공예・디자인학석사 학위논문

A Study on Supra-Functional Design for Unexpected Experiences

- Using the Methodology of Rhetoric Norm Deviations-

예측불가한 경험을 부여하는 초기능 디자인 연구:
수사학의 방법론을 활용하여

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Giulia Nespoli의 디자인학석사 학위논문을 인준함

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Abstract

With the drastic improvement of living conditions, the satisfaction of human primary needs has become easier, less meaningful, and less rewarding. This phenomenon led people to aim towards the satisfaction of higher needs, called *Supra-Functional*, linked to experiences, emotions, self-realization, knowledge, and socio-cultural meanings.

From this perspective, designing for the contemporary scenario means to go beyond offering simple functional performances, but rather to focus on bringing richness, valuable experiences, and enjoyment in users' daily life.

The Purpose of this research is to design supra-functional products able to generate unexpected experiences by employing norm deviations rules derived from rhetoric studies.

This Research investigates, first, the principles of unexpected experiences and how they emotionally affect human response; second, it analyses the fundamentals of supra-functional design and the directions for designing unexpected products. Third, the Research investigates the possibility to break common expectation for accomplishing unexpected results by applying rhetorical stylistic rules when conceptualizing and designing products.

The designs developed during these studies present unexpected features, focus on supra-functional needs, and aim to provide pleasant surprise or uncommon experiences to users.

In particular, the First Dissertation Projects, focus on exploring how to apply rhetoric rules in the design process and how to compose products based on Figures of Speech, while for the Second Dissertation Projects, the focus shifts from the rhetoric-designing method on to the purpose of conceptualizing products that deviate from the standard expectations, and, once the deviations are defined, designing the outputs by following the pertinent rhetorical rules. Finally, the focal point of the Third Dissertation Projects lies in enhancing the unpredictability of the outputs by following several surprise strategies for designing unpredictable experiences while employing rhetorical methods relevant to those specific purposes.

In conclusion, this Study shows a direction about how contemporary designers could go beyond the mere functional features of products, giving prominence, instead, to the supra-functional aspects of designs, aiming to turn users' *ordinary* into a meaningful and memorable *extraordinary*.

Keyword: Unexpected Experiences, Supra-Functional Design, Norm Deviation, Rhetoric Figures
Student Number: 2018-27363[①]

[①] The author of this thesis is a Global Korea Scholarship scholar sponsored by the Korean Government.

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Chapter 1. Introduction

1.1. Overview

This first introductory chapter presents an outline that provides a comprehensive overview of the key elements of the thesis. The outline uses the following sections:

Problem statement, the type of issues addressed by the research are presented. Research Objective, the purpose of the study and the core research questions are introduced. Research Method, the research methods used are provisionally outlined and justified. Structure of thesis, the frame of the remaining chapters written until now is drafted.

The four sections of this initial chapter will now be described in greater detail.

1.2. Problem Statement

"It is not enough that we build products that function, that are understandable and usable, we also need to build products that bring joy and excitement, pleasure and fun, and, yes, beauty to people's lives"
(Don Norman, 2004)

With the drastic improvement of living conditions, the satisfaction of human primary needs has become easier, less meaningful, and less rewarding. This phenomenon led people to aim towards the satisfaction of higher needs, called *supra-functional need*. They are linked to experiences, emotions, self-realization, knowledge, and socio-cultural meanings. According to this perspective, to design for the contemporary scenario means to go beyond the offer of simply functional performances, and focusing on bringing richness, valuable experiences, and enjoyment in users' daily life.

Simultaneously, contemporary society is facing a new paradigm driven by Big Data, where the amount of available information is more than what

could be processed, and almost everything can be predicted and controlled using data.

As a result, the modern person's daily life swings between a state of anxiety and fear of losing control and a state of hypostress, triggered by routine, comfort, and norms. Hypostress is characterized by boredom and restlessness.[②] This type of stress is more prevalent in modern life, and it has been correlated with depression, drug abuse, aggression, gambling, and relationship dissatisfaction.[③]

Designing for contrasting this phenomenon means to heal the boredom by delightfully increasing curiosity and surprise into users. Such a design philosophy turns objects and items taken for granted, into emotionally intensified experiences worth being remembered and shared with others.

In conclusion, to overcome the unconscious habit of giving only superficial attention to anything that follows norms or which has predictable behaviors, it has become essential for designers to create supra-functional objects capable of capturing attention, delighting their users, and emotionally twisting their expectations.

In other words, it has become crucial to upgrade designs with the purpose of turning users' *ordinary* into a meaningful and memorable *extraordinary*.

1.3. Research Objective

The general objective of this research is to design supra-functional products able to generate richer emotional reactions in the users by breaking their common expectations and offering them unexpected experience.

The investigative foundation for this research is provided by three main research questions **(RQ)**:

② "Hypostress Definition and Meaning: Collins English Dictionary." Hypostress definition and meaning | Collins English Dictionary. HarperCollins Publishers Ltd. Accessed November 10, 2020.

③ Martin, Marion, Gaynor Sadlo, and Graham Stew. "The Phenomenon of Boredom." *Qualitative Research in Psychology* 3, no. 3 (January 2006): 193-211. doi:10.1191/1478088706qrp066oa.

RQ.1 (WHY) Why is it important for humans to experience the unexpected? How does this type of experience affect emotional responses?

RQ.2 (WHAT) Is it possible to design products that generate unexpected experiences? Are there examples of supra-functional product designs that have been able increase curiosity and surprise into users?

RQ.3 (HOW) Given that rhetorical stylistic rules have the purpose to break common expectations, can they be exploited as tools for designing products able to provoke unexpected experiences?

1.4. Research Method

The research methodology, systematized for answering to the ground questions, consists of three complementary phases, outlined below:

RM.1 Analyze the main factors defining an unexpected situation; identify the constitutive phases of a surprised reaction; research the positive effects that surprise has on humans.

RM.2 Study Emotional Design theories for exploiting objects' intangible powers; identify in product design history examples of products that have been considered successful and memorable thanks to their ability to surprise and analyze how they work.

RM.3 Analyze the ability of rhetoric to break common expectations; research whether rhetoric can be applied to the design process; outline the series of rules for generating different types of unexpected reactions; verify their presence in the designs previously analyzed.

1.5. Structure of Thesis

The thesis structure will now be presented, providing an overview of the remaining three chapters:

Chapter 2. Review of the Literature. Literature of relevance about the human surprise process, emotional and unexpected design, and rhetoric rules for breaking expectations, will be discussed.

Chapter 3. Design Projects. The projects designed as outputs of the research will be presented and explained.

Chapter 4. Conclusions. The key points of the thesis will be reviewed, and final observations will be exposed.

The most unexpected experience

is the most remarkable

Chapter 2. Review of Literature

2.1. Overview

The second chapter reviews the literature relevant to the research. Studies on the importance of unexpected events in human life, the theory of emotional design for developing valuable products, examples of existing designs that succeeded in exploiting the surprise factor, and findings on the rhetorical ability to break the norm provoking unexpected reactions will be discussed.

2.2. Experiencing the Unexpected

2.2.1 The Surprise Sequence

Surprise is what we call any event or observation that is either unexpected or misexpected, in which a strong neural reaction claiming "I was wrong" is triggered in the subject. Surprise has been prehistorically evolved by the human brain as an instinctive mechanism for survival. Despite drastically improved living conditions of today, human bodies are equally hardwired to experience surprise with the same intensity as primitives. Due to this neural intensity, surprise still plays a major role in contemporary lives.

A surprise can be perceived as neutral, pleasant, or unpleasant depending on how the event qualitatively differs from what the experiencing subject was expecting. However, regardless of subjective evaluations, an unexpected event follows the so-called Surprise Sequence[④], which consists of four consequential phases: *freeze, find, shift, share*.

1. Freeze phase = Human brain can be considered as a prediction machine. Normally people are not in a state of surprise because their brains manage to predict what would approximately happen in the next instant. On the opposite, when the brain detects something which could not have been

④ Luna, Tania and LeeAnn Renninger. *Surprise: Embrace the Unpredictable, Engineer the Unexpected*. NY, NY: Perigee Trade, 2015.

predicted, the freeze phase is triggered. The unexpected event elicits immediately a spike in the brain wave called P300, which pushes all the cognitive resources to the object of surprise.

In other words, the freeze phase interrupts any ongoing thought, worry or memory in the individual who forgets everything they were doing to focus their attention on the present moment.

2. Find phase = Once the attention clusters, the brain develops a deep curiosity: it starts to analyze information at an intense speed, sorting through a broad range of thoughts, questions, and hypotheses in order to explain the unexpected event.

The duration and the intensity of the find phase are directly proportional to the degree of unexpectation. They both depend on the degree of schema discrepancy the subject experienced. A schema is a personal framework built for understanding things.

Anything that generates a schema discrepancy produces an effect of surprise and the bigger is the degree of discrepancy, the higher the intensity of the surprise will be.

3. Shift phase = In front of a schema discrepancy, three types of possible reactions have been identified: a person can either (a) pretend to not have experienced the discrepancy [ignoring the event]; (b) manage to find a logical and reasonable explanation [defending their own schema]; (c) shift their schema on the topic [shifting their own previous believes].

When this last type of reaction happens, people experience the shift phase, causing their thinking to become flexible and their perception of the world broadens.

4. Share phase = After the previous phases, the brain undergoes a cognitive burden[⑤] due to the intense neural work required. This because unexpected experiences, like secrets, create cognitive burdens that are physically difficult to keep for oneself.

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⑤ Soderlund, Magnus. "Customer Satisfaction and Its Consequenced on Customer Behaviour Revisited: The Impact of Different Levels on Satisfaction on Word-of-Mouth, Feedback to Supplier and Loyalty." *International Journal of Service Industry Management* 9 (1998): 169-188.
(The term *cognitive burden* in the context of surprise seems to originate from this article)

To soothe the cognitive burden, humans share it with others. In particular, the more unexpected an event is, the sooner and more frequently, people tend to talk to others about it.[⑥] Once shared, the unexpected event often becomes a story to spread farther or a memory able to reinforce connections with others.

The type of emotion that the whole Surprise Sequence leaves in the person, depends on the qualitative nature of the unexpected event (either positive, negative, or neutral) and its intensity. Since surprise can trigger a wide variety of emotional reactions, it can be claimed that surprise exists on a qualitative spectrum, varying from joy to anguish, and on a quantitative spectrum, floating from low-intensity experiences to high-intensity shocks.

2.2.2 The importance of the Unexpected

It has been proven that pleasant surprises positively affect humans in several ways.

The first benefit derives from the ability of the unexpected to amplify emotions: surprise has been defined to be not an emotion but, rather, an *emotional intensifier* which adds a quantitative "*er"* to qualitative emotions. For example, if an event makes one happy, by intensifying it with the unexpected, it will make the person happi*er*. On this topic, neuropsychologist Wolfram Schultz declared that surprise intensifies emotions by at least 400%.[⑦]

The intensification happens in the first phase of the Surprise Sequence, the Freeze Phase, and it has two main causes. First, it triggers a higher fluctuation of neurotransmitters in the brain. Second, the subject finds themselves in a state of deeper attention towards the object of surprise.

The latter mental state has a particular relevance nowadays, in an information-stuffed and speed-obsessed society, where people are used to shifting their focus compulsively from one thing to another. This attitude has been translated into an unconscious general habit of giving only superficial

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[⑥] Rimé, Bernard, Pierre Philippot, Stefano Boca, and Batja Mesquita. "Long Lasting Cognitive and Social Consequences of Emotion: Social Sharin and Rumination." *European Review of Social Psychology* 3 (1992): 225-58.

[⑦] Schultz, Wolfram. "Dopamine Reward Prediction Error Coding." *Dialogues in Clinical Neuroscience* 18, no. 1 (2016): 23-32. doi:10.31887/DCNS.2016.18.1/wschultz.

attention to everything.

However, considering that attention is the *sine qua non*[⑧] for feeling interested, it has been theorized that the reason why contemporary people are experiencing a feeling of hypostress and boredom more often than ever. This is despite being surrounded by plenty of attention-grabbing activities. Due to the lack of deep attention to any particular thing, it becomes impossible to experience all the range of emotions associated with true interest.

For this reason, the ability of surprise to interrupt the brain's activities for plugging all its attention into a single matter, becomes a precious method to exploit for breaking the boredom and reach that level of attention able to spark real interest and intensified emotions.

The second benefit of experiencing pleasantly unexpected events is related to the state of wonder triggered in the Find Phase of the surprise process.

At its core, wonder appears to be a powerful emotion that can inform and shape people's attitudes towards themselves and others. The very act of wondering has, indeed, the ability to change the whole perception of an experience.

In fact, rather than deploying a keen focus on finding answers, wonder allows you to sit back and marvel at the fog of questions provoked by certain events. While *wondering in the fog* of the Find Phase, the brain not only keeps arranging the information about that topic, but it also starts to link to those subject new external random inputs. As a result, creativity in general rises and the rearrangement of information generates new ideas, considerations and attitudes that would have not existed otherwise.

Another positive effect that unexpected experiences have on humans, happens when facing *novelty*, conceived here as an "experience you never had before".

The surprisologist Tania Luna stated that "We feel most comfortable when things are certain, but we feel most alive when they are not"[⑨] and there is actual scientific proof supporting this. In a neuroscientific

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⑧ From Latin*("[condition]without which not"*), a necessary condition without which something is not possible. *Cambridge Dictionaries*, s.v. "sine qua non", accessed March 30, 2021, https://dictionary.cambridge.org/dictionary/english/sine-qua-non

⑨ Tania Luna, and LeeAnn Renninger. *Surprise: Embrace the Unpredictable, Engineer the Unexpected*. NY, NY: Perigee Trade, 2015. 198.

experiment[10], participants' brains were tracked with functional MRI during novelty stimulus. It has been discovered that first, novel visual stimuli capture attention more than familiar ones. This was found to be the case even more than loved familiar ones. Second, it has been pointed out that the brain processes novel information in a totally different way from ones that it has already encountered and that only novel stimuli are able to activate the midbrain and release dopamine.

Novelty also produces new synaptic pathways in the brain which are responsible for extending one's behavioural flexibility in the Shift Phase, widening one's mindset, and sparking new ideas.

Finally, as anticipated in the Share Phase section, pleasantly unexpected experiences have a positive impact on interpersonal relations by pushing the participant into sharing what they experienced in a scale and speed directly proportional to the degree of the surprise he faced. Sharing unexpected stories has been linked with a strengthening of one's relationships and with improvement in both mental and physical health.

To summarize, pleasantly unexpected events have the power to concentrate all the attention to the present moment. This enables people to go through experiences in a more intense and memorable way, amplifying sensorial perception, producing more dopamine, sparking new ideas and eliciting a more positive and open attitude towards events and people in general.

[10] Bunzeck, Nico, and Emrah E. Duzel. "Absolute Coding of Stimulus Novelty in the Human Substantia Nigra/VTA." *Neuron 51* 3 (2006): 369-79.

Turn the ordinary into extraordinary

2.3. Unexpected Experience and Emotional Design

2.3.1 Emotional Design Principles

Emotional Design is a term introduced by Professor Donald Arthur Norman in his popular book *Emotional Design: Why We Love (Or Hate) Everyday Things*[11]. According to Norman, "It is not enough that we build products that function, that are understandable and usable, we also need to build products that bring joy and excitement, pleasure and fun, and, yes, beauty to people's lives" [12] .

The emotional design approach has developed principles for creating products that deliver positive experiences to users. They focus on how people emotionally react to visual experiences based on three dimensions of emotional impact, called *Visceral*, *Behavioural*, and *Reflective*. *(Table 1)*

Designs that combine principles from all three levels are able to provide users with a highly valuable experience, described as *delightful*. The principles for each design level are outlined below:

1. Visceral Design *"...concerns itself with appearances"*[11].

Visceral design stimulates the subconscious reactions of when a user encounters a product. Generally, it deals with attraction, tangible qualities, and sensory involvement. Users give immediate and strong reactions to visceral design induced by the initial sensory scan of the experience. A good visceral design makes users feel delighted and excited.

On this level a designer should be able to move the user's gut: since emotions are crucial in the decision-making process, an emotionally persuasive product will help lead the person instinctively choosing that product.

2. Behavioral Design *"...has to do with effectiveness of use"*[11].

Behavioral design is related to the product's usability, functionability,

[11] Norman, Donald A. *Emotional Design: Why We Love (or Hate) Everyday Things*. New York, NY: Basic Books, 2004.

[12] Norman, D. (2004). Introduction to This Special Section on Beauty, Goodness, and Usability. *Human-Computer Interaction,* [online] 19(4), p.312.

performance, and effectiveness of use. A good behavioral design must consider the users' needs and know how to satisfy them. The behavioral level refers to the emotions felt by users as a result of either accomplishing or failing their goals. When products or objects enable users to complete a goal with the minimum of difficulty and with little call for conscious effort, the emotions are likely to be positive. In contrast, when a product restricts the user and forces them to translate or adjust the goal according to its limitations, the user is more inclined to experience negative emotion.

To improve this level a designer should also work on the aesthetic-usability effect, according to which attractive products expand the user's mental process and increase willingness to learn, adapt and forgive difficulties.

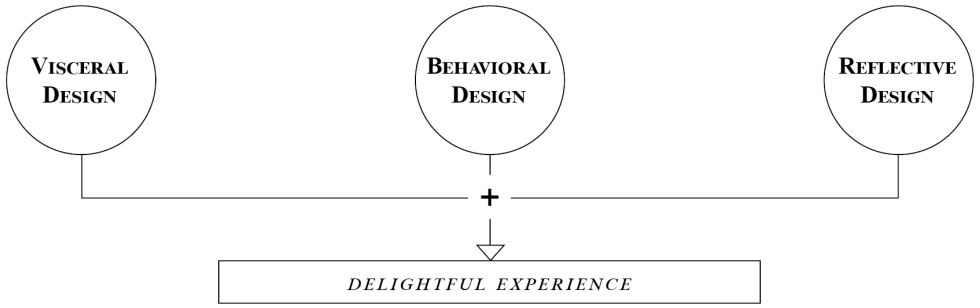
3. Reflective Design *"...considers the intellectualization and the rationalization of a product. Can I tell a story about it? Does it appeal to my self-image, to my pride?"*⑪

The highest level of emotional design considers with the human ability to predict the impact of a product on life when using it. The reflective design describes the complete impression of a product because users interpret, understand, and reflect on various aspects of the product like cultural connotations, its functions, features, implications, meanings, etc.

A designer could enhance this level by designing a product as a personal extension. This *ownership effect* works due to the fact that users place more value in experiences making them feel a sense of personalized ownership. Another aspect that helps the reflective level, concerns the *emotions-memory link* effect: emotionally charged events or things persist in our memory, generating an affection and loyalty that go beyond their mere functions and objective qualities.

According to Norman "the emotional side of design may be more critical to a product's success than its practical elements" and, therefore, designers should pay attention in infusing their projects with peculiar elements linked to specific emotional effects.

[Table 1] Emotional Design Theory Synthesis



VISCERAL DESIGN

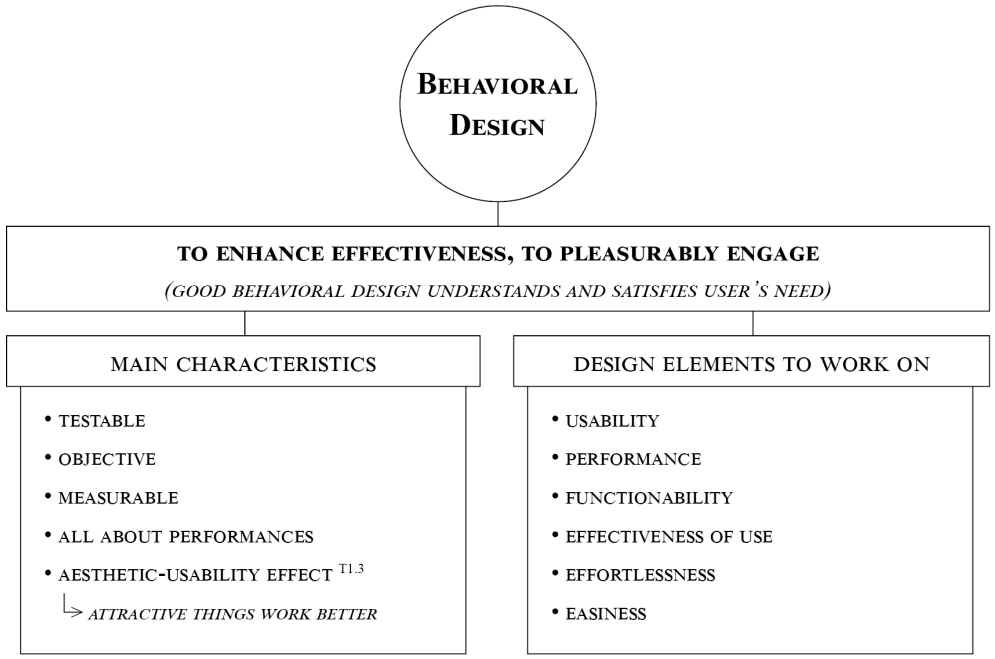
TO ATTRACT, TO PERSUADE

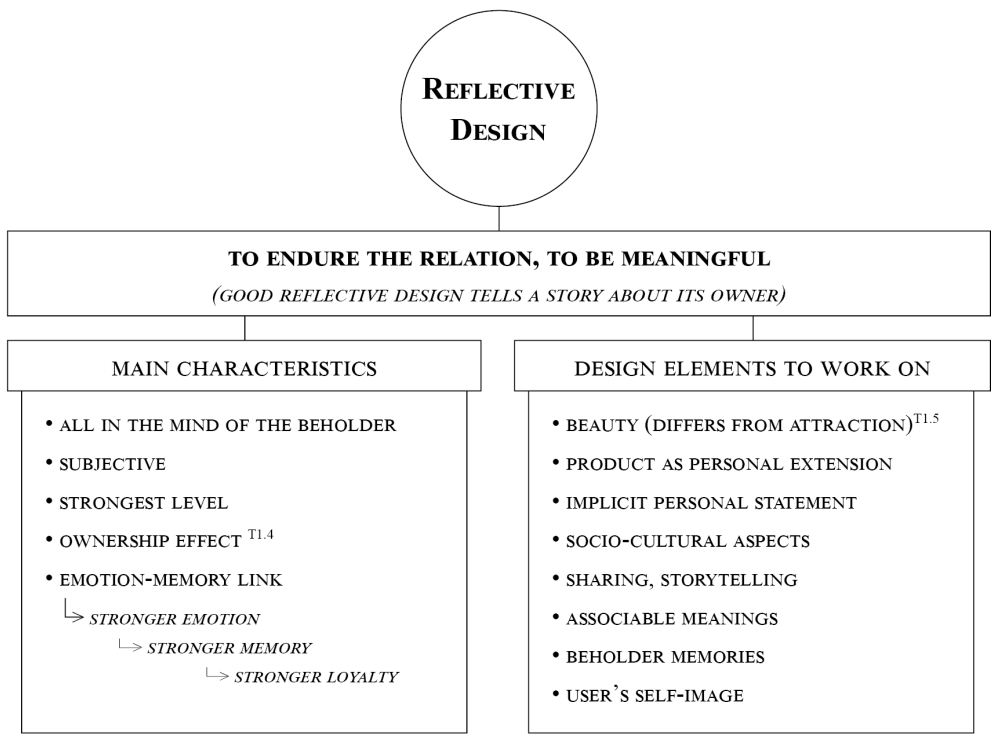
(GOOD VISCERAL DESIGN MAKES FEEL EXCITED & DELIGHTED)

MAIN CHARACTERISTICS	DESIGN ELEMENTS TO WORK ON
• UNIVERSAL	• AESTHETICS
• INSTINCTIVE	• SENSATIONS AND PERCEPTIONS
• PRE-CONSCIOUS	• SURPRISE, UNEXPECTED FACTOR
• GUT FEELING (LIZARD BRAIN) [T1.1]	• PHYSICAL FEATURES, TANGIBILITIES
• IMMEDIATE STRONG REACTION	• UNIVERSAL ATTRACTIONS [T1.2]
• PATTERN-MATCHING PROCESS	- *SWEET SMELLS AND TASTES*
↳ *POSITIVE PAST EXPERIENCES BUILD PATTERNS WITH WHICH THE LIZARD BRAIN INSTINCTIVELY WILL IDENTIFY AS POSITIVE ALL THE MATCHING STIMULI.*	- *SENSUOUS CURVES AND SHAPES* - *SLEEK SHINY SURFACES* - *SOLID STURDY OBJECTS* - *SATURATED COLORS* - *SYMMETRIES AND PATTERNS*

[T1.1] Gut feeling = phenomenon in which instinctive emotions catalyse the decision-making process.

[T1.2] Before any cultural or social influence, humans are designed to be attracted to those elements that are more likely to ensure their survival.





T1.3 Attractive things work better because: they trigger creativity, expand mental processes, and make the user more tolerant to difficulties or errors.

T1.4 Users place more value in experiences able to give a sense of personalized ownership.

T1.5 *Attraction*= instinctive phenomenon; *Beauty*= judgment built on conscious reflections,

2.3.2 Techniques for Designing the Unexpected

Is it possible to design products that generate unexpected experiences?

The first step for experiencing surprise is to enter in the Freeze Phase of the Surprise Sequence. In order get involved in the process, an event must trigger in the person the so-called *Transient Attention*, an involuntary, stimulus-driven mechanism of attentional control.

The mechanism of Transient Attention is instantaneous and differs from what is being generally referred to as proper attention. This latter mental state is called *Sustained Attention* and it is activated in the Find and Shift Phases of the Unexpected Experience.

The Sustained Attention is voluntary, goal-driven, slow, and maintained over long periods of time, whereas the involuntary, stimulus-driven attention is fast and decays quickly[15]

Since the two attentional mechanisms are different, also the tools necessary for being activated follow different principles. In the case of the Transient Attention, the most effective triggering tool is identified by the surprisologist Tania Luna as *Interrupting Pattern*.

The Interrupting Pattern technique consists in twisting a preexisting given pattern, which is either generated for the specific situation or is taken from a common knowledge, a shared series of values or basic norms. The weaker and less clear the pattern, the weaker the interrupting process will feel and, hence, the transient attention and the surprise will be less successful. For this reason, it becomes essential to first understand and master the normal settings of a scenario, a culture, an experience before starting to conceive how to break it.

The main technique for then shifting the Transient Attention state into the voluntary Sustained Attention is called *Knowledge Gaps*. Knowledge Gaps work according to the same principle of the Find phase, presenting a situation as a riddle to solve. In fact, when a question is being asked, and the response is being immediately given, the surprise sequence does not even

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personal experiences, knowledge, culture, society.

[15] Yantis, Steven. "Goal-Directed and Stimulus-Driven Determinants of Attentional Control." *Control of Cognitive Processes: Attention and Performance XVIII*, 2000, 73-103. doi:10.7551/mitpress/1481.003.0010.

start. On the contrary, when, instead of directly telling the answer, hints, clues or driving questions are provided, the person will stay engaged longer, keeping on in trying to figure out the answer, increasing the focus and, hence, achieving an intensified emotional reaction, which will make the whole experience richer, meaningful, and more memorable. The effectiveness of a Knowledge Gap is directly proportional to the engagement generated by the storytelling abilities of the scenario.

The Interrupting Pattern and Knowledge Gap tools work on different levels of attention in the same way that Rhetoric Figures (which will be analyzed in Chapter 2.4.) work on different levels of the language. By comparing the two couples, the author identified a first parallelism that will be developed later *(Table 2)*.

[Table 2] Parallelism Rhetoric Devices-Attention Techniques

	Rhetoric Language	**Unexpected Experience**
	Norm Deviations Devices	**Freeze and Find Techniques**
Perceptive, Compositive, Syntactic Level	WORD FIGURES artful deviations from the ordinary arrangement of linguistic elements	INTERRUPTING PATTERNS twisting and altering an expected predicted pattern
Reflective, Rational, Semantic Level	THOUGHT FIGURES artful deviations from the ordinary or principal signification of a word or message	KNOWLEDGE GAPS giving pieces of the puzzle to solve instead of the final solution

2.3.3 Examples of Unexpected Experiences in Product Design

This chapter exposes a collection of supra-functional designs that the author has considered capable of generating unexpected experiences and reactions in the users.

The following series present solely products belonging to two typologies of furniture: *chairs-sittings and cabinets*. Since these two types of furniture have a clear and basic function and are normally included in people's daily life, they offer a perfect "standardized" base to experiment on with surprise. Moreover, focusing on a few categories of products instead of several, makes the comparison between the various unexpected and rhetorical effects used easier and more efficient.

Before presenting the unexpected deviations, the standard identities of the two typologies of furniture are given in *Table 3*.

[Table 3] Standard Identity of sitting furniture

furniture type	CHAIR - SITTING
standard definition	*a separate seat for one person, typically with a back and four legs.* *It is called sitting solution, object which aim is to provide seats. Example are stools, chairs, armchairs, sofas, benches...*
example of standardized functional designs	

[Table 4] Standard Identity of cabinet furniture

furniture type	CABINET
standard definition	*a cupboard with shelves or drawers for storing or displaying articles.*
example of standardized functional designs	   

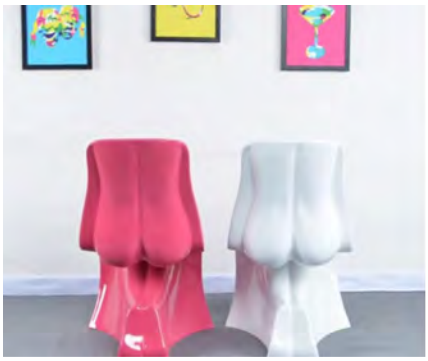
The selected products are classified into three categories (*visceral, behavioral, reflective*) based on which emotional level is affected by the main unexpected experience. The most evident rhetoric rules present in each design are also pointed out.

In particular, *Fig.1-6* are examples of products unexpected on a visceral emotional level; *Fig. 7-12,* on a behavioral level. *Fig. 13-15* are products that works on a reflective-behavioral level, while *Fig. 16-18* on a reflective-visceral emotional level.

A. Unexpected Design on a Visceral Level – examples

[Fig. 1] Soft Cabinet - Dewi van de Klomp
| antitetic material |

[Fig. 2] Furniture in Irregular Forms - Shiro Kuramata
| tsmesis based shape |



[Fig. 3] Him and Her chairs - Fabio Novembre
| ironic personified shape |

A. Unexpected Design on a Visceral Level – examples

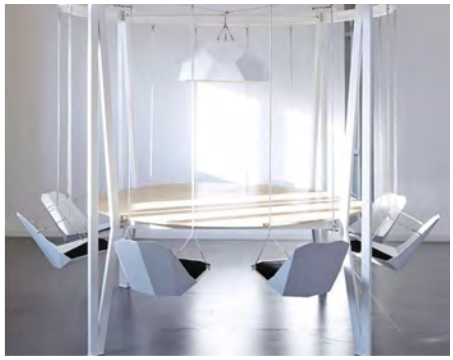
[Fig. 4] Good Vibration - Pietro Ferruccio Laviani
| oximoron shape-material |

[Fig. 5] Rough Sketch Products - Daigo Fukawa
| surrealistic appearance |

[Fig. 6] Banquet chairs - The Campana Brothers
| accumulative process (of existing elements as a single entity) |

B. Unexpected Design on a Behavioral Level – examples


[Fig. 7] Tafelwip - Marleen Jansen
| deletion of the standard balance, you cannot sit alone anymore |

[Fig. 8] Swing Table - Duffy London
|addition of a playful behavior in an unexpected scenario |


[Fig. 9] Spun chair - Thomas Heatherwick for Magis

| reinterpretation of user experience |

B. Unexpected Design on a Behavioral Level – examples

[Fig. 10] Lazy Basketball chair - Emanuele Magini
| synthesis of antithetic concepts: sport and rest |

[Fig. 11] Lazy Football chair - Emanuele Magini
| synthesis of antithetic concepts |

[Fig. 12] Modified Social Benches - Jeppe Hein
| deformation of traditional benches to elicit new social behaviors |

C. Unexpected Design on a Reflective + Behavioral Level – examples


[Fig. 13] The Josie chair - Mathery Studio
| ironic storytelling: with this chair that pops, you can party by yourself |


[Fig. 14] Do Hit chair - Marijn van der Poll
| shift of traditional roles designer-user who has to shape the metal box by himself with the hammer provided |

[Fig. 15] Sella Stool - Fratelli Castiglioni
| substitution of comfort with discomfort for logical but sarcastic reasons |

C. Unexpected Design on a Reflective + Visceral Level – examples


[Fig. 16] Pratone Lounge chair - Studio65
| exaggerated, ironic, symbolic, storytelling |


[Fig. 17] Humanoide - Ernesto Neto
| reflective shift from *sitting on* to *being subsumed in*|

[Fig. 18] No-1 Series - Park Jungju
| metaphor of an assembly kit that works in the opposite way|

2.4. Rhetoric Method for Designing the Unexpected

Rhetoric discipline has the power to influence feelings and behaviours in the receiver of the message. This method is a powerful tool when integrated with design methodologies.

2.4.1 The Power of Rhetoric to Break Expectations

Rhetoric[16] (/ˈrɛtərɪk/) is defined as the Art of Persuasion, and it considers how to efficiently use communicative means of persuasion available in a given situation. The purpose here is to shape attitudes in others and to influence their behaviour.

According to rhetorical principles, the persuasive value of content is controlled by the way it is presented and styled. In other words, rhetoric believes that the efficacy of a message depends on its shape. The area of rhetoric concerned with this topic is called Elocutio and it studies how to shape a message for a certain purpose.

As reported by Elocutio discipline, the styling aspect of the communicative process is named “poetic (or aesthetic) function” and it aims to attract, amaze, and persuade the receiver. This process stands in contrast to the informative function, which is a message that transmits information in the simplest way possible, that avoids any further interpretation. On the contrary, an aesthetic message pushes the receiver to wonder what a particular thing could actually mean. It encourages to slow down and reflect on the composition of a text. In most cases, an aesthetic message only offers hints that drive the receiver in a personal decodification of the content, inducing a sense of mystery and crypticness.

The communicative effectiveness of poetic messages depends on their ability to generate unexpected deviations from the normal expectation.

These deviations are achieved by employing the elements of a message in a way that is not considered standard, with the aim to produce new and different perceptions of the same content.

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[16] The word *rhetoric* comes from the Greek ῥητορικός rhētorikós, "oratorical", from ῥήτωρ rhḗtōr, "public speaker", related to ῥῆμα rhêma, "that which is said or spoken, word, saying",and ultimately derived from the verb ἐρῶ erō, "I say, I speak".
Perseus.Tufts.edu, Rhetorikos, Henry George Liddell, Robert Scott, *A Greek-English Lexicon*, at Perseus

The operating principles used are called *violations of the standards* or *Norm Deviations.* For a better understanding of the concept, the rhetoric definitions of Norm and Norm Deviation, are given below:

✦ Norm/standard = grammatical, syntactic, and/or semantic composition that respects habitual and expected structures. It has predictable and regular results. Using standardized communicative structures is considered efficient when an information has to be communicated in the most plain, regular way. In other words, the expression gives priority to its *informative function*.

Example: *"The train for Busan departures at 16:00 from the 3rd platform."* [informative function]

✦ Norm Deviation = the use of structures that break the automatism of a language, by deviating from its normality and foreseeability. In this communicative method, the informative function has secondary importance than the *poetic function* of the expression, able to attract attention and generate an emotional reaction by breaking the habitual expectations. The message is not immediate or universally clear but, rather, it should be subjectively interpreted by the receiver.

Example: *"The train for my happy ending was departing but I got there too late."* [poetic function]

2.4.2 Relationship of Rhetoric and Emotional Design

Originally, the rhetoric mechanisms were designed for persuading the audience in oral argumentations of politics, trials, funerals and actings. Since, in such cases, the communicative process takes place directly between people, classic rhetoric was conceived to succeed in seductive verbal communicative processes *among humans*.

However, it has been demonstrated that people are predisposed to project human emotions, motivations, and beliefs into inanimate things, through a process called *anthropomorphism*. Users tend to interact with products as they would be with humans. In extreme cases, they could develop an emotional attachment to the object just like they would to another individual.

The anthropomorphism is also analyzed in the Emotional Design model, where the product experience is described exactly as a *communicative process* towards the construction of a solid relationship[17] between the product and its beholder. This occurs when the contents [*significances*] and forms [*signifiers*] of a product are interpreted by the user through their own visceral, behavioral and reflective channels.

Acknowledging the anthropomorphism phenomena, it is possible to infer that in the same manner a person [*sender*] can persuasively communicate with another individual [*receiver*], which means that an anthropomorphized object can "speak" to a user in an emotional and persuasive way.

As a consequence, the persuasive tools, used by human senders to seduce, motivate, and move their receivers, can be adopted by designers in composing products capable of establishing a pleasurable and effective interaction with their users, as it is shown on *Table 5*.

As explained in the previous chapter, a human-to-human message in rhetoric can be either *informative* or *poetic*. Applying the same dichotomy to product-to-human communication allow us to classify designs in the same way: two typologies based on the main communicative purpose, in essence, classifying a design as either a *functional product* or an *emotional product*.

[Table 5] Parallelism Rhetoric-Design in communicative functions

	human-to-human message (rhetoric)	**product-to-human message (design)**
Norm / Standard	INFORMATIVE FUNCTION efficient and standardized structure, further interpretations are avoided	FUNCTIONAL PRODUCT focused on efficiency, performances, standardization
Norm Deviation	POETIC-AESTHETIC FUNCTION unexpected structures, multi-layer of meanings, personal interpretations, memorable, captivating	EMOTIONAL PRODUCT focused on personal and unique experiences, attractiveness, meaningfulness, enjoyability

[17] Norman, Donald A. *Emotional Design: Why We Love (or Hate) Everyday Things*. New York, NY: Basic Books, 2004.

2.4.3 Rhetoric Figures in Emotional Design

The rhetoric section of Elocutio, collects a series of stylistic techniques and rules for shaping a message with specific communicative purposes. These techniques are called figures of speech and they are defined as "...the art of saying something in a new way in order to make speech more pleasing, lively and penetrating."[18] The figures of speech are classified depending on which elements of the message (whether on form or on content) they can be applied. Below the two definitions:

- Word figures = artful deviations from the ordinary arrangement of words and linguistic elements.
- Thought figures = artful deviations from the ordinary or principal signification of a word or message.

From these two categories of rhetoric figures for the verbal language, previous scholars, (G. Bonsiepe, R. Barthes, U. Eco), developed a classification of figure of speech for visual applications, by shifting the definitions from the linguistic frame to visual semiotic principles. In fact, in visual semiotic, each sign (icon, index, symbol) is experienced through two dimensions, namely visual syntax [shape] and visual semantics [meaning]. As result, in the visual language the figures of speech have been divided as Syntactic and Semantic figures:

- Syntactic figures = artful deviations from the ordinary formal aspect of visual signs or system of signs.
- Semantic figures = artful deviations from the ordinary meanings of visual signs or system of signs.

Following the previous contributions of verbal and visual rhetoric, it is possible to develop a classification of rhetorical figures for design language *(Table 6)*. The figures work on the constitutive elements of a communicative process which, in the case of Emotional Design, happens through elements of the visceral, behavioral, and reflective dimensions. Therefore, these three dimensions have been used as criteria for structuring the new original classification of rhetorical figures for design language:

[18] N Lausberg, K., *Elemente der literarischen Rhetorik*, Munich, 1949, p.12

- ✦ Visceral figures = artful deviation from the ordinary appearances or tangible elements of a design.
- ✦ Behavioral figures = artful deviation from the ordinary usability, interactivity, or functions of a design.
- ✦ Reflective figures = artful deviation from the ordinary meanings or socio-cultural implications of a design.

[Table 6] Rhetoric Figures classification for expressive languages

Application	Category	Rhetoric Figure Definition
Verbal language	WORD	artful deviations from the ordinary arrangement of words and linguistic elements
	THOUGHT	artful deviations from the ordinary or principal signification of a word or message
Visual language	SYNTACTIC	artful deviations from the ordinary formal aspect of visual signs or system of signs
	SEMANTIC	artful deviations from the ordinary meanings of visual signs or system of signs
Design language	VISCERAL	artful deviation from the ordinary appearances or tangible elements of a design
	BEHAVIORAL	artful deviation from the ordinary usability, interactivity or functions of a design
	REFLECTIVE	artful deviation from the ordinary meanings or socio-cultural implications of a design

2.4.4 Rhetoric Effects for Unexpected Design

As reviewed in the previous chapter, Rhetoric Figures are essentially a series of artful deviations from the ordinary. Following this definition, they have been classified depending on in which way they create a deviation and on what kind of unexpected reaction they produce.

The classification, originally elaborated by Gruppo μ in 1970[⑲], divides the figures into four macro categories: *Addition, Subtraction, Substitution, and Shift.* It should be kept in mind that with the term "element" the author is referring to any type of entity of the composition, hence, all the categories analyzed in the previous chapter (word, though, syntactic, semantic, visceral, behavioral, reflective) are included.

⑲ Groupe μ, *Rhétorique générale*, Paris, Larousse, collection Langue et langage, 1970.

✦ Addition = starting from an existent element, new adjacently related elements are added to the composition. The addition can either be a *repetition* (of the same, a different or opposite element) or an *amplification* (enrichment, explicitation or enlargement of the element). The act of recalling elements somehow connected among them in a system, overlaps on the basic linear sequence of the speech a second communicative level charged of further meanings.

The resulting effects gravitate between a sense of pervasion, involvement, fullness, enrichment of meanings and a more intellectual-visual satisfaction in recognizing patterns, symmetries, correlations, and equivalences. It is also very effective for creating memorability.

✦ Subtraction = is a process of reduction that can be either *quantitative* (elimination of physical or visual elements, functions, parts) and *qualitative* (deletion of meanings, attenuation of content values, conceptual synthesis, suspension, or contraction of a logical unfolding process). Extreme forms of this process are the total absence, silence, and oblivion.

As a result, the element that has been subtracted or hidden becomes the central focus of curiosity. This process pushes the receiver to collaborate in rebuilding the absence, engaging them in the Find phase of the Surprise sequence.

✦ Substitution = this procedure combines subtraction and addition. An expected normal component of the system is deleted and is substituted with an unexpected one. At first, the replaced element seems out of place but, after a more focused consideration, a hidden connection to the context can be identified. This family of figures is easily found in advertisements due to its power to affect receivers on an emotional level.

The communicative efficacy of this process relies on provoking an alienated state in which the receiver discovers amplified meaning in the content. The substitution process betrays the expectation of predictability and arouses wonder.

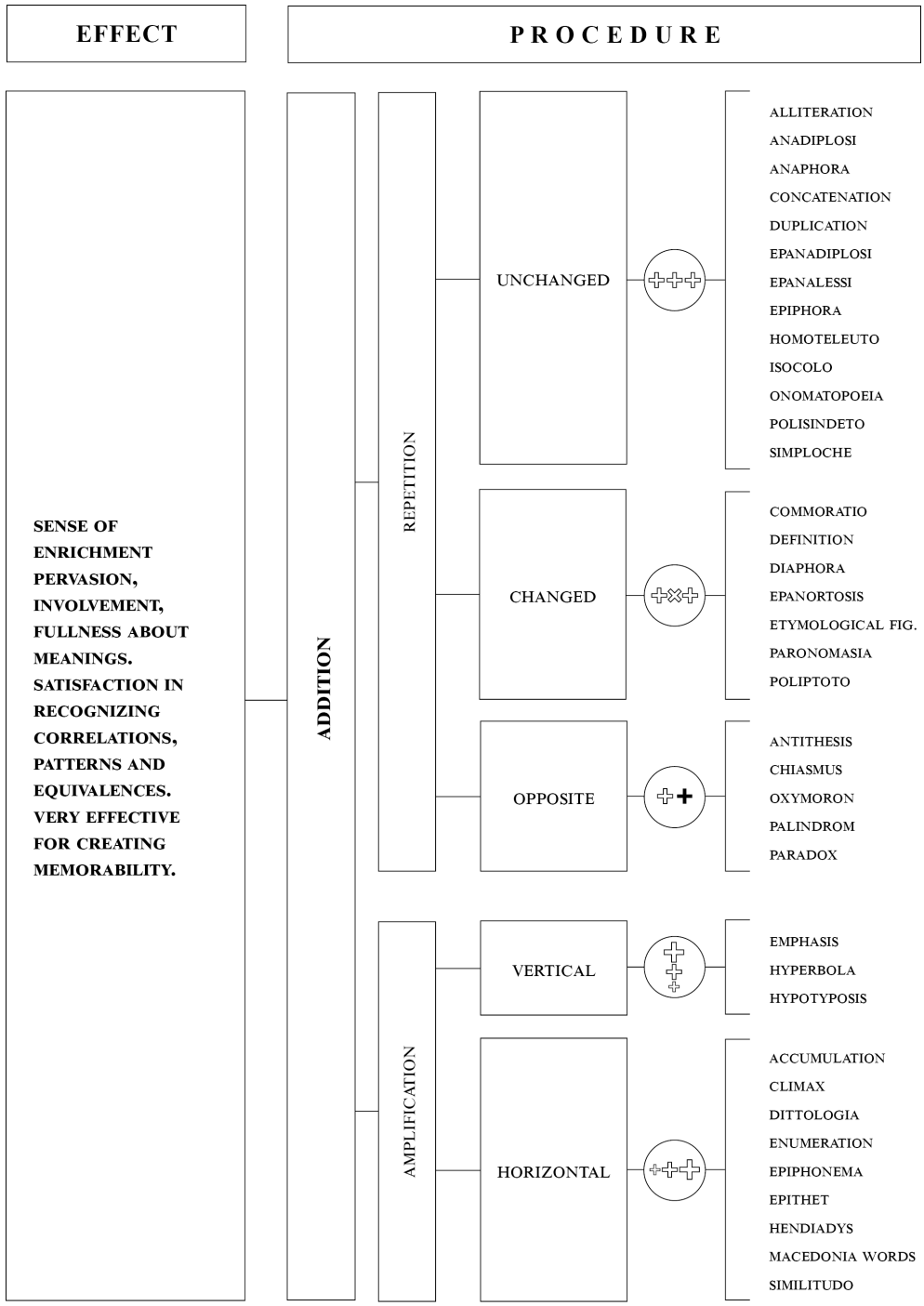
✦ Shift = the process of shift, is based on the concept of *repositioning*. Rhetoric figures of this category work by modifying the linear order of a

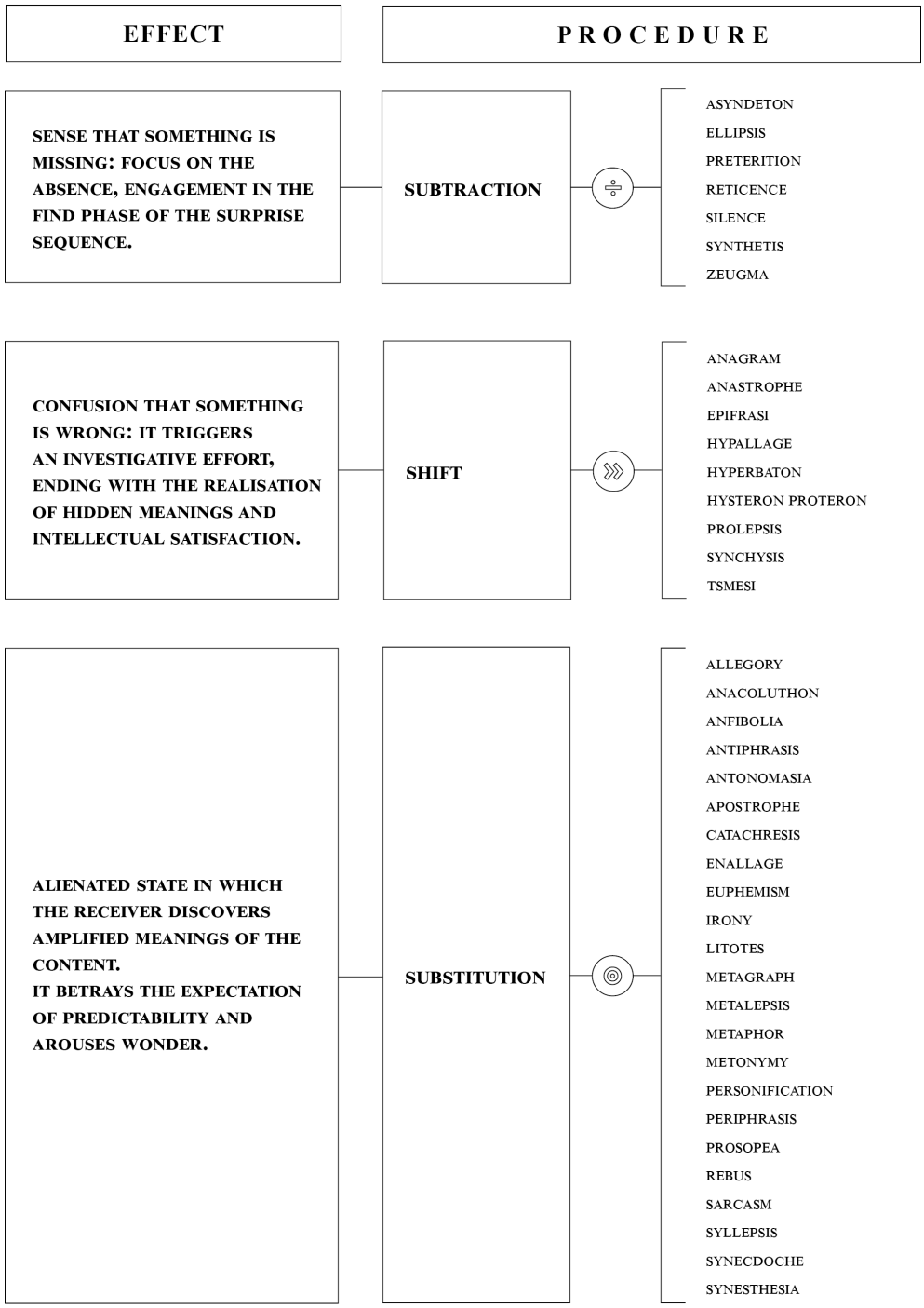
composition. The editing happens either by shifting the expected position of elements in the system or by breaking the continuity of the whole.

The final result generates effects of confusion and disorientation for the receiver who feels that something is wrong. By triggering the Find Phase, an investigative effort begins and commonly ends with an exclamation and a realisation of the hidden meanings.

Table 7 collects the categorization of unexpected effects and the corresponding rhetoric figures is outlined.

[Table 7] Classification of Rhetoric Figures for their effects




EFFECT
PROCEDURE
SENSE THAT SOMETHING IS MISSING: FOCUS ON THE ABSENCE, ENGAGEMENT IN THE FIND PHASE OF THE SURPRISE SEQUENCE.
SUBTRACTION
ASYNDETON
ELLIPSIS
PRETERITION
RETICENCE
SILENCE
SYNTHETIS
ZEUGMA
CONFUSION THAT SOMETHING IS WRONG: IT TRIGGERS AN INVESTIGATIVE EFFORT, ENDING WITH THE REALISATION OF HIDDEN MEANINGS AND INTELLECTUAL SATISFACTION.
SHIFT
ANAGRAM
ANASTROPHE
EPIFRASI
HYPALLAGE
HYPERBATON
HYSTERON PROTERON
PROLEPSIS
SYNCHYSIS
TSMESI
ALIENATED STATE IN WHICH THE RECEIVER DISCOVERS AMPLIFIED MEANINGS OF THE CONTENT.
IT BETRAYS THE EXPECTATION OF PREDICTABILITY AND AROUSES WONDER.
SUBSTITUTION
ALLEGORY
ANACOLUTHON
ANFIBOLIA
ANTIPHRASIS
ANTONOMASIA
APOSTROPHE
CATACHRESIS
ENALLAGE
EUPHEMISM
IRONY
LITOTES
METAGRAPH
METALEPSIS
METAPHOR
METONYMY
PERSONIFICATION
PERIPHRASIS
PROSOPEA
REBUS
SARCASM
SYLLEPSIS
SYNECDOCHE
SYNESTHESIA

Chapter 3. Design Projects

3.1 First Dissertation Projects: Overview

This chapter introduces the products designed in the first experimental phase of the ongoing research. The consisting of following rhetoric rules as compositive methodology. For each project, the rhetoric framework followed and the particular experience that the framework is supposed to generate are explained.

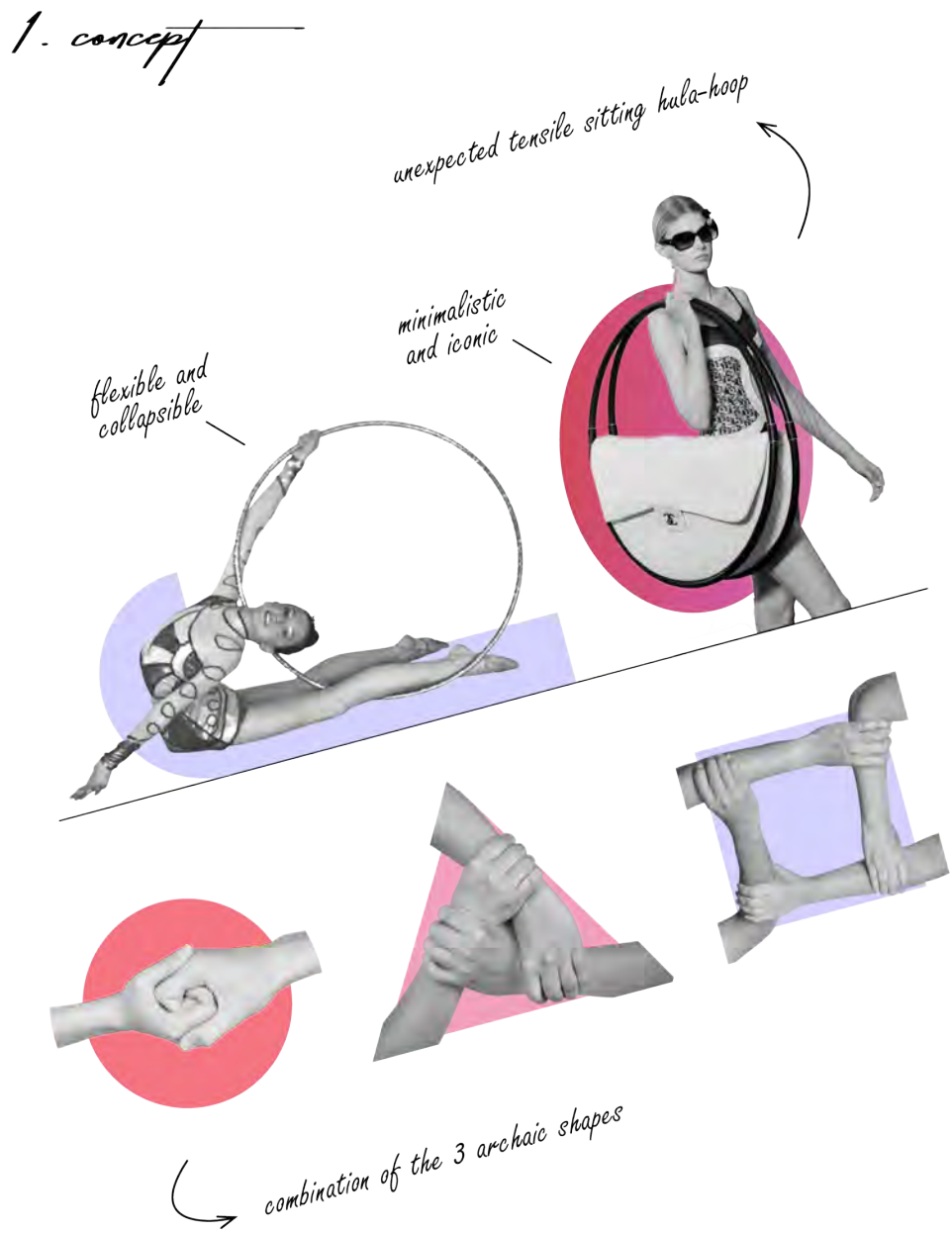
Some of the designs are finished and usable products, some are in the prototyping phase or undergoing technical developments and others are refined concepts without real models.

Here, the list of the projects in this chapter:

HAVE YOU EVER SIT ON A HULA HOOP?

3.1.1 Synthetic Stool: DeForma

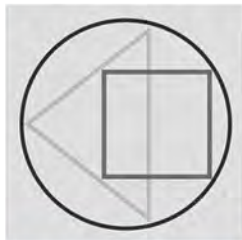
Design Process



[Fig. 19] DeForma: Concept

2. moodboard



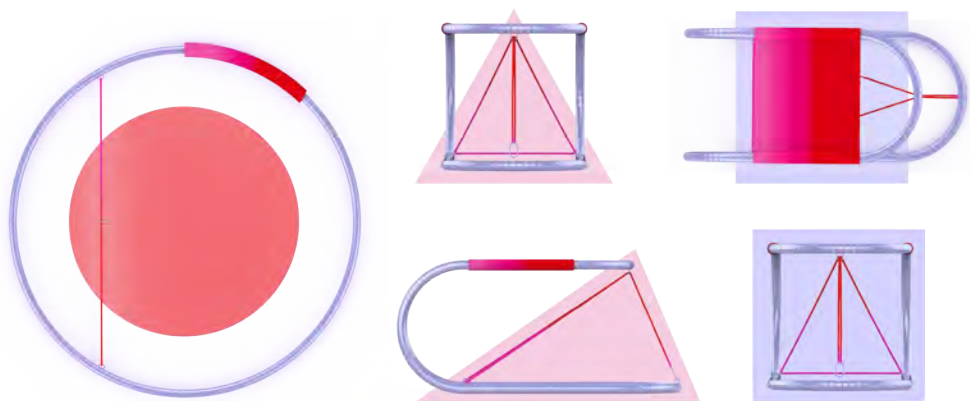


serpentine stool, tension structures, primary geometric forms



flex metal pipe texture, climb rope and hook, waterproof fabric

3. formal details



circle, the origin zero

triangle, the strenght

square, the balance

[Fig. 20] DeForma: Moodboard and Formal Details

Product Description

DeForma is a tensile and collapsible sitting solution with the look of a hula-hoop that unexpectedly transforms itself into a colourful customizable stool *(Fig.20).* The product arose from the rhetorical process of synthetization, in which the core meaning of a concept is encapsulated in a set of key-elements with hidden meanings, metaphors and symbols.

The expression *De Forma* has two meanings and merges two interpretations. In the first meaning, the DeForma stool (in Latin: "*about the form*") is read as a formal composition that synthesizes the three fundamental forms of circle, triangle and square *(Fig.20).*The second interpretation, (DeForma, from English: *deformable*) underlines its ability to change shape. The two meanings, when combined, become the allegorical storytelling linked to its use:

1. The most essential and synthetic shape is the circle, representing the notions of totality, wholeness, perfection, infinity, and eternity. The circle is also the zero, the "*potential being*", the origin point before any shapes. Because of this, DeForma's starting shape is a circular "hula-hoop".

2. By pulling a rope, a triangular frame appears. The triangle is the simplest but strongest possible shape because any weight placed on them is evenly distributed between all three sides. Being a symbol of strength, the triangular rope becomes the constraints that keep the structure in tension.

3. The final component is the square-shaped seat. When unwrapped the square seat gives to the structure its final stability and balance. Symbolically, the square form represents balance, solidity, stability and, therefore, it becomes the best shape for incapsulating the attributes of the seat.

[Fig. 21] DeForma: Rendering

From a technical point of view, the product embodies research on tension structures and experiments on crossover materials. From a functional perspective, De Forma is designed for matching the needs of a future Nomadic society. In fact, the name DeForma (as deformable) embraces the increasingly important concepts of collapsible, adaptable, foldable, and multifunctional design. Finally, it illustrates an innovative process of how to transform a minimal 2d circumference into a customizable 3d stool. *(Fig.22)*

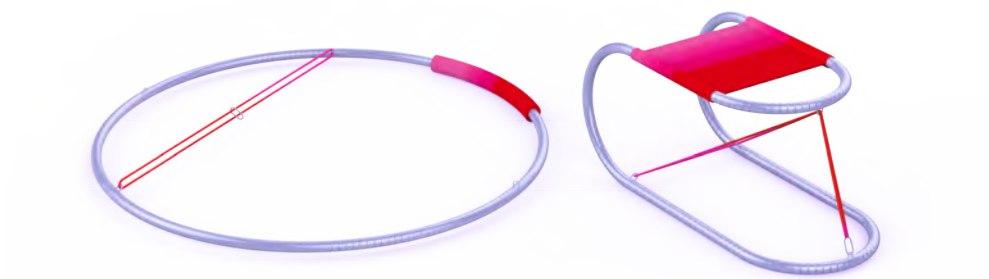
Rhetoric framework

SYNTHETIZATION: essential combination of key-elements into a meaningful but minimal unity. **HERE** the composition is a formal synthesis of the three archaeal shapes. The same synthesis also directs the functional level.

process	| SUBTRACTION (SYNTHETIZATION) |
level	| VISCERAL - BEHAVIORAL |
extension	| UNIT: SHAPES - COMPOSITION |

ALLEGORY: to connect a series of concrete images in such a way that they elucidate an abstract set of philosophical, existential, or aesthetic meanings. It allows to add more layers of meaning and interpretation to an artwork, making it become a multidimensional communicative tool. **HERE** the sitting forming process becomes an allegorical storytelling moment by making sequentially materialize the three primitive shapes: circle, triangle, square.

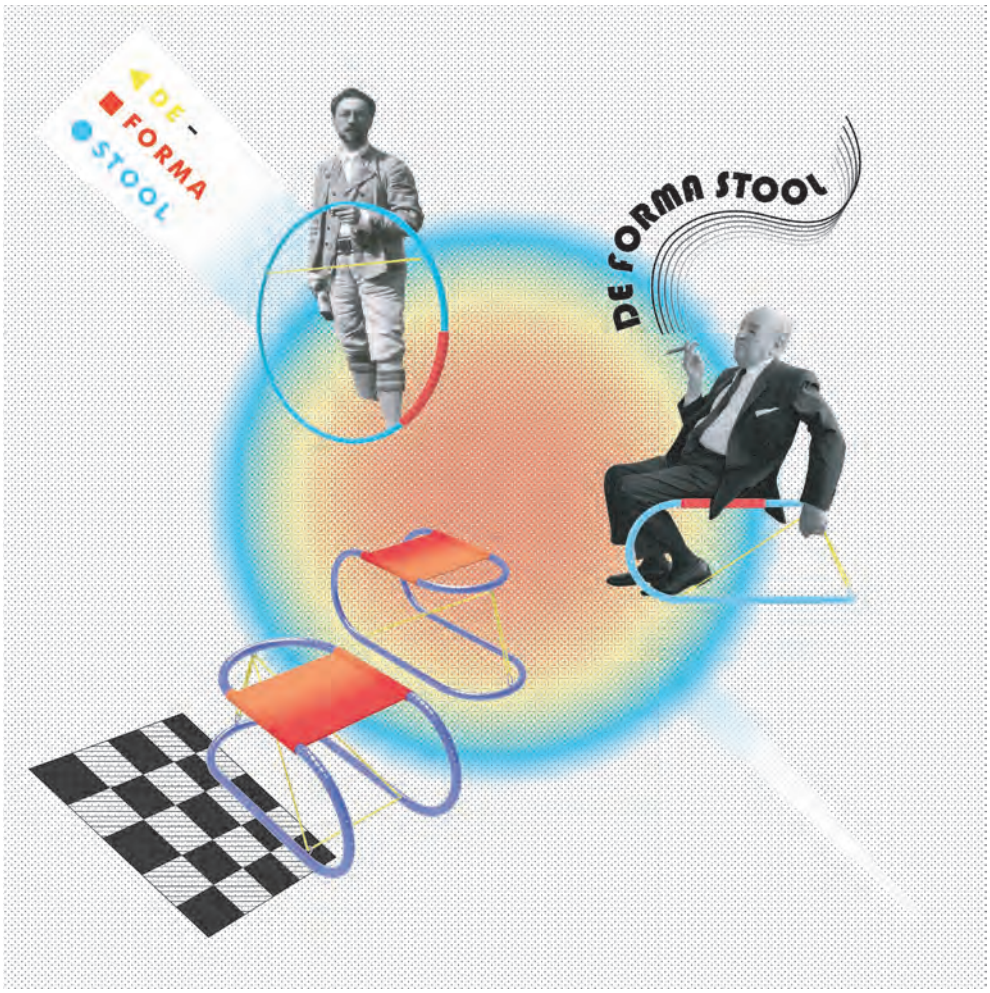
process	| SHIFT (ALLEGORY) |
level	| REFLECTIVE |
extension	| UNIT: SHAPES |



[Fig. 22] DeForma: Rendering

In the year 2020, as commemoration of Bauhaus's 100th anniversary, a Bauhaus-inspired version of the stool has been produced *(Fig.23)*. This celebrative version adds further meaning on the reflective level of the design playing on the syntactic-semantic relationship of its visual language.

In fact, the colour choice used for this version follows Kandinsky's theory on colours and shapes, according to which the three primary colours and the three archaic shapes are uniquely and harmonically linked to each other as yellow-triangle, red-square, and blue-circle.



[Fig. 23] DeForma: Poster of the Bauhaus Edition

HOW CAN YOUR EYES BRIGHT IN THE DARK ?

3.1.2 Amphibolic Glasses: Sunlight

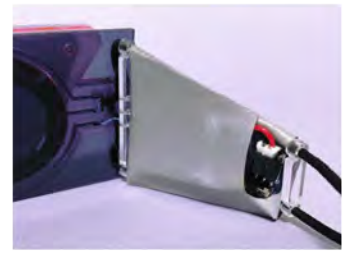
Design Process

[Fig. 24] Sunlight: Concept

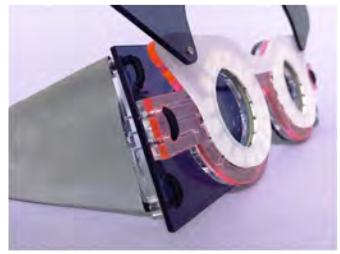
2. details

Programmable LEDs, allow to customize sequences and colors of the lights with Arduino

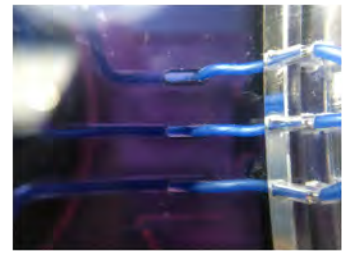
Dark lenses can be moved up when there is no need of protection from UV or sun



Lateral areas hide the access to the battery, the microcontroller and the on-off button



The wearing system based on elastic rope allows the glasses to be adjustable and prevents them from falling while dancing



Electric cables and circuits are displayed as graphic decoration

[Fig. 25] Sunlight: Prototype Details

Product description

Sunlight *(Fig.26)* is a pair of sunglasses which not only protect the user's eyes from sunlight but also makes the user a *shiny star (Fig.29).*

The concept is generated by rhetorically questioning the ambiguity of the word sunglasses. The terms SUN and GLASSES assume different meaning depending on which type of correlation is supposed:

- *Glasses that produce sun/light [=SUPPORTIVE CORRELATION]?*
- *Glasses against sun/light [=OPPOSITIVE CORRELATION]?*

By applying this rhetoric amphibolic process, the product design incorporates these two antithetic interpretations; a pair of glasses equipped with dark lenses for blocking light in sunny ambientes, and lenses with LEDs for generating light in dark ambient lights. *(Fig.27-28)*

[Fig. 26] Sunlight: Prototype

The glasses are digitally fabricated by laser cut acrylic sheets joined with screws and elastic ropes. The design also allows head-size adjustability while wearing the glasses. The acrylic layers differ in colour and transparency, creating a visual game of refractions and colour gradations. Moreover, the use of a transparent body makes the inner electric cables visible. Instead of hiding the functional components, this stylistic choice exploits the rhetoric figure called *emphasis*, making the cables becoming the main decorative element of the whole design *(Fig.25).*

Rhetoric framework

AMPHIBOLIA: rhetoric figure playing on a double meaning of an expression to generate jokes and irony. **HERE** it plays on the etymological ambiguity of the term “sun + glasses”.

process	| SUBSTITUTION (AMPHIBOLIA) |
level	| REFLECTIVE |
extension	| SYSTEM |

ANTITHESIS: composition constructed by contraries; juxtaposition of contrasting ideas or elements in a structure. **HERE** the glasses are antithetic in their concept and functions: they are designed to work both *pro* and *against* light.

process	| OPPOSITE REPETITION (ANTITHESIS) |
level	| BEHAVIORAL - REFLECTIVE |
extension	| SYSTEM |

[Fig. 27] Sunlight: Prototype

EMPHASIS: giving prominence to a quality or a trait, commonly considered secondary. This is done by promoting it to center and symbolize the very substance of the situation/construction. **HERE** the electric wires are purposely showed through the choice of transparent acrylic: in this way, from being functional components, they become the main decorative element of the whole design.

process	| VERTICAL AMPLIFICATION (EMPHASIS) |
level	| VISCERAL |
extension	| MATERIAL - COLOUR |

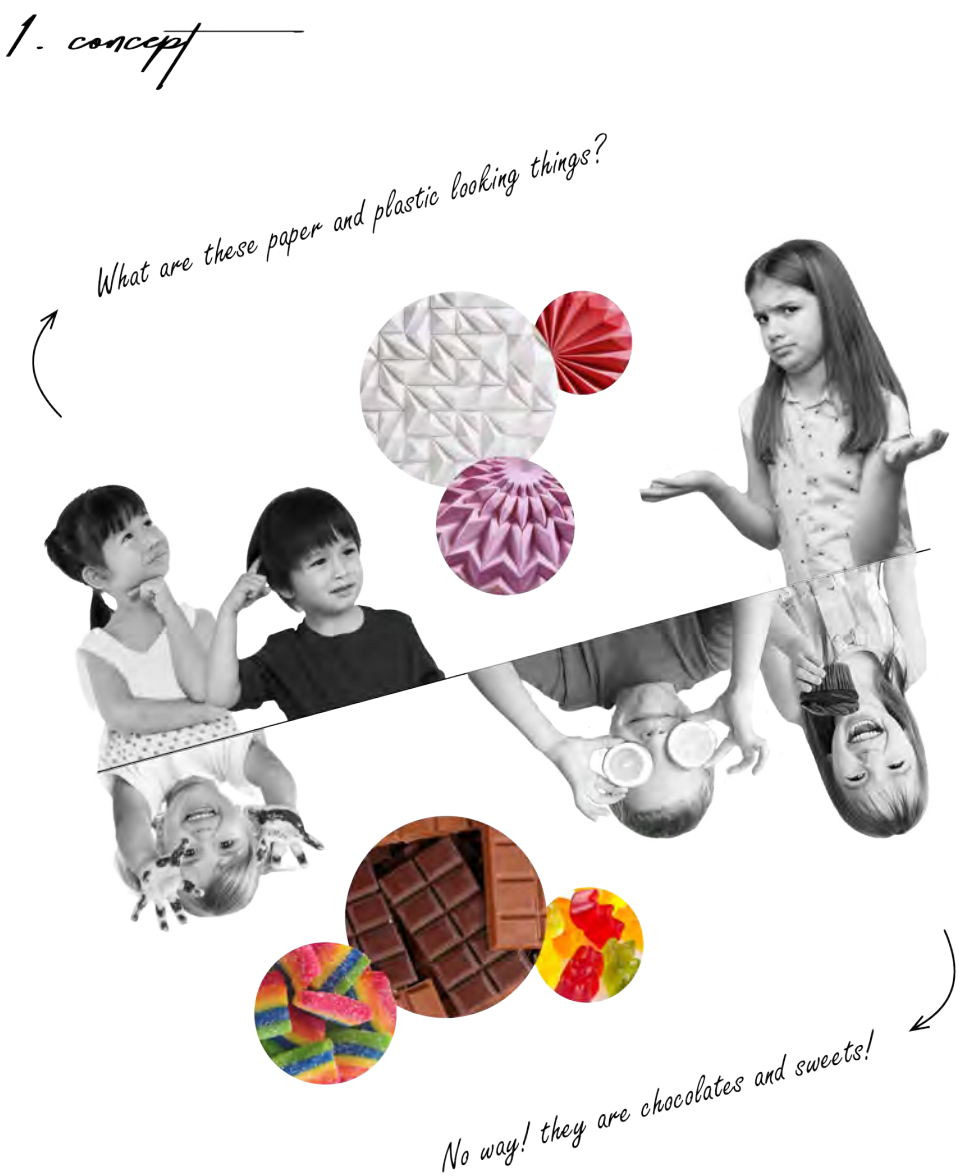
[Fig. 28] Sunlight: Prototype

[Fig. 29] Sunlight: Wearing test

ISN'T THIS PLASTIC SO SWEET AND YUMMY ?

3.1.3 Oxymoronic Dessert Moulds: Algorì

Design Process



[Fig. 30] Algorì: Concept

2. moodboard

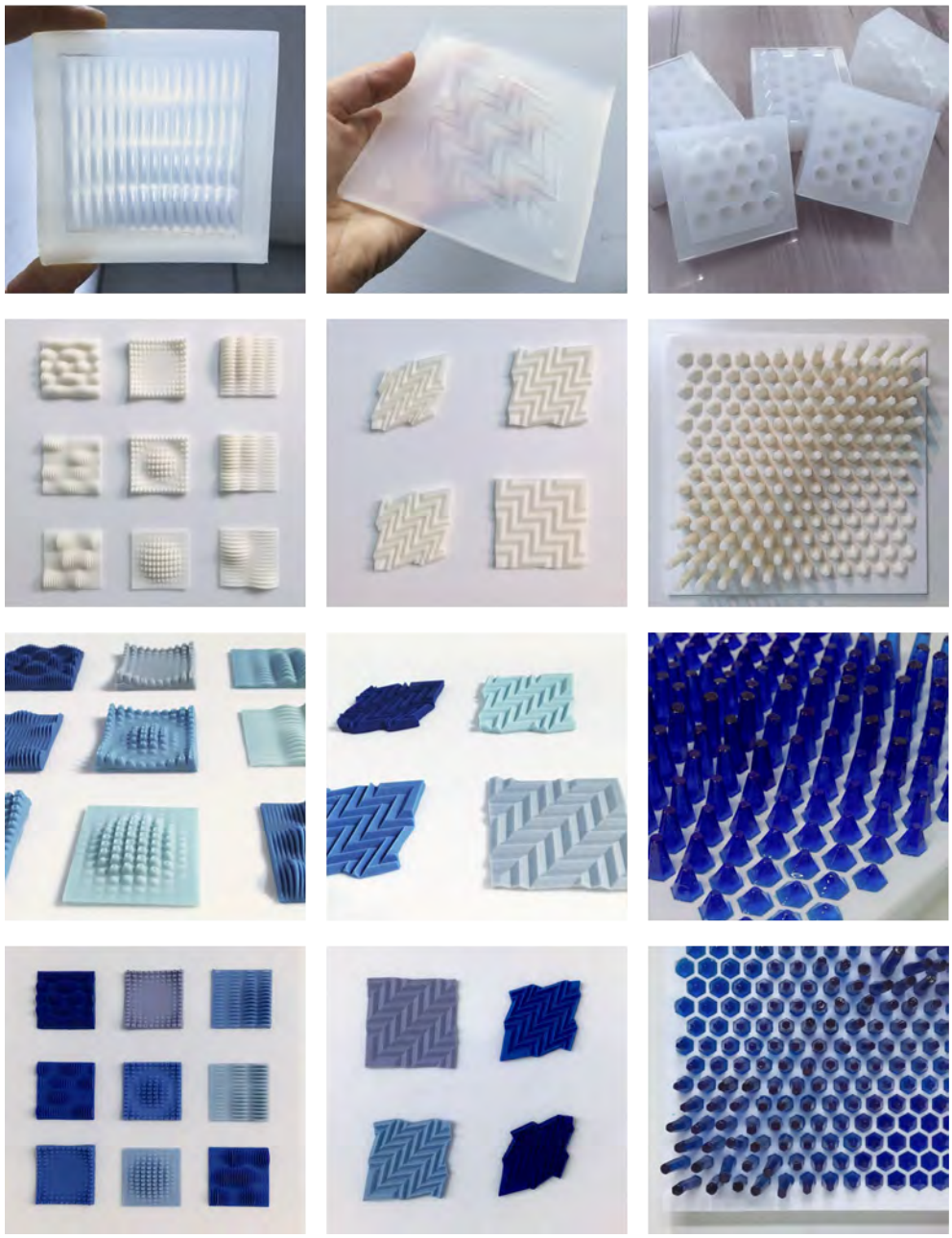
parametric modeling
paper folding studies
food design

patisserie recipies
foodgrade molding
finger chocolaterie

geometric patterns
digital fabrication
edible abstraction

[Fig. 31] Algorì: Moodboard

3. details



[Fig. 32] Algorì: Details of the Prototype

Product description

Algorì is a collection of parametric silicone moulds for chocolate and candies production *(Fig.33).*

The concept arises from the rhetoric figure oxymoron, which generates a contrast between the conceptual level of what an edible dessert should or could look like and the appearance of a non-edible product. The oxymoronic game guides all the formal elements of the product, from its geometric shapes to its algorithmic-generated textures, from the non-culinary shades of blue to the unexpected citrus after-taste.

The result is a memorable experience for the user: first the visual attraction (visceral level), then the appreciation of aesthetic and compositional features (behavioral level). The curiosity about what they are then arises: next the surprise of discovering they are edible sweets and excitement to taste them (reflective level). Finally, the enjoyment of the whole experience (delight level).

The designs for the moulds are researched in fields distant to the traditional culinary world. They are inspired by geometric variations, mathematical functions, and paper-folding techniques, all then generated with parametric modelling software.

From the productive point of view, the final desserts are manufactured through a digital fabrication process which consists in three main phases: first, 3d printing the positive moulds in food-grade resin; secondly, casting them in food-grade silicone to obtain negative shapes. Finally, the silicone negative moulds are used to make the oxymoronic chocolates and candies *(Fig.32).*

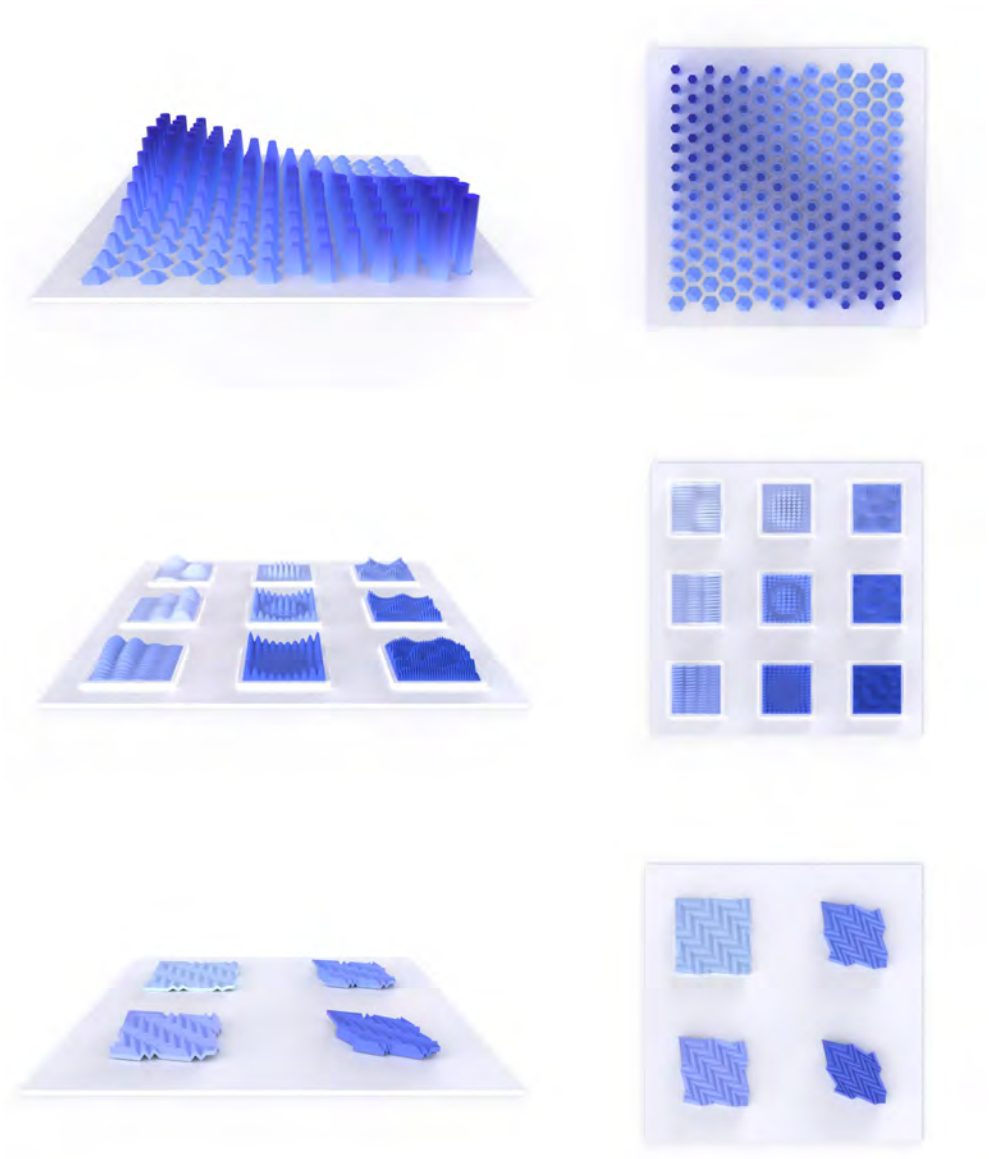
Rhetoric framework

OXYMORON: also called compressed paradox, is a figure which juxtaposes two concepts which seem to be mutually exclusive. **HERE** the whole experience is a contradiction of appearance, content, attributes, and expectations.

process	| OPPOSITIVE REPETITION (OXYMORON) |
level	| VISCERAL- BEHAVIORAL - REFLECTIVE |
extension	| SYSTEM |

CLIMAX: arrangements of elements such that one feature gradually increases in values such as quantity, quality, importance, visibility, meaning, size, loudness, saturation, etcetera. **HERE** the parameters of hue and value of the colour gradually increase.

process	| VERTICAL AMPLIFICATION (CLIMAX) |
level	| VISCERAL |
extension	| UNIT: COLOUR |

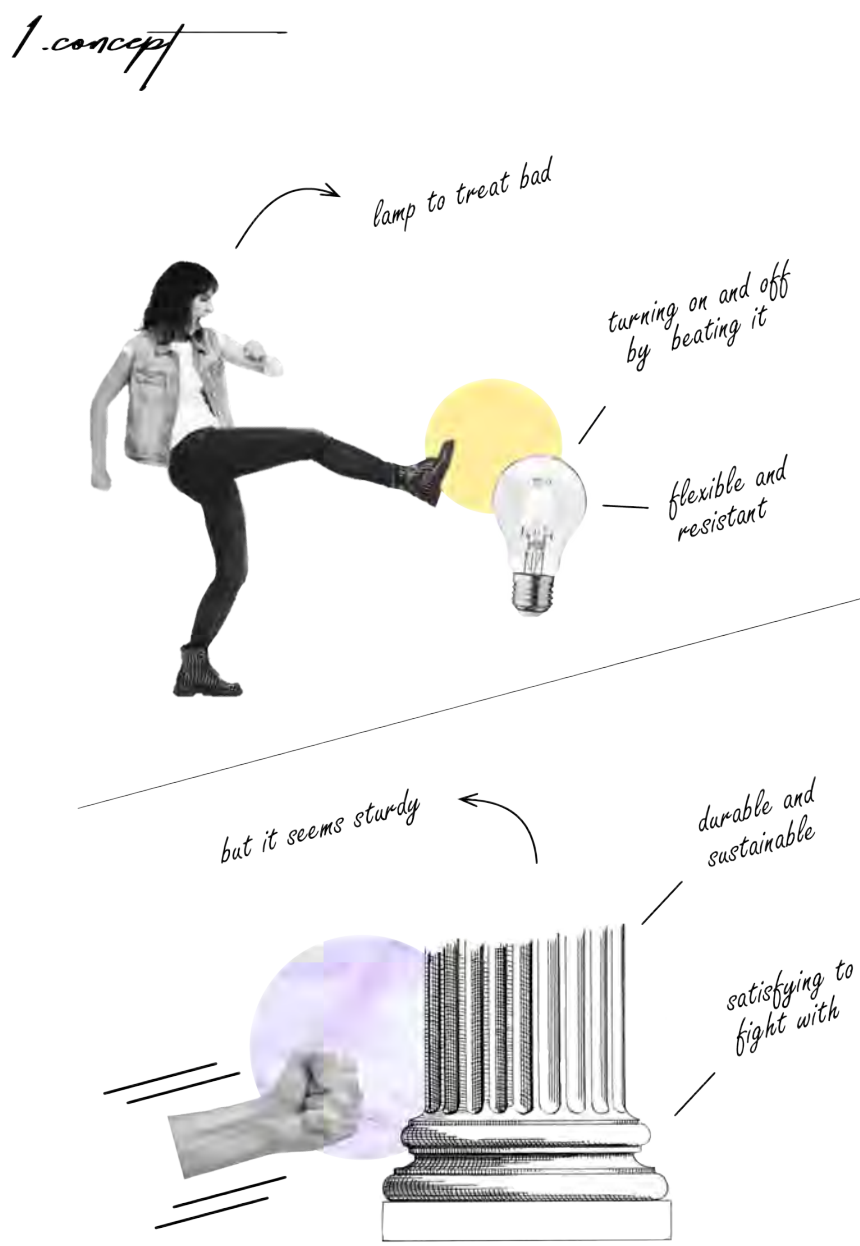


[Fig. 33] Algorì: Rendering

IF IT DOESN'T WORK, JUST BEAT IT UP !

3.1.4 Paradoxical Lamp: Eterna

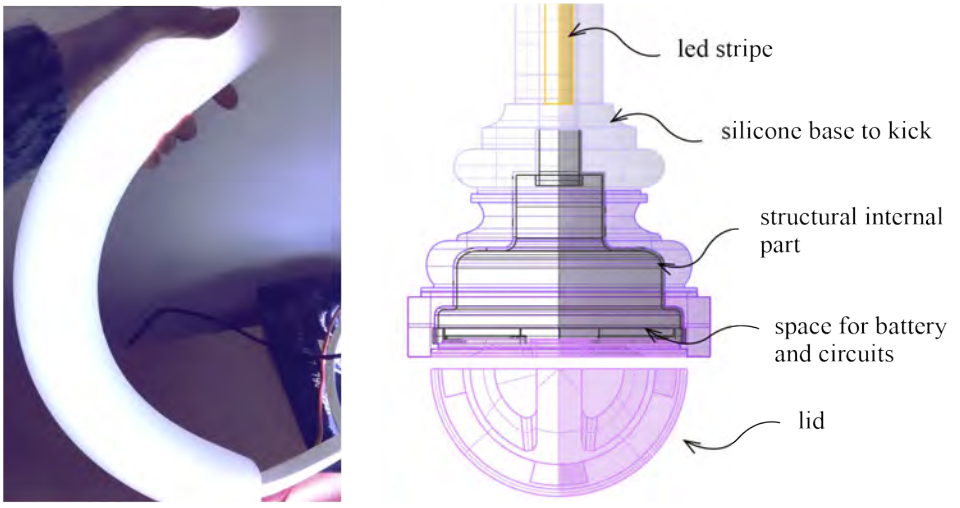
Design Process



[Fig. 34] Eterna: Concept

2. moodboard

3. details



[Fig. 35] Eterna: Moodboard and Details

Product Description

Eterna *(Fig.37)* is a multi-purpose lamp which, differently from traditional lights, should be treated badly. In fact, this paradoxical lamp turns on and off when punched, beaten, or kicked. The design concept meets the hidden desire of the most stressed users and simultaneously removes the need of having a physical switcher or controller. The rhetoric approach of the project starts from the concept level, where a paradoxical reasoning is generated as it follows: *major premise* = an aesthetic lamp should be treated properly / *minor premise* = treating it properly means treating it well / *inference1* = this lamp is turned on by hitting or beating / *inference2* = hitting an object is the opposite of treating it well / *conclusion* = treating this lamp properly means treating it badly.

Moreover, the formal composition oxymoronically interacts with the soft silicone material, by presenting architectural columns shapes, traditionally associated with the hardness and coldness of marble. Thanks to the silicone material, Eterna is flexible, waterproof, stress, and heat resistant.

From a technical point of view, the Romanic Doric bases *(Fig.36)* contain the integrated circuit of sensors recording vibrations when hit. This turns on/off the 12V led strip that traverses all the flexible semi-transparent cylindrical body. The sensors can be regulated to perceive less intense tactile treatment or more vigorous beats. The LED stripe is available in several colours and can be substituted directly by the user.

Eterna works both with current and with rechargeable batteries. Therefore, it can be bent and brought everywhere, for lighting spaces with a soft milky light that gradually fade into a purple luminescence.

[Fig. 36] Eterna: Rendering of Details

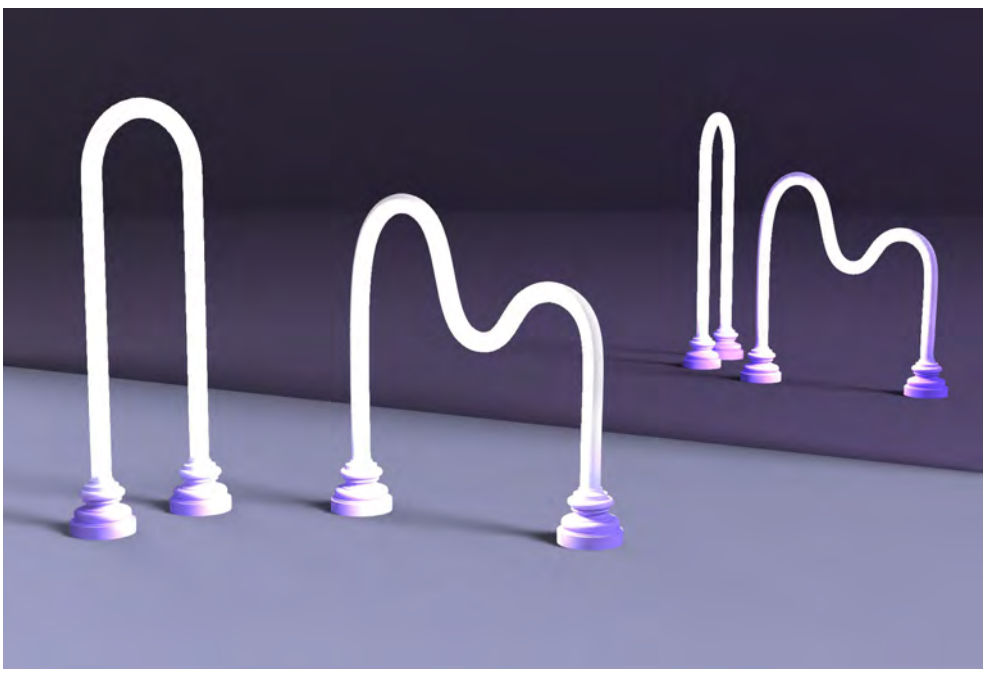
Rhetoric Framework

PARADOX: logical argumentative structure in which the conclusion turns the premise upside down, usually based on data of experience. **HERE** the experience suggests that an aesthetic lamp should be treated properly, that means well. However, this lamp turns on only by hitting, and hitting an object is the opposite of treating it well. The conclusion contradicts the premise, stating, therefore, that to treat this lamp bad is to treat it properly.

process	| OPPOSITIVE REPETITION (PARADOX) |
level	| BEHAVIORAL - REFLECTIVE |
extension	| SYSTEM |

OXYMORON: also called compressed paradox, is a figure which juxtaposes two concepts which seem to be mutually exclusive. **HERE** the shape recall marble columns that are supposed to be hard, but they are actually made of soft silicone.

process	| OPPOSITIVE REPETITION (OXYMORON) |
level	| VISCERAL - REFLECTIVE |
extension	| UNITS: MATERIAL-SHAPE |



[Fig. 37] Eterna: Rendering

WOW MY ROBOT GETS REALLY EMO-TIONAL!

3.1.5 Personified Robot: Mido

Product description

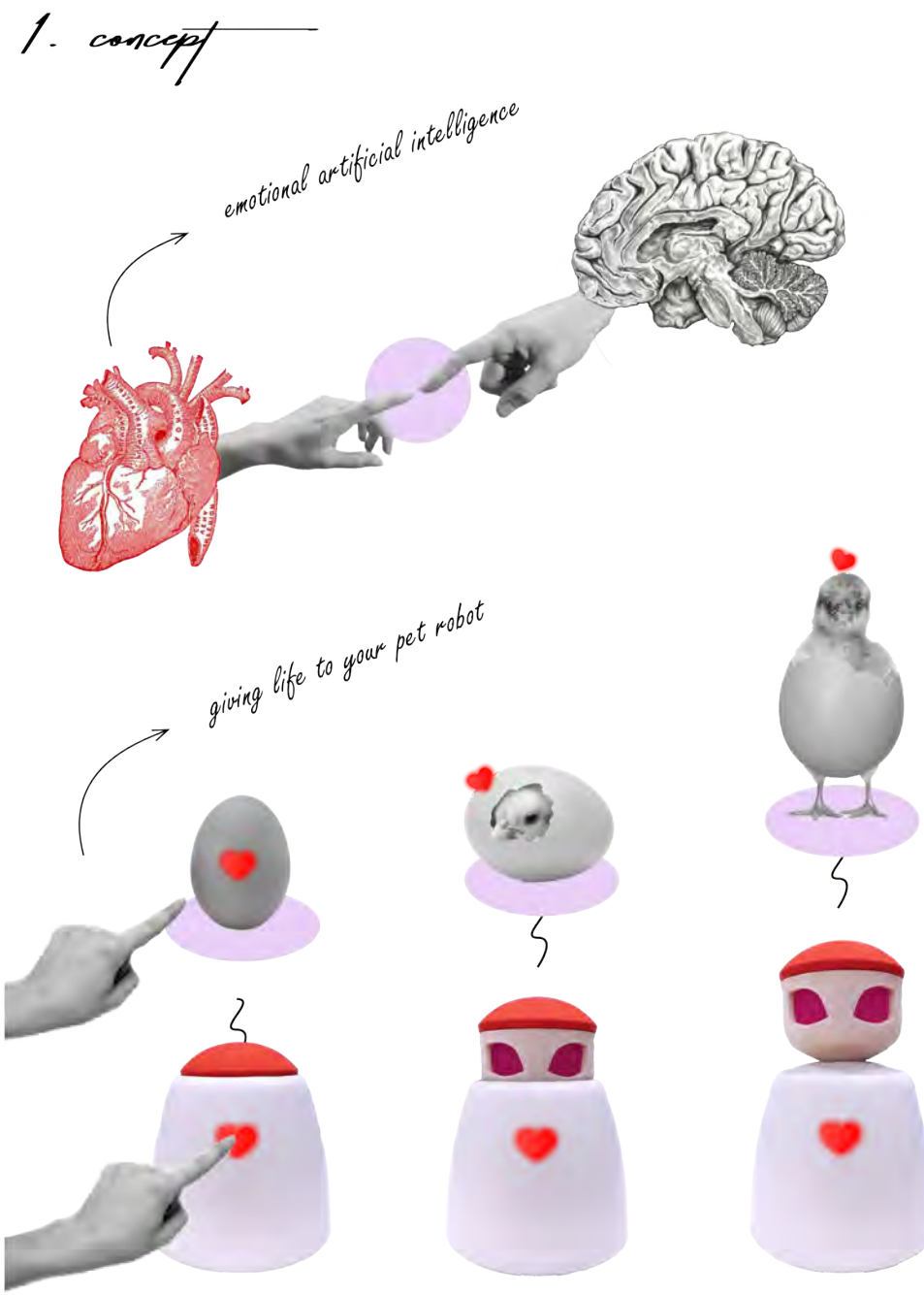
Mido *(Fig.40,41)* is an emotional robot in development at the *Autonomous Robot Intelligence Laboratory*, in Seoul National University's engineering department.

Its core value lies in being an artificial intelligence capable of learning how to communicate from online chatting databases. With training, Mido becomes capable of interacting with different human personalities and learns how to deal with each of them. In other words, Mido learns how to deliver emotions directly from human online experiences.

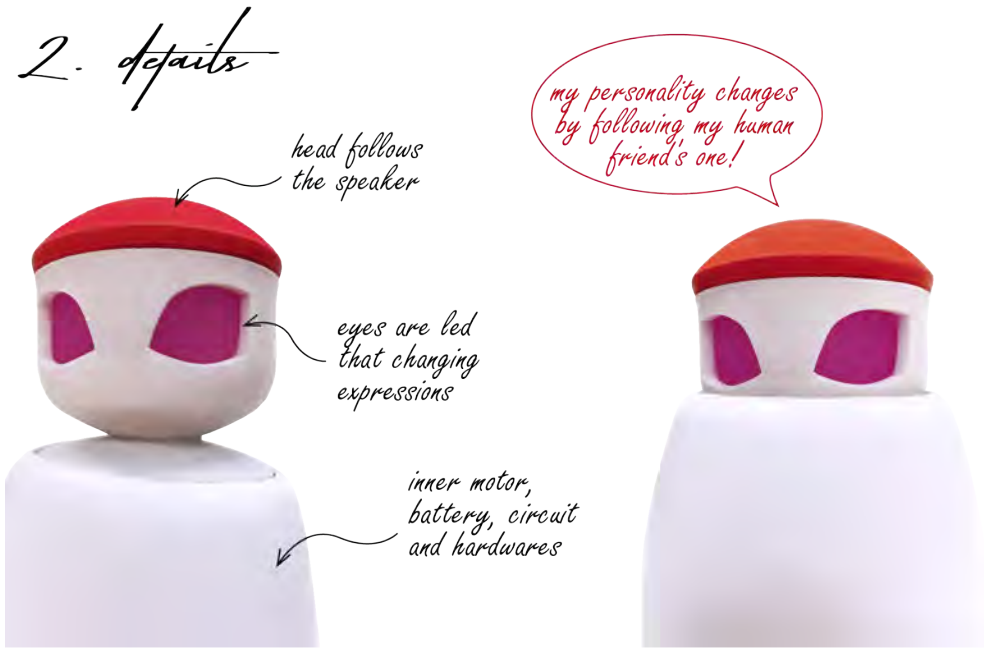
Due to the robot's mission to antithetically become a *less artificial and more human* type of intelligence, its external appearance is designed by picturing it as a living creature. This is achieved by applying the rhetoric figure of personification throughout the product composition. The robot has a body, head, and eyes. It applies the skill to speak and understand humans as well as the ability to deliver emotions through facial expressions and head movements.

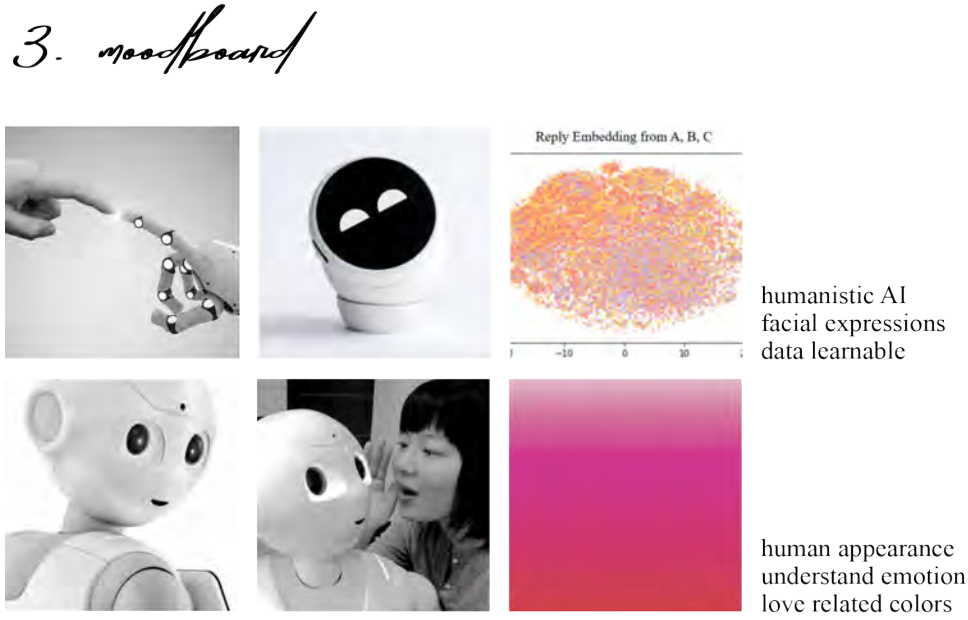
Mido is not only personified on the visceral and reflective levels but also in the user experience journey. Beside the main interactive function of chatting with users, its secondary actions are designed to mimic behaviours of a little living creature when activated. In fact, the user metaphorically makes the robot's heartbeat starting to beat as activation mechanism, by pressing the red button on its chest. Similar, Mido's booting process is delivered as a theatrical peek-a-boo movement traditionally associated with awaking human babies up *(Fig.38).*

Design Process

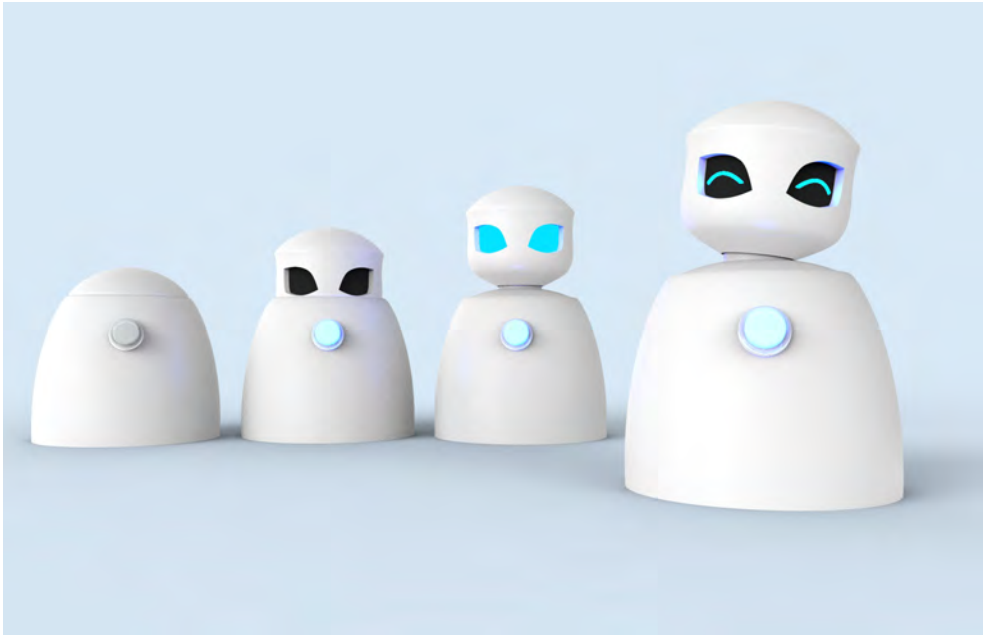


[Fig. 38] Mido: Concept





[Fig. 39] Mido: Details and Moodboard



[Fig. 40] Mido: Rendering

Rhetoric framework

PERSONIFICATION: application of physical, emotional, spiritual attributes and abilities of humans onto non-human entities. The *personification* device helps humans in the process of relating objects and concepts to their own range of emotions. This makes understanding, using, and interpreting the object easier. **HERE** the whole project is developing around the idea of applying human emotional reasoning and reacting abilities to an autonomous robot intelligence while making it to behave and look as a living humanized entity.

process	| SUBSTITUTION (PERSONIFICATION) |
level	| VISCERAL - BEHAVIORAL - REFLECTIVE |
extension	| SYSTEM |

ANTITHESIS: is called antithesis a composition built on contraries; the juxtaposition of contrasting ideas or elements in a common structure. The criteria for the contrary's identification are extensive. **HERE** the composition of contrasting concepts lies in the want of combining an artificial, rational, cold, objective intelligence with the human, emotional, warm, subjective mental abilities.

process | OPPOSITIVE REPETITION (ANTITHESIS) |
level | REFLECTIVE |
extension | SYSTEM |

METAPHOR: asserting a correlation or resemblance between two things otherwise unrelated. A metaphor transfers meaning from one subject onto another, enabling it to be understood in a novel way. **HERE** the single red button represents the heart of the robot, and the activating process is presented as a metaphoric awakening of an unanimated creature whose heart starts to beat by pushing it.

process | SUBSTITUTION (METAPHOR) |
level | BEHAVIOR |
extension | UNIT: UX|

[Fig. 41] Mido: Rendering

3.2 Second Dissertation Projects: Overview

The chapter is a collection of the most relevant products designed for the second dissertation of the ongoing research.

Compared to the previous 3.1 collection, the following projects present an improved approach for the theme of unexpected emotional rhetoric design with which they overcome the main criticism identified in retrospect on the first phase.

Despite displaying interesting products, the limit of the first collection lies in its being focused on demonstrating the feasibility of using a rhetorical approach in composing products rather than giving prominence to design unexpected effects through products. In other words, the development of products in the first collection has as starting point the decision about which rhetoric figure the design should be built on, rather than conceptualizing first what kind of unexpected experience and what type of emotional reaction the product should be able to provoke in the users.

For this second collection, the new approach gives primary importance to the resulting experience by planning to first, conceive an unexpected-emotionally enriched concept, and, only after that, to develop the surprise-factor in the form of a product with the help of rhetoric tools.

From a productive point of view, the previous designs were more experiments of innovative materials and processes, while the new outcomes are designed to be manufacturable and for selling purposes.

Here, the list of the projects of this chapter:

WOULD YOU LIKE A DRINK THAT SOUNDS NICE ?

3.2.1 Emphatic Glassware: TeaTin

Unexpected Norm Deviation

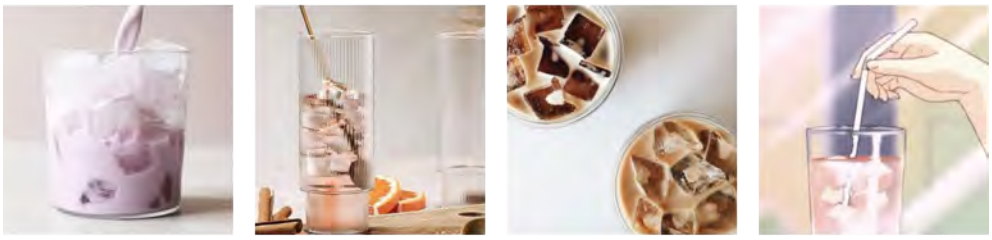
[Fig. 42] TeaTin: Norm Deviation Concept

Unexpected Purpose

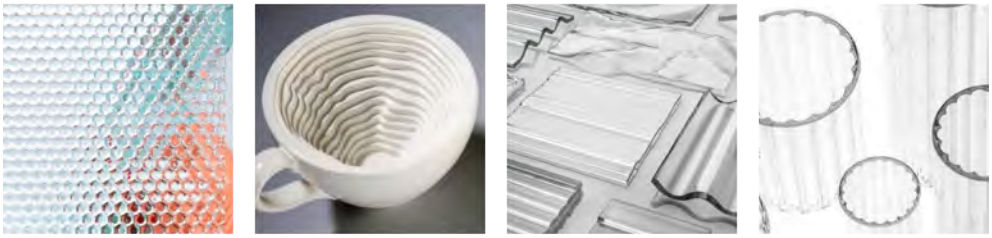
To create surprise in the common act of stirring a drink: with this action, TeaTin glasses produce rhythmic sounds with different tones that make the user marvelling at the stirring act in itself. *(Fig.42)*

In an innovative collective game, the stirring act goes from being a merely functional and secondary action to becoming the main attraction of the drinking experience.

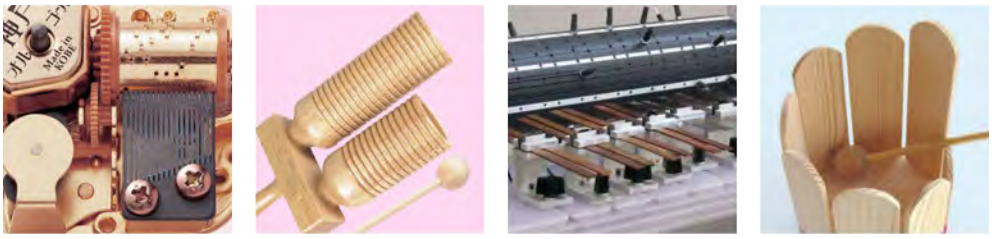
Concept



diving into the ritual of having drinks with straws and spoons to stir with



experimenting with textured materials with rhythmic sounds properties



researching the working principles of idiophones, scraping instruments and music boxes

[Fig. 43] TeaTin: Concept and Moodboard

Main Rhetoric Process

EMPHASIS: giving prominence to a quality or a trait, commonly considered secondary. This is done by shifting on it the centre of the attention and by making it symbolize the very substance of the situation/construction.

process | VERTICAL AMPLIFICATION (EMPHASIS) |
level | BEHAVIORAL - REFLECTIVE |
extension | SYSTEM |

Product description

TeaTin *(Fig.44)* is a collection of glassware with the peculiarity of producing different rhythmic tones when the stirring rod por the ice touches the glass.

The rhythmic effect is obtained by shaping the interior of the glass in a bumpy pattern. The tone variations are created by designing different heights for the units of the pattern. The pattern follows mathematical calculations, and its variations are parametrically designed.

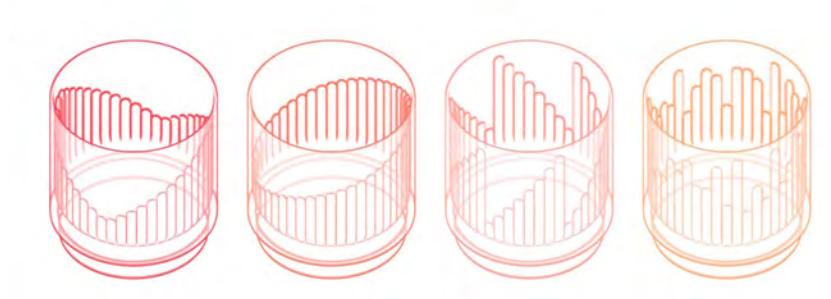
TeaTin offers two different collections, each consisting of four glasses with a distinct pattern variation: the first series, *ShortTin*, *(Fig.45)* is designed for beverages that require larger contact surfaces with air (to better oxidate).This series is suitable for drinks usually served in small amounts and with large ice cubes, such as whisky.

The second collection, *TallTin*, *(Fig.46)* is dedicated to coffee shop-style beverages and mixed cocktails, with a tall shape that prevents the drink from spilling when stirred.

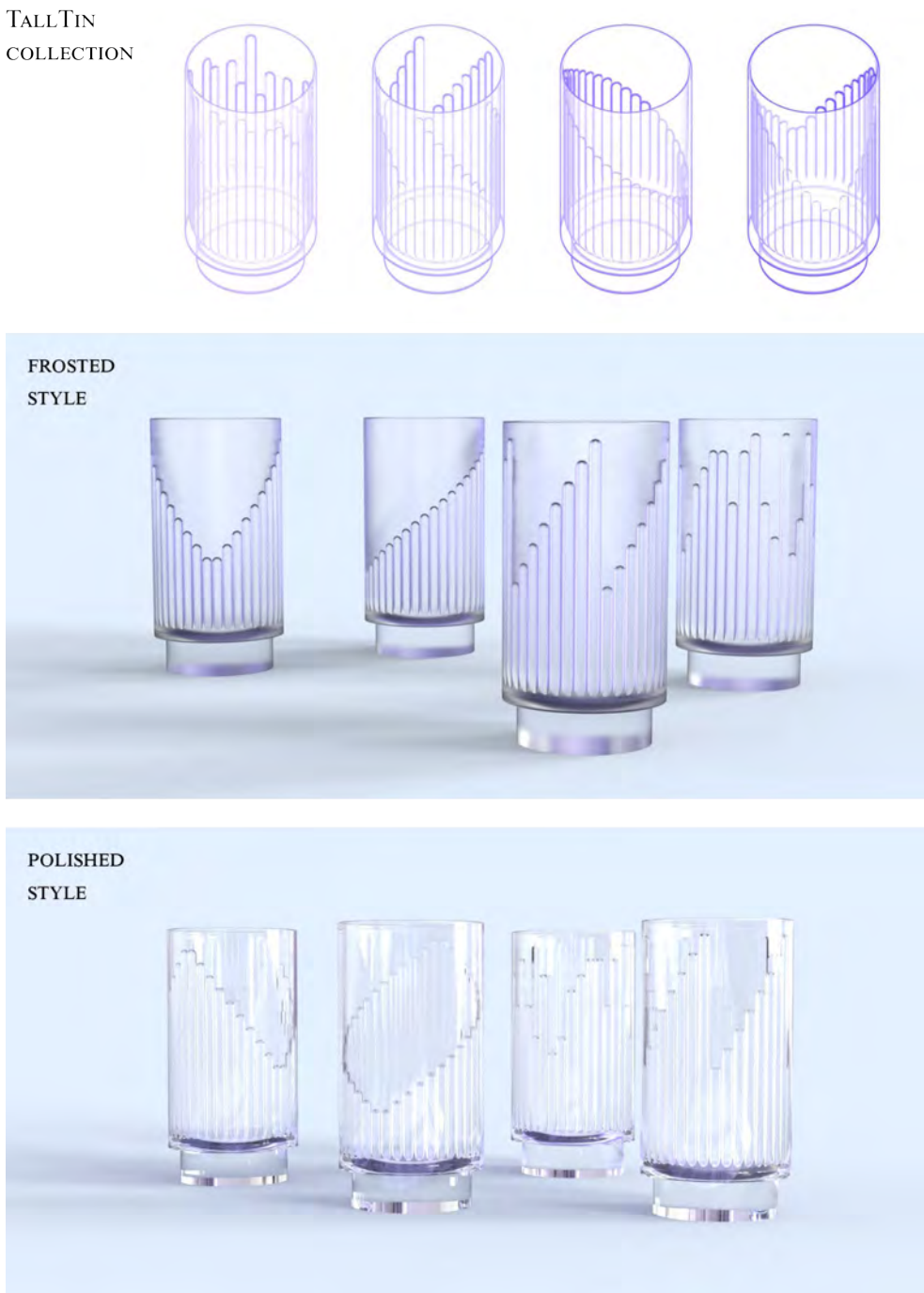
Both collections are stackable for efficient storage and are available in two styles: *frosted* and *polished*.

[Fig. 44] TeaTin: Rendering

SHORTTIN
COLLECTION



[Fig. 45] TeaTin: ShortTin Collection

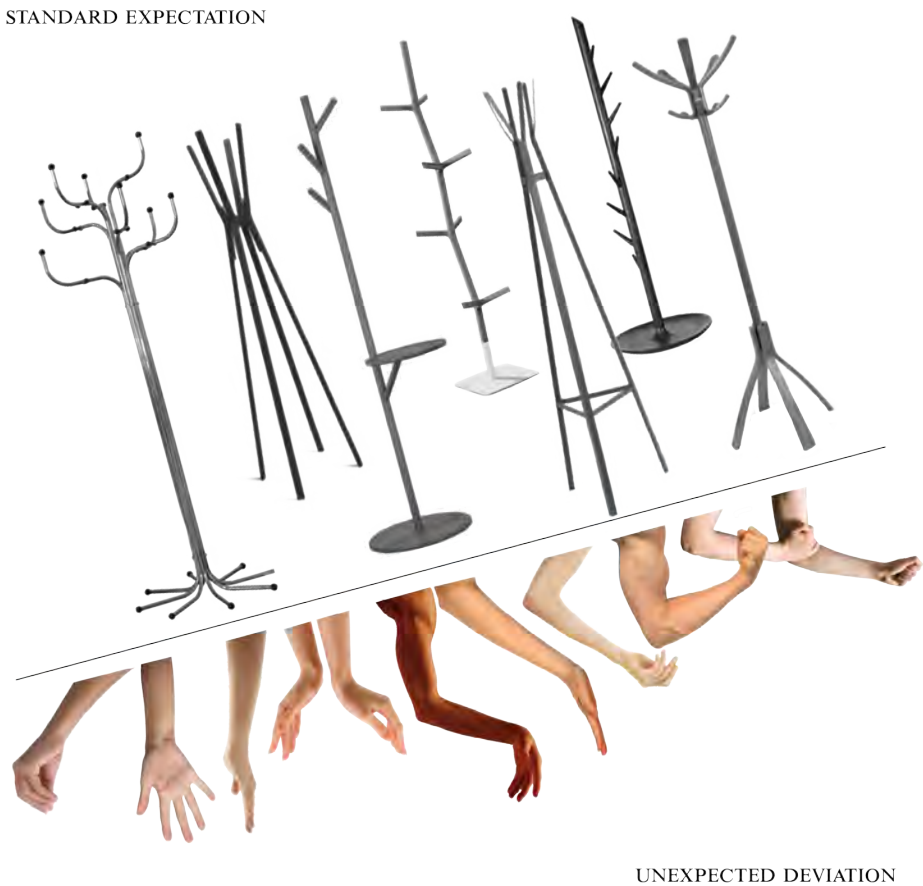


[Fig. 46] TeaTin: TallTin Collection

DO YOU NEED AN HAND ? USE MINES !

3.2.2 Metaphoric Coat Rack: Pose

Unexpected Norm Deviation

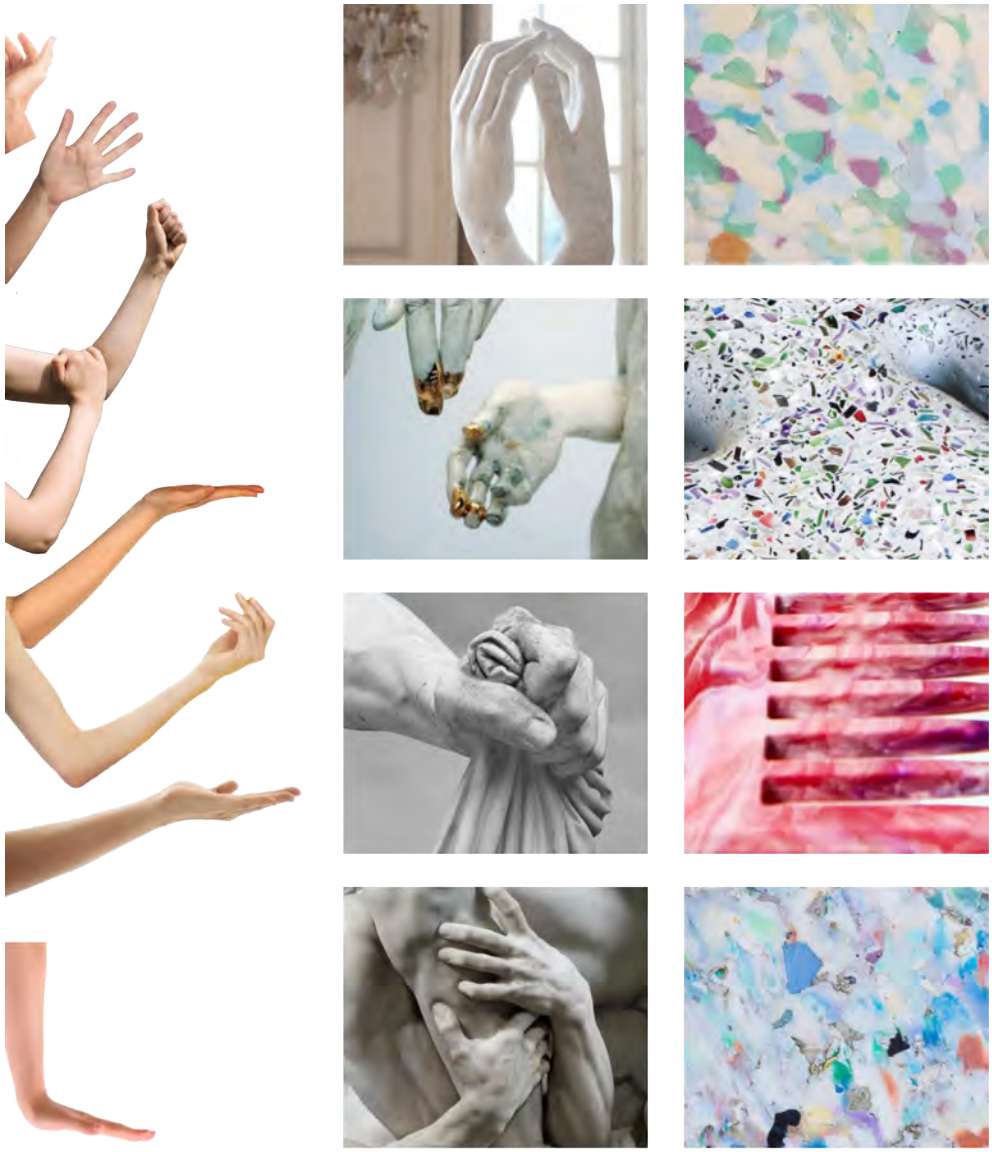


[Fig. 47] Pose: Norm Deviation Concept

Unexpected Purpose

Pose engages the user on a visceral level, due to its unexpected appearance at first sight. Instead of walking into a space furnished with a common, flavourless, inanimate-looking standing hanger, the user encounters a branch of various humanoid arms in diverse poses *(Fig.47).*
Do you need a hand? I will give you as many as you want.

Concept



often two hands are not enough to hold things... solution: lend a hand!

enchanting human shapes through the aesthetics of classic marble sculptures

focus on sustainability by using recycled plastic for getting a marble aspect

[Fig. 48] Pose: Concept and Moodboard

Main Rhetoric Process

METAPHOR: asserting a correlation or resemblance between two things otherwise unrelated. A metaphor transfers meaning from one subject onto another, enabling it to be understood in a novel way.

process	| SUBSTITUTION (METAPHOR) |
level	| REFLECTIVE |
extension	| SYSTEM |

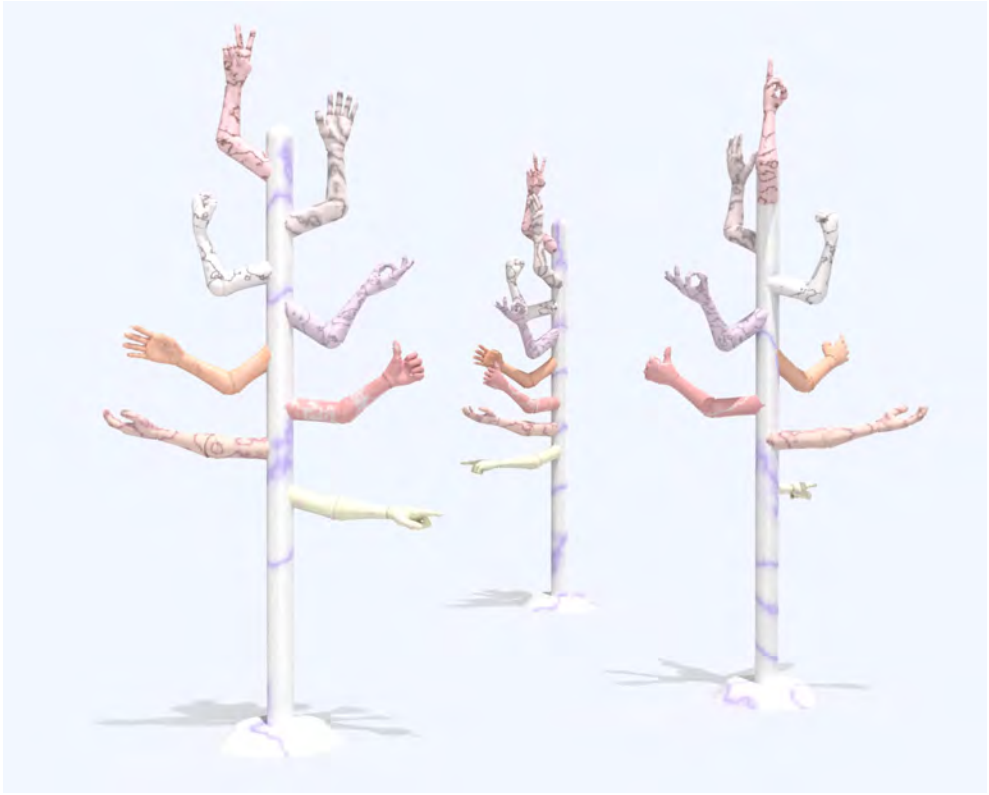
ACCUMULATION: piling up a series of elements which embody similar qualities or meanings with the intention to emphasize the common aspect or to summarize the main point.

process	| HORIZONTAL AMPLIFICATION (ACCUMULATION) |
level	| VISCERAL |
extension	| UNIT: SHAPE |

Product description

Pose *(Fig.49-50)* is an adjustable coat rack that looks like a tree of humanoid arms. Each arm can be rotated along the central body according to the user's need and all the arm's poses are designed to be a perfect type of hanger while showing a peculiar gesture. The gestures can also become a symbolic language among users when explaining where an item is hung, by simply mimicking that specific gesture.

Pose can be produced in various materials to match the space's style; however, the original concept wants the arms to be in various colours as a contemporary symbol of peace and acceptance of human differences. Pose is produced through injection moulding process, and it is made of recycled thermoplastic material. In this proposal, the shredded plastics are selected by colour and mixed in order to get a final marble-statue-look.



[Fig. 49] Pose: Renderings

[Fig. 50] Pose: Rendering

WAS I REALLY SITTING HERE ONE MINUTE AGO ?

3.2.3 Palindrome 2in1 Pouf: Bidibi Bodibi Puff

Unexpected Norm Deviation

[Fig. 51] Bidibi Bodibi: Norm Deviation Concept

Unexpected Purpose

Creating a surprising moment through a magic change in appearance of the pouf, when shifting its folding direction. With Bidibi Bodibi Puff, the user can change the vibe of the room in a few seconds, by shifting the style and colour of the furniture *(Fig.51).*

Concept

designing a comfy and easily variable sitting solution for a wide range of human poses

furniture able to transform its appearance with a "wow-moment"
+ possibility to customize two styles in one object

[Fig. 52] Bidibi Bodibi: Concept and Moodboard

Main Rhetoric Process

PALINDROME: word play in which a phrase, or sentence can be read backward and forward and still being sensible. The words derived from each direction could either be the same or a different word.(e.g., MADAM)

process	| OPPOSITIVE REPETITION (PALINDROME) |
level	| VISCERAL - BEHAVIORAL - REFLECTIVE |
extension	| SYSTEM |

Product description

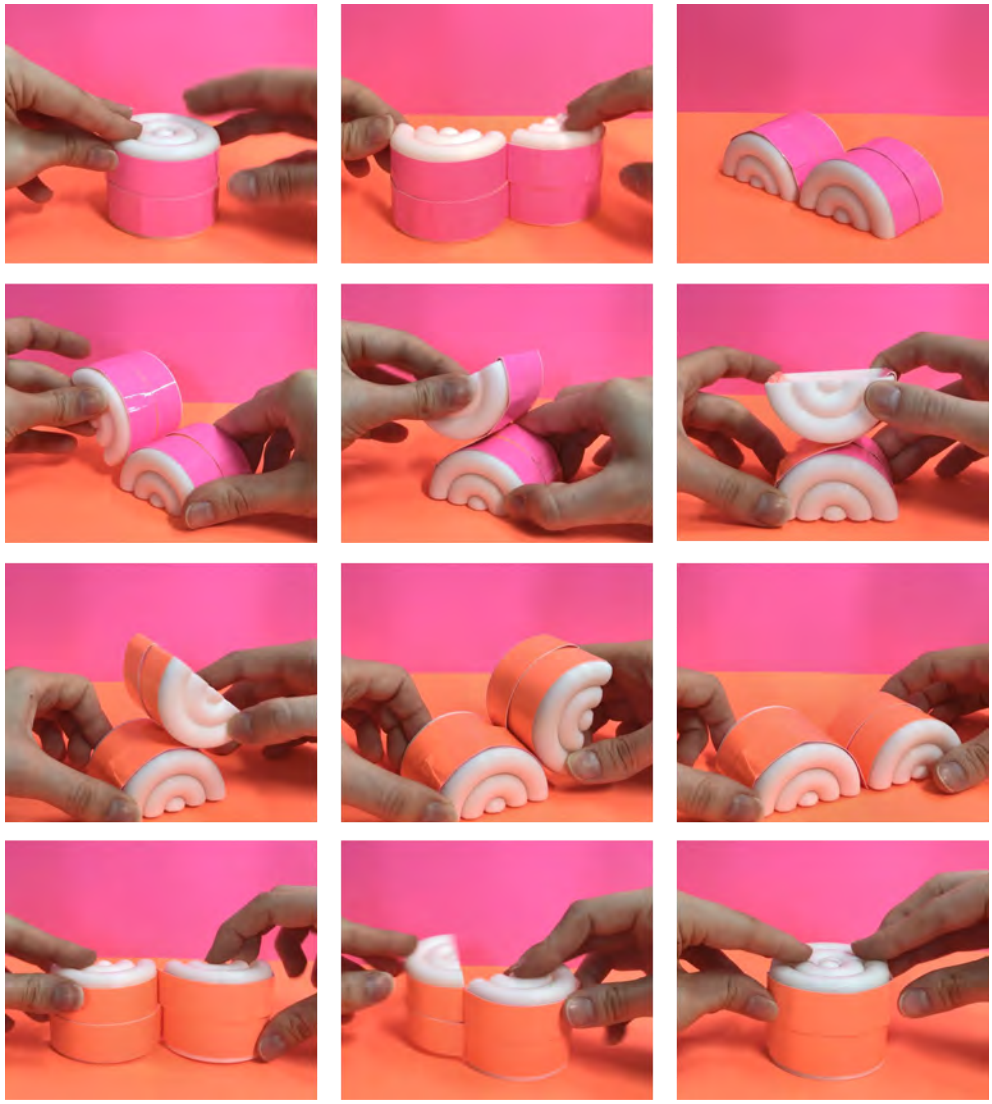
Bidibi Bodibi Puff is a 2in1 sitting solution that can be used both as a traditional pouf and as a versatile mega-pillow*(Fig.53)*.

The peculiarity of this product lies in its original ability to change its external appearance by inverting its rolling-unrolling direction. This palindromic system alternatively shows and hides different surfaces. *(Fig.54)*. This is inspired by mechanisms of magic tricks and illusions. The pouf cover is designed to be totally customizable by the user, who is able to choose and combine two different styles (fabrics, material, pattern, colour, finishing etc).

Bididi Bodibi is a playful and stylish piece of furniture that not only elicits various sitting-resting positions but that can also conquer bigger spaces: thanks to a magnetic attachment system, the single units can be combined together for complex, chameleonic and unique resting areas.

[Fig. 53] Bidibi Bodibi: Sitting Variations Examples

Palindromic Mechanism



[Fig. 54] Bidibi Bodibi: Palindromic Mechanism Prototype

3.3 Final Dissertation Projects: Overview

The chapter presents two final supra-functional products designed according to the findings of this research.

As final collection, the following projects merge unexpected purposes with strategies used for surprise and the rhetoric norm deviations of visceral, behavioral, and reflective levels.

The implementation of the surprise strategies *Interrupting Pattern and Knowledge Gaps* allows the projects to overcome some grey areas faced in the 3.2 designs. The main doubt arisen from the previous collection concerns the observation that something considered unexpected by an individual could be at the same time being seen as standard by someone else.

This matter is part of a wider cultural and sociologic issue about the relativism of individual's experience, theories that will not be explored in the ongoing research. However, in the frame of designing surprise through products, this problem can be overcome by supplying the users with the standard background that the design will then proceed to distort. This background is set by following the surprise strategies mentioned above.

In synthesis, for this final collection, the design process applied consists still in planning an unexpected experience ahead, but by first clearly setting the standard ground from which the experience will unexpectedly deviate. Once the standard-deviation frame has been drawn, rhetoric tools are used in developing the design on its different aspects.

Below, the final projects are listed:

HARD
ER
FAST
ER
LONG
ER
BRIGHT
ER

3.3.1 Analogical Lamp: Lunatica

Unexpected Norm Deviation

[Fig. 55] Lunatica: Unexpected Deviation Concept

Unexpected Purpose

Inspired from boxing, the unexpected deviation consists in twisting the negative concept of hurting electric/electronic products. Your pc is not designed to restart by violently punching it when crashed…This lamp, however, yes. The harder you punch it, the brighter it will turn on.

3.3.1 Analogical Lamp: Lunatica

Concept

baloons, bubbles and moonlight as inspirational shapes for reimagining the idea of punching bag through modern eyes towards an ethereal aesthetics

exploiting materials for their functional proprieties: vacuum suction cups for sticking to surfaces, springs for elastic resitance, milky silicon for diffusing light

recalling the traditional structure of training boxing bags for suggesting how to interact with the lamp; allowing users to get violent with the object

[Fig. 56] Lunatica Concept and Moodboard

Norm Deviation Process

STANDARD GROUND: Box punching bag. The concept requires that the user is able to recognize a standard punching bag from its physical features such as shape, structure, and dimensions *(Fig.56).*

EXPECTED PATTERN: Passing by a punching bag, the individual will tend to try hitting it.

EXPECTED KNOWLEDGE: The user knows that can be a stress relieving action and that nothing will happen to the hit bag.

UNEXPECTED DEVIATION: The punching bag looking object, is actually a lighting design product.

INTERRUPTING PATTERN: The user will think it is a modern punching bag, based on their past pattern. But when they hit the bag, it will turn on!

KNOWLEDGE GAP: The intensity and amount of the punches control of light intensity and shut down timer. The user will learn by testing the lamp that the stronger they hit, the brighter the light and that the more the number of punches given fast, the longer the lamp will stay on.

Main Rhetoric Process

Visceral

SUBSTITUTION / METAPHOR: asserting a correlation or resemblance between two things otherwise unrelated. A metaphor transfers meaning from one subject onto another, enabling it to be understood in a novel way. **HERE,** the lamp shape resembles a modern punching bag.

Behavioral

SUBSTITUTION /ANALOGY: cognitive process of transferring information or meaning from a particular subject (the analog, or source) to another (the target). **HERE,** by resembling a punching bag, the shape and structure of the lamp act as hints for implying that the target item will work in an analogic way as the source item. Hence, by hitting and punching it.

Reflective

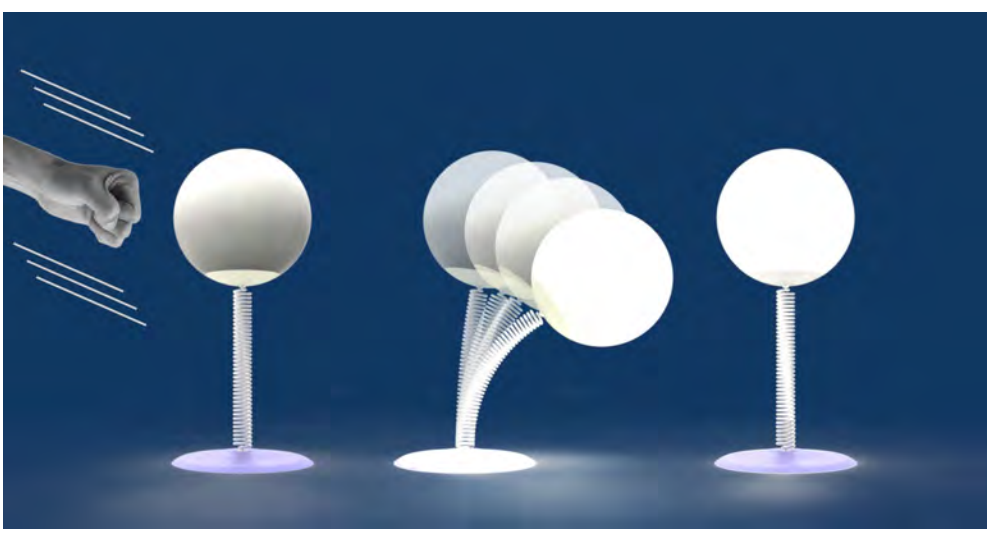
OPPOSITIVE REPETITION / PARADOX: logical argumentative structure in which the conclusion turns the premise upside down, usually based on data of experience. **HERE,** the experience suggests that an aesthetic lamp should be treated properly, that means well. However, this lamp turns on only by hitting, and hitting an object is the opposite of treating it well. Therefore, the conclusion contradicts the premise, stating that to treat this lamp bad is to treat it properly.

Product Description

Lunatica *(Fig.57)* is a "punching" lamp, that turns on when hit and whose level of brightness depends on the intensity of the blow it receives.

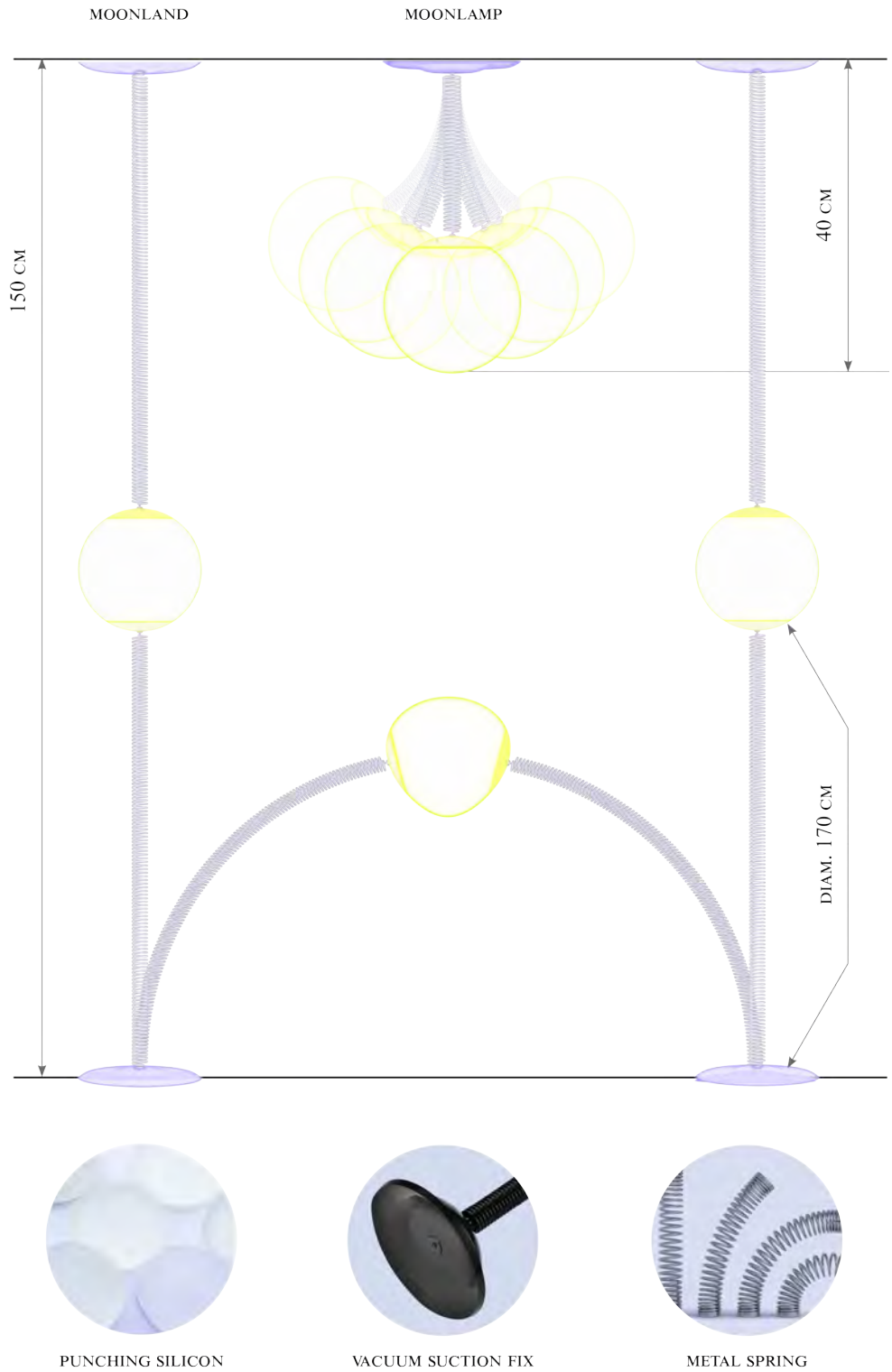
At a first glance, from a visceral perspective, Lunatica looks like a minimal punching bag for desk, so that users will not immediately identify the object as a special lamp, hence they will get more surprised once witnessed the functioning of it.

From the base to the top, the structure consists in a strong vacuum suction cup as stand, which allows the lamp to be tightly secured to any surfaces compatible with suction proprieties and to not fall when hit; a metallic spring whose elastic proprieties support punches and let the body returning to its original state after hitting; a circuit area with battery, charging door and LEDs connected to a vibration sensor that activates them; and, finally a milky silicon cover that works as light diffusor and a soft but sturdy area to beat without problems. The silicon head is soft, durable, and very satisfying to beat, becoming a stress reliving item.



[Fig. 57] Lunatica: Moonlamp Rendering

Lunatica has two versions, Moonlamp and and Moonland. Moonlamp is a desk-size version, with a total height of 40 cm that could be also stuck on inclined surfaces. Moonland is the taller version, which measures 150 cm and is designed as a double-head fixed suspension lamp, with two vacuum suction cups that can be easily disassembled and installed *(Fig.58-59)*.



[Fig. 58] Lunatica: Structure and Materials

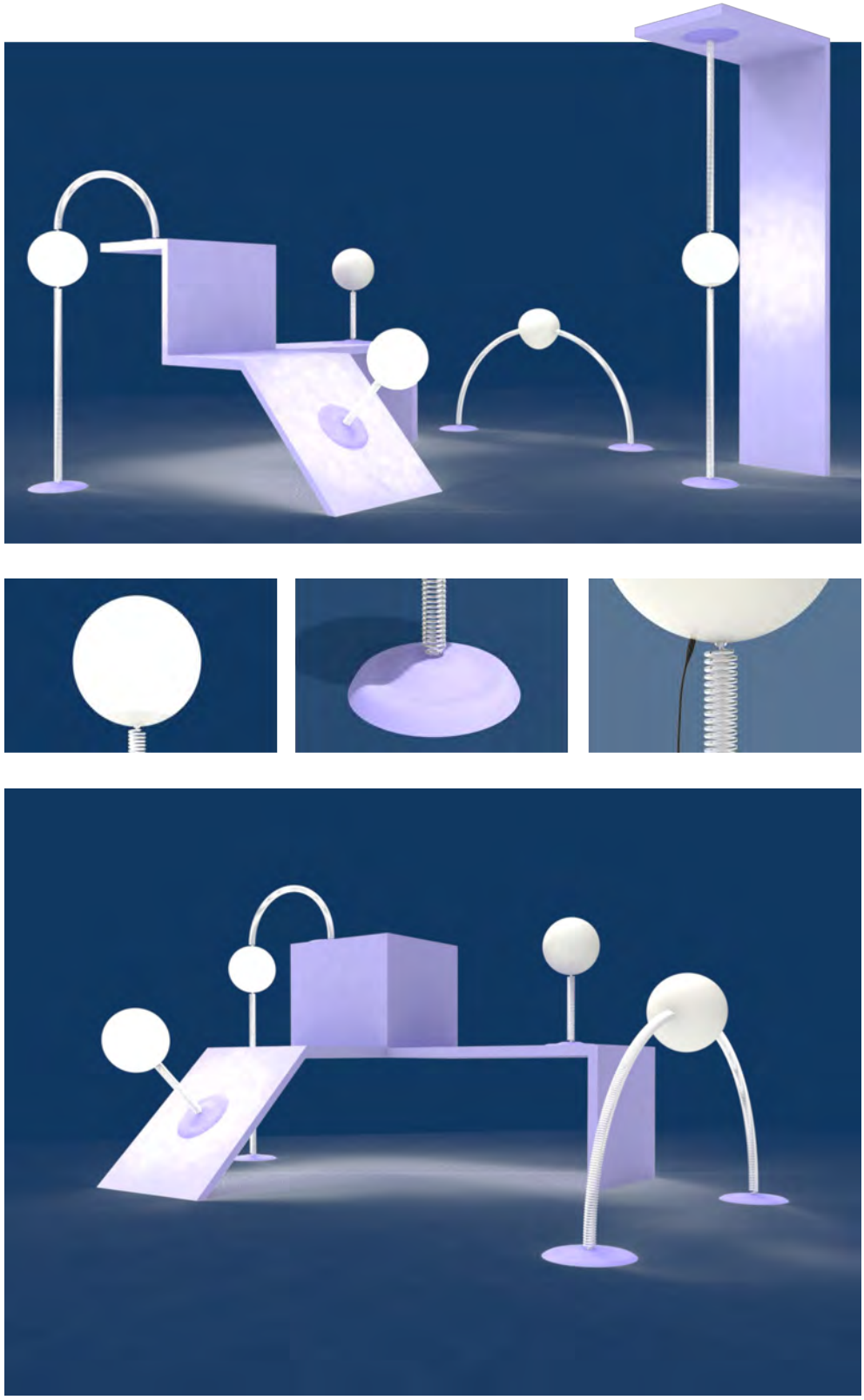
From a behavioral level, the function system works as following: once the lamp has been charged and left in a stand-by mode, it lights on when it gets hit for a certain amount of time.

By experimenting with different punches, the user will learn that the stronger the punch, the brighter the lamp will turn on and the faster multiple punches are given, the longer the light will stay on. Moreover, since different people have different ranges of strength, the AI of the lamp can be calibrated to work on a specific range of vibrations. So that everyone can have their own lamp to punch.

The punching interaction with the object is not only unexpected, but it also focuses on pleasurability of the engagement and on easiness-effortless of usage: among manual gestures, the punch is one of the less exploited hand gestures when it comes to furniture design, perhaps also due to the negative connotation associated with violence.

From a reflective point of view, the unexpected design of Lunatica transforms the lamp into a supra-functional furniture. First, the concept of traditional lamp, where the emphasis is on its own lighting propriety, gets distorted so the focus is now shifted to how the light gets activated and controlled. Second, the furniture twists the qualitative connotation of violence inflicted on objects: according to norm experiences, electric furniture receives punches due to people's rage or frustration for malfunctioning. Lunatica literally takes this human attitude towards hitting objects for make them work as functioning principle, so ironically the negative violent act, becomes the not only allowed but required. Finally, Lunatica design mixes aesthetic aspects with visual references from sport equipment, so that both boxing lovers and design-oriented people can feel connected when owning the piece.

Moreover, due to its playful aspect, Lunatica has a storytelling that pushes to share the experience with other people, transforming the mere necessary action to turn on a light, in an experience enriched with meanings, emotional stress relief and ironic engagement.



[Fig. 59] Lunatica: Renderings

WANNA PLAY SOME PATTERN DISKS WITH ME ?

3.3.2 Synesthetic Player Device: D-Lux

Unexpected Norm Deviation

[Fig. 60] D-Lux: Unexpected Deviation Concept

Unexpected Purpose

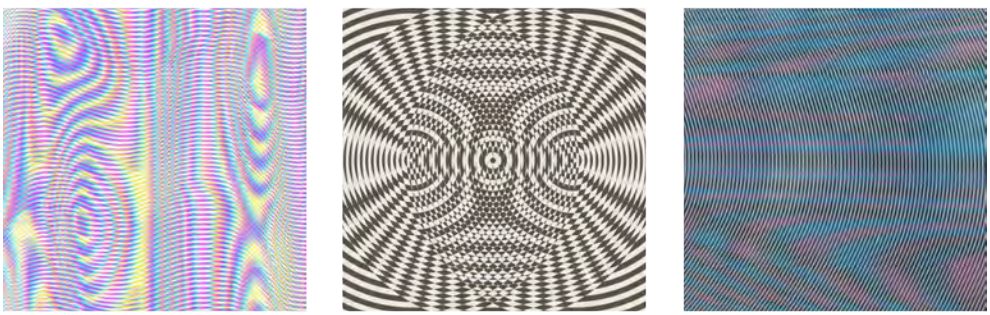
Have you ever used a phonographic record player for listening to music disks? Probably yes. Have you ever used a stereographic pattern player for watching visual disks? I bet no.

The purpose of the project is to offer an unexpected shift of senses around record players: from objects used to enjoy pre-recorded sounds and music, they become devices for enjoy analogic optical effects *(Fig.60)*.

3.3.2 Synesthetic Player Device: D-Lux

Concept

Shapes and cultural recalls of disk and cassette tape players, concept of having physical vinyl for music



Optical illusion, moiré patterns, stereographic and lenticular effects, as source of human attraction and surprise

Looking at optical artworks as enjoyable methamorphical experience, the pattern discs become physical objects for personal collections

[Fig. 61] D-Lux: Concept and Moodboard

Norm Deviation Process

STANDARD GROUND: Turntable as vinyl record players.

EXPECTED KNOWLEDGE: Having a device that analogically plays music.

UNEXPECTED DEVIATION: The device actually works with visual discs, made of semi-transparent stereographic and moiré graphics.

INTERRUPTING PATTERN: The user gets visually captivated by optical illusions they can choose among with.

KNOWLEDGE GAP: Until a visual disc is not played in the lenticular device, the user could only roughly guess how it will look like, but they will not know for sure: the curiosity around it keeps up the engagement.

Main Rhetoric Process

Visceral

SUBSTITUTION / METAPHOR: asserting a correlation or resemblance between two things otherwise unrelated. A metaphor transfers meaning from one subject onto another, enabling it to be understood in a novel way. **HERE,** the product shape resembles a minimal record player.

Behavioral

SUBSTITUTION /ANALOGY: cognitive process of transferring information or meaning from a particular subject (the analog, or source) to another (the target). **HERE,** the functioning system of the device is inspired by the LP record player, where single pre-recorded disks are put on a turntable which activate them thanks to specific technologies.

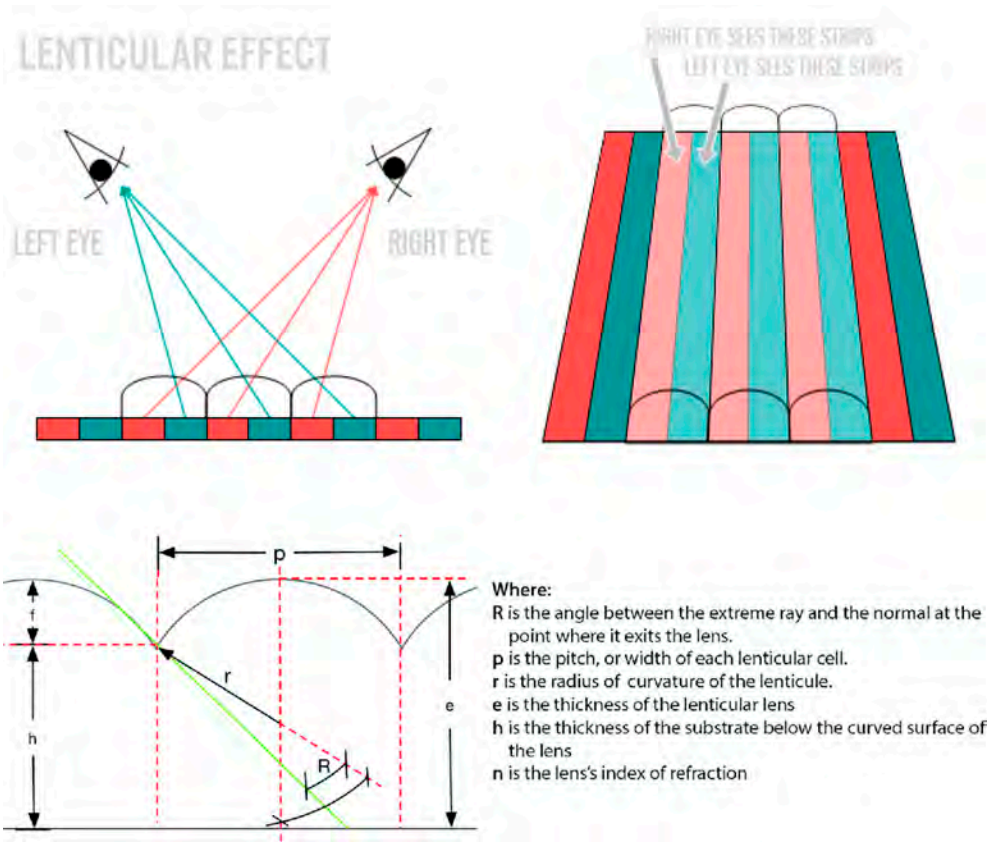
Reflective

SUBSTITUTION / SYNAESTHESIA: describing or associating one sense in terms of another, most often in the form of a simile. Sensations of touch, taste, see, hear, and smell are expressed as being intertwined or having a connection between them. **HERE,** the common knowledge suggests that disk players are for hearing experiences. However, the product transpose the concept into the visual sense, generating a new type of engagement.

Product Description

D-Lux *(Fig.66)* is a luminous device for playing records of visual patterns.

Inspired by the vintage record players used for listening to music vinyl, it consists in a turntable with led as a base and a lenticular transparent cover that is responsible of "playing" the visual discs, when they are inserted beneath it. The lens is designed following optical formulas for generating what is called *lenticular effect (Fig.62).* In details, the lenticular lens is an array of lenses, designed so that when looked at from slightly different angles, different parts of the image underneath are shown.[20] A common use of lenticular principles is lenticular printed images, where, when moved, they can reveal either two different images, show a moving sequence or suggest a sense of depth.



[Fig. 62] D-Lux: Lenticular Effect Theory

[20] "Lenticular Lens." Wikipedia. Wikimedia Foundation, June 12, 2021. https://en.wikipedia.org/wiki/Lenticular_lens.

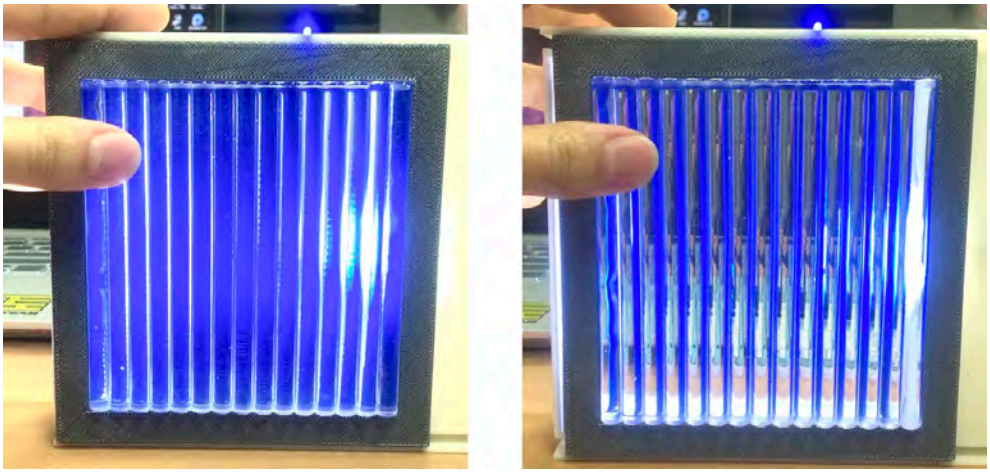
From a reflective level, D-Lux not only engage the human brain on an intersection between logical and irrational, generated by the optical effect, but it also possesses calming and mindfulness effects due to its ability to captivate the eyes and to bring the focus of user's attention back in the moment. Moreover, when using D-Lux, we are not seeing reality, but a story that is being created for us. For this aspect, the product promotes deeper discussions around human attractions to illusions, neuroscience, and philosophical relativity. Beyond the sensorial satisfactions it becomes an intellectual storyteller and question-maker.

Product Development

In order to investigate the working principles and the potential of the lenticular effect, a series of studies and tests has been made. For the tests, the lenses have been digitally fabricated as it follows: first, a model of the pattern has been 3d printed in ABS and cured with acetone by vapor smoothing to obtain a polished surface. Then, the piece has been casted with silicon. Finally, the silicon mould obtained from the cast, has been used to recreate the lens with clear epoxy resin.

[Fig. 63] Lenticular Effect: Test n.1

(Fig. 63) **Test n.1 – Linear lenses on deformed pattern.** The first study analyzed the potential of the lens as distorter rather than just simply showing two images.



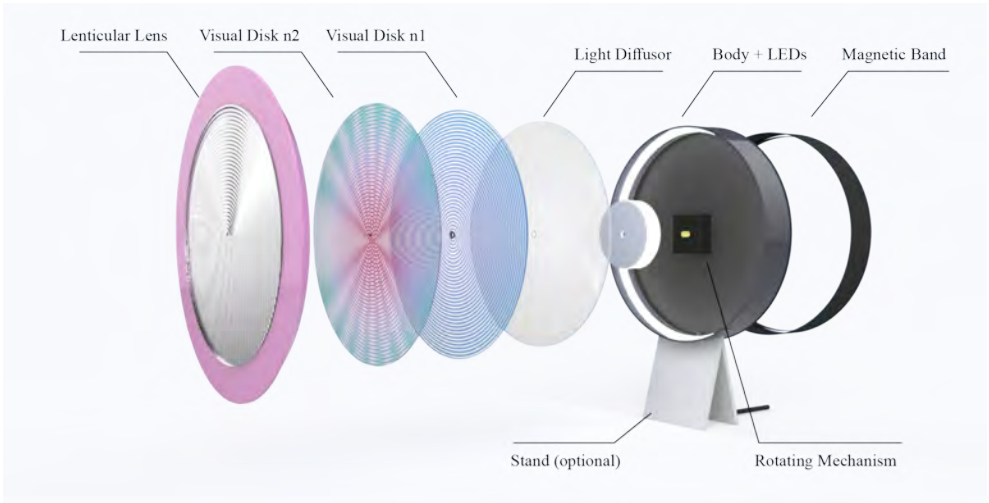
[Fig. 64] Lenticular Effect: Test n.2

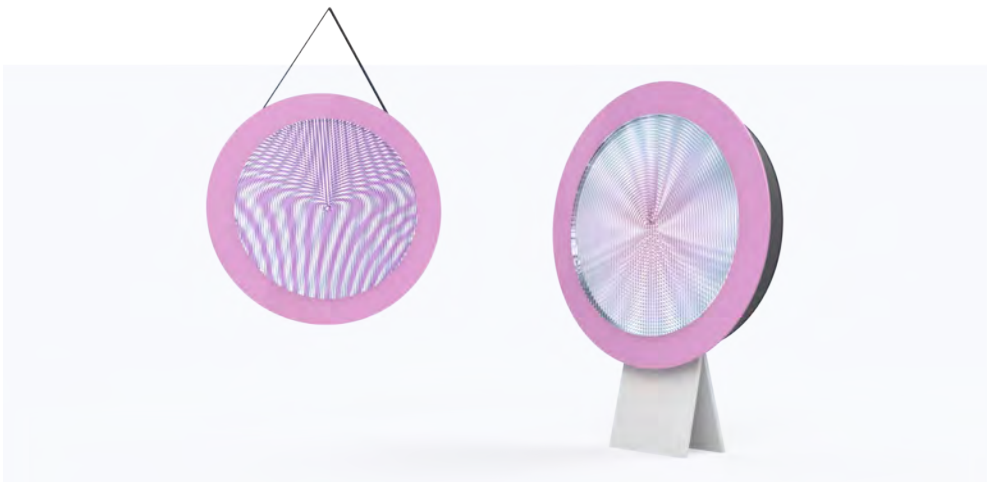
(Fig. 64) **Test n.2 – Studies on opaque-transparent transitions with linear lenses.** The lenses are combined with a sub-layer of a 3d printed blue grid. The thickness of that layer is made the effect resulting not perfect, since the refraction in the right has still some blue in it. The research aimed to understand the potential of lenticular in applications such as regulator of light intensity or open – close states.

[Fig. 65] Lenticular Effect: Test n.3

(Fig. 65) **Test n.3 - Studies on concentric lenses**. The traditional lenticular effect requires linear lenses. Here the research, wanted to push beyond the simply regular shift of left-right images, towards a more distorted and unpredictable results, obtainable by deforming not only the graphic beneath, as in the Test n.1, but also by deforming the lens in itself.

Final Design

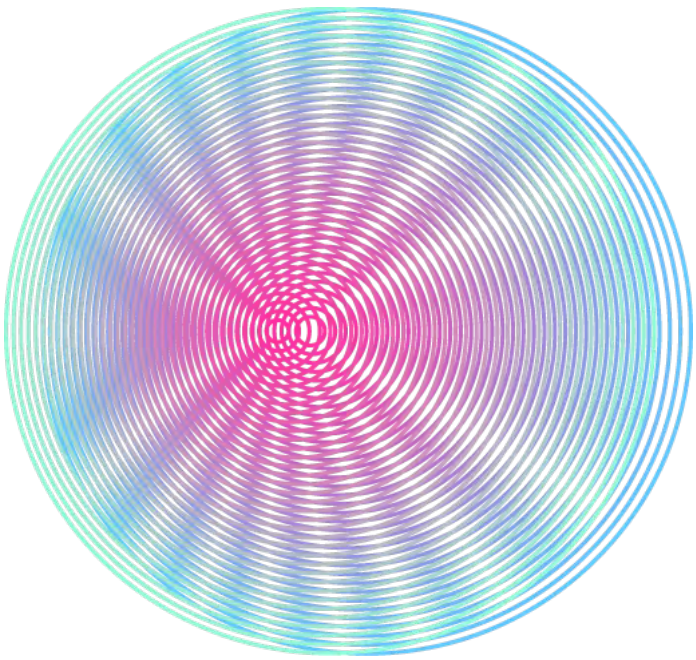


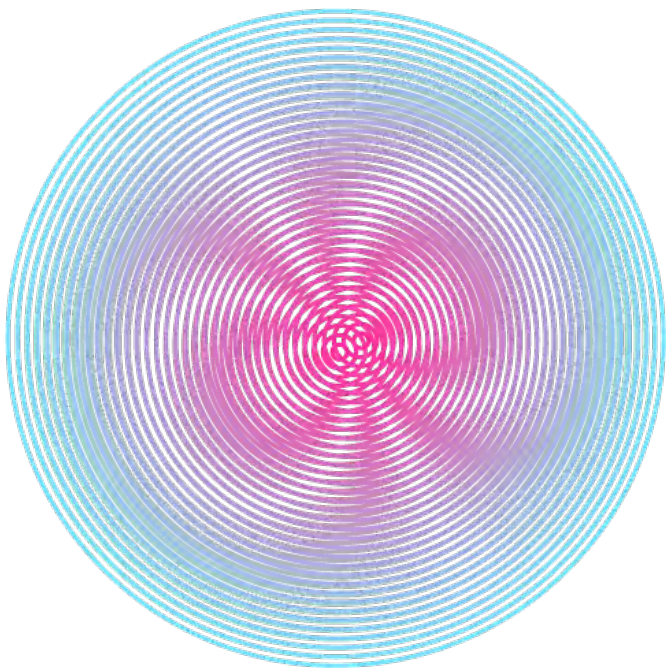


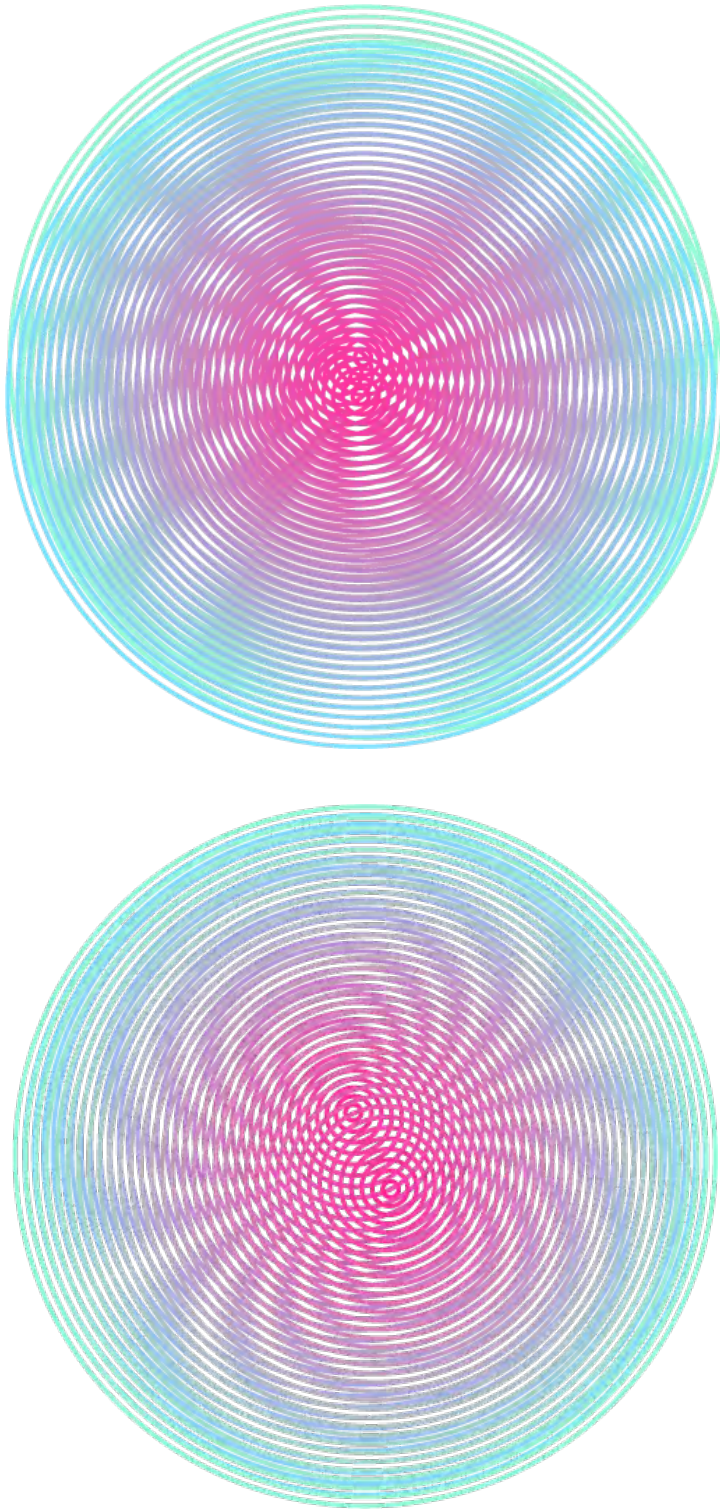
[Fig. 66] D-Lux: Renderings

Visual Pattern Disc Examples

D-Lux can host more than one visual disc at time, allowing users to remix several patterns together to obtain unique moiré illusions beneath the lens. *Fig. 67* shows examples of visual disc combination, with their moiré effects.







[Fig. 67] D-Lux: Visual Discs Moiré Effect Examples

Final Prototype and Exhibition

Fig. 68-69 are photos of D-Lux final prototype displayed in occasion of the Degree Show College of Fine Arts at Seoul National University, June 2021.

[Fig. 68] D-Lux: Exhibition Photos

[Fig. 69] D-Lux: Exhibition Photos

Chapter 4. Conclusions

The research achieved the objective to design supra-functional products able to generate unexpected experiences by following norm deviations derived from rhetoric studies.

The investigative foundations (RQ) for this research have been answered as it is summarized below (A):

RQ.1 Why is it important for humans to experience the unexpected? How does this type of experience affect emotional responses?

A.1 Pleasantly unexpected experiences have the power to shift and sustain people's attention to the present moment. This enables people to go through experiences in a more intense and memorable way, amplifying sensorial perception, producing more dopamine, sparking new ideas and eliciting a more positive and open attitude towards events and humans in general.

RQ.2 Is it possible to design products that generate unexpected experiences? Are there examples of supra-functional product designs that have been able increase curiosity and surprise into users?

A.2 By presenting examples of existing supra-functional products, the research has shown that design can produce surprise. However, producing the unexpected means to deviate from the expectations, hence, the expectations must be first identified and studied. For this reason, the research proceeded first, by outlining the features and requirements of the three levels on which humans, experience design, namely Visceral, Behavioral, and Reflective. Secondly, the selected examples of unexpected products have been classified according to which emotional level is affected by the main unexpected experience.

RQ.3 Given that rhetorical stylistic rules have the purpose to break common expectations, can they be exploited as tools for designing products able to provoke unexpected experiences?

A.3 The research has proven that rhetoric rules can become tools for the design language. By transposing norm deviations from the verbal levels words-thought to the experiential levels of design visceral-behavioral-reflective, passing through the parallelism with the visual syntactic-semantic levels, it has been verified that the rhetoric stylistic apparat of verbal, visual and design language shares the same principles of the techniques used for generating surprise in human experiences. As a result, by following rhetoric norm deviations rules in composing designs, it is possible to enhance the supra-functional aspect of the concept and increase its ability to produce unexpected experiences.

The design outputs generated by applying the findings of the research, focused on supra-functional needs, presented unexpected features, and provide pleasant surprise to users. During the research, from simply following rhetoric rules while designing the products, the methodology has been improved by requiring the projects to have ahead a defined concept of the wanted unexpected experience, which then will be developed while designing the output through norm deviations.

The final projects stand as examples of harmonization between the surprise techniques analyzed and the norm deviations tools on the visceral, behavioral, and reflective levels. The resulting outputs are supra-functional products able to generate magic moments enjoyable on a daily basis.

In conclusion, the research provided a study on how contemporary designers could and should go beyond the mere functional features of products, giving prominence, instead, to the supra-functional aspects of designs, aiming to turn users' *ordinary* into a meaningful and memorable *extraordinary*.

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Appendix

Appendix A - List of figures of speech and thought

-A-
abating
abbaser
abecedarian
abcisio
ablatio
abode, figure of
abominatio
abuse
abusio
abusion
acoloutha
accismus
accumulatio
accusatio adversa
accusatio
acervatio
acrostic
acyrologia
acyron
adage
adagium
addubitatio
adhortatio
adianoeta
adjectio
adjournment
adjudicatio
adjunct
adjunctio
admonitio
adnexio
adnominatio
adynata
adynaton
aeschrologia
aetiologia
affirmatio
affirmation
aganactesis
agnominatio
agnomination
aischrologia
allegory
alleotheta
alliteration
amara irrisio
ambage, figure of
ambiguitas
ambiguous
amphibologia
ampliatio
anacephalaeosis
anacoenosis
anacoloutha
anacoluthon
anadiplosis
anamnesis
anangeon
anaphora
anapodoton
anastrophe
anemographia
anesis
antanaclasis
antanagoge
antenantiosis
anthimeria
anthropopatheia
anthypophora
anticategoria
anticipation
antilogy
antimetabole
antimetathesis
antipersonification
antiphrasis
antiprosopopoeia
antiptosis
antirrhesis
antisagoge
antistasis
antisthecon
antistrophe
antithesis
antitheton
antonomasia
apagoresis
aphaeresis
aphorismus
apocarteresis
apocope
apodioxis
apodixis
apologue
apophasis
apoplanesis
aporia
aposiopesis
apostrophe
apothegm
apparent refusal
appositio
apposition
ara
articulus
aschematismus
aschematiston
asphalia
assonance
assumptio
assumption
avancer, the
asteismus
astrothesia
asyndeton
auxesis
aversio
-B-
barbarism
battologia
bdelygmia
benedictio
bomphiologia
brachiepia
brachylogia
broad floute, the
-C-
cacemphaton
cacophonia
cacosyntheton
cacozelia
casus pro casu
catachresis
catacosmesis
cataphasis
cataplexis
categoria
cause shown
change of name
characterismus
charientismus
chiasmus
chorographia

macrologia
martyria
maxim
medela
meiosis
membrum
mempsis
merismus
mesarchia
mesodiplosis
mesozeugma
metabasis
metalepsis
metallage
metaphor
metaplasm
metastasis
metathesis
metonymy
mimesis
mycterismus
-N-
noema
-O-
oeonismus
ominatio
onedismus
onomatopoeia
optatio
orcos
oxymoron
-P-
paenismus
palilogia
parabola
paradiastole
paradiegesis
paradigma
paradox
paraenesis
paragoge
paralipsis
parallelism
paramythia
parathesis
parecbasis
paregmenon
parelcon
parembole
parenthesis
pareuresis
paroemia
paroemion
paromoiosis
paromologia
paronomasia
parrhesia
pathopoeia
perclusio
periergia
period
periphrasis
perissologia
peristasis
permutatio
personification
philophronesis
pleonasm
ploce
polyptoton
polysyndeton
pragmatographia
procatalepsis
proclees
prodiorthosis
proecthesis
prolepsis
prosapodosis
proslepsis
prosonomasia
prosopographia
prosopopoeia
prosphonesis
protherapeia
prothesis
protrope
proverb
prozeugma
pysma
-R-
ratiocinatio
repetitio
repotia
restrictio
rhetorical question
-S-
sarcasmus
scesis onomaton
schematismus
scheme
scurra
skotison
sententia
sermocinatio
simile
solecismus
soraismus
sorites
subjectio
sustentatio
syllepsis
syllogismus
symperasma
symploce
synaeresis
synaloepha
synathroesmus
syncatabasis
syncategorema
synchoresis
synchysis
syncope
syncrisis
synecdoche
synoeciosis
synonymia
synthesis
syntheton
synzeugma
systole
systrophe
-T-
tapinosis
tasis
tautologia
taxis
thaumasmus
tmesis
topographia
topothesia
traductio
transitio
transplacement
tricolon
-V-
verborum bombus
-Z-
zeugma

Appendix B - Modern classification of the principal rhetoric figures elaborated by Gruppo μ (1970)

PROCE-DURE	LEVEL OF EXTENSION						
	SIGNIFIER			INTER. SIGNIFIER / SIGNIFICANCE		SIGNIFICANCE	
	PHONEME	SYNTAGMA	SENTENCE	SYNTAGMA	SENTENCE	SYNTAGMA	SENTENCE
ADDITION UNCHANGED REPETITION	ALLITERATION ONOMATOPOEIA HOMOTELEUTO DUPLICATION POLISINDETO ANAPHORA EPIPHORA SIMPLOCHE ANADIPLOSI CONCATENATION EPANADIPLOSI ISOCOLO			EPANALESSI			
ADDITION CHANGED REPETITION		POLIPTOTO		EPANORTOSIS PARONOMASIA ETYMOLOGICAL FIG. DEFINITION COMMORATIO		DIAPHORA	
ADDITION OPPOSITIVE REPETITION				PALINDROM CHIASMUS		ANTITHESIS OXYMORON PARADOX	
ADDITION VERTICAL AMPLIFICATION						EMPHASIS HYPERBOLA HYPOTYPOSIS	
ADDITION HORIZONTHAL AMPLIFICATION		MACEDONIA WORDS		EPITHET DITTOLOGIA HENDIADYS ENUMERATION ACCUMULATION		CLIMAX EPIPHONEMA SIMILITUDO	

PROCE-DURE	LEVEL OF EXTENSION						
	SIGNIFIER			INTER. SIGNIFIER / SIGNIFICANCE		SIGNIFICANCE	
	PHONEME	SYNTAGMA	SENTENCE	SYNTAGMA	SENTENCE	SYNTAGMA	SENTENCE

÷ SUBTRACTION	ASYNDETON ELLIPSIS	ZEUGMA RETICENCE SYNTHETIS SILENCE	PRETERITION
◎ SUBSTITUTION	METAGRAPH ENALLAGE	REBUS SYLLEPSIS ANACOLUTHON	ANFIBOLIA ANTONOMASIA SYNECDOCHE METONYMY CATACHRESIS SYNESTHESIA METALEPSIS METAPHOR EUPHEMISM LITOTES PERSONIFICATION PERIPHRASIS ANTIPHRASIS ALLEGORY PROSOPEA APOSTROPHE IRONY SARCASM
» SHIFT	METATHESIS ANASTROPHE TSMESI HYPERBATON EPIFRASI SYNCHYSIS	ANAGRAM HYPALLAGE	PROLEPSIS HYSTERON PROTERON

요약 (국문 초록)

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디자인학부 공업디자인전공

생활수준의 향상으로 인간은 기본적인 1차적 욕구충족 넘어, 더 높은 욕구의 만족을 지향, 그것은 지식, 경험, 감정, 자아실현, 그리고 사회문화적 의미등과 연결되어 있다.

이러한 관점으로 볼 때, 현시대 디자인에서 시나리오를 설계한다는 것은 단순한 기능적 퍼포먼스의 제공을 넘어, 사용자의 일상생활에 풍부함, 가치 있는 경험, 그리고 즐거움을 제공하는 데에 초점을 맞추어야 한다는 것을 의미한다.

본 연구의 목적은 수사학 연구로부터 도출된 표준 편차를 디자인에 적용하여 사용자에게 예상치 못한 경험을 부여할 수 있는 초기능적 제품을 디자인하는 것이다. 연구의 방법은, 예측불가한 경험의 원리가 인간의 정서적 반응에 영향을 미치는 것에 대한 중요성을 파악하고, 제품을 개념화 및 디자인할 때 수사적 스타일 규칙을 적용해 사용자의 예상 및 기대를 깨뜨릴 수 있는 제품을 디자인하는 방법의 가능성을 탐구한다. 또한, 연구 중 도출된 초기능적 니즈에 초점을 맞춘 디자인은 예상치 못한 기능적, 정서적 특징들을 가지고 있으며, 이는 사용자에게 놀람과 동시에 긍정적이며 유쾌한 경험을 선사한다. 특히, 첫 번째 단계의 작품 진행시 초점을 맞추었던 점은 수사적 규칙 Figures of Speech에 따라 디자인하는 반면, 두 번째 단계의 작품 진행의 경우, 기존의 수사적 규칙만을 적용해 디자인 해보는 것이 아닌, 표준 기대치에서 벗어나 규범의 편차를 제공하기 위한 디자인 방향을 탐색한 후, 그 중 적합한 수사적 법칙을 적용하는데 초점을 맞췄다. 세 번째

단계에서는 예측 불가한 경험을 부여하기 위하여 몇 가지 디자인 전략을 고려하면서, 동시에 그에 적합한 수사적 방법을 적용하여, 디자인의 예측불가함을 향상시켰다.

본 연구를 통하여, 제품 디자인 시 필요한 기능적 요구를 넘어, 사용자에게 평범함 대신 의미 있고 기억에 남는 특별한 경험을 줄 수 있는 디자인을 시도하였고, 특히, 디자인 프로세스에 있어, 갑자기 떠오르는 아이디어나 감각에만 의존하는 것을 넘어, 수사학적 방법론을 활용하여 새로운 디자인 방법의 가능성을 탐구하였다는 데에 그 의의가 있다.

주요어 : 예측불가한 경험, 초기능적 디자인, 수사학 방법론

학 번 : 2018-27363[21]

[21] 본 논문작성자는 한국정부초청장학금(Global Korea Scholarship)을 지원받은 장학생임