some way. This is visually explained in figure 4 which is a quick overview of the findings in their paper on different ways sources can be mapped upon a target. Two different categories out of the four (Exp-Lit, etc.) will be used in the design of two concepts, to be able to make a distinction between the implementation of both categories and how this influences the design method (figure 3).

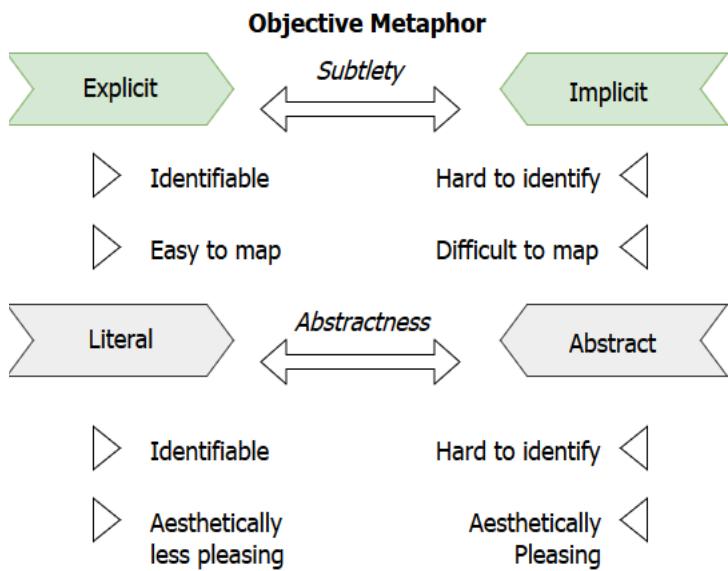


FIGURE 3 Objectives for Metaphor Implementation

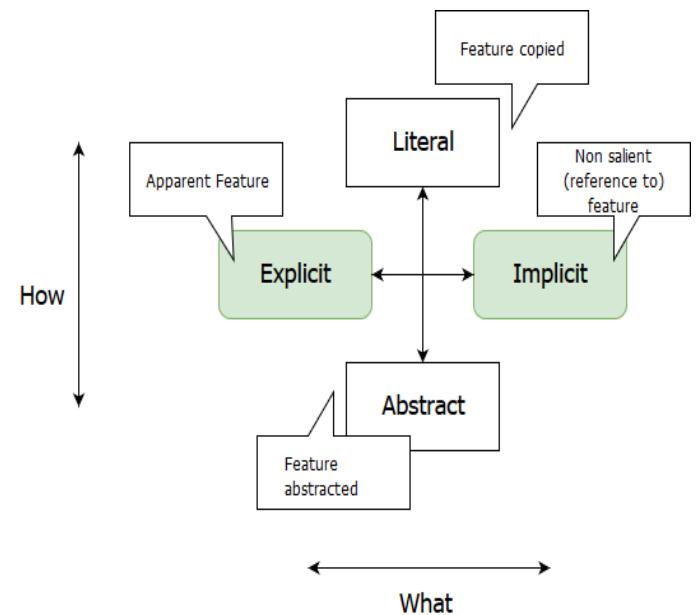


FIGURE 4 Metaphor Mapping

RESEARCH

PERSONAL ANALYSIS

For this part a method from Sonneveld (2013), called tools for reflection, was used in order to establish a structured framework for creating a clear personal analysis. This method includes a lot of unconsciously relevant questions or assignments which gradually helps the participant build an image of himself. A more detailed description of the analysis can be found in the appendix A.2. For this report only the concluding findings and findings with relevance to the project were taken into account.

The conclusion of this framework was mostly focused on values and virtues that define the author as a designer. This is first discussed below and the outcome is very useful, but incomplete in my view. Therefore I listed my interests based on conclusions from other questions in the personal analysis, and completed it with the interests that were missing and considered useful.

Values From the concluding question in the analysis, it came forward that the personal values I like best are empathy, appreciation, self-awareness, freedom and creativity. These values can be triggers or features in the personal design or design process, in order to create a personally satisfying object.

With empathy I mostly mean being able to put yourself in someone's position. If this was a more general value, I think the world would be a lot more tolerable. For example I do think honesty is not a virtue in all scenarios. To determine the situation in which honesty is important, one needs to be able to put oneself in another's shoes.

Appreciation is not only important to analyse what

one has and where one stands in life, but also to keep one's mind at ease. To realise that it is not always necessary to strive for something that you do not really need or like particularly. The things that one does want to achieve, because one thinks it is important, one wants a certain amount of appreciation for. Thus, this value works both ways.

Self-awareness is the knowledge of what is right by your own standards and being critical towards your own actions. Not only to an extent which is visible, but to also consider the invisible effects.

Freedom is my kind of independence. To explore without limitations, which will be put to reality in the exploration phase.

With creativity I especially like it when something has an unexpected turn, which could only be accomplished by creative thinking.

Virtues My most important virtues are independence, dedication, criticism and curiosity.

The latter is probably why I like to imagine scenario's and stories. Curiosity, see the course of things, exploring different perspectives. I like to learn about developments, especially the ones that are unexpected. Independence is needed to be unbiased by subjectivity or to explore with freedom.

Following through with thing I plan to do is a matter of dedication. Dedication is something that only works if I do it for the right reasons. I personally struggle a lot making important decisions. But I always force myself to follow through with one of my options. Nothing could be worse than doing nothing. This is necessary in order to keep moving. Once I have made this decision and I value it, I plan on dedicating myself to it. In short, I like to explore the course and development of things from different perspectives. I would like to

RESEARCH

tell a story without limitations. I especially like it when an unexpected turn of events comes up or when it is a smart set up. Making unlikely combinations work is one example. Another one is when something has an unexpected effect. But what I enjoy most is to create something that adds to my personal development.

Interests The interests that were extracted from the personal analysis are:

Stories,
Development or course of things,
Exploration of different perspectives,
Logic,
Unlikely combinations,

This list is completed with the following interests

Lightning
Nature
Patterns
Candles
Iteration

Most of my interests, including unlikely combinations, partly depends on coincidence, but it nevertheless has the eureka factor. Unlikely combinations are most appealing to me when in the end they seem to fit together. Most of the time this is correlates with using different perspectives on subjects. One of the examples used in the analysis is an artwork from Whitney (figure 5). The combination of X-ray & flowers is highly unlikely, almost like extremes. Flowers are associated with beauty, growth and vitality, whereas an X-ray machine is associated with hospitals, sickness and mostly seen as a scary device. When looking at this machine in a different view, one also points out that this machine provides understandability, transparency and in some way beautiful pictures. When this feature combines with the beauty of flowers, the outcome makes it a great combination.



FIGURE 5 X-ray flower by Whitney (sd.)

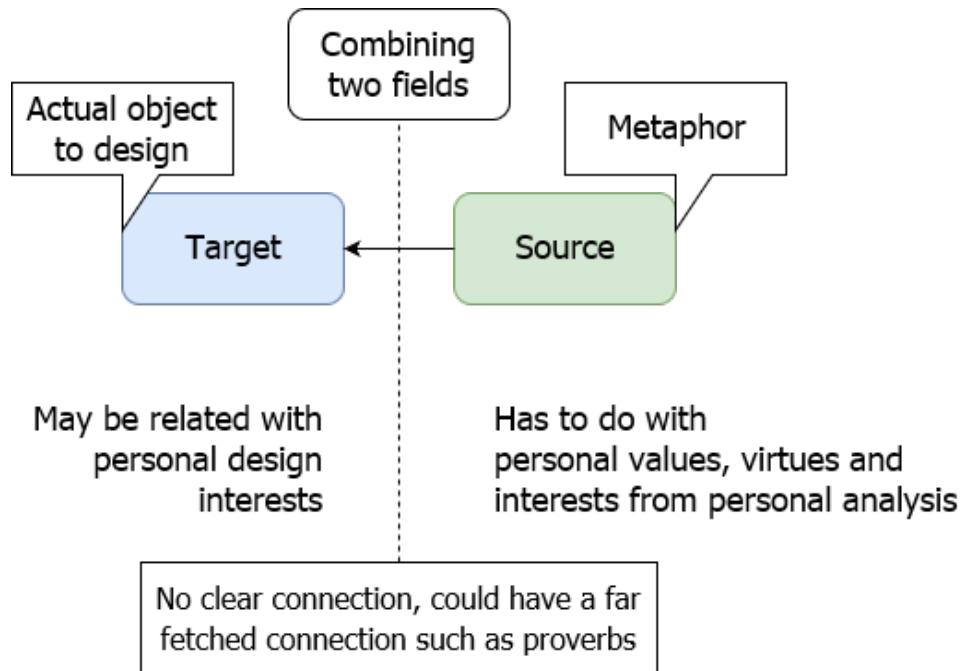


FIGURE 6 Structure of the design question

EXPLORATION

Based on the personal analysis' conclusions, two mind maps (appendix A.3) were created in order to concretize the terms storytelling and exploration better. These two factors seem to be the overarching values from my personal analysis. These mind maps were direct or indirect input for the possible combinations to work with in the rest of the exploration phase, but also helpful later on in the process to not lose the personal touch out of sight.

When building a bridge from the analysis to the exploration the question arises: what kind of objects do I want to design? Obviously an object that is suitable for the implementation of a metaphor. Furthermore something with a lot of design possibilities, to ensure enough creative freedom. Finally, something that is being or can be used for one of my own interests mentioned in the analysis or mind maps. The decision was made that this object has to have a clear use (for example: chair) instead of an unclear use ('Tijdsbelever': device to experience time), because for me the curiosity lies with the different mapping methods to create a personal attribute. Therefore time could better be spent on exploration of a known object and iterate on that than on the conceptualisation of an unknown or unclear attribute with no guiding form or function yet.

A list of design missions based on my interests from the personal analysis can be found in the appendix A.4, leading to the final design question, which is formulated as:

"How can one make a personal object from an unlikely combination of different fields using a metaphor?"

METHOD

The following design process will function as an answer to this question and the designed objects itself are the necessity for this process to exist, as it is a research through design case. As described in the literature analysis, a product metaphor consists of a source and a target. Therefore, when answering this design question, the unlikely combination itself will consist of a target and a source as well. The global structure of this approach can be viewed in figure 6.

Table 1, listed on the next page, was created to make the combination of two terms insightful. By summing up the terms and dividing them in two columns based on tangibility, the preferred mapping strategy can be established (figure 7). Most of these intangible terms and some tangible ones were deducted from the personal analysis and mind maps and in some cases transformed to be more general. The rest of the tangible terms were chosen randomly, in accordance with figure 6.

EXPLORATION

TABLE 1 Sources and metaphors divided per column based on tangibility

Intangible	Tangible
Judge a book by its cover	Glasses
Wiping out memories	Wiping materials
Face reality	Lamp
Flipping over a page	Typewriter
Curiosity killed the cat	Pen
Look at the bigger picture	Paper
Shed a light on the situation	Bag
Walk against the lamp (Dutch saying)	Diaphragm
Keeping up appearances	Dishwasher
Features	Table
Growth	Roof tiles
Springs	Vacuum cleaner
Seeds	Luxaflex
Industry	Vase
Death	Coat Hanger
Building Blocks	Doorbell
Burning	Power Plug
Access	Wallet
Chaos	Water Flask
Longing	Water Boiler
Understanding	Pocket Watch
Criticism	Umbrella
Energy	Pan
Balance	Skateboard
Pudding	Exhaust pipe
Layers	Ladder
UV	Desk
Minimalistic	Coat
Weak	Drilling machine
Flexibility	Street lights
Bare Essentials	Plates and cutlery
Connection	Helmet
Enlarge or Increase	Extractor hood
Position	Laundry Rack
Alternatives	Bicycle Rack
Circular	Rake
Lightning	Smoke Detector

There are two different columns in this table. As mentioned above, the left one are all terms that are intangible. They can describe a value, purpose, feature, visual metaphor, function, etc. In some cases the terms in this column could also be the overarching metaphor. This column can only function as a source, since there is no interest in creating unclear objects (figure 7). The right column consists of random products that could function as either targets or sources for the mapping of metaphors. These are tangible existing products, which all have a clear use or form and are therefore relatively easy to map.

When mapping solely from this column, the outcome will most likely be explicit and perhaps a bit kitschy. This is because the visual language of two products with clear use is generally very recognizable and less changeable. When making a combination from both columns, the mapping will more likely be implicit, because the visual language can differ a lot and might be applicable to multiple other terms as well. This is making the metaphor less recognizable and open for other suggestions.

When making the combinations I realized there was a certain distinction in methods that I was using depending on the sort of mapping I was looking for.

Method 1, the ‘explicit method’, combines two tangible attributes or objects and combines them. One being the source and one being the target. When looking at the table that would mean solely using the right column to find unlikely combinations. For example the combination of a water boiler with an exhaust pipe. If in this case the water boiler functions as a target and the exhaust pipe as the source, one could visually think of many ways to explicitly map this. The advantage of this method is that it is a relatively easy method to gain new insights, because one does not have to think about features, goals and values yet. Since it combines two tangible objects, the mapping will tend towards explicit and literal. If one would like to make the example combination implicit, the tangible object becomes intangible. The exhaust pipe itself will not be mapped, but the concept of pollution instead.

Method 2 involves the left column as well. Since the left column consists of intangible terms, this cannot be seen as a metaphor on its own. This intangible term is rather a feature of the metaphor that can be mapped to the source. With this distinction it becomes clear that one cannot simply pick one term from each column and call it a product metaphor. For example flexibility can be a feature from multiple objects or processes around us. Perhaps even from an object that is listed in the right column. That is why there are two options to complete the method.

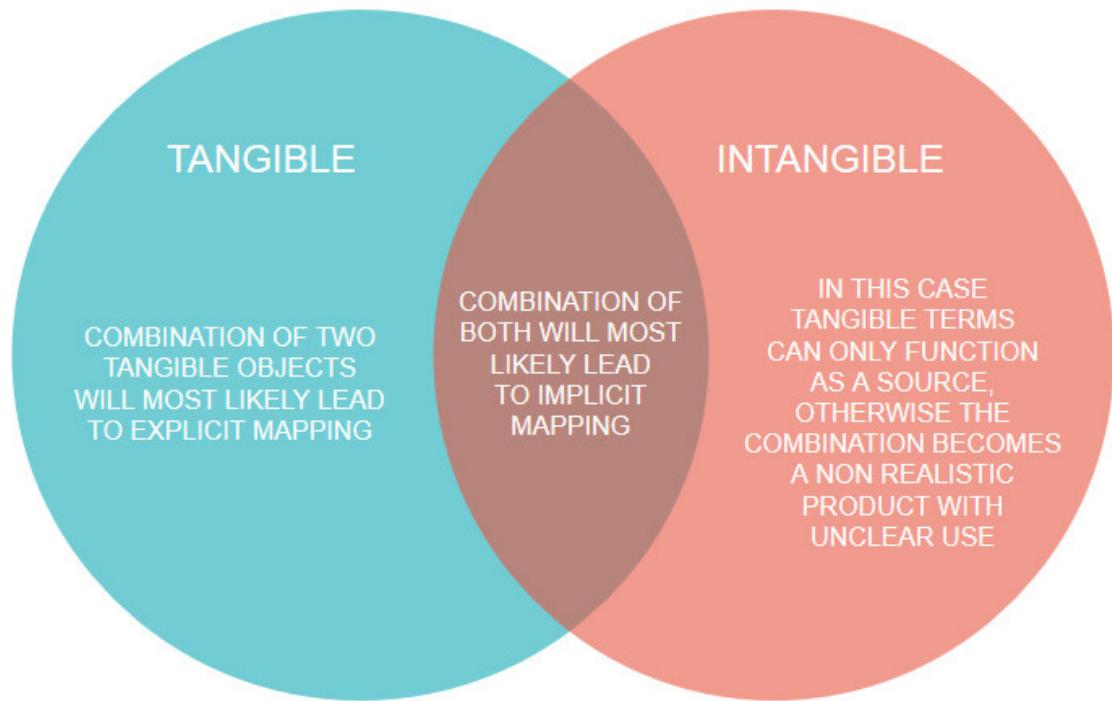


FIGURE 7 Mapping outcomes based on tangibility

EXPLORATION

Firstly, after combining two terms from different columns, one could reflect back to the right column to find the metaphor to which the feature fits. This would be as described in method 1, a combination of source and target solely from the right column, but with help from the left one. The left column term is in fact the feature to map onto the target. This different thinking track could give some different mapping insights compared to method one.

Secondly, one could simply combine terms from the different columns and think about the intangible term as a source in multiple dimensions. This could be called the "implicit method". After combining two terms from different columns, one could look for a corresponding metaphor outside of the columns.

By making a small mind map either on paper or just in the mind, other metaphors that fit the feature can come to mind that were not initially listed.

Subsequently a third method could be derived from these former ones. This would only involve the left column. By combining two features, one could either look at different tangible objects these features come from, that could function as a source and target or try to combine the intangible terms in some kind of visual language. However, this one is not used in this research, primarily because it is not in the scope of this project of only ten weeks.

One thing to note is that these methods are not distinct and can be simultaneously iterated with in order to gain new insights. When using method one, the linking of metaphor and features could go both ways. For example, when looking solely at the right column, one could combine an exhaust pipe and a water boiler. In this case the exhaust pipe can be the source or

metaphor for the target; the water boiler. An exhaust pipe can be seen as a feature or part of an overarching metaphor: pollution. However 'pollution' could also be a term that we could find in the left column, since polluting is also an intangible feature of an exhaust pipe. Once again this case the combination of water boiler and pollution is made by a mix of method one and two. In fact these methods are just guidelines for the different dimensions of features, tangibility and metaphors one could think of depending on the type of mapping one would want to perform.

IDEAS

The outcome of this thinking track is the combinations presented in table 2. For most of these combinations a sketch is made to visualize the source on the target, which can be viewed in appendix A.5 and figure 8. This way the different types of ideas with one combination could be explored. One combination can iterate from making a switch of target and source, taking different aspects or features of the source or changing the goal of the target to a side goal it possesses.

EXPLORATION

TABLE 2 Combinations and Outcomes

Combination	Outcome
Wiping away memories + Vacuum Cleaner	
Layers + Extractor Hood	
Layers + Helmet	
Layers+ Skateboard	
Table + Chaos	= Different height table, Layers
Growth + Coat Hanger	
Sunblind + Water Boiler	
Flexible + Street Lights	
Chaos + Ladder	
Access + Skateboard	
Doorbell + Access	
Plates and Cutlery + Longing	
Plates and Cutlery + Access	
Plates and Cutlery + springs/growth/burning/industry	
Position + Ladder	
Helmet + Access	= Magnetic Helmet
Coat Hanger + Weak	
Investigation + Pan	= Pan with investigative measuring scale
Social Media + Bookmark	
Wallet + Criticism	= Transparent Wallet
Smoke detector + Bell, Bubbles	
Balance + Coat Rack	
Pan + Flexible	= Hanging Pan
Water Boiler + Balance (+ Bare essentials)	
Bicycle Rack + Bare Essentials	
Water Flask + Flexible	
Laundry Rack + Positioning	
UV + Bicycle Rack	= Glow in the Dark Rack
Burning + Vase	= Burning Vase

Street lights + Increase	= Lantern bushes / Bigger lights
UV + Coat	= UV pattern coat
Exhaust Pipe + Seeds	
Pocket Watch + Lightning	
Street Lights + Lightning	
Extractor hood + Smoke Detector	
Desk + Seeds	= Desk with Grass/Greenhouse
Desk + Aquarium	
Helmet + Balance	= Helmet that holds position
Circular + Rake	
Smoke Detector + Exhaust pipe	
Criticism + Ladder	Three steps up and two steps down
Lightning + Chair or Cocoon	
Water Boiler + Exhaust Pipe (pollution)	(= peel off)
Vase + Enlarge	= Expanding Vase (Layers)
Power Plug + Seeds	

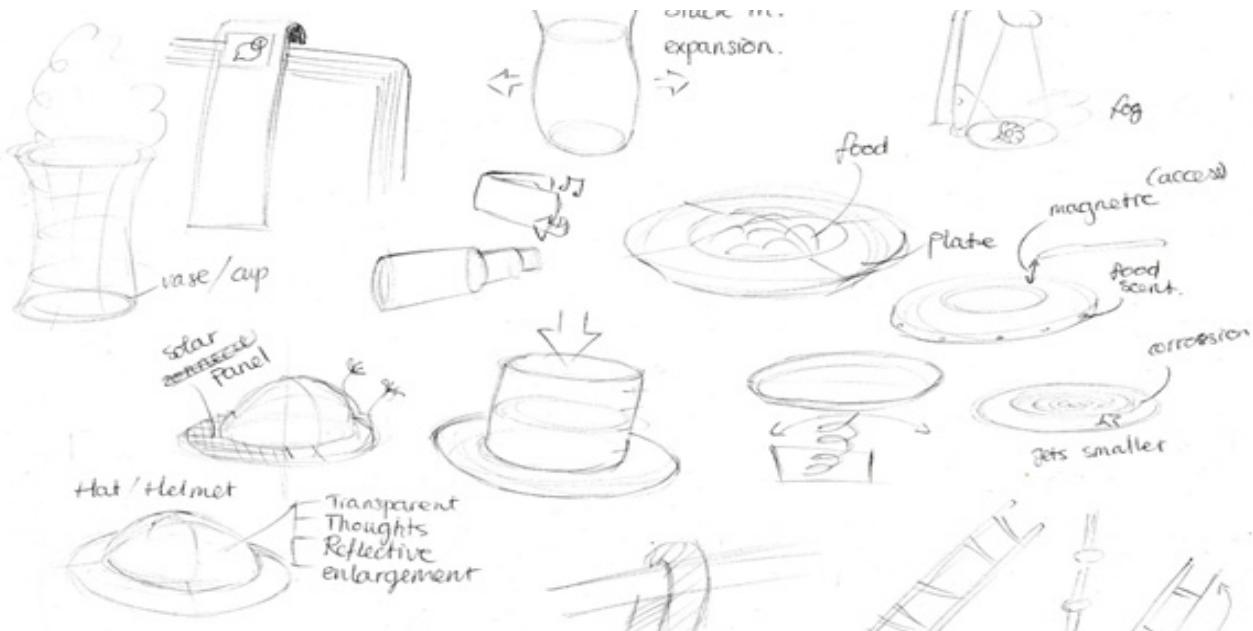


FIGURE 8 Brainstorm sketches based on table 2

EXPLORATION

EXAMPLE

The starting point for a source is an exhaust pipe. An exhaust pipe has a clear use and visual language which is rather unchangeable without losing the recognition. Two options present itself. Firstly, one could keep it simple and use the first method to explicitly map an exhaust pipe on a target and create a rather trashy and loud design object. Secondly, one could use the second method and the switch to an intangible term must be made. In this case the term is pollution, which can be seen as an overarching metaphor for an exhaust pipe. In this case we should look for mappable aspects of pollution. The list below got its inspiration from creating a mind map, thinking of opposites and considering emotional and visual language. When the goal is to make the metaphor harder to identify, the mapping should be implicit. For this goal the intangible mappable aspects should thus be intangible and expressible in visual and emotional language. The mappable objects can once again be found in a feature of another mappable aspect and so on.

Pollution Mapping Elements/ SOURCES:
(implicit is italic)

- Exhaust Pipe
- Polluted materials
- Trash
- Chimneys
- (Bubble) Plastic
- Gas mask
- Litter Can
- Mouth Cap
- Over packaging
- Acid rain*
- Meat
- Civilisation*
- Jerrycan

Opposites

- Trees
- Green energy*
- Bicycle
- Uncivilized*
- Transparency*
- Emotional/visual Language:
- Smokey*
- Dirty*
- Plastic*
- Trashy*
- Chaotic or clean*

After this process was applied 3 to 4 times a lot of sketches and ideas came up. After this diverting process a converting process took place to select 2 ideas to continue working on. These were selected in conformation with my interests and values from the personal analysis, reoccurrence of terms in the mind maps, design possibilities and originality. The last criteria can more or less be seen as some type of gut feeling, since this is very personal. I simply asked myself the question which combinations I would personally want to possess, if I were to choose only two.

The following combinations were chosen:

Lightning + Chair	= Lightning Chair
Life Cycle + Water Boiler	= Life Cycle Interaction Boiler

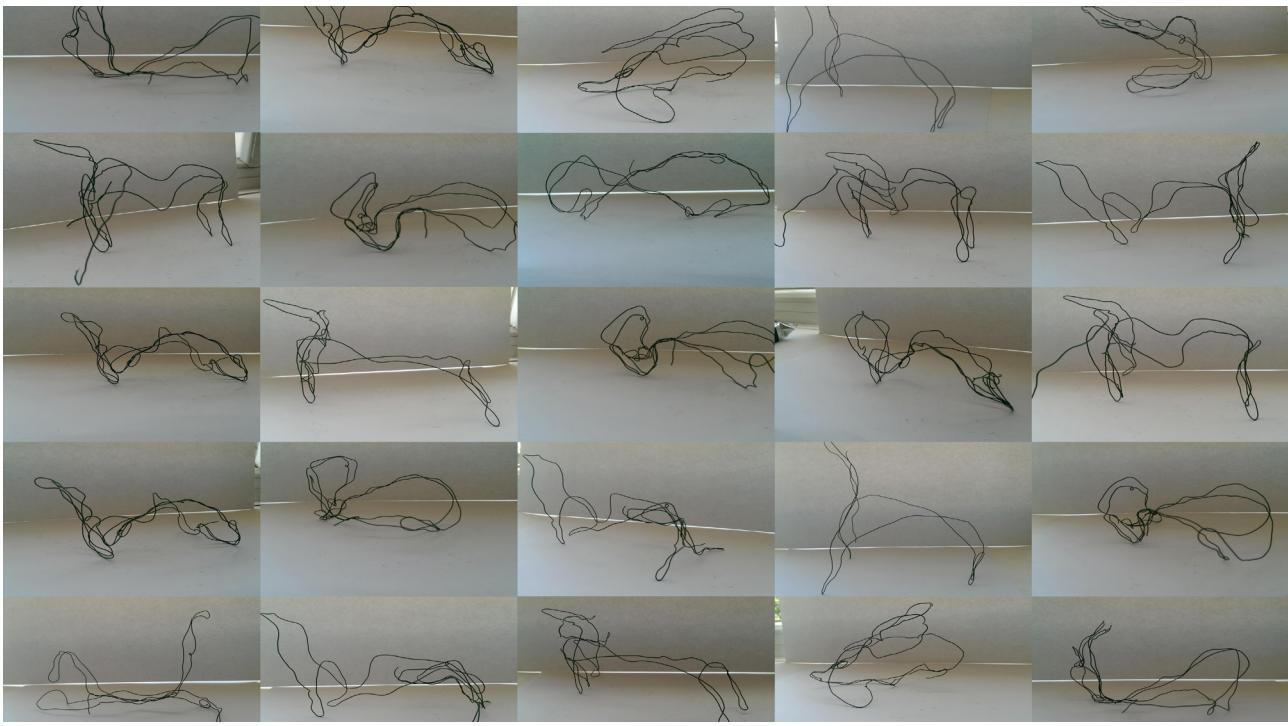


FIGURE 9 Shape exploration with iron wires

DESIGN ANSWER

This and the exploration section contain the answer to the design question, which was formulated as:

"How can one make a personal object from an unlikely combination of different fields using a metaphor?"

In this question the design process itself is already the answer to the 'how'. However, the final concepts need to be elaborated, to reflect on the extend to which the object has merged the different elements, implemented the metaphor and has become personal. For the research reflection these final designs are needed as well, since this is a research through design case. For example to reflect on the extend to which the design differs from DDD objects.

LIGHTNING CHAIR

First the concept of the Lightning Chair is worked out. For this combination the lightning is the source, since it is the intangible term of the two. However, it is considered a real object with a clear simplified shape. That is why it is interesting to use this term. The mapping would tend towards implicit, but can also become explicit. With this source the only requirement is to implicitly map it on the target. This is causing the metaphor to be a bit harder to identify and to avoid an over the top design. One thing I still do not want to be fixed in this step is the scale of abstractness. Meaning that the mapping will either become Implicit-Literal or Implicit-Abstract.

Several mapping elements or features of lightning that could be used are

- Bright
- Powerful
- Humid

- Capricious
- Dark
- Faraday's Cage
- Rain
- Electricity
- Conductivity
- Sound and danger
- Strikes
- Counting distance element

Several of these elements are tangible, which enable explicit mapping. Since this is not the goal, the focus lies with the intangible elements.

Next the term "chair" is elaborated on. A chair can take many shapes and colours, but the function is universal. A chair is meant to sit on. Because of this the assumption that there is a need for a proper seat area is easily made. However, could it also be a chair when it has the form of a chair, just not the function? Or even when it has neither, but just the appropriate height? In some situations almost everything in the user's environment with the appropriate height can become a chair or bench, even if it is not comfortable. For example, this could be a wooden pole from a fence or a large flower pot in the park.

For this chair the decision was made to at least make it possible to sit on it. This would be the only requirement the object "chair" should have except for the mapping method.

From double walls (see appendix A.3) the thinking process went towards another track with a number of sketches, namely towards the shape of lightning striking (figures 10 and 12). This led towards the concept of wires and conductivity.

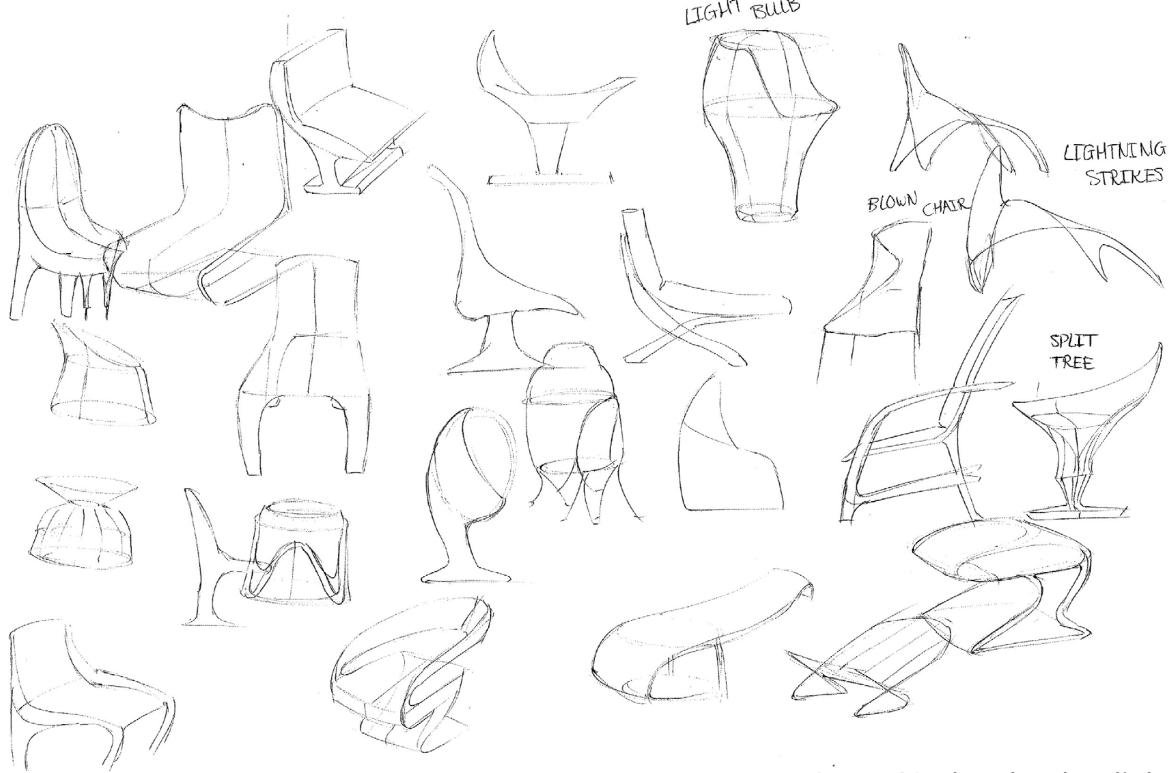


FIGURE 10 Idea sketches lightning chair

DESIGN ANSWER

This time not between walls but with another implementation in the form of a wired chair. Another feature that is characteristic for lightning is capriciousness. This feature could also be found in iron or copper wires. A shape study with an iron wire (figure 9) aims to explore the design possibilities with this capricious capacity. The combination of these elements came to a more complete concept. The wires represented conductivity and are being used as the main material for the chair. The 'lightning striking' became the shape of the chair in a very literal way, with a focus on the capricious shape it contains, transforming the shape of the chair

into a deckchair. As can be seen in several of the sketches from figure 12 this idea was very abstracted in the beginning and began being more literal after the wire exploration process (figures 9 and 11).



FIGURE 11 Shapes extracted from the iron wire exploration

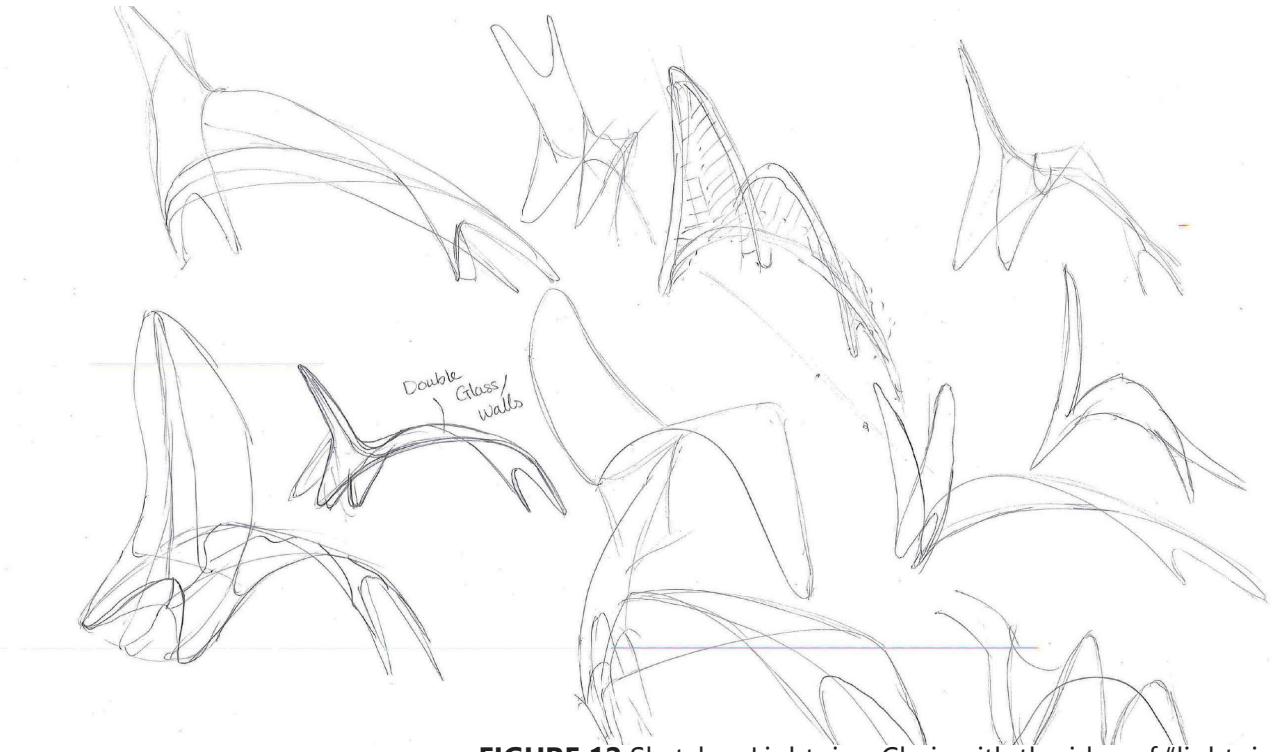


FIGURE 12 Sketches Lightning Chair with the idea of "lightning striking"

DESIGN ANSWER

The shape and materials were fixed to a certain extend. During the process of model making the shape did not completely have to resemble the sketches made earlier. I let the process influence the design a bit by coincidence, if only it would create a similar impression. During this process the initial idea was to use a thicker copper wire. However, this thicker wire was relatively expensive, but more importantly, had lost a lot of capriciousness. This is the one feature that is essential for the impression of the chair. Therefore the decision was made to use thinner iron wire and to wind it around a thicker iron wire (figure 13). This was the easier solution for the small model, however with a real life model would perhaps be possible to influence small pipes in a way that they do have a capricious shape. Another

feature that was not taken into the model, is the use of a mirroring glass plate as an underground for the chair. This way the stormy sky gets reflected directly on the underground (figure 14). The full process of the model making can be found in appendix A.6.



FIGURE 13 Final model



FIGURE 14 Impression of use environment

DESIGN ANSWER

LIFE CYCLE INTERACTION BOILER

The initial source for this combination was pollution, but this does not involve a personal touch, which is required in this design case. Therefore the feedback to the personal analysis was made. There, one of the conclusions was that I am interested in the process or development of things, also because this is somehow a story to tell. Telling the story of the life cycle of a product with a visual metaphor is a challenge, because it is an overarching process instead of one object.

One of the basic ideas to visualise this is to work with layers. These layers could be static and visible in any state of the product or packaging. However, more interesting would it be to implement this metaphor into the usage of the product as some type of interaction. Therefore the first requirement is to map the source in some kind of interaction besides the shape. The second requirement is that the mapped elements should be abstracted in some way. This decision was made to keep the object aesthetically more pleasing and the interpretation open for others. Similar to most stories it can be seen from different perspectives. The mapping should either be Explicit-Abstract or Implicit-Abstract.

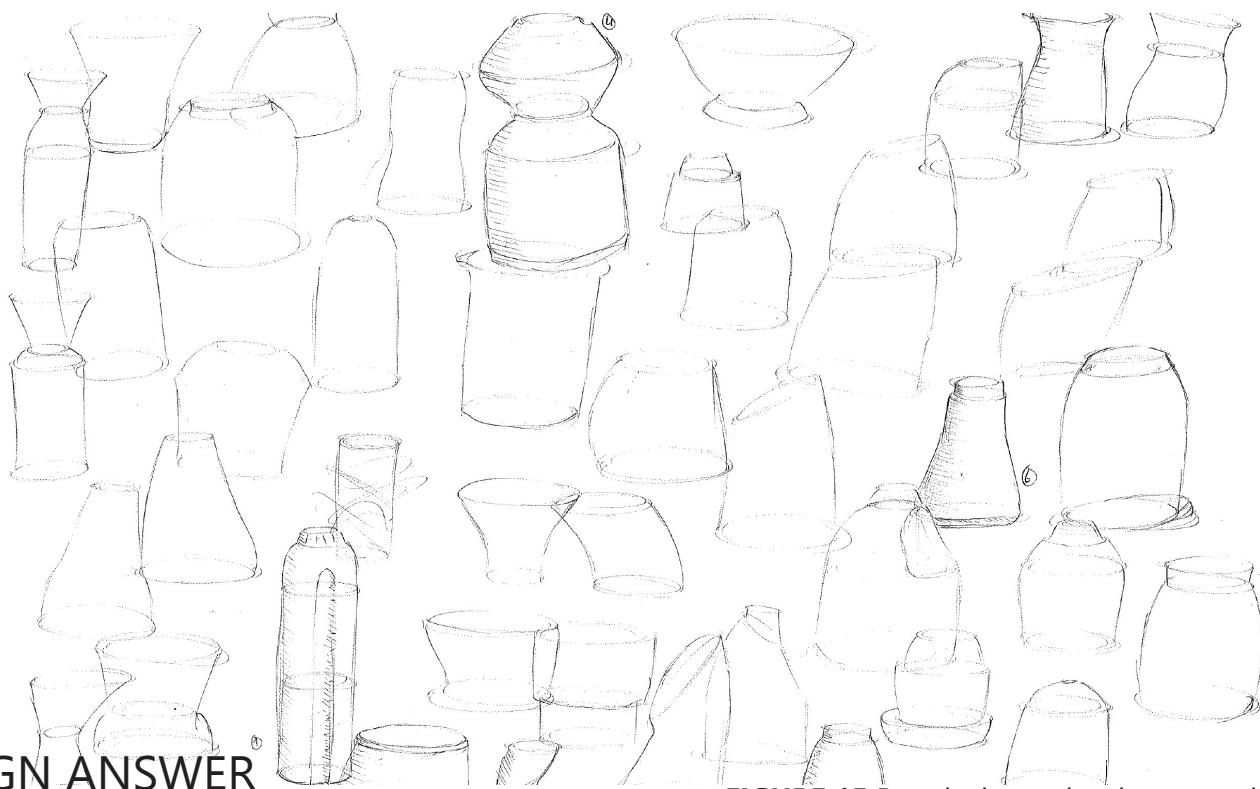
Because the layered character of the idea reminded

me of a cocoon, it has a slightly convex shape. The rest of the exterior was kept pretty simple, because the product will speak for itself better through the interactions than designed shape. Therefore I did not want to distract the user from these interactions and give it a plain appearance, which also fits my own preferences. The shape exploration can be seen in figures 15 to 19.

Sources or interactive mapping elements from the life cycle of a water boiler:

Types of interaction

- Layers
- Melting
- Unfolding
- Heating
- Slide together
- Shaving off
- Falling leaves
- Peel off
- Changing Texture
- Intersection
- Reversing the process
- Production Phase
- Packaging
- Bubble Wrap



DESIGN ANSWER

Paint	
Clean	
Use Phase	
Heat	
Water(proof)	
Splashes and stains	
Limescale	
After life Phase	
Garbage	
Damaged	
Reusable	
Parts	
Crushed	

The idea to combine those bold terms, became more concrete by distinguishing states and transitions. A state would be comparable with a use phase in the life cycle and a transition could be the interaction between those phases. To physically construct this layers will be used. The whole concept is to reverse the life cycle. Here the Life Cycle is divided into the three phases; pre usage phase, the usage phase and the after usage phase. The outer layer of the product will represent the end of life phase, which contains the mapping elements 'Damaged' and 'Reusable'.

After usage phase

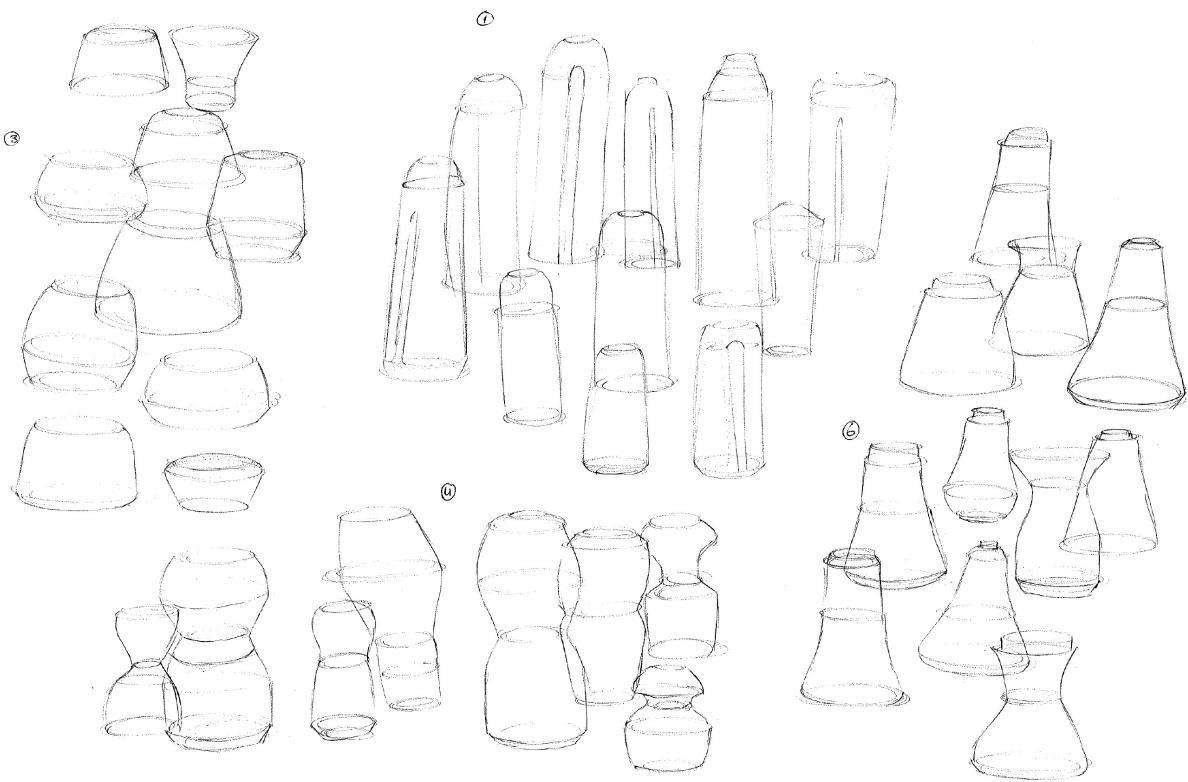
The initial idea was that it will have a damaged appearance and due to the heating process of the boiler, it will gradually start revealing cracks and folds, making the layer itself an affordance to peel off (see sketch in figure 18). This would then be the interaction to the underlying layer of the usage phase. Obviously, it would be very impractical to have all these peeled layer pieces around a water boiler. Besides, these 'waste pieces' are not a good example of a life cycle, because

FIGURE 15 Rough shape sketches water boiler

they imply the opposite of reusability. On the other hand this could be a tool to create awareness, but I personally do not think that the message is strong enough for the user to understand. Another complication could be that the water boiler is still hot whenever they start peeling it off.

Therefore, and also for the model making, this plan was not feasible. In the feasible case the outer layer, with a damaged and used appearance, will be wounded around the actual water boiler, making it able to unfold (see figure 23 and sketch in figure 18). The reusable mapping element will be the flexibility of the layer. Once it is folded or unfolded it can only become flexible enough to fold or unfold again by the heat of the boiling process. By using the water boiler the outer 'damaged' layer can be reused. A side advantage of this is that the user could determine the speed of the cooling process afterwards by folding the layer tight around the boiler or not. This layer's damaged appearance and interaction implementation of reusability are both quite abstract, which is in alliance with the requirements.

The material that could be used for this outer layer is some type of polymer. Given that the layer could be at a maximum distance of 10 cm from the heat source and the boiling temperature of water is probably a little over 100 °C (373 K), an estimated glass transition temperature of approximately 45 °C (318 K) and a melting point above 100 °C (373 K) of the material will be needed in order to become and stay flexible. The polymer Polylactide (PLA), with a glass transition point starting at 52 °C (325 K) and a melting point between 145 °C (418 K) and 177 °C (450 K), fits this description best (CES).



DESIGN ANSWER

In the case of the model (see appendix A.6), the outer layer is made of air drying clay. Making sure that the same interaction takes place only with water instead of heat. Once the clay is dry, it has lost its flexibility, but as soon as water is added, it becomes flexible again and can be reused to fold or unfold the layer.

Usage Phase and Pre Usage Phase

The usage phase is represented as a layer by the boiler itself. Contrary to the after usage layer, this layer looks brand new and very decent. It has a black shiny colour, which implies a certain expensive appearance. Another reason for this decision is that spills and tea stains are almost invisible on a black underground.

This layer consists of a metal boiler which is painted black with heat resisting paint and primer. For the interaction with the pre usage layer, a layer of heat

FIGURE 16 Multiple groups shape sketches water boiler

responsive paint is applied on the black paint in the pattern of bubble wrap. This paint changes colour when heated and the pattern becomes visible (figure 20). Once again this pattern is an abstraction from the packaging in the production process. This last interaction leads us to the last phase of the cycle, but similarly to the former interaction, only during the use of the product.

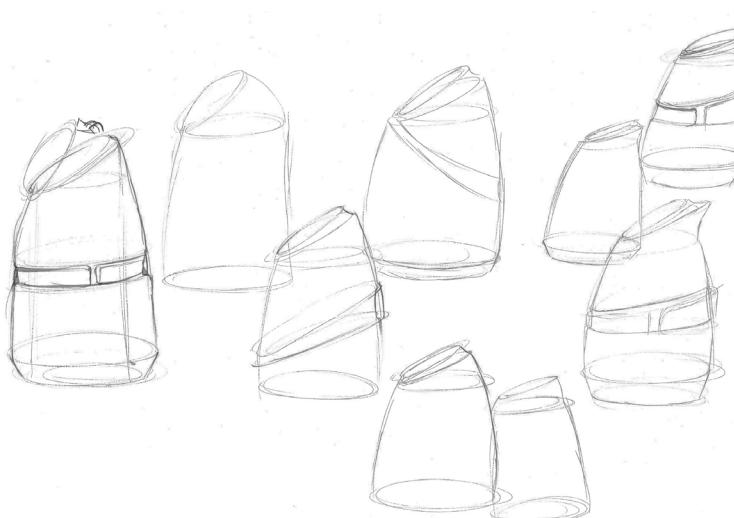


FIGURE 17 More detailed shape sketches

DESIGN ANSWER

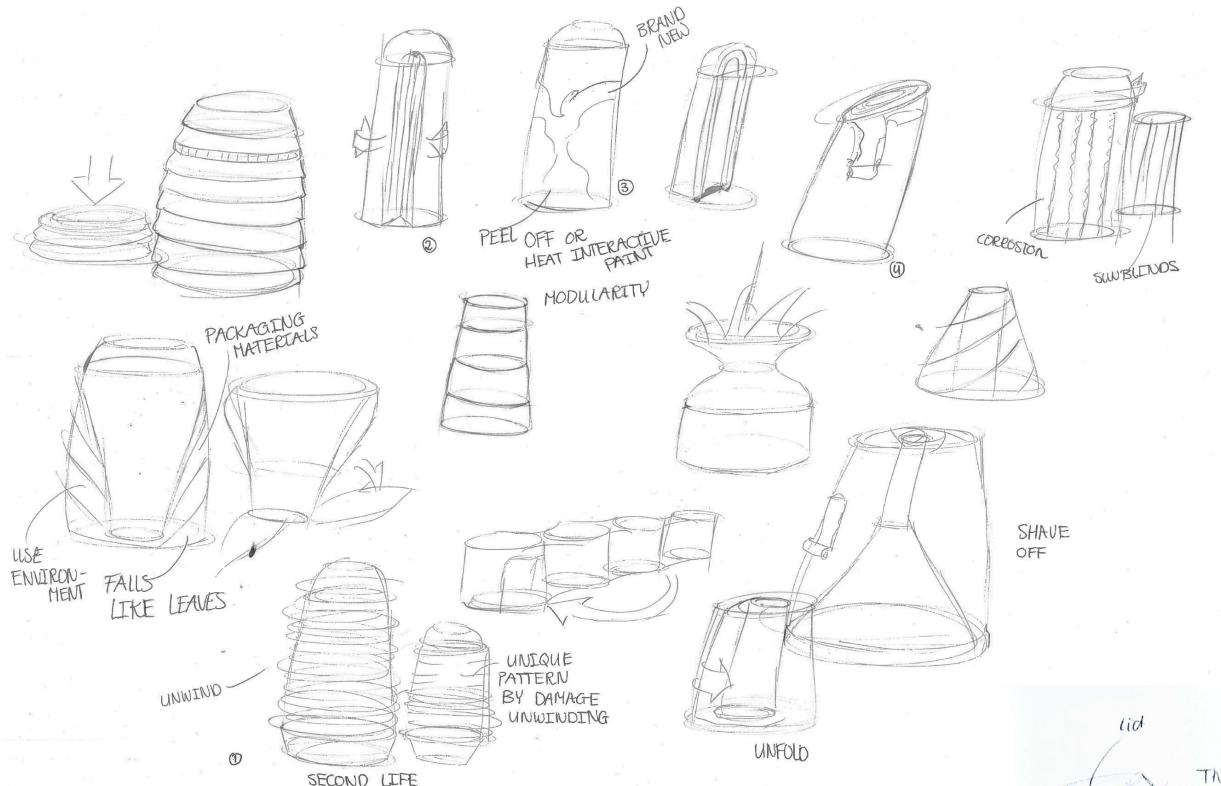


FIGURE 18 Interaction exploration sketches

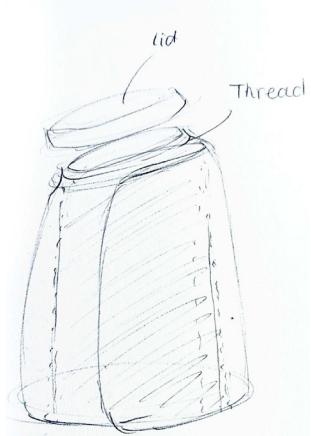


FIGURE 19 Position of the lid



FIGURE 20 Process of the pattern appearing when heated



FIGURE 21 Final model water boiler



FIGURE 22 Impression use environment



REFLECTION

DESIGN REFLECTION

The design question was formulated as:

"How can one make a personal object from an unlikely combination of different fields using a metaphor?"

This question contained 3 factors to take into account. Firstly, it had to be created from an unlikely combination from different fields. This was done in a structured way, using two columns with terms. Secondly, to do so, one should make use of the implementation of a metaphor in the object. Therefore the distinction between tangible and intangible terms was made between the two columns. These respectively represented targets and sources, which made the implementation of a metaphor possible. And finally, it needed to maintain a personal touch.

When it comes to the personalisation of this project, I personally found the framework from Sonneveld very helpful in determining certain interests and values that came forth from questions one usually never bothers to ask themselves. However, it did not help me determine the more plain forward terms that interest me such as stormy weather or the change of seasons. These are the interests that are not simply said activities or hobbies and are easily forgotten or left out, even though they might be great influencers of your style as a designer. Therefore I did add some of them to my list of interests. This being said, I do think that the personal analysis was a good base for the personalisation of the exploration phase. By using a lot of terms that are appealing to me as a designer, the exploration of these combinations became limited to my personal interests and gave the direction for a design

FIGURE 23 Final model unfolding

that I appreciate as a result but also when designing it. During the converting phase my personal analysis conclusions became one of the most important criteria for choosing a concept, when normally in DDD situations this does not weigh that heavily compared to other criteria.

Another difference that this DDD approach has had on the design process is that I had to figure out myself what the structure of the process was going to be. Since in DDD one simply tries to meet the demands, there are less demands in ADD and they are more flexible. This gave the incentive for a much more fun and unlimited exploration process, but on the other hand less support and structure for the decisions that had to be made. That is when the structured thinking patterns from DDD make a good complementation for this unlimited thinking and exploration. Setting up a structured plan relatively early in the process, helped maintaining the logical order in this chaos.

Coming back to the first two factors, it should be noted that some DDD structural thinking was indeed necessary. In the first place it was important to completely understand the definitions that I wanted to work with. What exactly is a metaphor and how and for what does one use it? What makes an unlikely combination? Is it just randomness or do we need certain terms to enable these combinations? This way of thinking out the exact definitions of what I wanted is comparable with the analysis phase from most DDD assignments I encountered. Using this analysis skills is how I ultimately came to a method that provided me with two designed attributes that meet most of my personal expectations.

REFLECTION

From these two objects, the metaphor mapping went very well with the lightning chair. The material make it implicit since this feature is applicable to multiple sources and the capricious shape makes it literal. Primarily since the mapping has become literal, which seemed to be the hardest category to map, I was quite surprised that after 2 to 3 iterations I already had a solid concept, which was aesthetically pleasing enough. As for the interaction boiler, this process took some more time, probably due to the fact that this was not about mapping a feature in the product design language but about mapping a process in the product interaction. This required a lot more visual thinking and imagination in reconstructing the use process. Funnily enough, this was an implicit-abstracted mapping which should be most aesthetically pleasing (see figure 3), but personally I find the design less aesthetically pleasing than the Lightning Chair. The explanation for this fact is that the source lightning in a literal state is already considered prettier than the abstracted form of a worn out product. This does imply that the findings from Cila et al. are not meant to use as a rule of science, but rather as a guideline for most mapping situations.

RESEARCH REFLECTION

The research question was formulated as:

"To what extent can, looking from the designer's perspective, the implementation of metaphors in Author Driven Design be useful in comparison to Demand Driven Design?"

In words of Cila and Hekkert 'metaphors are frequently employed by designers in order to bring new perspectives into products, and enhance their appeal and meaning' (2009). From my own experience with previous demand driven design assignments, metaphors were used primarily with another goal than this ADD project. In these assignments I found the emphasis to be more on the enhancement of appeal and meaning by the creation of affordances for the users. By doing so the intuitiveness and usefulness of a product improves. It is usually meant to unburden the users of thinking too much about an interaction with the product in question by using a well-known metaphor. However, in Author Driven Design the opposite is the goal, because this is about an author carrying out his or her own ideas. Functionality here is not the priority, but making users think about the product or its interaction is. In this case the metaphor needs to express a certain emotional value or experience, which would mostly let users think about it in a different perspective. Whereas Author Driven Design uses the freedom of the whole scale of explicitness and abstractness to map these metaphors, I believe Demand Driven Design leans

more towards the implicit and abstract to avoid vulgar designs that might affect functionality.

In the question the term 'useful' was described as the capability to satisfy a certain goal. Since the goal in DDD is to meet the functional requirements, metaphors are being used to aid that goal by offering affordances to the user. If this metaphor would explicitly and literally be mapped, the design would become aesthetically less pleasing and way to identifiable. Ending in the metaphor overruling the product, while it should actually be aiding its functionality and according to table 1 be "invisible" since it is part of the design. This would make the metaphor relatively useless. In ADD this is not an issue, since that might be the author's general idea. A possible pitfall for this approach might be the use of implicit and abstract mapping, because that could cause the user to miss the entire point the author is trying to make. In both approaches the use of metaphors seem to be of significance, the only difference being the goal and visibility of the metaphor. Therefore it seems to be the safest solution to mostly use explicit and literal mapping for ADD and be careful with the use of explicit-literal mapping for DDD purposes.

To answer the question 'to what extend', that would mean comparing the necessity of metaphors in both approaches. When it comes to metaphors in DDD in some cases, for example software interfaces, the use of metaphors to guide the user are indispensable. However, when designing a lamp it is not necessary, because there is no need for additional guidance for the user about the functionality or the author's underlying idea. In ADD this need is there and consequently metaphors are indispensable in this approach. Once again, this is not a rule of science, but merely an observation when comparing both approaches.

REFLECTION

DISCUSSION

Due to the personal aspect of this research, some findings may have been subjective. Therefore, these findings should not be used to copy, but rather as a guideline or insight for most mapping situations. Since this research was done in ten weeks, only two designs were mapped with this method. Therefore the findings would need additional research from at least a dozen more designs with this method in order to become more credible and trustworthy. For now it can best be considered an hypotheses based on an observation from a small number of cases

CONCLUSION

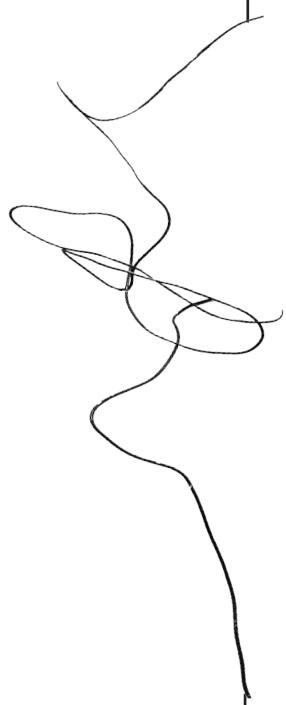
To conclude, the extent to which metaphors are useful in product design depends on the product goal. The necessity is there if the products have to communicate a deeper meaning or functionality to the user, which with DDD is the case in some designs and with ADD in approximately every design.

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APPENDICES

- A.1 Project Proposal
- A.2 Tools for Reflection
- A.3 Mind Maps
- A.4 Design Missions
- A.5 Exploration
- A.6 Model Making
- A.7 Additional Photos



A.1 PROJECT PROPOSAL

SHARONA JASPER
S1740490

SCIENTIFIC CHALLENGES IDE
Title Author Driven Design Project
Coach Wouter Eggink
Amount EC 15 EC, Module 4 (23/04/2018 – 29/06/2018)

SHORT RATIONALE

Exploring the Design of objects from your own intrinsic motivation, rather than from an external demand driven assignment.

LITERATURE

- Frayling, C. (1993). Research in art and design.
- Findeli, A. (2010). Searching for design research questions: some conceptual clarifications. Questions, Hypotheses & Conjectures: discussions on projects by early stage and senior design researchers, 286-303.
- Eggink, W. (2009). A chair to look to the moon: What we can learn from irrational design history for contemporary design practice. *Design Principles and Practices: an International Journal*, 3, 103-114.

RESEARCH QUESTION

To what extend can, looking from the designer's perspective, the implementation of metaphors in Author Driven Design be useful in comparison to Demand Driven Design?

RESEARCH APPROACH

Why This scientific challenge is meant as support for the research of Wouter Eggink on the author driven and demand driven design approaches.

From my own motivation it was interesting to answer the question what makes the use of metaphors in both approaches appealing and how they are being used. What is the added value and the difference in implementation of these metaphors, taking into account the different goals of both approaches?

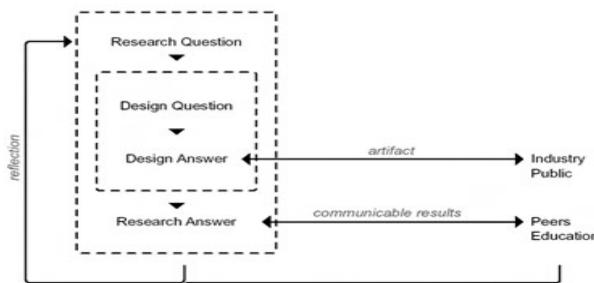
Where & When The research will be conducted at the university of Twente during a time span of ten weeks. This is week 17 to 26, starting from Monday 23rd of April until Friday 29th of June 2018.

What The question can be answered by exploring the implementation of metaphors in ADD and in DDD and where the boundary of this implementation lies in both approaches to ensure the desired goal. The final deliverable should be a description of those boundaries and how to reach them from a designer's perspective.

How Testing by attempting to answer the design question through designing and afterwards the research question by reflection. This will be done starting from ADD perspective and the process will be executed in a DDD structured way. First, a personal analysis will provide what exactly one wants to achieve and what personal values one would want to implement in this research through design. After that the literature analysis will be focused on the value and use of metaphors in design and how they are reached from a designer's point of view. The actual design will be used to implement the metaphor itself. After the representation the reflection, the design and research question can be answered respectively by reflecting on the design with the implemented metaphor and comparing the design process of the Author Driven Design with previous Demand Driven Design processes.

Framework

This research will be done according to Findeli's framework of project grounded research in design.



Findeli (2010)

Plan of action

1. ANALYSIS

Personal analysis contains the answers to the reflection assignments from Sonneveld (2013), in order to learn more about who you are as a designer and what you want to carry out. This results in a statement of what one wants to implement in the project and why.

The literature analysis is the base for exploration of the research question.

2. IDEATION / EXPLORATION

In this phase a lot of ideas will be generated and explored based on previous information from the analysis. Finally two or three ideas will be chosen to conceptualise.

3. CONCEPTUALISATION

In the conceptualisation phase the chosen ideas from the ideation phase will be elaborated. Resulting in a final concept, which will be complete on paper.

4. REALISATION CONCEPT AND REPRESENTATION

With the final concept on paper, the concept will be realised. After this is executed, a representation of this concept will be made. This phase could already answer the design question.

5. REFLECTION

The reflection will be on the overall design process including the analysis. This reflection will also answer the research question, using the answer of the design question.

All of this will be documented in a final report.

Schedule

Week Activities

- 17 Final project proposal and start personal analysis
- 18 Final personal analysis and start literature analysis
- 19 Final literature analysis, formulate design question, start ideation
- 20 Ideation
- 21 Final ideation and further conceptualisation
- 22 Final concept and realisation concept
- 23 Realisation concept
- 24 Finalize realisation concept and representation
- 25 Reflection
- 26 Reflection and final report

A.2 TOOLS FOR REFLECTION

1. 'Inspiring people' reflection

Who inspired you in your development as a creative person?

Starting with my family, my sister has a talent in drawing and painting. A few years ago, she started exploring this talent and ever since she has grown a lot. Her paintings begin to contain a certain amount of reality and liveliness that she had not reached before. This really inspired me to learn more about the use of visual art and the techniques she mastered. My grandfather has this hobby where he is just fascinated by new inventions which he then learns a lot about and wants to discuss afterwards. He was a photographer in his life, but I believe his great passion was to either become a doctor or some kind of inventor. These discussions always gave me new insights of how to improve or change something. My grandmother had a passion for painting and created a lot of paintings, decorations, painted candles, etc. One of her paintings used to hang in my room ever since I was a little kid. The rest of her various artworks can be found all over the house in which I grew up.

My parents have taught me certain things that helped me become a creative person which has a wider appreciation and set of perspectives. For example, when I was little, they did not hide me from lightning to feed fear of it, but instead focussed on the beauty of it by watching it together, making me see different sides of things. Furthermore, when I met other industrial design students, their work became inspiration for becoming a more creative person as well.

In my case not only real persons inspired me to become creative. My favourite fictional characters carried some kind of style that inspired me and therefore inspired me to like artefacts that matched this (life)style. One example is the main character in the Mentalist (TV show) or a character called Michael from the tv series the Good Place. The former always came up with clever and creative solutions in a way of thinking, which seems to work for him. Both characters have changed quite a bit over the series and that is kind of what I admire about them. They are critical, but can also be critical to themselves and both characters were able to come to smart insights and deeper moral values by using their creativity. That comes close to the values I want to live by.

2. 'Inspiring events' reflection

What did you encounter this week in the media, in the street, at home, that triggered you as a designer? When did you think "This is where I, as a designer, can make a difference"?

I usually think that I can make a difference as a designer whenever I encounter a situation that I think is not optimal or even stupid. One recent event that was really stupid in my opinion is the fact that people still have to drive extremely far to look at bricks. Even if the salesman is 100 kilometres away from you, they will deliver the bricks to your front door, but you still have to visit because pictures are not an accurate representation of the colour and texture of those bricks. I immediately thought by myself that some kind of service for samples, or other representation methods could really be a solution in this case. This has so many advantages and I really do not understand why this was not happening already.

3. 'Inspiring pieces of art' reflection

Describe what aspects of the work of art inspires you. Next, try to discover how these aspects represent design values that matter to you.

The beauty of this art for me lies in the combination of two at first sight very distinct things together and making it work. Flowers on itself are already considered beautiful, whereas X-rays are not associated with beauty at all. Yet this artworks does make that association.



X-ray flower (Whitney)

4. 'Scenario' reflection

Describe a day in your life in 10 years from now. Your description will start with 'I wake up', and ends with 'and I fall asleep'. You may choose any format you want: text, storyboards, animations, etc. The goal is to make you aware of what topics come to your mind when you think of yourself in the future.

I wake up in the morning and immediately greet my lovely doggo. As always I quickly write down any stuff I need to remember during the day. After breakfast and other morning rituals I walk downstairs and towards the office with a cup of tea and my dog. I feel very blessed to be able to walk to my work, especially when I look at the traffic jam and the endless amount of frustrated drivers. Upon arriving there I greet my partners and we start the morning with a small evaluation of where we are with the assignment we are working on. This involves us travelling to several places in the next week, where this assignment should be implemented as an experiment. After discussing this project, we start working on this project individually.

Later in the afternoon we come together to continue working on our personal project. This project is something we make for our own portfolio and perhaps sometimes could be used in competitions or other. As sort of a late afternoon drink, we do this when enjoying a drink or two and catch up with each other. Sometimes this leads to entire evenings on a terrace. Today however, we finish in about an hour and I walk back home. For dinner I've invited a few friends over. After we are finished we watch the newest episode of our favourite tv show and then they return home. Before I walk my dog again, I review the ideas I wrote earlier that day and attempt to get some inspiration out of it to use for our or my personal projects. Also I like using my imagination to alter any dreams I may have had and write it down so that it can be put in the current story that I am writing. After taking a quick shower I immediately go to bed and fall asleep.

5. 'Alternative lives' reflections

Describe 5 possible other lives that you could be living right now, lives that would 'fit you'.

Maybe you could be studying journalism, be a midwife, an actor, etc.

There are no restrictions, as long as this parallel life really resonates with who you are.

Give a brief description of these 5 lives, and how they connect to you.

The first alternate life that I could be living is the life of a writer. Either the writer of a book or the writer of storylines for movies and or TV shows. This is a great way to tell a story with all your creativity in it. For myself it would be very satisfying to see that I can put thoughts into the real world. Very often when reading a book or watching a show I can think of alternate endings, that would fit my preferred outcome.

The second alternative is being a detective or crime scene investigator. The aspect of solving mysteries is appealing to most, including me. However what I find attractive as well is learning about human behaviour and logical reasoning. The way of thinking here seems very interesting. I would like to explore these thinking tracks, since it seems like a very useful skill to master in other situations as well.

Furthermore, I could also be a Photographer. Either for news articles or for recreational articles. I would not want to be doing photoshoots of celebrities or family photos, but rather capturing a moment or place. This involves a lot more exploring, which I like, and is of more significance to me. It is of more significance because it would make me feel like what I am doing is more important to viewers, but also to myself. I get to share a piece of the atmosphere around me with others and get to learn a lot about how the world works.

Being a programmer. This is partly due to the realisation that everything around us is changing rapidly towards the virtual world, but also because there are so many possibilities. Also meaning that there is a lot of room for creation. I like to try new things and I believe that being a programmer could offer a dynamic setting for that, since it is such a broad and deep area.

The last alternative is being an architect. Not just a random architect, but one who designs tree houses or Eco houses. Almost like making an artwork out of a home and involving lot of natural elements. The idea of designing such a big piece of someone's live would make me enthusiastic and motivated right away. Because these project are always long term, it would definitely give a sense of satisfaction to see something as big as a house or building in real life instead of just your sheet of paper.

6. 'Creative Achievements' reflections

Describe three creative achievements, that you were/are proud of and made you happy: 1. When you were a little kid, 2. When you were a teen ager, 3. During your education as an industrial designer. It may be something you made (an object, poem, tree house) or that you organized (party, diner, political manifestation) as long as it is something that shows your creative thinking.

What makes you proud/happy of these achievements?

What do they show about you?

In my childhood I was particularly proud of this puppet that I made out of a sock. I was amazed by the fact that I could make something similar to actual puppets which to me had a certain personality. Apparently, back then, I already liked creating something with a personality, because I could let my phantasy run free.

As a teenager I really liked taking photos and making or editing short movies. I particularly liked to evoke the right emotions with good timing and music that fits the images. For the course CKV we had to make a movie. I am proud of this movie because I felt like it became entirely different than I imagined and a lot of iteration took place. However the setting and vibe of this short film became exactly as it was intended beforehand. The feeling I wanted to express there made it valuable, even though some images and editing could have been better. So in short I was really proud that I could express a feeling through a short film.

During my education as an industrial designer, I think I am most proud of the things we made that are different than the usual stuff, because it had some creative aspect which nobody has thought about yet. For me one example is the Flexwall, which was meant as office furniture for Ahrend. Even though we did not pass our project immediately, Ahrend chose our concept to further develop. This gave us such a boost after learning that we failed our project. At least we had fulfilled our assignment towards the company we were designing for, while following our own creative decisions. This probably meant more for us at the moment than passing for our project. Somehow I felt that someone appreciated the fact that we had thought out of the box.

7. 'Conversation with oneself' reflections

In this assignment you will have a conversation with yourself. Describe a theatre scene in which you are miraculously duplicated into two: you and yourself. First, describe the setting in which the conversation takes place: are you at the beach, walking in a forest, washing the dishes together? Etc. Feel free to include bodily gestures or other behaviour. This is a free-flow assignment. Just start writing the conversation and see what comes up. DO NOT have a plan on beforehand. The scene should be approximately one A4, but don't stop if you still feel in that flow.

The setting of this conversation is an airport terminal. It is a very crowded day and I am very stressed about catching the flight.

Me, fast walking: 'Hurry up, we're going to miss our flight!'

Myself, somewhat irritated: 'How about you just go instead and leave me behind?'

Me: 'I'm serious! We HAVE to be on this flight!'

Myself: 'And what if we don't?'

Me: 'Two words: big trouble.'

Myself laughing sarcastically: 'Yeah, apocalypse beware of this tragedy..'

Me, eyerolling: 'You know what I mean.'

Myself, at a more serious tone: 'No, not really.'

Me ignoring that previous comment and continuing fast walking.

Myself, grabbing me by my arm and pulling me backwards: 'I mean it. Where are we even going?'

Standing still in the middle of the crowded terminal. People pushing their way around us.

Me: 'I must've told you a thousand times, I am not going to repeat myself.'

Myself: 'No you haven't.. You only said we were going to gate 7.'

Me: 'Yeah, that's right!' Short pause.

Myself: 'Well, mind to tell me where the flight is going?'

Me, slightly hesitating: 'Forwards, I guess'

Myself, staring at me with disbelief: 'You are stressing over catching a flight, from which you do not even know the destination? Why would you even board that plane?'

Me: 'Well, look around you, everyone is busy catching a flight!'

Myself a little self-satisfied: 'Oh really? look again..'

Me turning around. The terminal is empty apart from a few lost tourists.

Me very suspiciously: 'Okay, bad timing I guess?'

Myself: 'Don't worry, I think they will be back soon and once again it will be crawling with destination seekers'

Me: 'How come? They are on time for their flights.. We apparently aren't..'

Myself: 'Of course we are! Flights are leaving all day..'

Me: 'Yeah, very funny, but ours should have left 5 minutes ago. I have written proof on that screen, if you don't believe me.' Pointing at the departure screen.

Myself: 'I don't need that to tell me on what flight we should be'

Me pauses a moment, then turns around, starts dialling a number and walks the opposite direction.

Myself follows at the same pace.

Myself: 'Wait, what are you doing?'

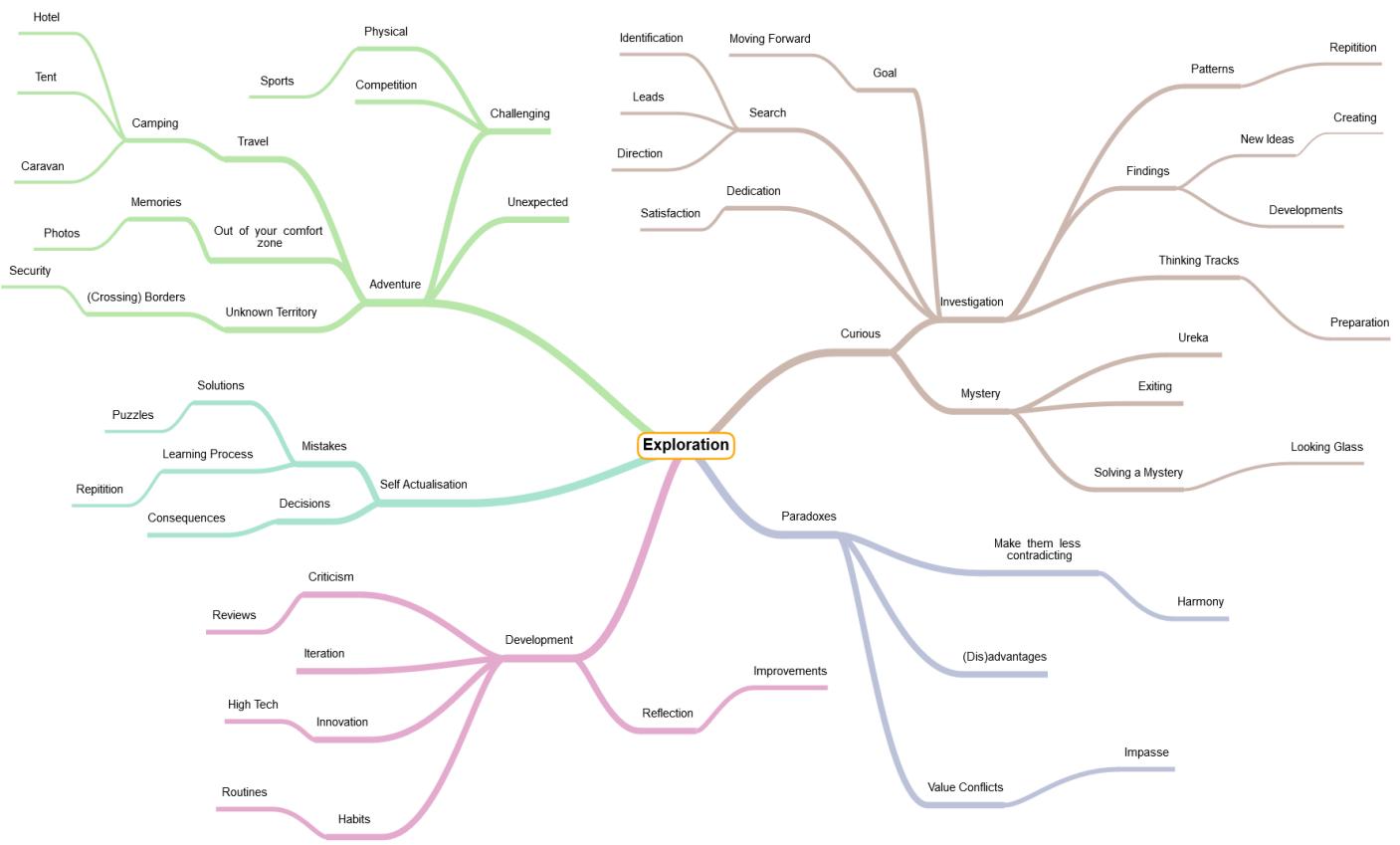
Me, while maintaining my pace: 'I'm informing the pilot that I am not going to be his co-pilot on this flight.'

Myself: 'Right, I'm sure they will wait for you if that is the case..'

Me: 'Nah, I think someone else can handle the autopilot in my place from here. Besides, like you said, they will be back soon anyways.'

Myself nods at me. Me and myself walk towards the exit without looking back.

A.3 MIND MAPS



A.4 DESIGN MISSIONS

Possible design missions

- Is it possible to design something art-like to keep people curious?
- A device to combine different unobvious objects, to give a boost to creativity
- Telling a story through an object
- Make an emotionless object
- Make an art piece of an unlikely combination of objects or features/conflicting values/conflicting features
- Design an object that has zero usefulness
- Design an object which increases independence
- Designing the metaphor of reward to help people follow through
- A device that shows your progress in something
- Design the element of surprise/ design the unexpected
- Design something intended to break
- Design something intended to destroy something
- Design something without meaning
- Design something with an unexpected effect

A.5 EXPLORATION

Several initial ideas:

Storm is a broader concept to work with.

Sitting in the midst of the storm like nothing is happening. Make it look like a breeze.

Soundproof chair is an interaction that has to do with storm.

Lightning rod chair, is quite an explicit metaphor.

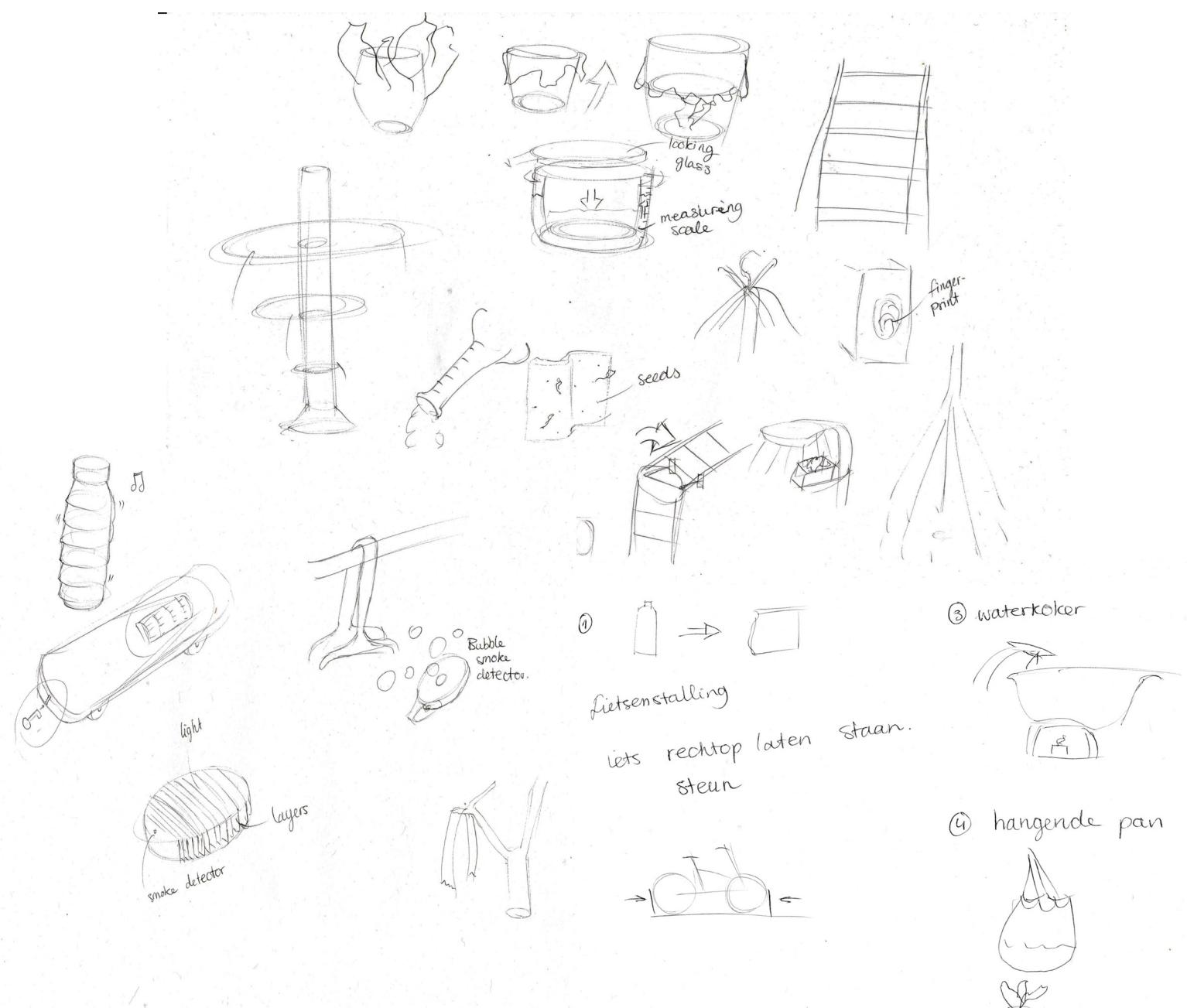
A line of objects called Keeping up appearances

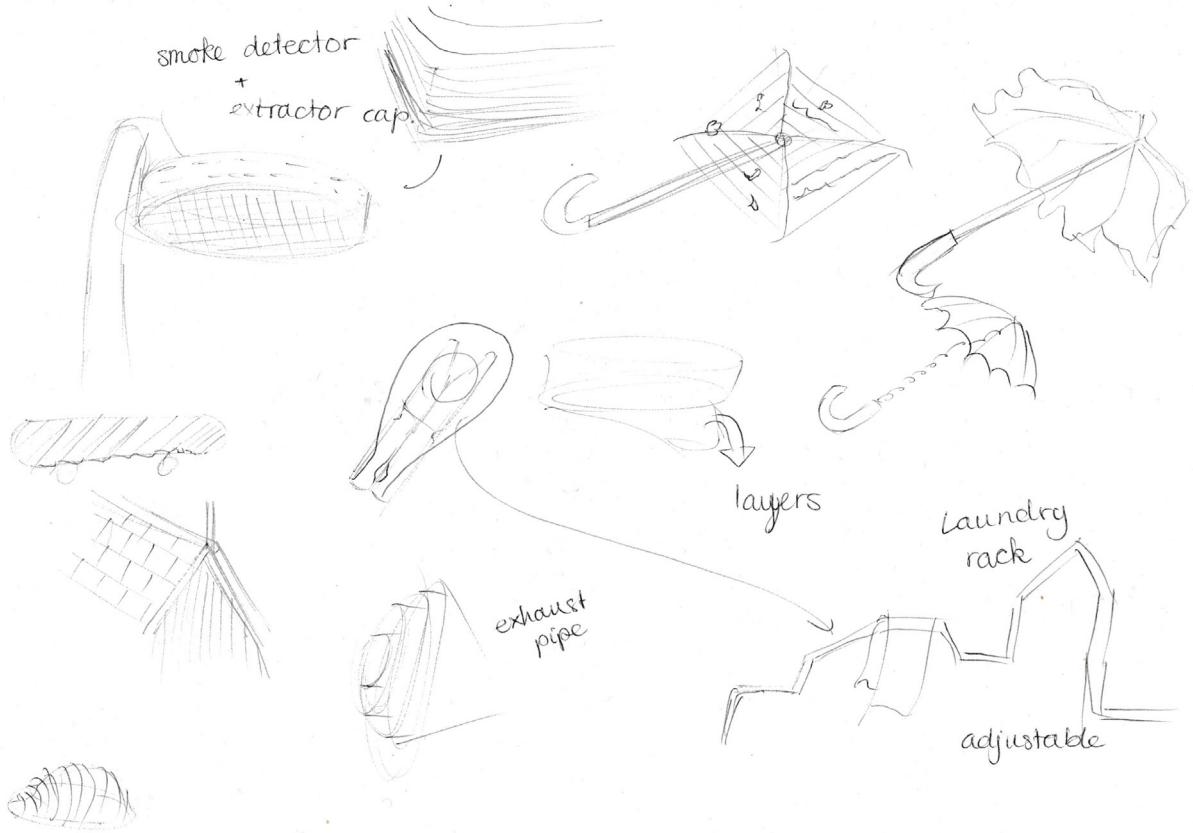
Series of double walled products called the truth behind walls.

For the water boiler this could mean a double walled product with in between these walls an interaction that mimics the life cycle when the boiler is heating water.

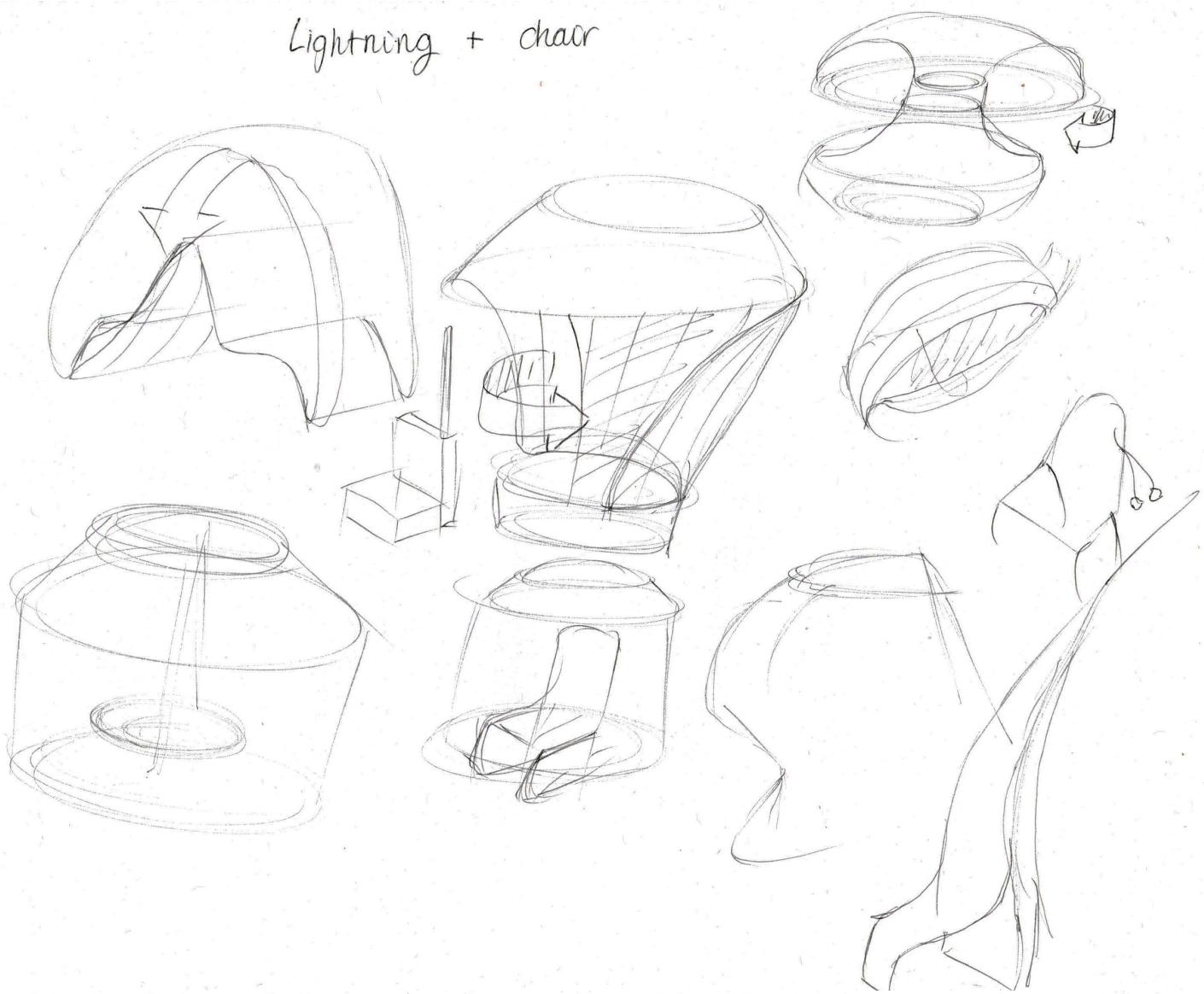
The chair would then get double walls with electricity wires in between. In this case the "truth" between the walls would be the danger of lightning. This is an implicit mapping on the one hand, but on the other hand this could question whether the original source (lightning) is still noticeable enough.

Brainstorm Sketches





Lightning + chair



Storm

split tree



Water Boiler + Pollution





A.6 MODEL MAKING

CHAIR

Required materials:

- Copper or iron wire with a preferable thickness of 0,8 mm or thicker.
- Copper or iron wire with a preferable thickness of less than 0,5 mm.
- Wooden plate
- Optional: Glass mirror plate
- Paint and brushes
- Modelling clay

Method:

The chair is constructed by twisting two long 0,8 mm wires in each other (see image top right corner). After this the one twisted wire can be bent in different directions to find the rough shape of the chair. In this step it is important to keep the capricious feature of the chair. After the shape is defined, the thinner wires can be wound around this shape. Once this step is completed, the chair needs to be able to stand on its own. This was done by creating a stable support around and underneath the chair's legs with modelling clay. This will also manoeuvre away the loose ends of the thinner wires. For an underground a wooden plate was used and painted with stormy cloud colours. The same painting pattern was used for the clay support round the legs. Attaching the chair to the underground can be done by a screw or a strong instant glue. If this model were to stand outside, a better alternative for the paint pattern on the wooden plate would be to use a mirroring glass which directly reflects the sky upon the underground.

WATER BOILER

Required materials:

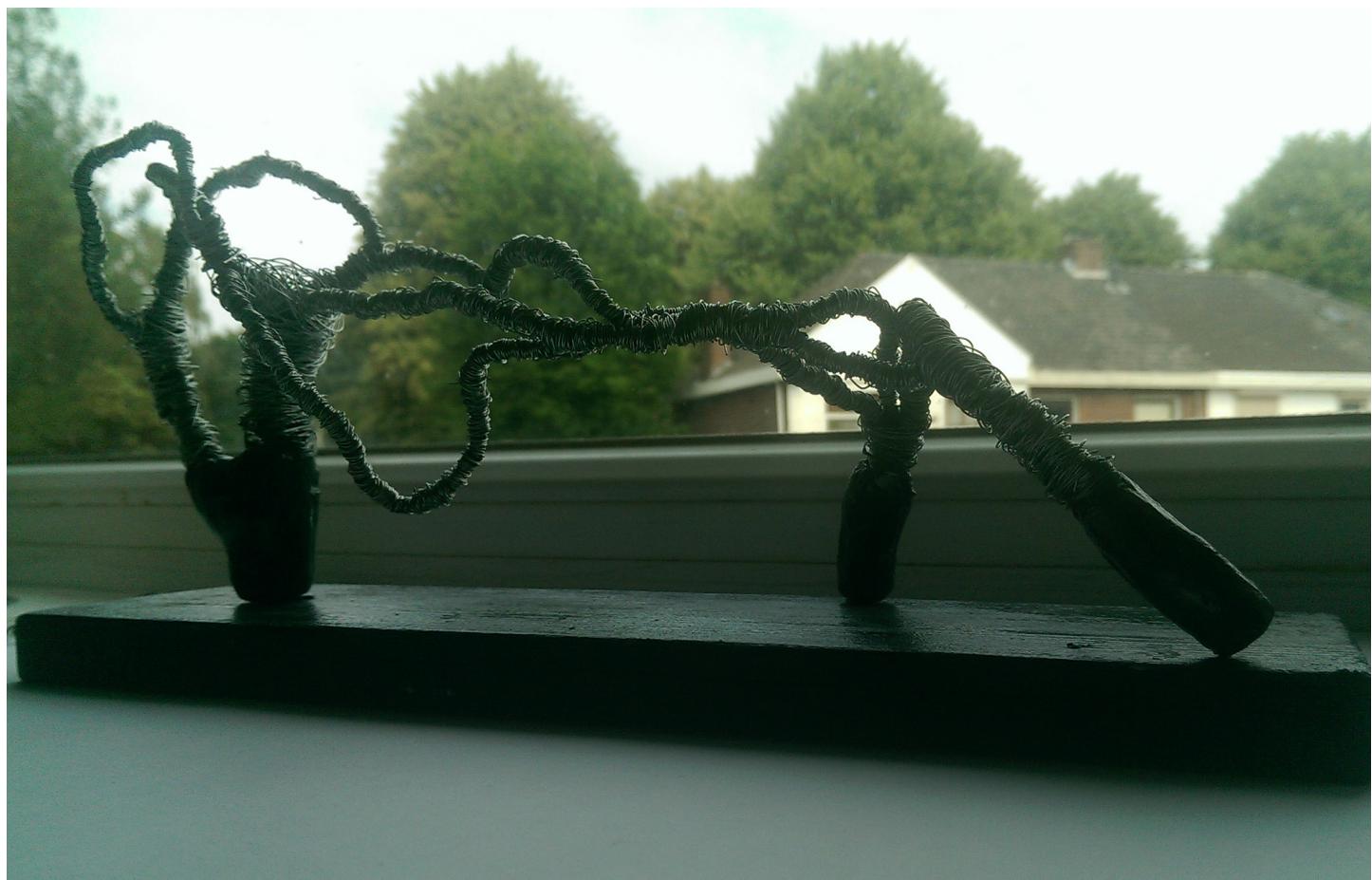
- Bubble wrap
- Paint and brushes
- Glass or plastic bottle/pipe
- Optional: glass cutter, scissors
- Air drying modelling clay and water
- Plastic lid from a pot

Method:

The water boiler starts with a cylinder from either hard plastics or glass. When cutting one from a glass bottle a glass cutter is required. This cylinder should be scrubbed with sand paper and then be painted black. Once this layer is dry a layer of white paint was applied on the bubble wrap, which then got wrapped around the cylinder, creating a pattern. The next material to work with was the modelling clay, which needed to become the foldable outer layer of the water boiler. In order to achieve the lightly coned shape, the layer needed to be thicker on the lower side and folded a bit to the inside on top. Once this was dried a damaged pattern could be painted on the outside. When dry, one side of the layer was attached to the cylinder using instant glue. The last element, the plastic lid with the right diameter, was sanded, painted in the right colours and made to fit in the top opening by moistening the clay again and forming it around the inside of the lid.

A.7 ADDITIONAL PHOTOS

LIGHTNING CHAIR



LCI WATER BOILER



