

LIVING OBJECTS

© Tzu Hua Huang 2021

All rights reserved. No part of this
book may be reproduced in any form
without permission from the author.

A thesis presented in partial fulfillment of
the requirements for the degree Master of
Industrial Design of the Rhode Island School
of Design, Providence, Rhode Island

by

Tzu Hua Huang
2021

Approved by Master's Examination Committee:

Soojung Ham
Professor | Industrial Design | RISD
Thesis Chair

Jonah Willcox Healey
Adjunct Professor | Industrial Design | RISD
Thesis Advisor

Albert Lee
CMF Designer | Google
External Thesis Advisor

ABSTRACT

Sometimes, I find myself sunk into my memories, during daytime when the sun illuminates through the seam of the shutters in my room, or at midnight, when the world is in deep silence.

The sound of flipping books brings me back to the time when my mom sat in the living room quietly, with a cup of hot black tea as always. At the time when she read, I always found a stream of light illuminating the table, covering her face partially. One page, two pages, and three pages; as she kept flipping, the repetitive sound made the quiet afternoon peaceful, but emotional.

Those pieces of memories pour out inadvertently and occasionally. When I get back to reality, however, I do not find the beautiful moments so often in our daily life. I cannot remember since when things have shifted from physical to digital. People started to lose sensorial connection with physical reality.

Living Objects reveals the world I constructed. In this world, every subtle movement brings changes, just like the butterfly effect: have you noticed the gentle breeze created by you while you walk, and how it blew up the leaves on the floor? The ripples in our life might be tiny and you do not even notice. However, it is those subtle ripples that make your ordinary life extraordinary!

CONTENT

CO - EXISTENCE Physical World & Virtual World	1
THE SENSES Visual. Acoustic. Tactile	5
THE EMOTIONS of Everyday Objects	13
RE - DEFINITION of CMF Design	39
LIVING OBJECTS A Space of Being	45
THE EXPERIMENT	59
ACKNOWLEDGEMENT	77
BIBLIOGRAPHY	81

CO -

EXISTENCE

PHYSICAL WORLD & VIRTUAL WORLD

A REFLECTION OF THE PAST

Have you ever noticed how dramatic your living style has changed when you thought about how it used to be a decade ago?

In the past, reading a physical book was a main method for us to acquire information and knowledge; people had photos printed and displayed on the shelves in their living rooms, reminding them of the precious moments in their lives; most of the games children played required body contact and allowed multi-players.

Nowadays, people have easy access to online books, obtain information just by a simple click, attend Zoom meetings without sitting in the meeting room in person, and Facetime with their family or friends living thousands of miles away.

THE ISSUE

The advance of technology has created a virtual world which runs in parallel with the physical world. A lot of the time people are absorbed in digital activities and seem to lose attention to their surroundings. However, spending too much time in the virtual world could be problematic – it could lead to physical and mental issues, such as insomnia and depression, and even social issues. Attempts to police the web will cause freedom of speech conflicts, for example. While interpersonal interaction allows people to stay emotionally healthy.

A review paper published by the World Psychiatric Association – “The “Online Brain”: How the Internet May Be Changing Your Cognition” pointed out that excessive Internet use impairs brain and verbal development. Social comparisons through mass acceptance and rejection effects self-esteem. As to media multi-tasking, it effects attention and memory.

PROBLEM TO SOLVE

People's reliance on online activities has caused the decrease of physical sensorial experiences. While being beneficial from the convenience that technology has brought us, we should not ignore the physical environment we are living in.

To bridge the connection between the human and physical world, we should not only reestablish a meaningful sensorial connection with the physical reality, but redistribute the amount of time we spend in the virtual world and physical world.

Emotions are triggered by human senses, visual, acoustic, and tactile. And those senses build the connection between the human and physical world. We cannot restrain technology from growing and deny the advantages it brought us, but, meanwhile, we should not lose attention to the subtle changes in the surroundings and never forget the emotions and warmth physical interaction creates!

THE SENSES

VISUAL. ACOUSTIC. TACTILE

Humans use senses to investigate the world around us, and the senses play an integral role in our emotional processing. A review by Vuilleumier showed that emotions provide a boost to our sensory cortices. Our emotions and sensory cortices can impact one another in both directions.

VISUAL

Emotions starts with vision.
Vision expresses differently:
color, material, and form;
tangible or intangible.



ACOUSTIC

Sound evokes memories; it reminds you of the moment and brings back the emotion you had at the time.





TACTILE

Tactility is an important perception for how humans learn the world. Our emotional experience is derived by touching, which is also how we get the most primitive tactile feeling.

THE EMOTIONS
OF

EVERYDAY OBJECTS

“We all encounter objects in our everyday lives. Most we pass by, without thought of how we affect the object or how it might be affecting us, our lives or the people that surround us. We are shaped by the objects that are significant to us, and we also shape these objects. This dual experience of shaping and being shaped by objects has occurred throughout history.”

In “Feeling Things: Objects and Emotions through History,” editors Stephanie Downes, Sally Holloway and Sarah Randles pointed out that historians have paid attention to the way people feel for or because of objects, but have been less likely to think about the way objects are changed or shaped by people.

By designing home objects based on human senses – visual, acoustic, and tactile – we can see how humans could change the way how objects are expressed.

| VASE





VISUAL

Wherever there is light, there is shadow. When the shadow is sheltered, the form of shadow also changes; your movement effects the shadow.





ACOUSTIC

Have you noticed the various sounds created by you? Different height and different angles of pouring water, everything makes the sound different.

TACTILE

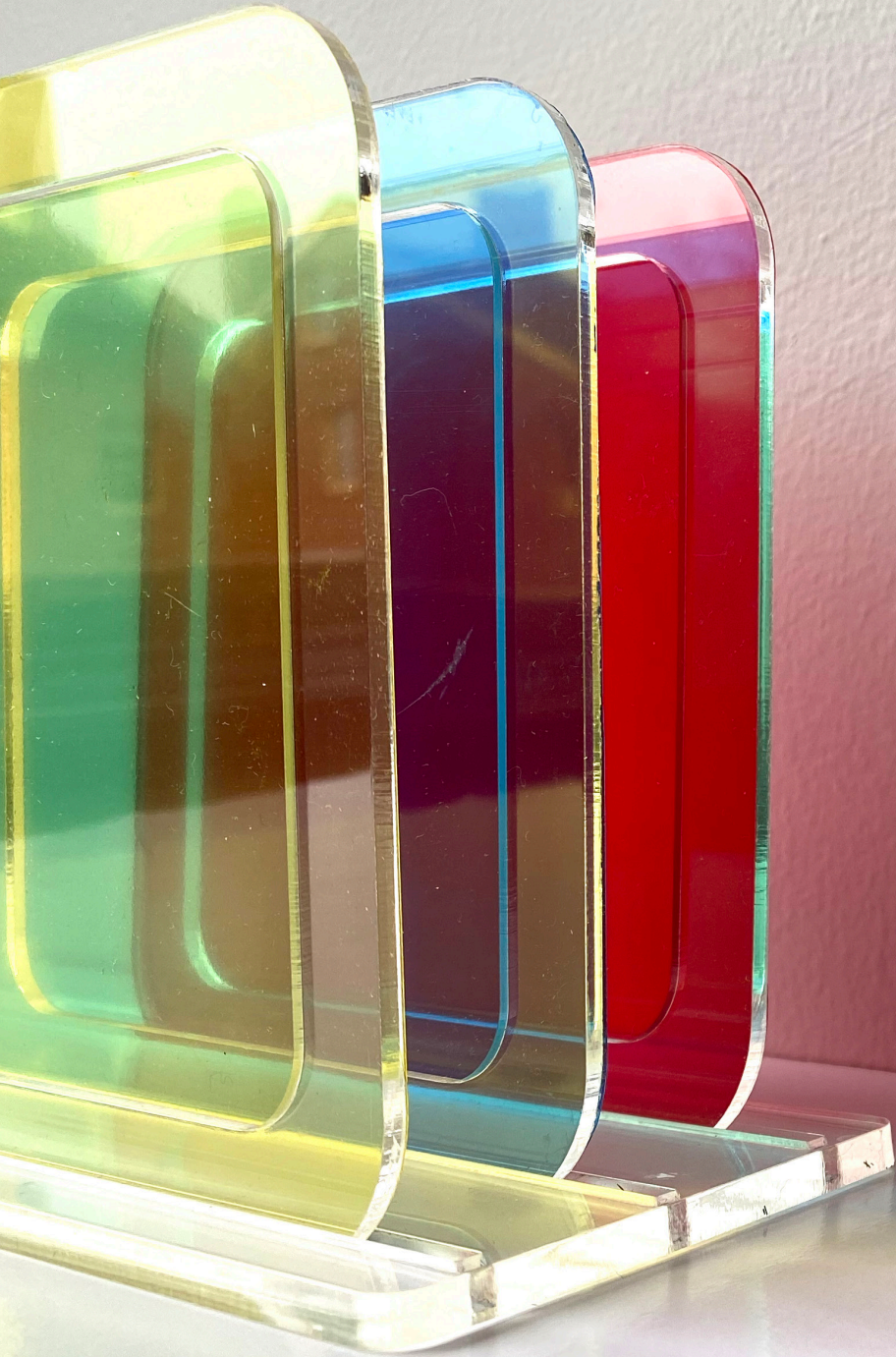
Feel the touch of your fingertips and the temperature from your palms through the vase. As time goes by, your fingerprints cover the surface gradually.





| BOOKSTAND





VISUAL

Where you place the books or how you move the partitions, each of your movement effects the expression of reflection and colors.

ACOUSTIC

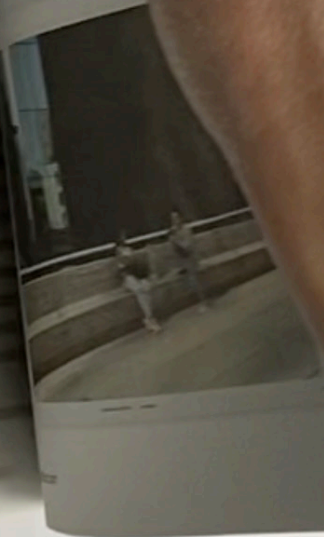
It is the sound when
papers touch each other.
When you flip through
the pages, do you enjoy
the sound created by
your fingertips?

tion.com

Shaky Traces of Great War the Ypres

Peter De

With an essay by
Hengel about how
can be better under
that has roots in the

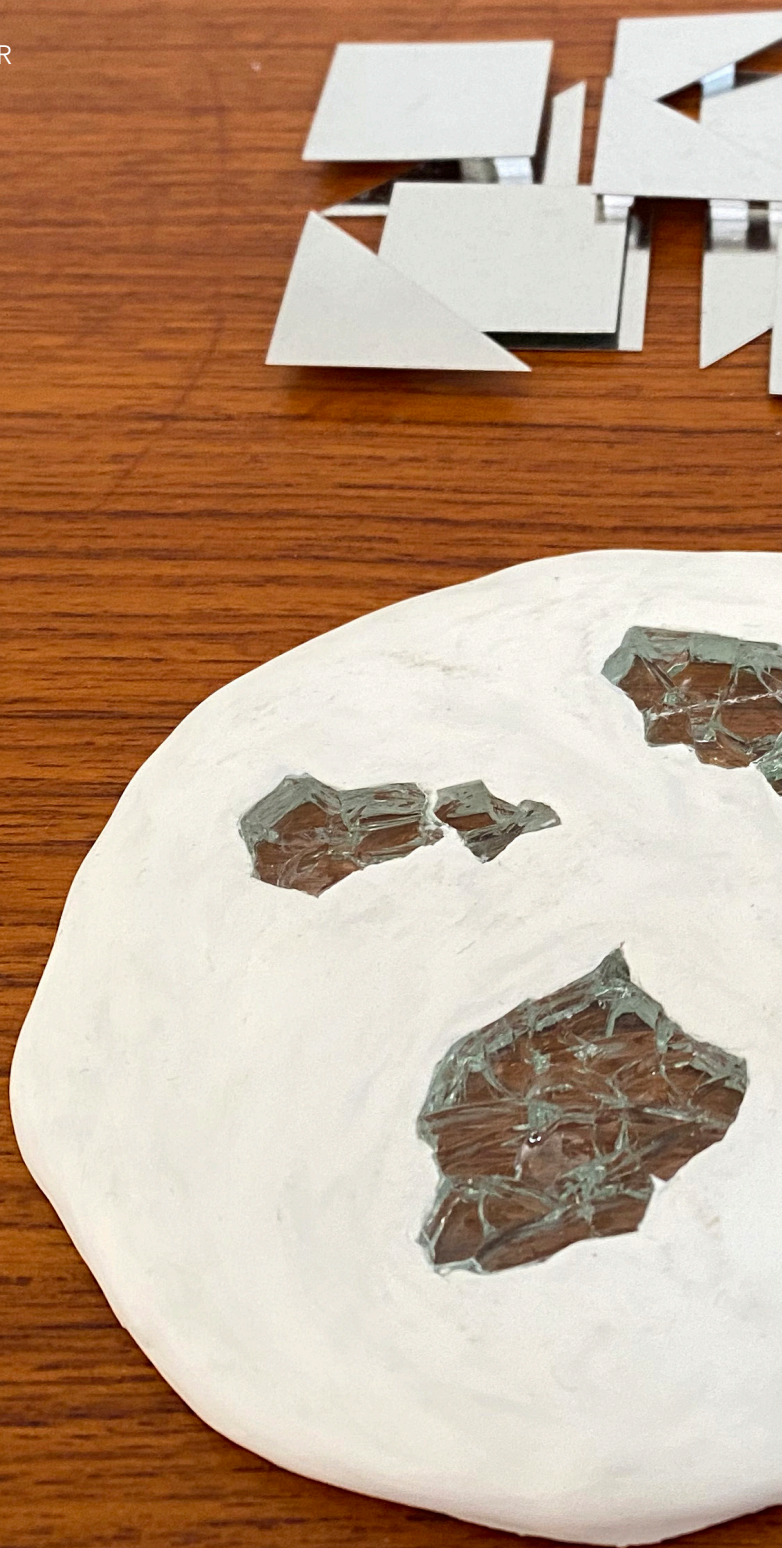


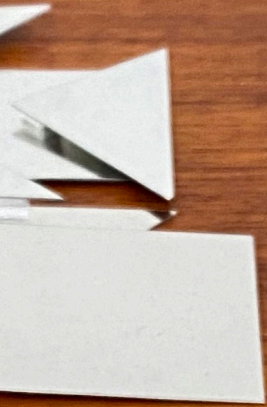
TACTILE

A tree takes years to grow. A thin piece of paper has gone through so many processes to form. Do you feel all the emotions devoted in it when you touch papers?



| COASTER





VISUAL

The gem-like reflection is sometimes glowing, but sometimes hidden. Take a sip of your coffee, and enjoy the mysterious evening.



ACOUSTIC

When you make yourself a cup of hot tea, have you noticed the sound of boiling water? The sound of tea leaves crushed? And even the sound when the cup hits the coaster?





TACTILE

While trying to find the balanced point on the soft surface, feel the tactility through the cup.

RE -

DEFINITION

OF

CMF DESIGN

Color, Material, and Finish (CMF) design is a broad discipline encompassing different industries and products. The three elements are hard to separate from one another. Every material has its own specific property; colors and finishes appear differently based on it. Color Psychology, the study of how color effects mood and behavior, points out that color is far from just a visual experience; it can effect your mood, your wants, your reactions, so on and so forth.

CMF design is an important element which controls how an object looks, feels, and behaves, and how those traits influence its functional and perceived value. Some people identify CMF design as simple as the combination of colors and materials and the application of different finishes. However, it is more than how it is defined, it is the spirit of design.

COULD CMF BE APPLIED

IN THE SPACE DYNAMICALLY ?

I was a CMF designer before attending RISD. In CMF design, everything starts from stories! Most of the time, CMF required a lot of observation, experiments, curiosity, and creativity. Trial and errors is the best way to learn the property of materials and the variation of colors and finishes.

Rather than identifying "F" as finish in CMF, "feeling" could interpret it more appropriately. Different from the traditional definition, this project, Living Objects, is redefining CMF design within the space. It makes use of what exists in the space: light and shadow, the colors from nature, and the sound which is created by human movement. Combining together, all those elements create the abundant emotions that bond with human beings.

As a designer
I must be not only a creator
But a good story teller!

It has been a long time since the last time I stepped out of my house. I find there is nearly nothing to do in Providence during the pandemic. It was such a nice day for hiking, even though the mountains were still covered by snow.

In Wolf Hill Forest Preserve, Rhode Island, there was a lot of snow in the woods. I stepped on the snow and tried to draw a smiling face with my shoes. I like how it feels to walk on snow. Every step makes my foot sink into the snow; I pulled back, and created a continuous loop of these movements, which kept me walking and walking. I ran; I tried to avoid the ground which is covered by ice. I picked up the branch on the ground and bent it; the crunchy sound of it made me realize how close I was to nature. I let the sunlight illuminate my face. I sat on a stone, enjoying the sound of wind hitting leaves.

It was the nature that created the moment for me. I was feeling every little thing with each piece of myself, my eyes, my nose, my ears, my skin, and my heart.

2021.01.30



LIVING
OBJECTS

"In the instant people blink, they miss seeing something. We delight in discovery for the very reason that there is a part of the world of past experience left that we failed to see or took no notice of."

—Yasuhiro Suzuki



Rather than defining it as furniture, Living Objects is a space which consists of different elements, the nature, your movement, and every little thing happening in the space.

By triggering human senses – visual, acoustic, and tactile – Living Objects connect people and the physical world with memories and emotions.

The space changes depending on yourself. Reading a book or having a piece of hot and crispy toast, all the senses it creates – the shadow, the smell, and the sound of your movements – all happen in the space naturally. Living Objects builds the relationship between you and the surroundings. All the happenings in the space create a moment for you.






A SPACE
OF
BEING

| VITALITY

The gentle breeze brings the slow movement of leaves; the subtle movement creates the sound of leaves touching each other naturally. Bringing nature from the outdoors to the indoors, creating a space with energy and vitality.



A modern, minimalist lamp with a glass container holding a small green plant, set against a light background. The lamp consists of a vertical black rod with a small light at the top, and a horizontal black rod extending from it. A glass container with a black band around its neck is attached to the horizontal rod, containing a small green plant with several leaves. The background is a plain, light-colored wall.

| INTERACTION

Technology distances people from the physical world, while at the same time, it also helps us to enjoy the current moment. Technology exists as part of the environment.

Living Objects detects your presence; it builds the relationship between human and the space. The light turns on automatically and the rod rotates down when you approach. All its reactions and the lively shadow on the surface are welcoming your being in the space.

| KINETIC


The proportion of each part and the distance between the light source and the plant are well-considered. A 30 degree angle makes the rotation elegant.



| SURFACE

Made of cement, the surface expresses an irregular stone texture naturally.





"Each item is special. Each mark, each burn, each dent, and each repair all contain a story, and it is stories that make things special." Donald Norman believes that the marks, dents, strains make the objects personal.

Every part of Living Objects is manmade. The aging of objects is a beautiful process which records time and memories. They grow old along with their owners and degrade gracefully.

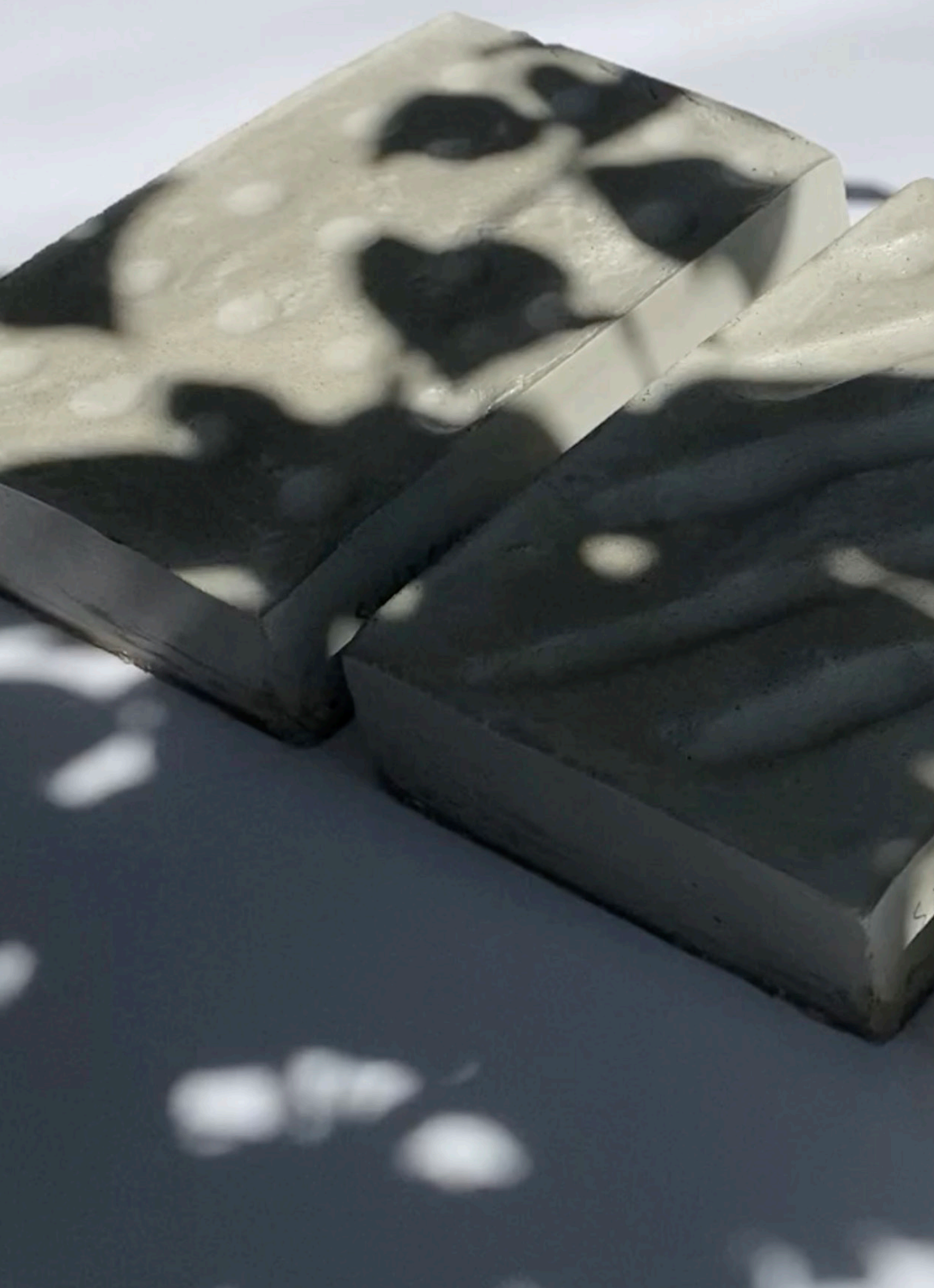
THE
EXPERIMENT





| CEMENT

The pattern and the levels of grey tone interpret the surface differently.



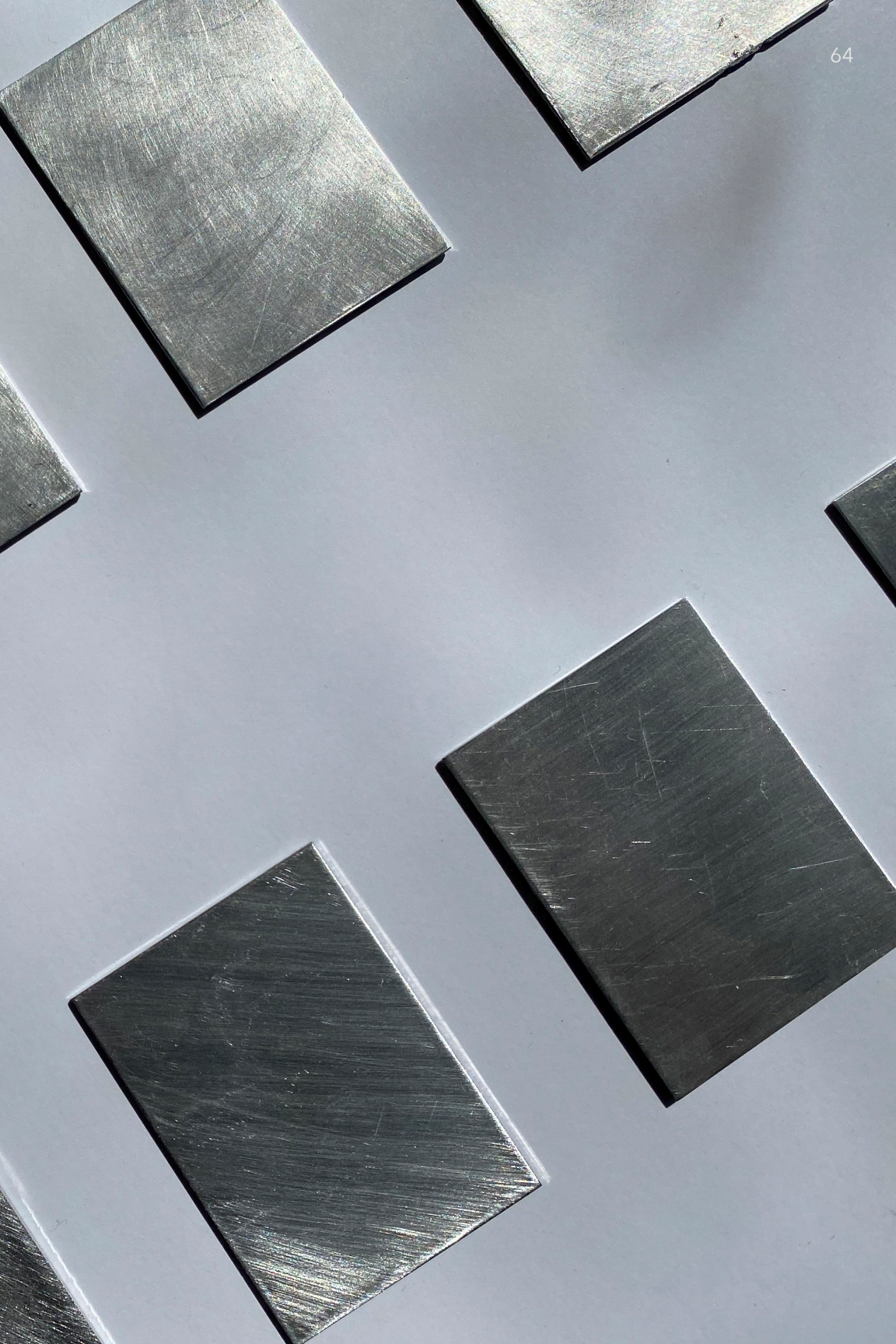


| SHADOW

Shadows tell stories differently. The shadow on the plain cement has a pure shape, while shadow on the patterned surface has a richer shape.

| FINISHING

Finish defines the tactility; it also effects the way you feel it. A rough finish could bring the feeling of craftsmanship. However, a fine finish could make the piece look delicate.



| SANDING GRIT



Original



180



320



Scrubber



Steel Wool 4



47C



400



800



1200



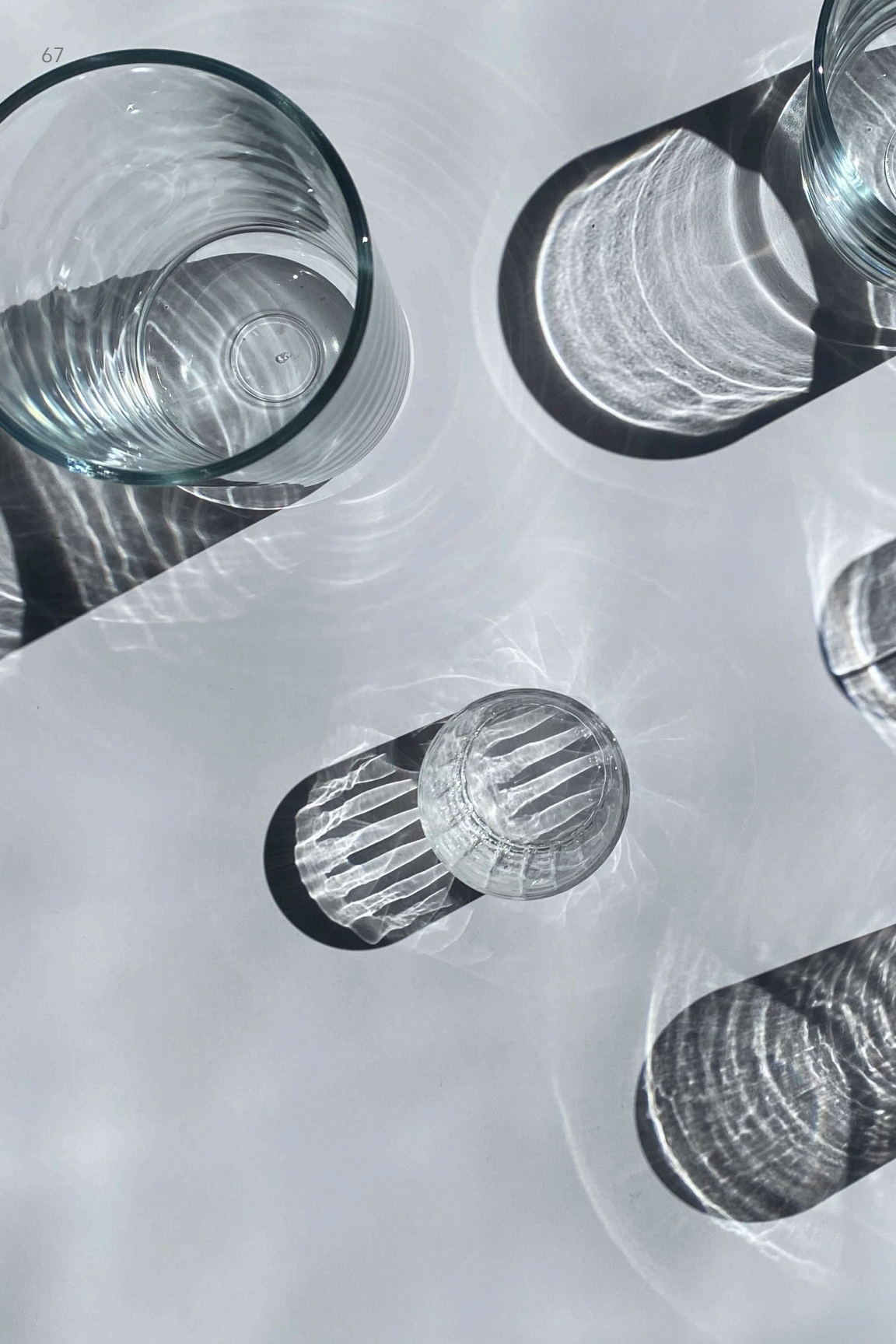
Stripe 45 °



Stripe 90 °



Stripe 0 °






| REFLECTION

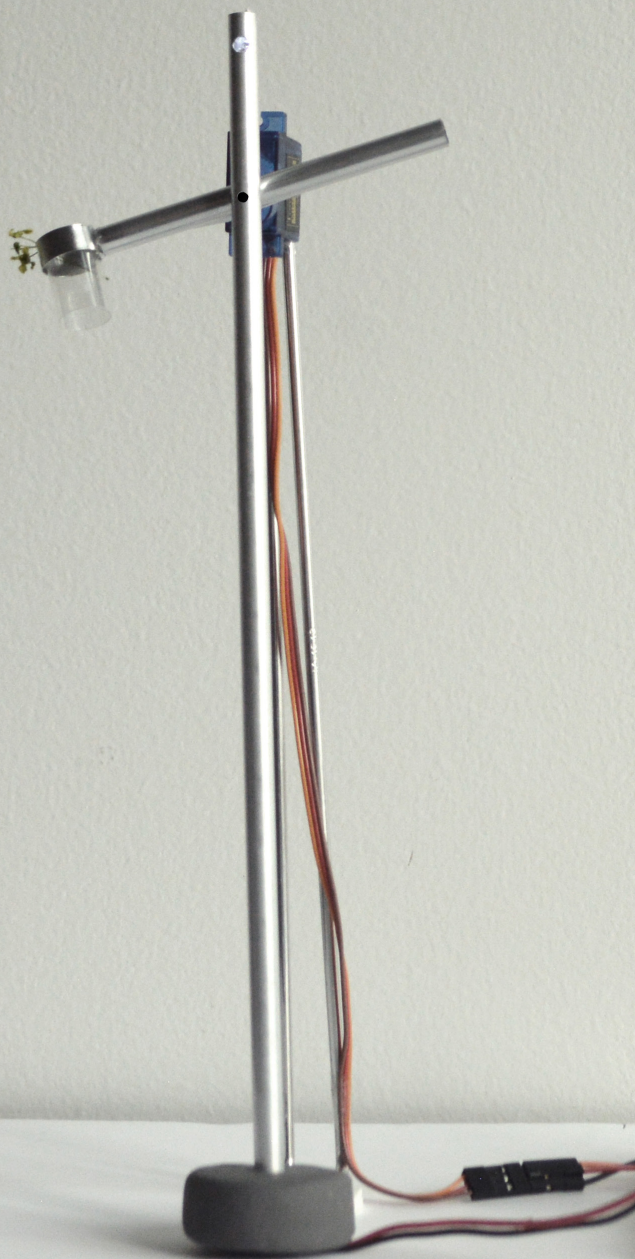
The reflection differs by the material, the thickness, and the amount of light. The variation of light makes the reflection glow and disappear.



A clear glass bottle is tilted, pouring a stream of water into a tall, clear glass. The water is captured mid-pour, creating a clear, aerated stream. To the right of the tall glass is a shorter, wider glass, which is empty. The scene is set against a plain, light-colored wall, and the glasses are on a white surface. The lighting is soft, creating gentle shadows.

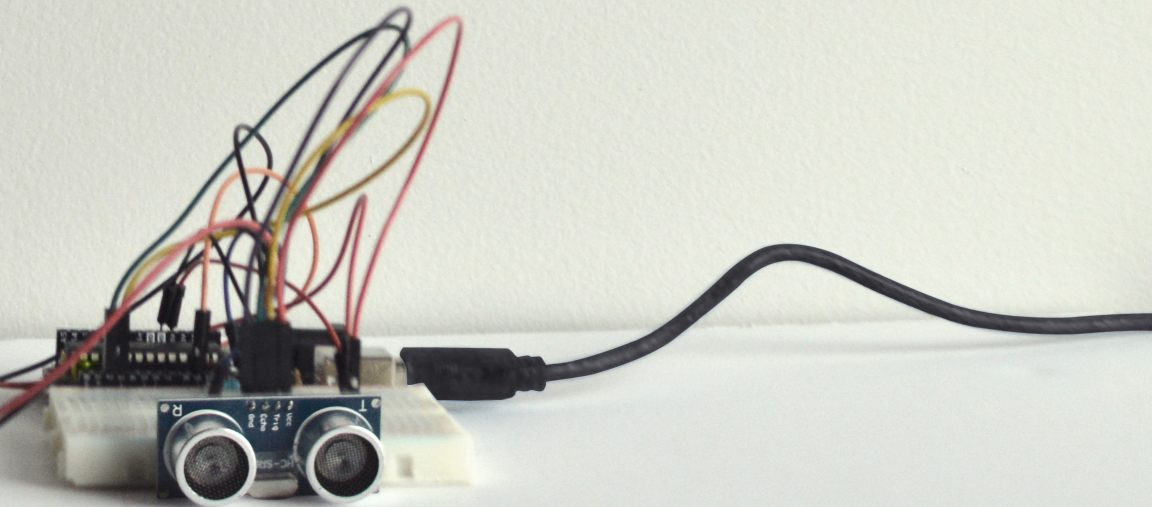
| SOUND OF WATER

The sound of water appears differently if you listen carefully. Plastic containers create thicker and denser sounds while glass containers have nice and clear sounds when pouring water into it.



| MECHANISM

With LED bulb, servo motor,
and distance sensor, Living
Objects could detect your
approach and your absence.





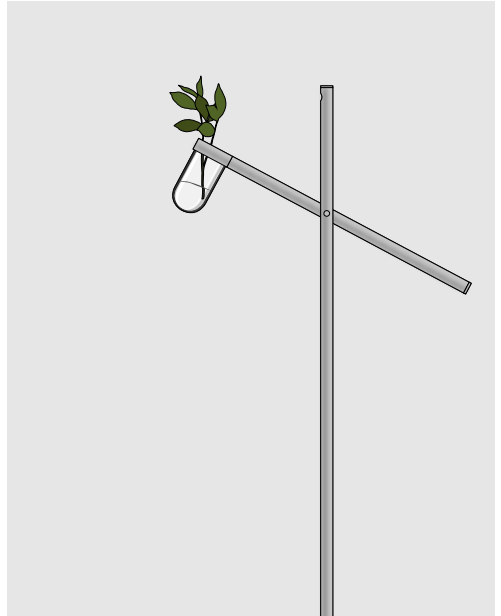
When detecting a subject approaching, the light turns on.



The rod goes down.



When detecting a subject leaving, the light turns off.



The rod goes up.

"I like to repeat things everyday.
When you repeat things you
start to notice slight differences
in everyday life."

—Sato Oki





ACKNOWLEDGE

Living Objects reflects part of myself. I express this project as the way I see the world. In my everyday life, there are some silent moments when I have conversations with myself, the nature, and the surroundings. Even just a piece of leaf floating in the puddle, I notice the ripples around it.

Experimentation and making is an essential part in this project. To me, the value of making is to offer the object its spirit. The best part of manmade is that you could never make two identical objects; each object you make is the one and only. During the process, I made decisions, and I changed decisions. The most beautiful thing about design is sometimes you never know how it will turn out to be.

MENT

My passion towards CMF design also helped me explore the new definition of color, material, and finish through this project. As a designer, I noticed that a lot of the time designers are more comfortable with the design process we are familiar with; we try to follow the design methodology of how it is defined.

CMF design is an area of specialty within the greater industrial design discipline. It triggers our senses by sight, by feelings and by the perceptions of our everyday lives. Even though colors, materials, and finishes are the factors that affect human feelings, I found that CMF design could be implemented more dynamically. Rather than just focusing on how to utilize color palettes applied on materials to create a certain feeling, the elements within the surrounding, the nature, the sound, and the human movement in the space should all be considered as part of the design.

During the development process of Living Objects, I was trying to explore the nature, the proportions, and the sensory as part of CMF design. By experimenting with all those elements, I found the texture in life and the way to bring people back to reality.

Thank you to my thesis advisors: Soojung Ham, Jonah Willcox Healey, and Albert Lee for all the advice and support for this project. I gained design inspirations but at the same time challenged myself through every discussion with you, which helped me polish and shape my design.

Thank you to the Industrial Design faculty: Paolo Cardini, Elizabeth Leeper, Nora Khan, Charlie Cannon, Beth Mosher, and Emily Cornell Du Houx for helping me become a good story teller and nurture my design concept.

Thank you to my previous colleague, and my good friend: Chinwei Chou for all the support since I stepped into the design field in 2016. Your mentoring has built my design foundation and shaped my design spirit. It is you that makes me grow and thrive confidently.

Thank you to my classmates and friends: Max Pratt, Ashley Harris, Katrina Machado, Juliana Soltys, and Kennedy Liu for all the discussions through the whole design process. Thank you for all the help on making the objects; it was your help that made Living Objects realized!

And thank you to the technicians: Will Reeves and Michael Scimeca for the knowledge sharing and guidance on design making, which strengthened my skills and polished the details of my design.

B I B L I O G R A P H Y

Mieko Okabe (2018)
"The Problem of Living in the Digital Age"
The Japan Times

Joseph Firth, John Torous, Brendon Stubbs, Josh A. Firth, Genevieve Z. Steiner, Lee Smith, Mario Alvarez-Jimenez, John Gleeson, Davy Vancampfort, Christopher J. Armitage, Jerome Sarris (2019)
"The "Online Brain": How the Internet May Be Changing Your Cognition"
World Psychiatry

Patrik Vuilleumier (2005)
"How Brains Beware: Neural Mechanisms of Emotional Attention"
TRENDS in Cognitive Sciences

Yasuhiro Suzuki (2011)
"Blinking and Flapping"

Donald A. Norman (2003)
"Emotional Design"

Stephanie Downes, Sally Holloway, Sarah Randles (2018)
"Feeling Things: Objects and Emotions through History"

Liliana Becerra (2016)
"The Fundamental Principles of Colour, Material and
Finish Design"

Emily A. Vogels, Lee Rainie, Janna Anderson (2020)
"Tech Causes More Problems Than It Solves"
Pew Research Center
<https://www.pewresearch.org/internet/2020/06/30/tech-causes-more-problems-than-it-solves/>

Rebecca Rago (2014)
"Emotion, Brain, & Behavior Laboratory"
<https://sites.tufts.edu/emotiononthebrain/2014/10/09/emotion-and-our-senses/>

GLEN NUNES)2018)
"The Psychology of Color: How Color Affects Human
Behavior"
<https://feltmagnet.com/drawing/The-Psychology-of-Color-How-Color-Affects-Human-Behavior>

