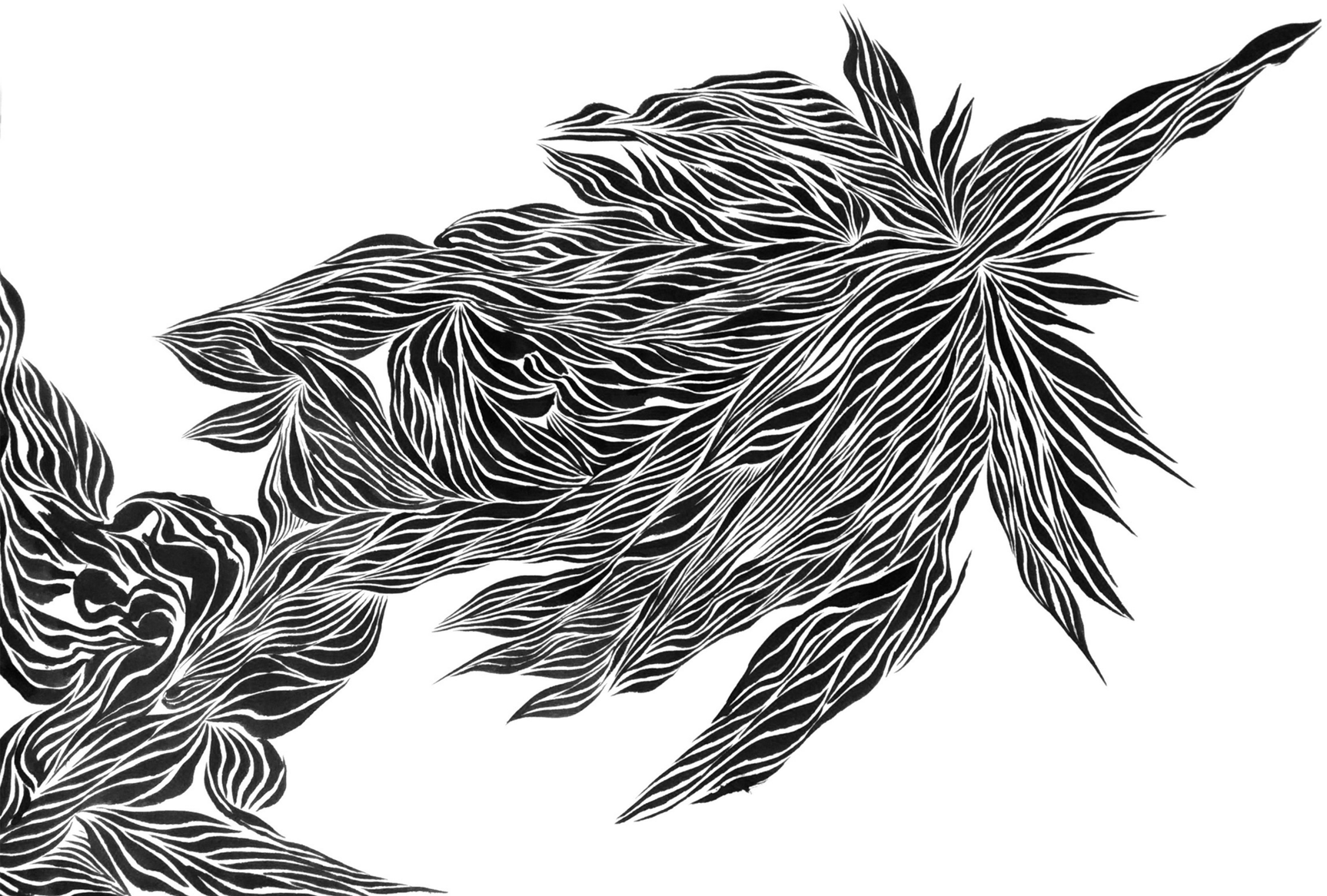

The Dance *of* **Art & Science**

Portfolio by

CHARLOTTE
QIN

2018-2019

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Artist Statement

Self-portrait at 24 (2018)

Songs of Water

I am no Chinese, Canadian, or Swiss

I am a body of water
I come from the ocean

I am scientist, artist, designer
I am omnifarious

Put me in a pot, I become tea
In an oak barrel, I am wine

Being a scientist taught me how to
observe and question

Being an artist gifted me the sensitivity to feel
a wounded planet and
her oppressed femininity

Being a designer enabled me to connect
and serve the world

Dance of Art and Science

In this portfolio, you will see the collision of modern physics and furniture design unfold, the human-centered design tradition challgned by indigenous values, the first encounter of chemical engineering with permaculture, and visualizations of the "blind spots" of science, including the unconscious mind and *collective effervescence.*

Most of the works displayed were conducted during the MA/MSc programme in Innovation Design Engineering (IDE) jointly taught at the Royal College of Art taught and Imperial College London, accompanied by many more brilliant people I can mention here, whom I met on my journeys across the UK and Switzerland.

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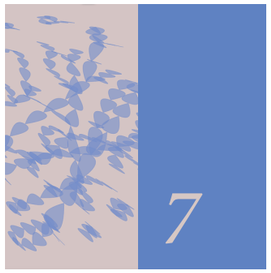
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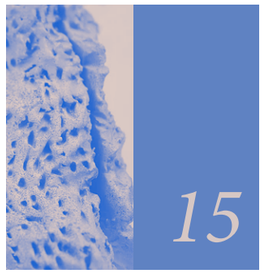
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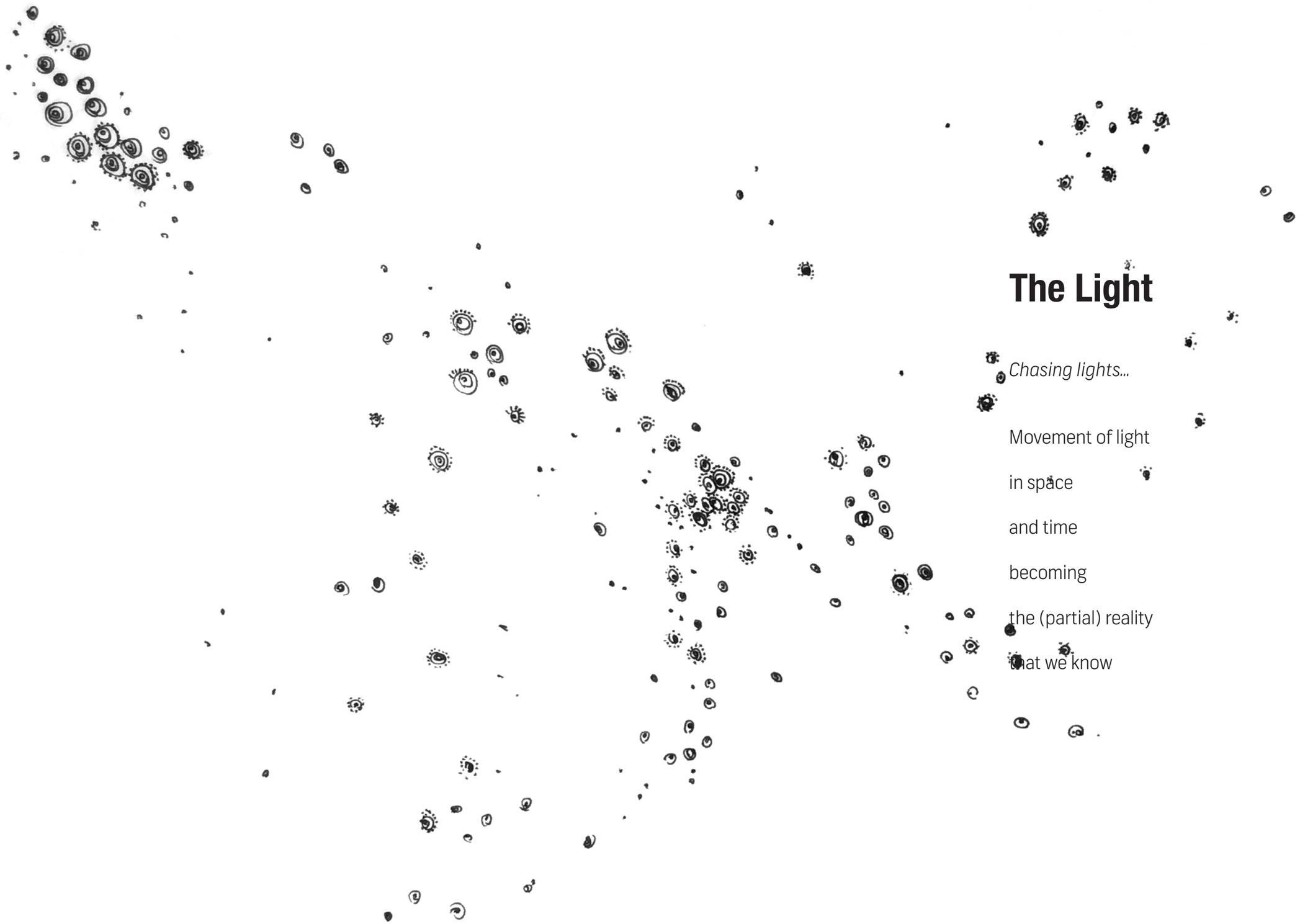


The Light

Chasing lights...

Movement of light

in space

and time

becoming

the (partial) reality

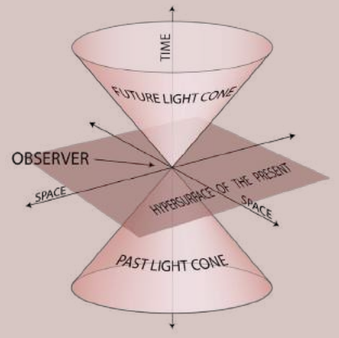
that we know

Light-cone Chair

November 2017 - January 2018

Collision of Physics and Furniture Design

The light-cone chair is a furniture piece designed in my *superposition state* of art and physics. The shape of the chair resembles a "light cone" in Einstein's theory of relativity, which is our humanity's first visualization of integrated space and time. A light cone is a double-cone intersecting at a single point, called an 'event'. The cones represent the fabric of spacetime, containing the paths that a flash of light would take through spacetime: emanating from the event and traveling in all directions, but bound the cones, of which limit is the speed of light. The upper-cone is called the future light-cone whereas the lower-cone is the past light-cone.



The Creation Process

The skeleton of the chair was made with two times 3-meter stainless steel rods, mirror-symmetrically shaped with incredibly heavy, yet careful bending work and soldered together to form the abstracted outline of the chair.

The supporting strings bound across the stainless steel chaiar frame, twisting into a vortex, forming a double-cone joining at the center, providing two sitting positions from either direction of the opening cone.

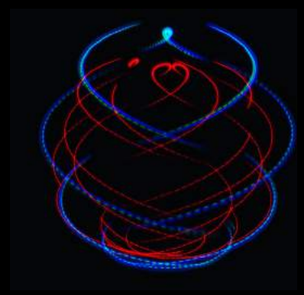
While sitting at the center of the light cone, the perceived trajectories of the past- and future-self all converge to "right here, right now".

The chair conveys and reminds us of the most foundamental teaching of buddhism: *be in the present moment*.

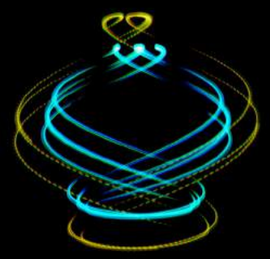
Light Tracer

February 2018

in collaboration with Pascal Romme,
Christian Domehl, and Menglin Ye



Shiva Dance



Royal

Painting with Optical Illusion

Thanks to the anomalies of our human brain and eyes, the footmarks of light can be perceived as “rays”. The paintings displayed in this section is enabled due to an optical phenomenon called “persistence of vision” and its psychological partner, the phi phenomenon—the mental bridge that the mind forms to conceptually complete the gaps between the frames.

Protection

Pearls and Raindrops

Amethyst

code availabe on GitHub

Water and Fire

The Dark

Journey into the invisibles...

90% of the iceberg

90% of the universe

90% of the brain

90% of forest intelligence

....

Mindscapes

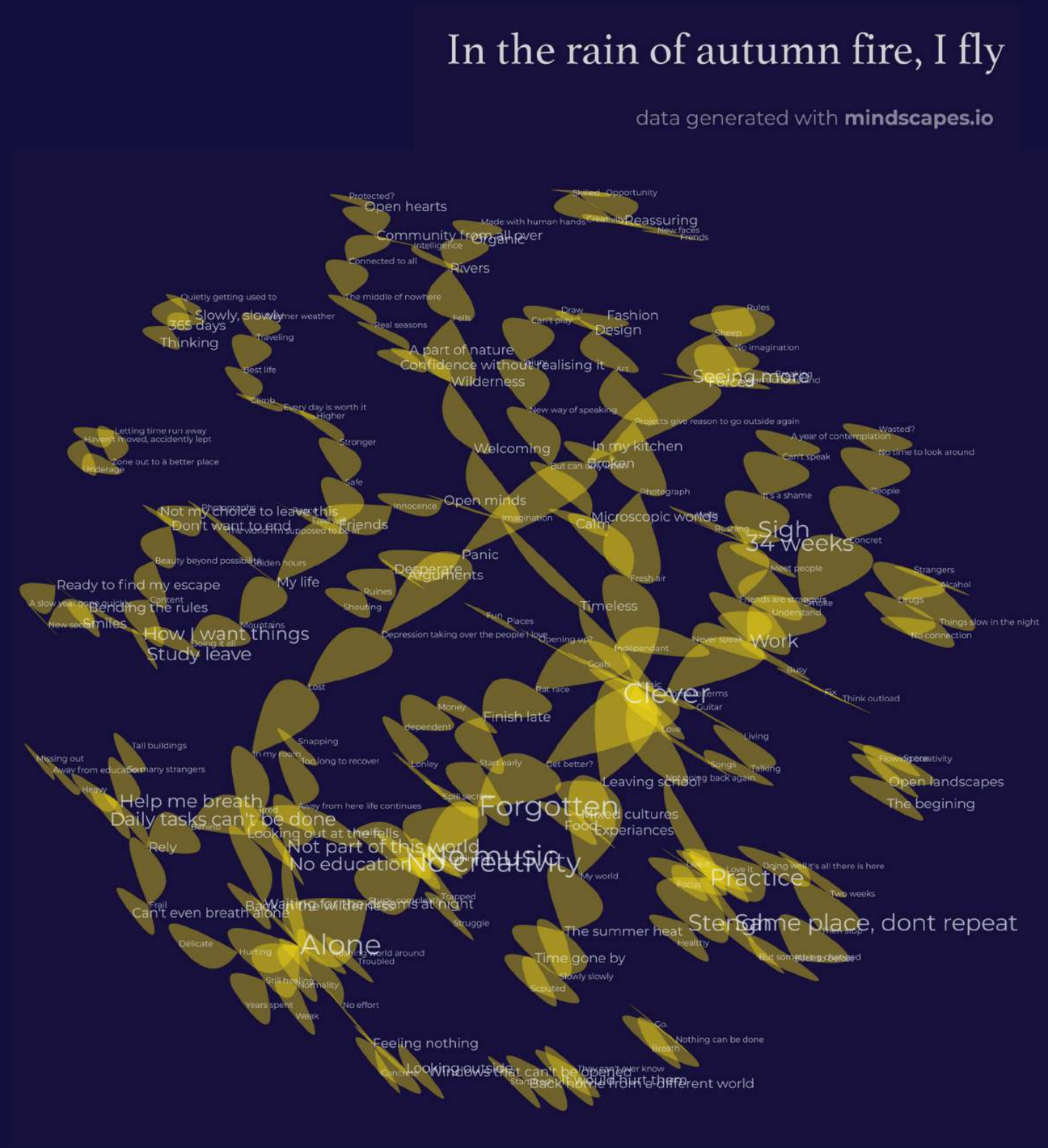
March - June 2019

Mindscapes is a mind-mapping tool which allows one to see the topographical view of their perceptions formed by intuitive thinking. This mapping technique is based on psychologist Edward de Bono's work in *Water Logic* (1994) where he used water as a metaphor to describe the thought process of the a self-organizing brain: one thought would flows to another, and the to the next one, until the flow eventually forms a *circle*. Cyclical thoughts are like water spirals that drains us down.

Landscapes of the Unconscious Mind

Mindscapes is demonstrated to be therapeutic effects on individuals who uses it for self-inquery. The technique has made into an web based-app as an alternative to traditional journaling. The prototype of the application can be accessed: mindscapes.io, optimized for touchscreen.

The butterfly graph is the mindscape of a user who used the app to channel the wounds from a long past period in life. I had turned her data into a data art work with D3.js with her permission. Butterflis are strong symbols of growth, metamorphosis. Instead of nodes and arrows in conventional graphs, the shape of butterflies indicates the direction of the flow and this abstraction provides an layer of emotions and human touch.

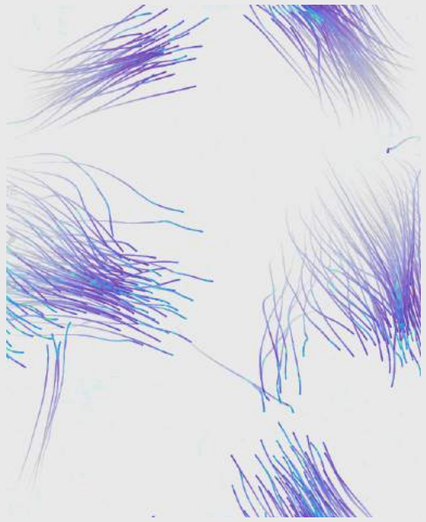


Empathify

July - October 2019

Design Internship at Bell Labs, Cambridge UK

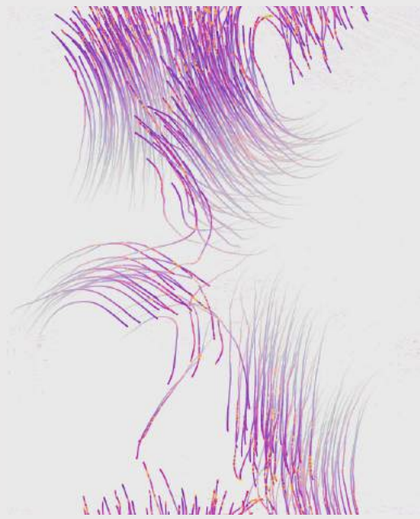
Empathify is a information design research project in partnership with Social Dynamics Research Group in Bell Labs in Cambridge, UK. The aim of the project is to develop visualization for aggregated biofeedback data, i.e. heart rate, heart rate variabilities, developed in the Lab with evidence in the intelligibility and psychological interventions of the visulizations. The current demo can be viewed here.



Joy

Trust

Anticipation

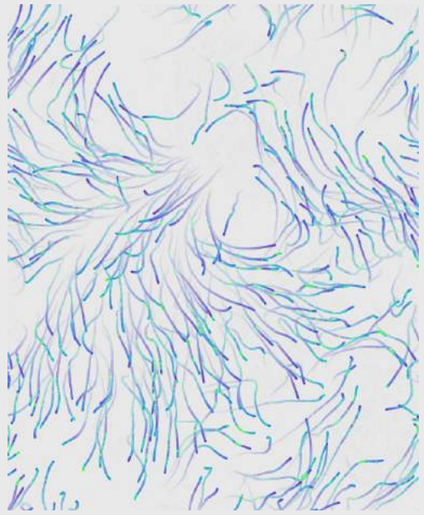


Surprise

Visualizing Collective Effervescence

The demo illustrates eight different emotions that are considered to be primary in humans according to the psychologist Robert Plutchik. Following our research and user experiment on anthropomorphism, environmental psychology, biophilic design, we have implemented an agent-based model to simulates the behaviours of bird flocks; using the deviation of synchrony as a metaphor to express human emotions at an aggregated level.

Sadness



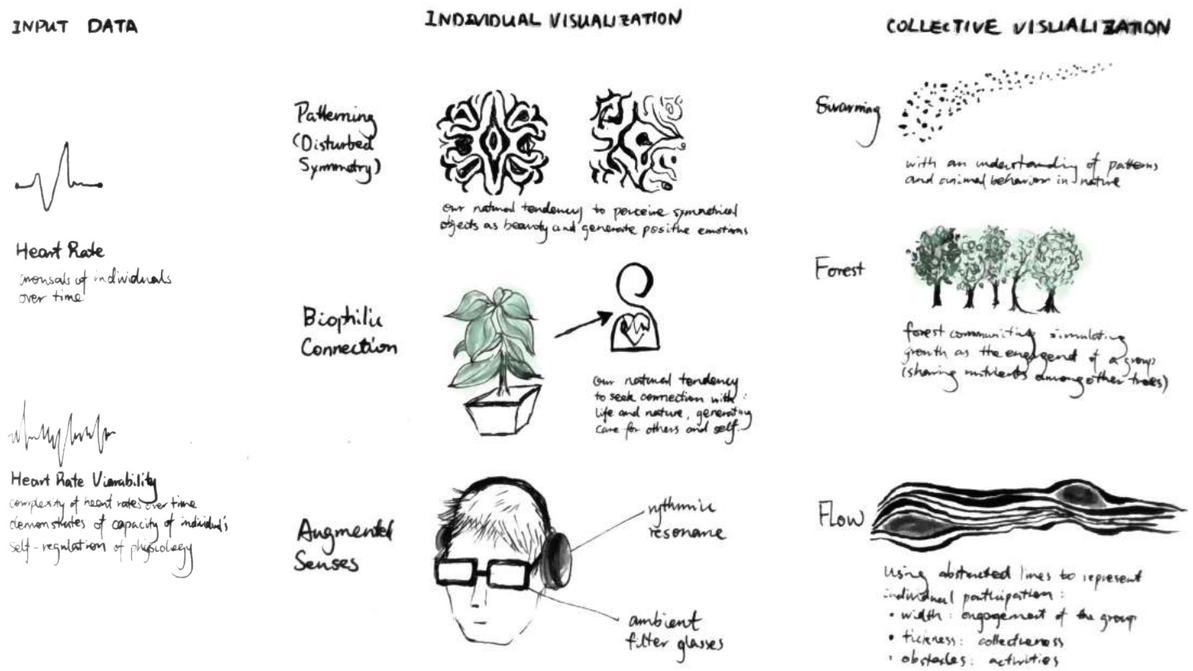
Fear

Disgust

Anger

Empathify: Work in Progress

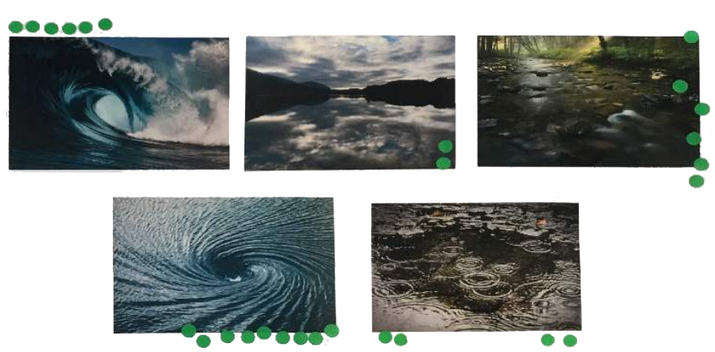
1. Ideationon on visualization of HRV data



2. Meditation on emotions

3. User testing on anthropomorphism:

How are you feeling today?
Describe using the image below.



4. Alpha version of emotions visualized with with Boids Model

The Earth

Our roots are in the dark; the earth is our country. Why did we look up for blessing -- instead of around, and down? What hope we have lies there. Not in the sky full of orbiting spy-eyes and weaponry, but in the earth we have looked down upon. Not from above, but from below. Not in the light that blinds, but in the dark that nourishes, where human beings grow human souls.

Ursula K. Le Guin

River Shrines

April - May 2018

Waterscape in nature, meandering as river, stream, slipping off waterfalls, forming pond, lake, ocean... passing through the civilized world, water gets trapped in dams, bumping into walls of straightened canals, and concrete lake shores. What a difference between man-made and nature-sculpted! Inspired by Inuit mythology, I facilitated the four creations by water, based on life-centered-design framework, to create shrines for the God and Goddess of the river.

Designed by Water

Gaia

Goddess of spring water
She is attentive, peaceful, known for her generosity and compassion

Ying

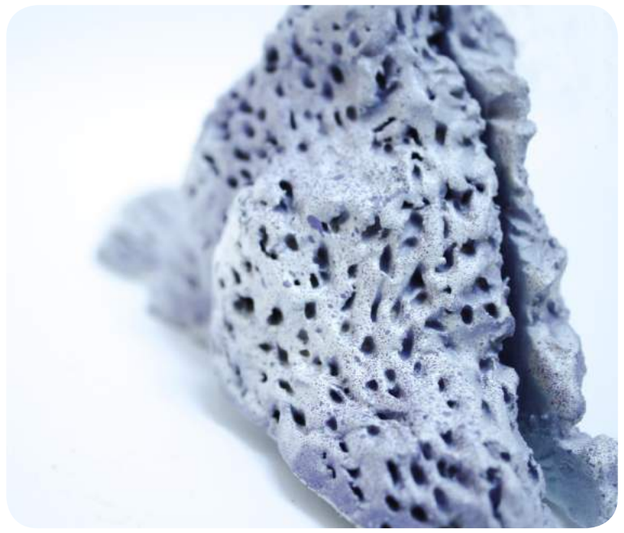
Winter Goddess coated with ice, disguised in a thin layer of morning fog. Solitude, intuition, silence is her signature

Leith

Autumn God infused and energized with the forests' most delicious spices and minerals; Wild laughs, adventurous spirit

Pauw

God of the summer flow
Embodiment of strength, openness, passion, and abundance

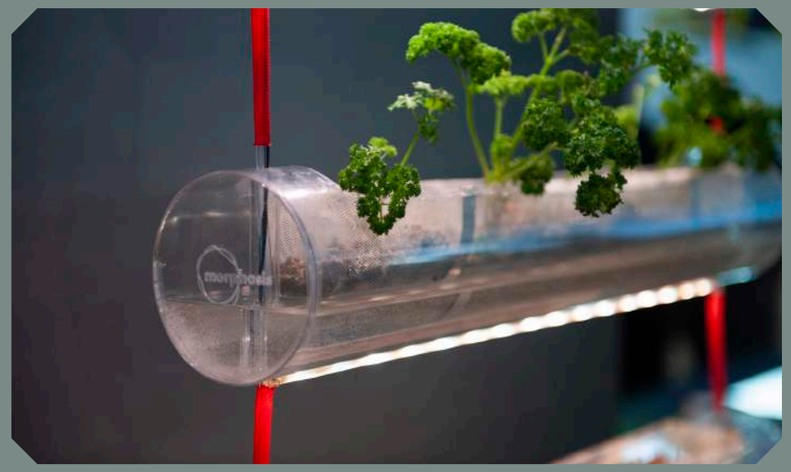


September 2018 - March 2019
in collaboration with Filippo Tomasi, Stephenia Silva, and Menglin Ye

Industrial Design Meets Permaculture

Food waste management is the biggest challenge in our food supply chain. Our current industrial food waste processes produce by-products that end up in a landfill site; when it decomposes over time, the methane produced goes straight into the atmosphere and contributes to the warming temperature. Learning from nature who turns all "wastes" into resources, we propose a circular model to the current food industry with Morphosis, which would recycle 100% of food waste and enable growing new crops locally and economically.

Morphosis is a biomimic in-house appliance which turns food waste into biofertilizer. This chemical reaction produces both a methane-rich biogas to power the appliance itself and a biological fertiliser that can be used in hydroponic farming to boost crop growth without exhausting the soil. Morphosis is the hybrid of ancient engineering, ***anaerobic digestion***, and modern agritech, ***hydroponics***.



Morphosis is an example of a regenerative design for circular economy in food industry.

The project had successfully entered the semi-final of the venture Catalyst Challenge (VCC 2019) of Imperial Enterprise Lab.

My team also had the honour to exhibit at Imperial College Advanced Hackspace Demo Day on March 14 - 15th, 2019 and again at Chemistry Future 2040 on April 12 at the Molecular Sciences Research Hub (MSRH) in London, where we had intriguing discussions with the chemical engineers

ArtScience Expriments

Science is humans' vehicle to understand nature.

Yet, the essence of nature is not the scientific model,

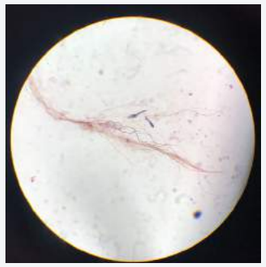
but the living experience

of being human...

That is why we create art.

Appearances

2019



mycorhizal fungi under microscope

7-9 November
Brainhack Global
Campus Biotech Geneva

Working with neuroscientists on the sonification of fMRI data

18-20 October
Quantum Futures Hackathon (QFH)
CERN , Geneva

Working with physicists, mathematicians on visualization and gamification of quantum phenomenon

4-5 May
Bio-Design Lab
University of Edinburgh

Working with biologists to identify mycorhizal fungi in soil sample and explore potential of mycelium network 12 April

exhibition at Chemistry 2040

12 April
Chemistry Futures 2040
Molecular Sciences Research Hub (MSRH), London

Exhibitor

exhibition at the Advance Hackerspace

14-15 March
Advanced Hackspace
Imperial College London

Exhibitor

8-10 March
StartHack
St. Gallen, Switzerland

worked on AI solutions for algorithmic biases on gender, race, and occupation

2018

October 2018 - Feburary 2019
Grand Challenge Collaboration
CERN & Royal College of Art

Facilitated the science-design collaboration on social challenges between CERN and RCA

July - September 2018
Innovation Design Residency
IdeaSquare at CERN

Initiated Idea Circle, a community-based science communication and outreach meet-up and established its prototype version

Posters for workshop series of Idea Circle during residency at CERN

21- 22 July 2018
Assistant for *Inter-Galactic Travel Bureau*
Guerilla Science

Assisted drama-based science communication project and performance during a weekend Festival

26 February 2018
Mythos: Mask of of Intersex
Royal College of Art, London

Hosted a panel discussion on intersex, non-binary sex, and ancient mythology with Stephen Fry and co.

The End.

@QinTheory
charlotteqin.com
March 24, 2020