

Kinetic Design Competition

EXHIBITION

5th - 9th December 2023

INTERPLAY
INTERPLAY
INTERPLAY
INTERPLAY

CATALOGUE



The Royal Society of Sculptors, Dora House 108 Old Brompton Rd, London SW7 3RA



The DesignEducation Trust



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INTERPLAY EXHIBITION

Do you ever stop to reflect how much the design of motion in everyday objects affects your daily routine? Have you ever thought that behind everyday actions there was a creative mind designing the motion? For example, in each action you encounter with some thing, from pressing the alarm clock button in the morning, switching on your bed lamp, using a shower, opening a jar of jam, getting a coffee from a vending machine, making a phone call, or crossing the road there is a designed-in movement.

As AI and new technologies evolve at an unimaginable speed this design of movement will become ever more important, as will how much support young designers receive to explore elegant motion in our Educational Institutions.

The Design Education Trust presents its INTERPLAY EXHIBITION between 5th and 9th December 2023 at the Royal Society of Sculptors to champion and support young creative minds that will lead new motion design possibilities of the future.

At the INTERPLAY EXHIBITION a range of projects are exhibited involving 'motion design'. These are from architecture, sculpture, fashion and product design. The exhibits propose movement as biomimicry, kinetic waves, light motion, solar energy harvesting, wearable objects, spirituality, haptic sound to urban elegance. All exhibits offer different ways of understanding kinetic design to stimulate our imagination.

Firstly you will encounter a selection of experimental kinetic objects from 'Cyber Physical Systems'; a workshop of the joint programmes at Imperial College and the Royal College of Art of Innovation Design Engineering and Global Innovation Design. The devices use Arduino computers and Ai software to propose speculative kinetic designs that translate human behaviour into robotic motion.

Then you will find fourteen projects that have been selected as the best Entries to our initial INTERPLAY Competition. Eight of the proposals were awarded £1000 in a Round 1 to develop their project ideas further in a Round 2. The other six proposals exhibited each received Commendation Awards due to their excellence in offering new solutions for sonic, haptic, olfactory, morph, blue-sky and tech kinetic designs.

One of the eight projects will be announced as overall winner during the exhibition and receive an £8000 Commission to develop their proposal further.

The Design Education Trust invites you to delve into a playful experience aiming to lift your spirits in these dour times. Join us between the 5th and 9th December to see our free INTERPLAY EXHIBITION at the ROYAL SOCIETY of SCULPTORS, Dore House, Old Brompton Road, London, SW7 3RA.

UNCANNY DYNAMICS

Uncanny Dynamics is an exhibition comprising two sculpture series; Vortexglass & Arbor Kinetics

KINETICS OF CONSTRAINTS

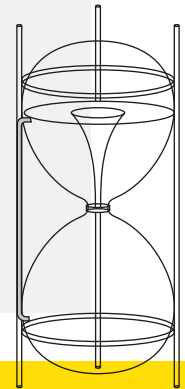
VORTEXGLASS 1



Vortexglass is a bespoke, hand-made whirlpool hourglass machine. The replicable design will be created in collaboration with glassmakers to generate a series of kinetic sculptures which expose the delicate interplay between **constraints**, fluid turbulence and **self-organised** vortices.

The fluid dance of dynamics and **dissipative structures** can be disrupted and influenced by adjusting the water flowing in and out, but the pervasive process of **self-organisation** inevitably **emerges**.

As a series, the nuanced relationship between the the two degrees of freedom in the system is unvailed, exposing the detailed **complex dynamics** that emerges from **simple components**.



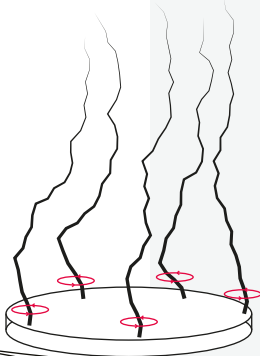
The interplay of constraints and emergent kinetics human control and natural forces

ARBOR KINETICS 2

In Arbor Kinetics, simple **mechanisms** are used to generate an array of kinetic aesthetics in a sculptural series. For each sculpture, branches will be arranged on a circular platform. **Rotational motion** will be converted into jerking, twisting, extending, interweaving, shaking, pivoting and swaying due to **mechanical constraints**.

The sculptures will serve as both a demonstration for simple electromechanical principles of kinetics, while concurrently conveying an unnerving sense of **human intervention** in the dynamics of natural forms.

The work displays **organic forms** - such as the natural bend and flex of the branches, and movement that is reminiscent of **organic motion** found in nature - as an advantage of kinetic aesthetics. In contrast, the curious **robotic motion** in the work is visually incongruous, and expresses the human imposition on nature's **forms and processes**.



WHO ARE WE?

Matthew Woodham is an artist and experience designer interested in the human relationship and influence on the **systems of nature**. His educational background in cognitive neuroscience has expanded to the study of **processes and dynamics** throughout a broad array of natural systems, for example **emergence, self-organisation and chaos**. He is particularly interested in the 'isomorphic' nature of **complex systems**. He builds **sculptures, machines** and creates real-time, **interactive environments**. He graduated from MA Information Experience Design from the Royal College of Art in 2023.



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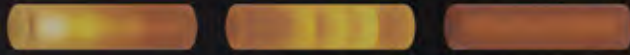
DETAILS

Uncanny Dynamics: Kinetics of Constraints is an exhibition of two kinetic sculpture series celebrating and exploiting **natural forms and processes**. The works provoke audiences to consider **human interventions** with nature, and how design can both work **with and against** natural systems. The exhibition explores the interplay of **dynamics and constraints** to generate **emergent behaviours**. The interactive kinetics tussle with tensions between **control and chaos, animate and inanimate, nature and machine**.



BEAM

BRIGHT
EMOTIVE
ANIMATED
MODULE



SAMPLE LIGHT VARIATIONS



SAMPLE ANIMATION POSES

KINETIC MOTION

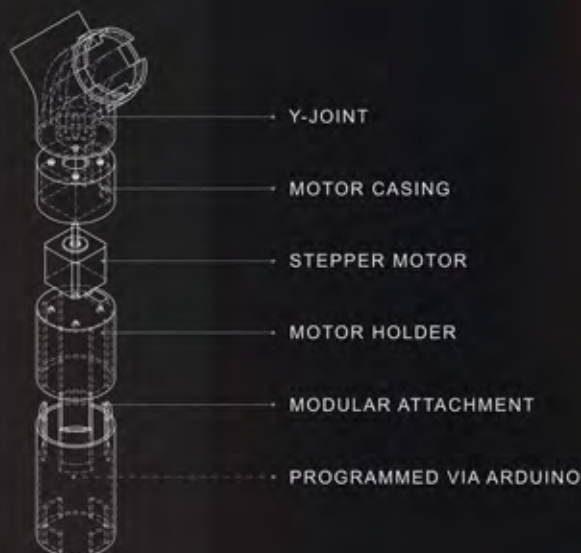
Four stepper motors are used to create lifelike, bio-mimetic animations in BEAM, mimicking nuanced nonverbal cues found in humans and animals, helping it to respond to the daily cycle and its environment.

TANGIBLE LIGHT

Light is treated as a tangible kinetic entity in BEAM. Using an LED panel tube, BEAM can shift light from ambient glows to distinct spotlights, creating dynamic, contextually varied visuals via generative AI.

SONIC PERSONALITY

By voicing a range of dynamic, varied auditory cues through a speaker, BEAM communicates its feelings and intentions in response to user behaviour in subtle and intuitive ways.



Imperial College
London



MEET BEAM!

BEAM is a "living" lamp that blends kinetic motion, light, sound and AI to transform our relationship with everyday household objects. Inspired by elegant, biomimetic movements of nature, BEAM creates emotionally-rich interactions through intuitive kinetic behaviours, bringing a uniquely graceful and delightfully unpredictable presence to your living space.

ABOUT THE TEAM

Xin Wen, JJ Agcaoili, Wei Zhang are recent MA/MSc Global Innovation Design graduates of Royal College of Art and Imperial College London. BEAM (recipient of the Proposal Development Award) is developed in collaboration with Luling Wang, sound and music maker. Contact the team lead, Xin, at xin@manyprojects.co

FIND BEAM AND TEAM ON
manyprojects.co/beam





FloPoTo - Flower Power Tower

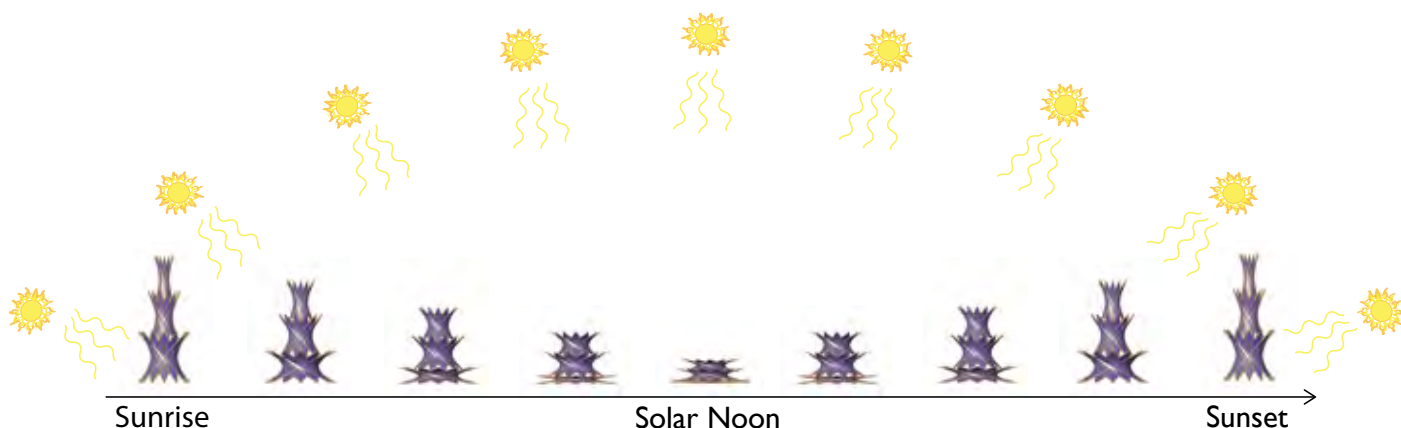
Year 1 - MEng Engineering and Architectural
UCL, The Bartlett School of Architecture

At the outset, we designed a moving tower, exploring the concepts of structure and kinetics while honouring and celebrating 'carnival.' Achieving all our objectives of sustainability, efficiency, lightness, and grandeur, the tower ended up standing monumental 10 metres tall.

Following this award-winning success, we had the honor of constructing it three more times following its debut at the initial carnival parade. It served as the centre piece of the Summer Show Launch Party at UCL's Main Quad, marked the grand opening of the

UCL East Marshgate Building, and concluded with an appearance at the renowned Bloomsbury Festival.

Our ultimate goal for the Kinetic Design Competition was to make Flower Power Tower live up to its name and leverage our dynamic and flexible structure to drive positive changes for our planet. As a result, we are excited to propose an automated kinetic solar power unit that we believe has the potential to revolutionize aesthetics and the public acceptance of widespread solar energy technology.



We are collaborating with Solar Cloth, a leading company in the revolution of solar panel technology, to create bendable and flexible photovoltaic laminate sheets that will be part of our FloPoTo fabric design.

We envision it as a magnificent kinetic power unit for gardens or open areas. This innovation aims to supply our power grid with carbon-free electricity, bringing us one step closer to achieving a net-zero carbon footprint.



Group Members: Ahmet Urfali, Aliza Kabani, Anna Van Gucht, Arina Pavlova, Hana Molokhia, Mengyuan Chen, Ramona Kingdon, Sebastian Eisen

Tutors: Barbara Zandavali, Bedir Bekar, Klaas de Rycke, Luke Lowings, Luke Olsen

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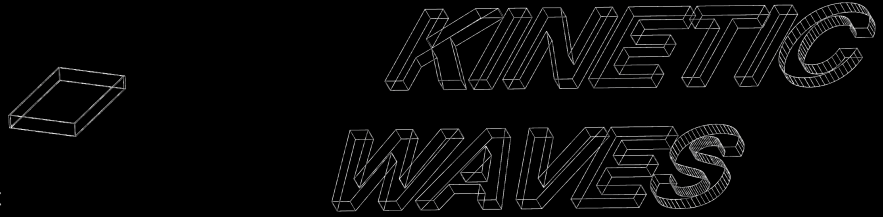
KINETIC WAVES team members:

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Jacob Deakin - Designer/Creative Technologist
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Mara Ungurean and Jacob Deakin are a design duo interested in exploring how 4D design can create delightful experiences that surpass the current limitations of both contemporary art as well as commercial/utilitarian design.

Mara Ungurean is designer and recent UAL graduate. She won the RSA's Student Design Award in 2022, among other design awards. Her main expertise lies in experiential design, speculative projects, and set design. She visualises concepts using 3D modelling and CGI, with visual research and AI playing crucial roles in her process. Jacob is a Welsh Designer/Creative Technologist. He primarily works with TouchDesigner and Projection Mapping, his to work is centered on three principles: process, experimentation, and texture. He has exhibited in Japan, Portugal and across the UK. His aim is to bring this spirit of visual innovation to all of his projects, regardless of the medium.

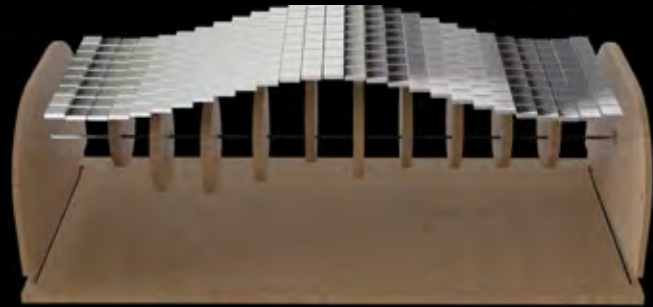


CONCEPT

"The Ocean Never Speaks Twice" is a kinetic installation consisting of modular, unique wave patterns generated by AI/ human interaction creating the calming and visually striking effect of ocean waves reflecting light.

The installation is built out of individual pieces of polished metal, perfectly simulating water as they move. Each piece of metal is attached to a belt which moves up and down when the gears under them are rotating. This movement can be generated by a motor or by manually spinning a handle. Above this piece, there is a spotlight that creates the impression of a glimmering ocean.

This installation is multisensory, as it also creates sounds when it moves. The final visual and audio effect highlights the ephemeral nature of the movement, in stark contrast to the durable materials and never-ending cycle of motion.



3D render of the kinetic sculpture.

PROCESS

- The process began with a small mockup, validating functionality using material scraps.
- Technical drawings explored construction methods, initially favoring laser cutting, but wood was later chosen for cost and flexibility.
- Timber was cut using a bandsaw, and holes were drilled for assembly.
- A jig ensured identical holes in cam disks for a sine wave effect.
- The correct pivot point for brass rods was determined and secured with copper wire, with additional copper channels restricting side-to-side movement.
- Glockenspiel parts, sourced from an old glock, were integrated.
- The prototype, crafted in Mid Wales, was then transported for finishing touches, including attaching shiny plates, completing the collaborative effort.

USE

Exhibiting "The Ocean Never Speaks Twice" offers a range of opportunities to engage different audiences and environments:

- **In art galleries and museums**, it allows art enthusiasts to appreciate its aesthetic and kinetic qualities, often as part of contemporary or kinetic art exhibitions.
- **Placing it in public spaces like parks**, plazas, or urban squares brings art to a broader audience, creating a dynamic focal point and engaging passersby.
- **In corporate lobbies**, the sculpture adds an innovative and sophisticated touch to the workspace, becoming a conversation piece that contributes to the overall ambiance.
- **Cultural centers that celebrate art**, technology, and culture find it an ideal fit, where the sculpture symbolizes creativity and cultural richness.
- **Featuring it at special events**, conferences, or art festivals makes it a highlight, enhancing the overall experience for attendees with its interactive elements.
- **High-end retail spaces**, especially those focused on luxury or cutting-edge design, can elevate the shopping experience and align with the concept of "services as theatre."
- **Universities or design schools** can showcase the sculpture as an educational tool, offering students a tangible example of the integration of design, technology, and cultural expression.





The Big Electron 2.0

In a world grappling with mental health issues and anxiety, 'The Big Electron 2.0' is a unique response, drawing inspiration from diverse cultures to create interactive kinetic sculptures.

At its core, this series offers a space for play and contemplation, providing a break from ever-present negative happenings. These pieces blend modern technology with timeless symbolism, creating captivating sounds reminiscent of ancient instruments.

Cultural interplay and hands-on interaction evoke shared emotional and spiritual responses, alleviating anxiety during gallery visits. Blurring the line between a toy and a meditation piece, it encourages mindfulness, celebrates interconnectedness, and offers a glimpse into a future driven by green technologies and cosmic unity.

In this existential journey, 'The Big Electron' promotes interconnectedness across time, cultures, and entities, providing a respite from the anxieties of our fast-paced world.

Heal high-functioning Anxiety

Revival of Ancient Cultures

Challenge Design Aesthetics

Cross cultural patterns trigger idiosyncratic memories of architecture and art, while mechanics remain timeless. Working together inviting the audience to contemplate and observe.



The Process



Research:
Totem Poles and Traditional Masks



Illustrated Research:
making drawings showcasing intent and research



Miniature Models:
using spare parts to recreate miniature relics from sketches



Prototypes & CADD:
testing mechanics by making physical & digital models

The Team

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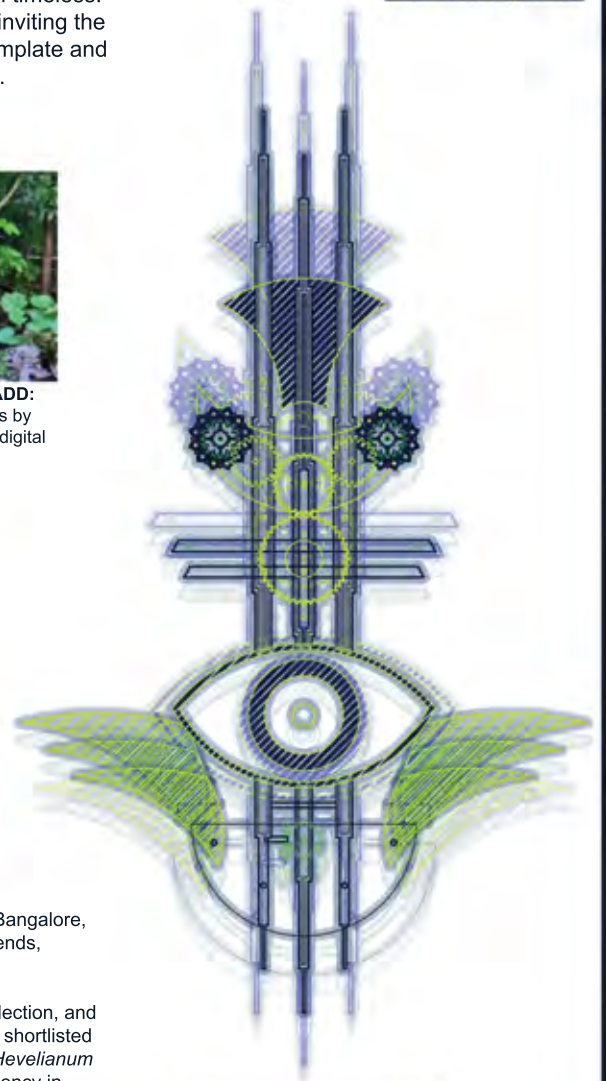
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(left to right) - Nandhit, Sophie, and Nina

Nandhit Reddy Vasanth is a multidisciplinary artist and designer with an architecture background from Bangalore, India. He and his workshop assistants for this project – **Sophie Bryer** and **Nina Gonzalez-Park** – are friends, collaborators, and graduates with distinction of MA [Art & Science] from Central Saint Martins in 2023.

They have been exhibiting their work and participated in opportunities internationally and in the UK. Nandhit has showcased his art in the Graduate Art Show, Tabish Khan's and UAL's, Third Culture Art collection, and serves as an Artist Ambassador for The Old Operating Theatre Museum. Sophie and Nandhit have been shortlisted for the Global Design Showcase x Gucci Award. Sophie has exhibited at the University of Glasgow, the Hevelianum Gdansk Festival of Light in Poland, and a participant in the upcoming Silence Awareness Existence residency in Finland. Nina's has displayed her work at the RA Summer Exhibition, been shortlisted for the Ingram Prize, and recently participated in a residency at the Tokyo University of the Arts.



THE BIG ELECTRON 2.0



KINETIC EXOSKELETON

The way that our bodies look at this precise moment is the reflection of the places where we have lived, people we have met, conversations and interactions we were part of. We are memories.



3
FLOWERS
FLOWER PODS AREA

2
SKIRT
Dismountable bottom layer
WOOD, ALUMINUM, RUBBER AND RESIN

1
RIGID SHELL
Arm and Body support with flexible joints

The suit is split into 2 main interactive sections: **HELMET** and **EXOSKELETON**.

Both devices are capable of registering facial expressions and sound.

Covered in robotic flowers that open and close at different rhythms and speed when reacting to their surroundings.



PLATFORM open from the back with a short ramp for easy access. Hardware and batteries will be encased and hidden in the lower frontal bottom.

4
ROBOTIC FLOWERS
140 Responsive Flowers



NEUTRAL



JOY



FEAR

KINETIC HELMET



5
FLOWER PODS

80 FLOWER PODS IN 3 DIFFERENT SIZES
Each Pod will have 1-3 Robotic Flowers and 1 microservo



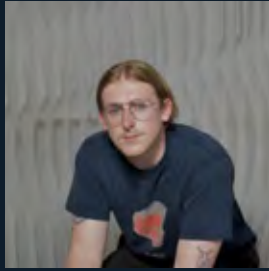
AN EXPERIMENTAL WEARABLE DEVICE WITH RESPONSIVE MOVEMENT
SPECTRAL OBJECTS

MARIA NAVA - Multidisciplinary Artist, MA Fashion, Royal College of Art (2022). JOSE NAVARRO - Software Developer, Robotics PHD candidate, National Polytechnic Institute of Mexico (2023). ROY BRANDYS - Audio Visual Artist.

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PARAMETRIC PAPER



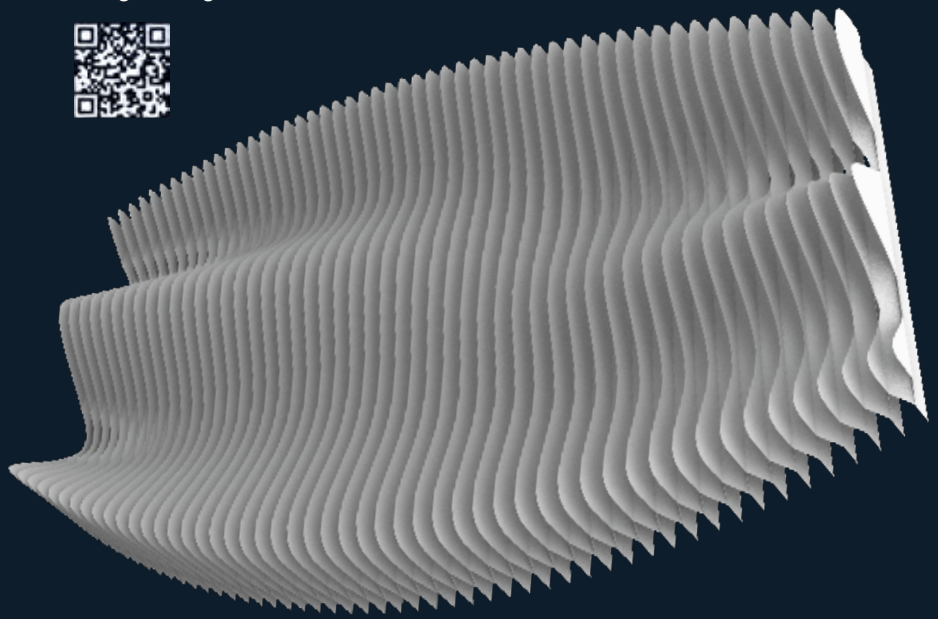
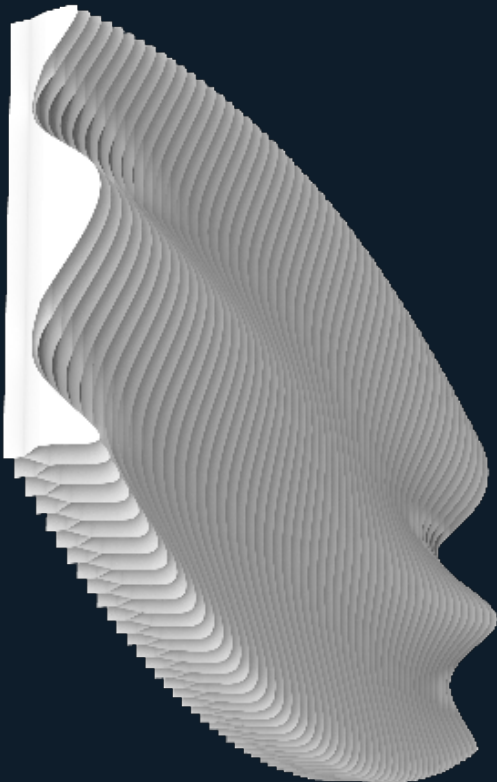
Who Are We?

BFB Design Collective - a group of computational designers with specialisms in parametric design and digital fabrication. The group have been exploring how form and material can encourage **playful kinetic** interactions for **sensorial** effects felt through haptic, acoustic, and visual stimuli. Their research is now being furthered explored with the development of *Parametric Paper*; with the aim of bringing playful and sensorial connections to utilitarian environments through the design of their kinetic sculptures.

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What is Parametric Paper?

Parametric Paper is an installation, comprised of 100 uniquely shaped sheets of paper, which are bound to combine and form one homogeneous, yet complex morphology. The form extends out, physically **inviting touch** and exploration from the user, in a flowing **transitional motion**. Through physical interaction, a ripple effect dissipates across the network of paper forms. Kinetically activating **emotional** and **sensorial stimuli** for the user through; a visual response in a wave-like shimmer, an acoustic response through a **harmonic soundscape** and a **haptic response** through **textural interplay**. We look to implement this installation in utilitarian environments to bring joy, playfulness, intrigue and inspiration through design, in environments which lack the former.

INTERACT
EMBRACE
PLAY





URBAN ELEGANCE

WHAT

Traffic lights that blend the functional necessities of urban life with the delicate, mesmerizing beauty of hanging mobiles and kinetic sculptures. These traffic lights are intricate pieces of art that breathe life into urban landscapes, transforming ordinary streets into interactive public installations.

WHY

1. To Elevate Urban Aesthetics
2. Promote Public Engagement
3. Inspiration and Interaction

HOW



Inspired by constructions of Orrery planetariums (clockwork models of our solar system) the entire motion is powered by a single motor, using a clockwork gearbox and nested shafts to vary the motion of each of the rings.

WHO

Holly and Joe are both Global Innovation Design Students at ICL and the RCA. Holly, is interested in the intersection of art and science particularly in terms of the climate. Joe is interested in design for disability and how creative solutions can improve lives.



Holly Souza-Newman - [NewmanHolly1@gmail.com]
Joseph Jones - [joseph.s.m.jones@gmail.com]
Global innovation Design MA/Msc

PROCESS



In future iterations, standard pedestrian and motorist symbols could be added to the central shapes that light up green or red to avoid confusion or safety concerns.



MOTION

1. The 3 outer rings line up and turn green to form the classic walking man
2. The concentric inner rings rotate around each other at different speeds and in alternating directions (this increase in movement is mirrored by the pedestrians crossing)
3. Once the 4th outer ring completes a full rotation it lights up red, the green man breaks apart into 3 pieces, and the inner rings stop rotating (again mirrored by the pedestrians stopping)

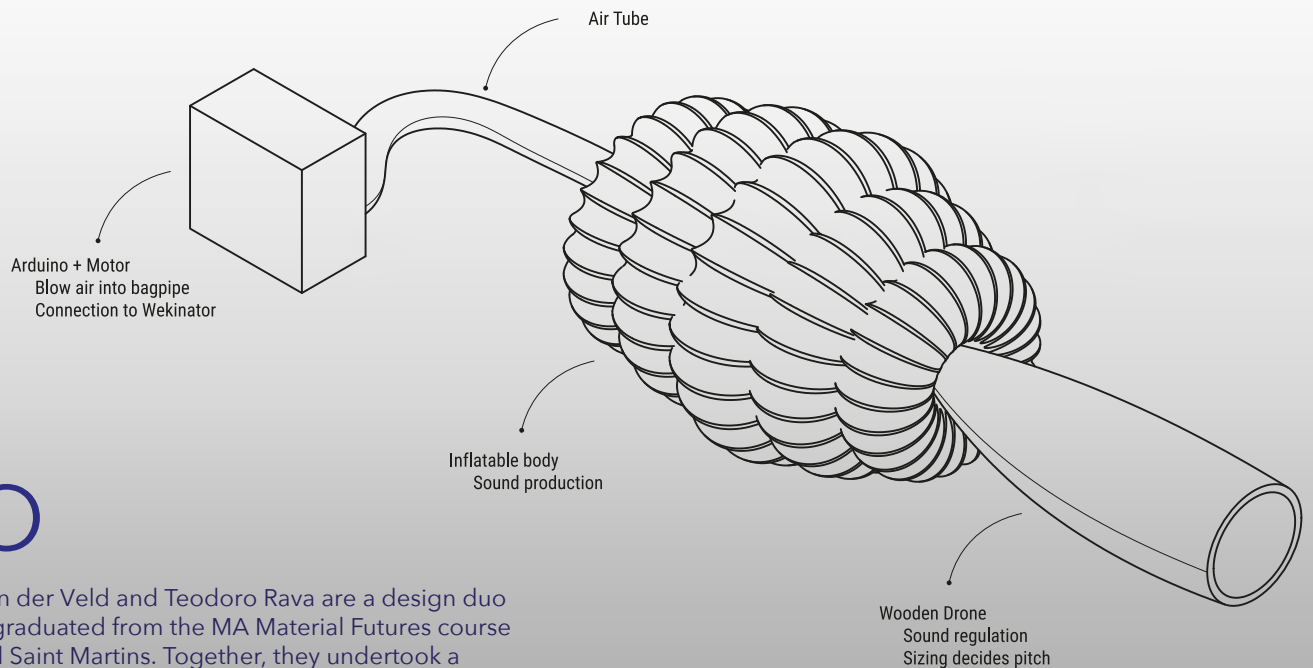




HYBRID RESONANCE

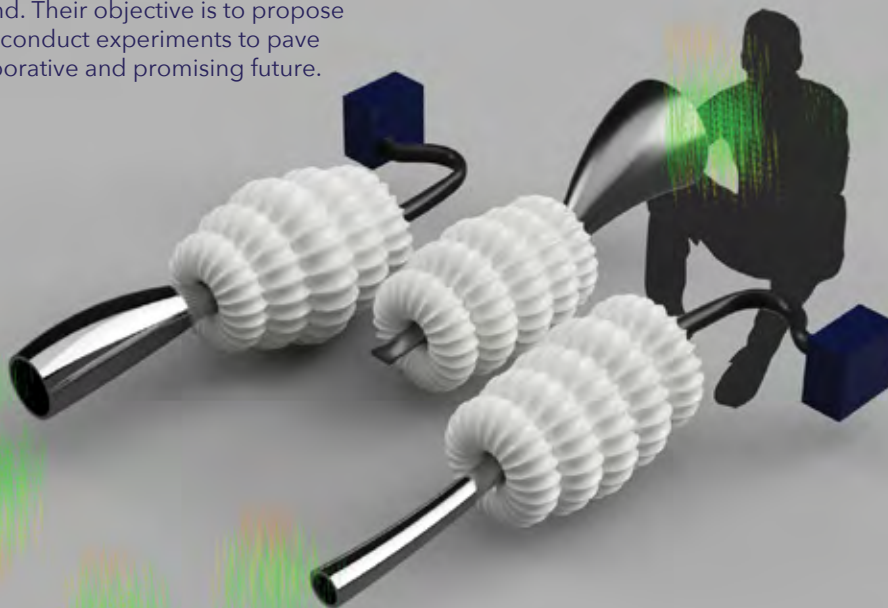
Hybrid Resonance proposes as a second prototype
A hybrid bagpipe that inflates creating an interactive auditory environment.

The sounds generated by the human are processed by the Wekinator, translating them into individually interpreted outputs. This dynamic feedback loop between human and machine challenges conventional notions of composition and performance.

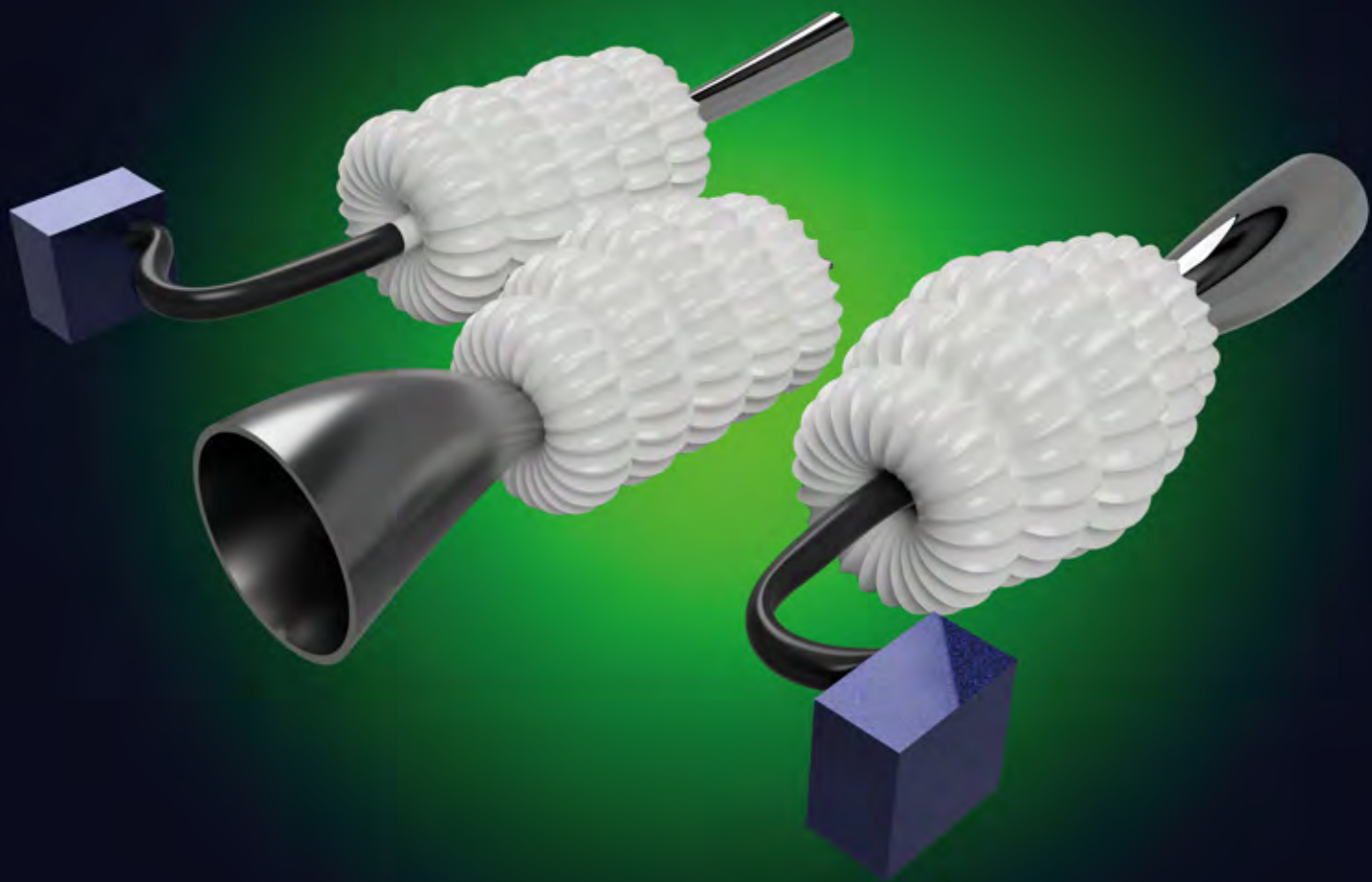


BIO

Malou van der Veld and Teodoro Rava are a design duo recently graduated from the MA Material Futures course at Central Saint Martins. Together, they undertook a project in partnership with DeepMind, driven by their shared passion for music and media arts. They ventured into the realm of emerging technologies, including machine learning and generative AI, interpreting them as mirrors of the human mind. Their objective is to propose alternative solutions and conduct experiments to pave the way for a more collaborative and promising future.



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Sojung Park is a multidisciplinary artist working in sculpture, installation, and painting. As a holder of an MA in Sculpture (Royal College of Art), she focuses on the errors in human sensory perception within a constantly evolving world.

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Hong Seok Lee is a PhD Candidate at Imperial College London. He specialises in Bioelectronics, Intelligent Sensing System.

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“Breath of Tranquility”

Breath of Tranquility aims to provide a respite for the overactive minds of individuals living in a fast-paced world. By utilising technology and an interactive inflatable sculpture, this project will encourage the audience to embrace a moment of peace and reconnect with their inner selves. This proposal seeks support to bring this captivating kinetic art project to life, offering a sanctuary of calm within the chaos of modern society.

Motion

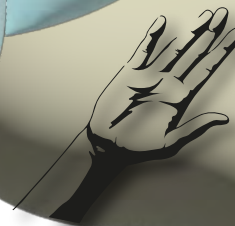
Massage machines are material that can represent the sense of touch designed for human body contact with organic movements. The motion is typically implemented through haptic technology, enhancing the sensation of receiving a massage, offering us a unique sensation.

Soft Sculpture



Soft sculpture is seen as an extension of the medium that goes beyond simply using soft materials to create sculptures. Essentially, it is characterised by flexibility in open forms that transcends the limitations of rigid materials.

Haptic



The artwork is made of silicone which inflate and deflate by the circulation of air. The interactive nature of this installation will encourage people to be mindful of their breaths by breathing together at same pace with the artwork and engage in a moment of reflection.



Identiscentory

“Olfactory” Commendation Award

MArch Design for Performance and Interaction
The Bartlett School of Architecture | University College London
A duo of interior architects whose approach revolves around creating human-centered experiences that enrich personal journeys through interaction.
Our focus lies in intangible elements, encompassing perception, and olfaction, and visualizing them to aid individuals in understanding themselves and reflecting on their past through mechanical kinetic motions.



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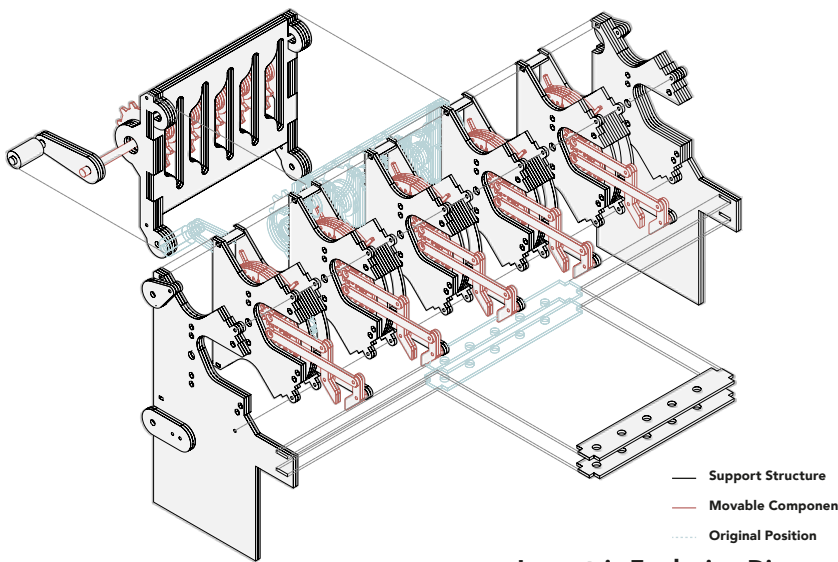
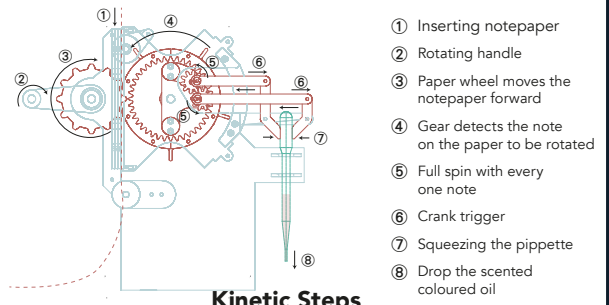
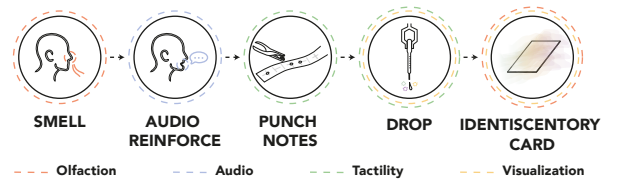


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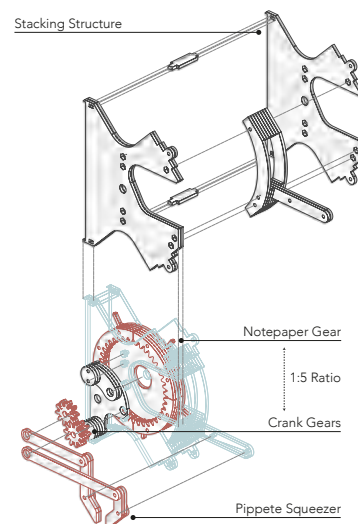


Identiscentory represents a cherished moment within the slow media movement, challenging the prevailing high-technology design environment. By highlighting *the significance of tactility, human engagement, kinetic motion, and personal narratives*, our installation creates an immersive experience that transcends the digital age, *connecting participants to their memories and emotions in a profound and meaningful way from olfaction to the abstract art form.*

Participants are given a pallet of scents which act as triggers for retrieving and reinforcing personal narratives. These are encoded on a punch card which is then fed through a mechanical installation that deposits coloured liquid onto a strip of watercolour paper. This process of translation is celebrated through an enchanting kinetic motion that involves participants in the creation of a unique visual imprint - a rich journey through memory and the senses by focussing on the interplay of olfaction, tactility, mechanical motion, and visualization.

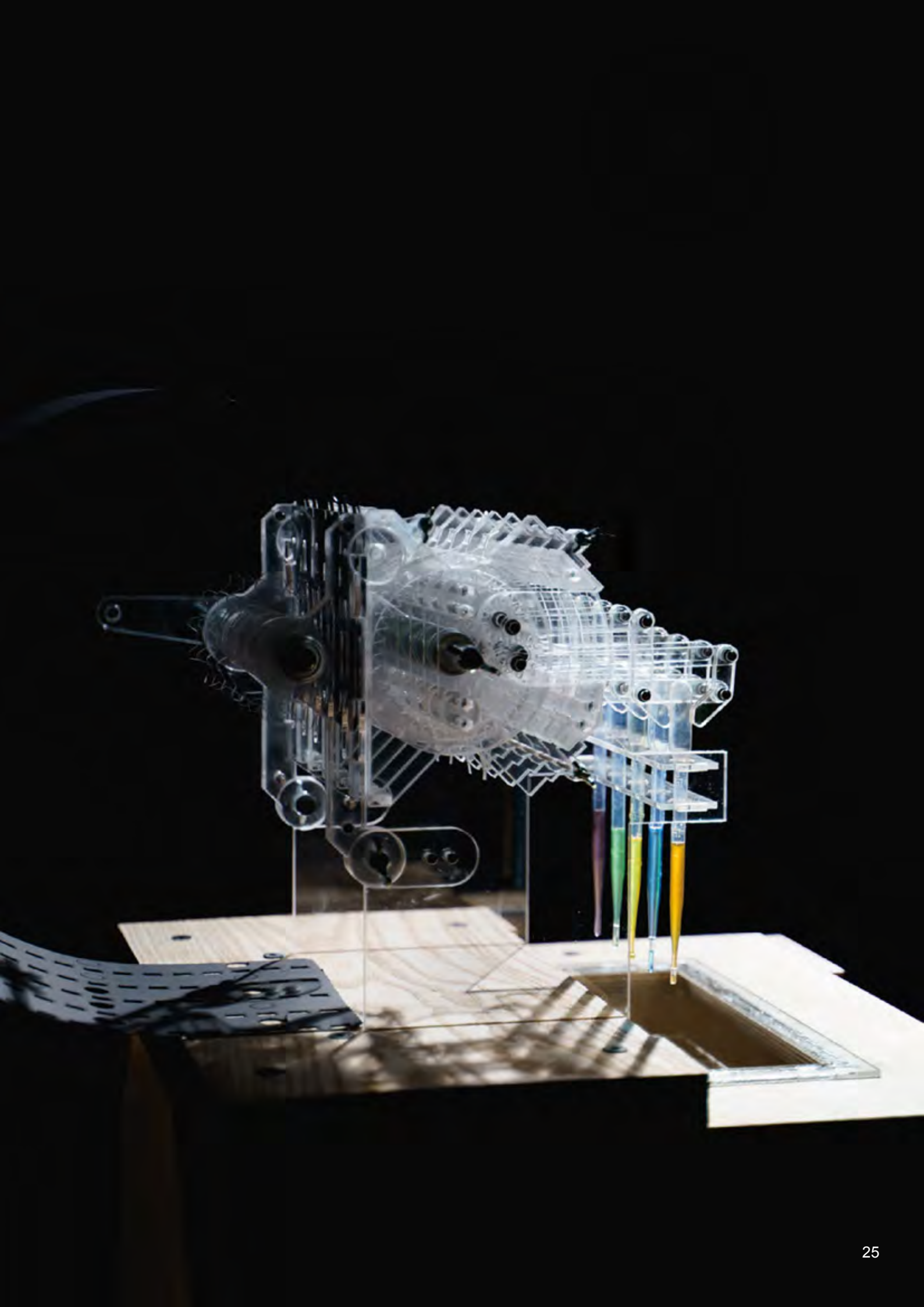


Isometric Explosion Diagram



One Channel Module

The primary mechanism centers around the interplay of a crank, gears, and a paper trigger. Each hole in the notepaper compels the teeth on the notepaper gear to engage with it, causing a 1/5 rotation. This 1:5 ratio between the notepaper gear and the crank gears results in a full revolution of the crank, which, in turn, exerts pressure on the pipette. Consequently, each notation on the notepaper precipitates a single droplet of aromatic colored oil.



SILVERWEAR

An articulated, morphable bracelet that transforms into a fork for waste-free on-the-go eating. This design concept leverages the tension of an internal ligature to move interlocking links into a stiff, rigid form for eating, and a mechanism to relax this tension to allow the bracelet to curve around the wrist when at rest.



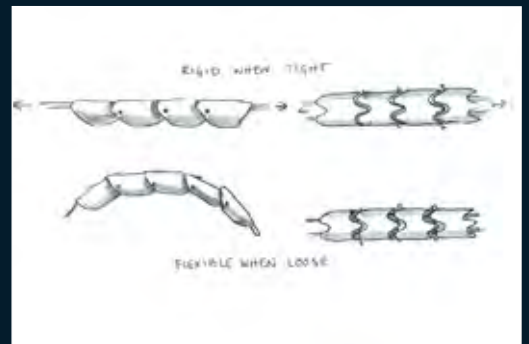
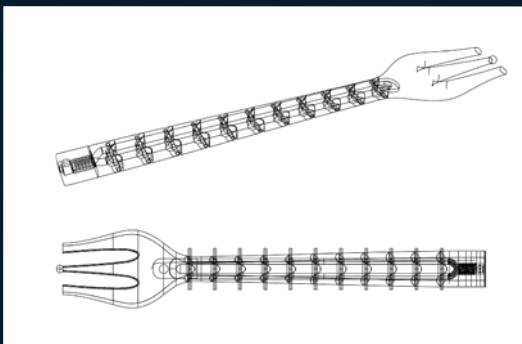
.01

end cap screw adds tension to internal cording to constrict joint motion and create a stiff shape for eating



.02

when tension is relaxed, hinged joints allow the bracelet to curve around the wrist and the centre tine to lock into a ball clasp



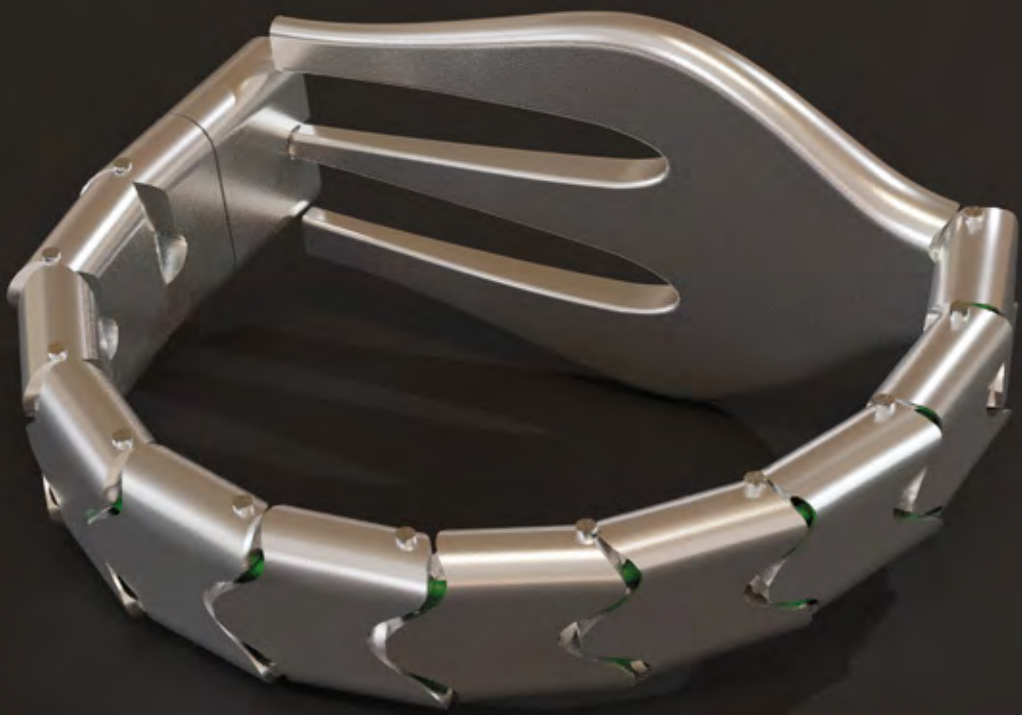
Elizabeth Lee

Elizabeth is a designer interested in objects and experiences that help us live more joyfully and frugally on this planet. After studying psychology and linguistics at Columbia University, she began her career exploring how symbols, images and cultural patterns affect decision making as a brand strategist. A personal conviction that society must change to respond to climate crisis led her to pursue further education in sustainable design at Pratt Institute before joining the Royal College of Art and Imperial College.

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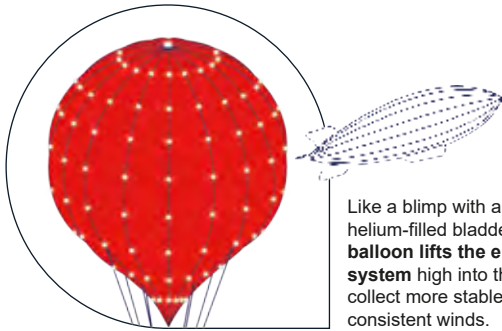
Imperial College
London



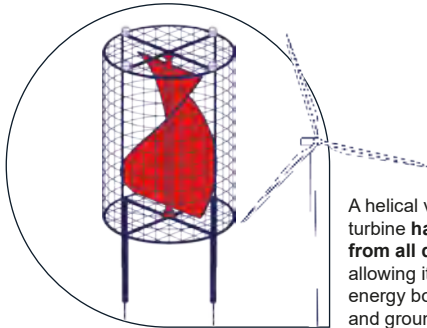


BLUE SKY COMMENDATION AWARD

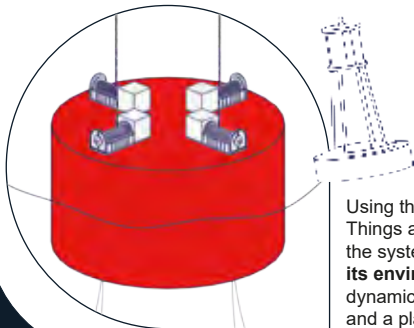
energy
BALOONS



Like a blimp with a helium-filled bladder, the **balloon lifts the entire system** high into the air to collect more stable and consistent winds.



A helical vertical axis turbine **harvests winds from all directions** allowing it to generate energy both at full height and ground level.



Using the Internet of Things and smart sensors, the system **responds to its environment**, creating dynamic vertical movement and a playful show of light.

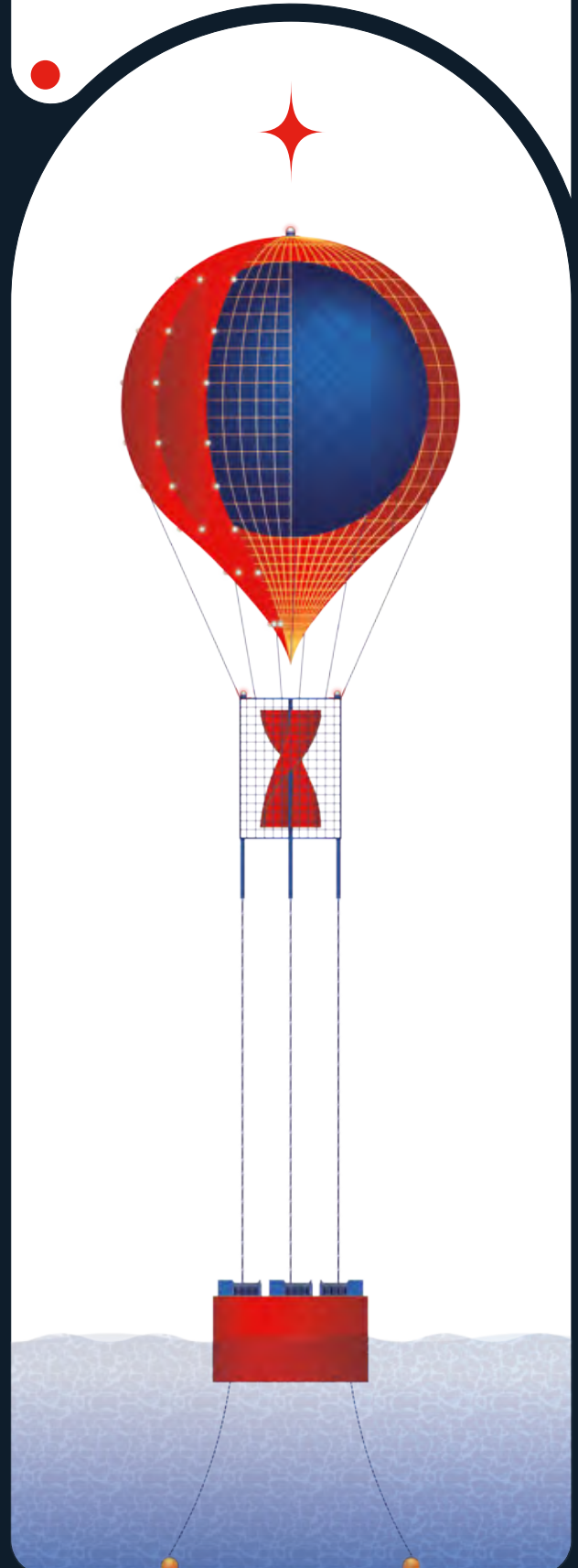


"Energy Balloons" is designed by Laura Janicka, a recently graduated Master of Architecture student from the University of Salford. The project expands on her master thesis research investigating fuel poverty and creating surplus in areas of scarcity.

© I_janicka
✉ laura_janicka@outlook.com

WHAT IS IT?

The project reimagines the airspace of man-made waterways by introducing **lighter-than-air wind energy generation balloons** distributed along their banks; harvesting more reliable and stronger winds at high altitudes.



DRAWINGS NOT TO SCALE

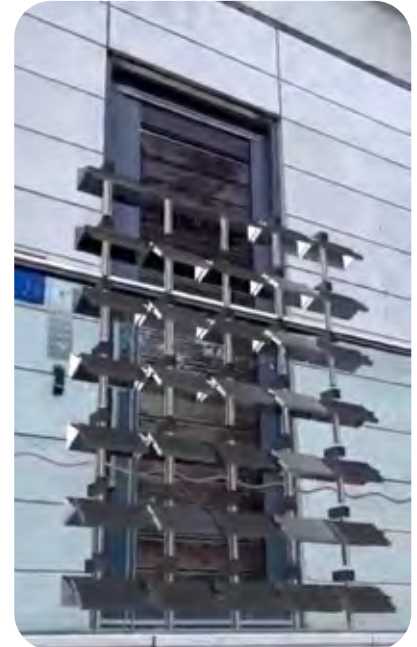




Kinetic Solar Window Blinds

A kinetic solar shading solution, merging art and efficiency.

Our latest project, the "Kinetic Solar Window Blinds", is a manifestation of this philosophy. It is a **beautiful interplay** between energy efficiency, interactive design, and a commitment to sustainability. By combining the elegance of window blinds with the practicality of solar panels, we have created a system that not only harnesses renewable energy but also provides **dynamic light control** and a **mesmerizing light show feature**. This design embodies our vision of **enhancing everyday experiences** while **contributing positively to the environment**.



Technical Development

The blinds consist of tiles made from solar panels, innovatively **employing kinetic principles** to adjust their positioning for optimal solar exposure. This maximisation of energy efficiency is made possible through **machine learning algorithms** and light sensors, ensuring the blinds autonomously adapt to the sun's position.

Preliminary results show that our original Solar Tile blinds, designed for different target markets, are capable of producing significant amounts of energy over the course of a year. For example, the Solar Tile blinds, covering an area of **450m²** in London, can generate up to **43,510 kWh/year**. Enough to power **16 households (UK)** a year!



Aesthetic Appeal

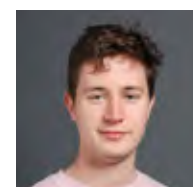
Our original Solar Tile Blinds is intended for **industrial clients**, particularly buildings with large window surfaces. They draw inspiration from American-Israeli artist Daniel Rozin's mechanical mirrors, these blinds present a grid of solar panel tiles that can rotate individually, creating a **mesmerising, pixellated art display**.

Both designs are controllable via a bespoke app, which offers the user the ability to manually adjust the blinds and access real-time data on energy production.

The Designers

"As a team of forward-thinking designers and engineers, we have always been driven by a desire to **intertwine the practical with the aesthetic**, the functional with the delightful. Our past works are distinguished by this unique blend, ranging from small-scale consumer products to comprehensive architectural solutions. We believe that the objects and systems we interact with daily should not only serve their intended purpose but also **enrich our lives through innovative design and interactive experiences.**"

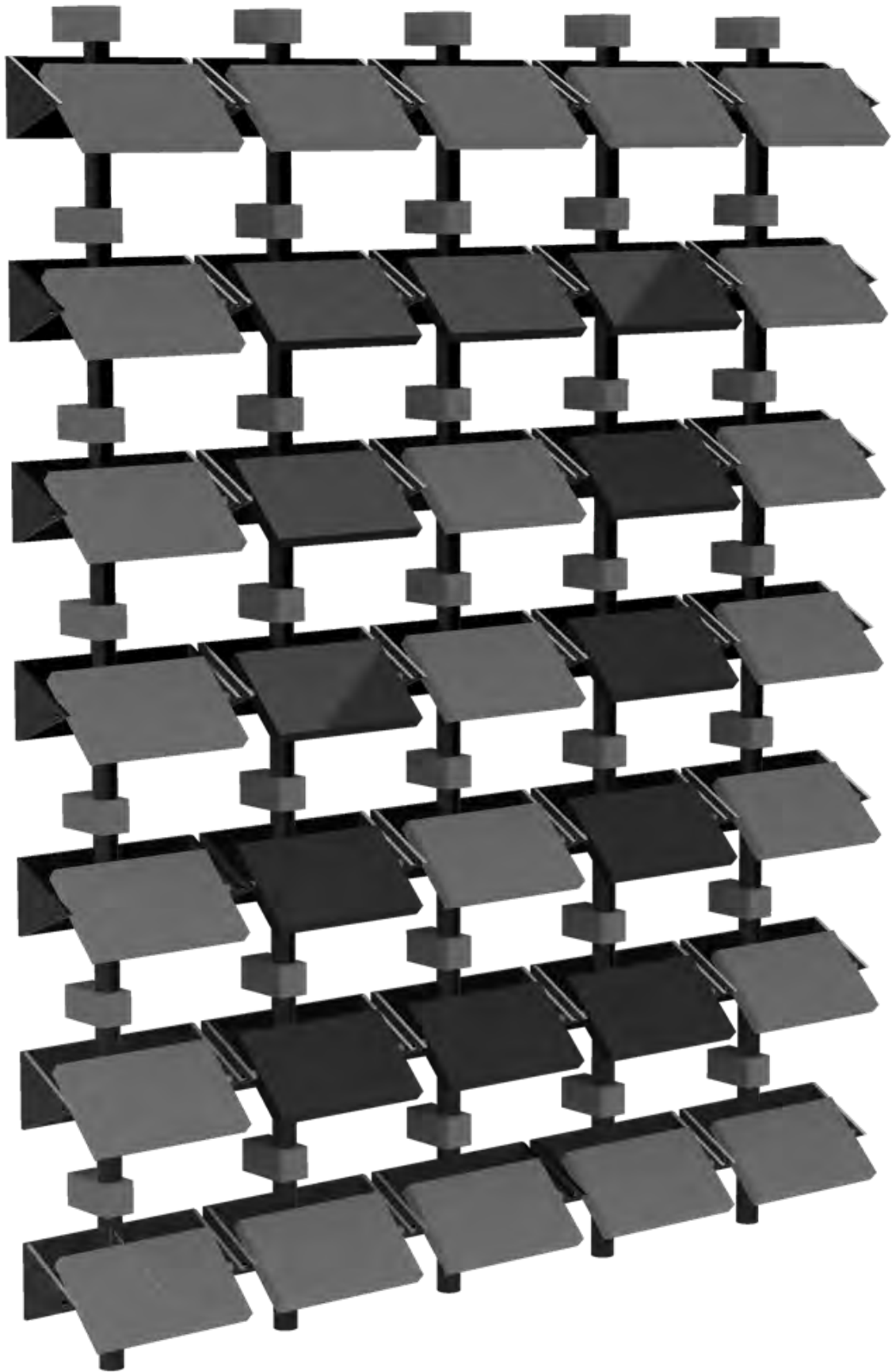
Stefan and Freddie are Design Engineering students at the Dyson School of Design Engineering. A degree that combines both design thinking and traditional engineering. Their research interests include **IoT, Physical Computing** and **creating a sustainable future**.



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CYBER PHYSICAL SYSTEMS

“The MA/MSc in Innovation Design Engineering (IDE) is a joint programme between the Royal College of Art and Imperial College London that spans over 40 years. Cyber Physical Systems is a 5 week module taken by the first year students on IDE along with visiting students from around the world on the Global Innovation Design Programme. The students come from a wide range of educational backgrounds, with a minority having encountered technical skills like electronics and coding in previous degrees and most being entirely new to it. Over the module they learn how to work with machine learning and build interactive systems, culminating in a group project implementing a kinetic, interactive object incorporating machine learning. The Design Education Trust has been an excellent supporter of our students, providing them with motivation and context for their projects along with enabling them to take risks trying new materials and fabrication techniques.”

Dr Rebecca Stewart, Senior Lecturer & Module Lead IDE
www.imperial.ac.uk/design-engineering/study/ide/



COTE

Nowadays, people are accustomed to communicating through digital media. There is, however, a gap between digital and analogue that digital cannot fill in. So, we visualized the own value of analogue interaction, drawing inspiration from the Korean expression '대화가 꽃피다', which translates to 'Blooming the conversation'. Three small flowers bloom when people initiate conversations, forming a single large flower.

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FROM CALM TO CHAOS

'From Calm to Chaos,' is a kinetic sculpture that embodies the spectrum of emotions in today's frantic world. Responding to hand gestures, the double pendulum's erratic movement mirrors life's chaos, prompting a call for viewers to adopt stillness as a radical response and practice mindfulness amid perpetual flux.

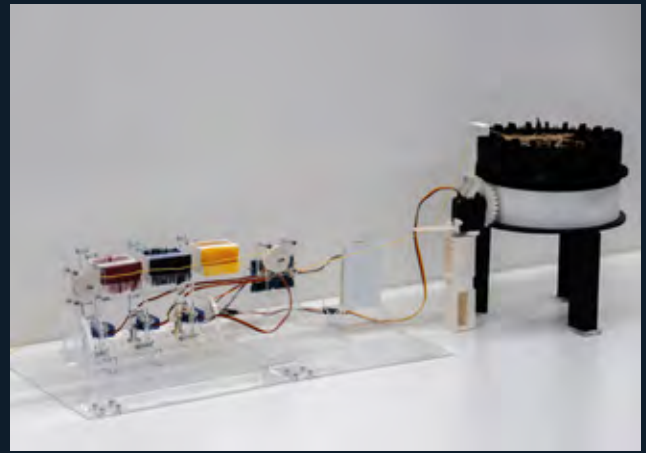
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FINDING YOUR BALANCE (FYB)

The cyber-physical system 'Finding your balance (FYB)' is an interactive game that comedically simulates the daily experience of emotional ups and downs. With 2 parts running in parallel, FYB is composed of an algorithm-controlled ball balancing system symbolizing daily emotional turbulence, and a gesture-controlled robot arm that displays emotional movements according to the changes in the player's facial expressions.

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 Yiran Lin | yiran.lin23@imperial.ac.uk



THE THREADS OF MOIRAI - KNITTING YOUR EXPRESSIONS

"The Threads of Moirai - Knitting your Expressions" is an interactive machine that blends tradition and technology. Inspired by circular knitting machines, it creates a dynamic knit by dyeing the thread in real-time according to facial gestures. The resulting knit is a physical record of the captured expressions of the user.

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 Juan Pablo Guzman Alvarez | 10036461@network.rca.ac.uk
 Xi Wang | xwang74@pratt.edu



PORCUPINE

'Porcupine investigates a physical manifestation of security. We live in a society that is evermore controlled by fear. We explored how such an emotion is embodied in nature and within societies. Drawing inspiration from the porcupine's self-defence mechanisms, we created a garment that detects aggression and mimics the animal's quills. The device seeks to signal awareness and protect the wearer, not to harm.

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 Yi Ting | IG: [@yi.tingggg](https://www.instagram.com/@yi.tingggg)



MUDRAS IN MOTION

This project merges Bharatanatyam, a classical Indian dance known for expressive hand gestures, with technology. Using a camera system, the intricate mudras are captured and translated into symbolic representations displayed through the sculpture. The concept envisions a future where technology and humanity coalesce seamlessly. It creatively juxtaposes the elegance of the natural world (Peacock) with the grace of this dance.

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 Hsin-Tzu Chang (Cindy) | cindychang.0704@gmail.com
 Prerna Singh | applications.prerna.singh@gmail.com
 Sonia Rettenmaier | sonia.rett@pm.me

The DesignEducation Trust

The Design Education Trust promotes young imaginations for influencing future designs of the 'everyday' world.

The Objectives of the Charity are to promote education in the field of the creative disciplines by assisting worthy aspiring practitioners to achieve their potential for the benefit of the whole. This role includes provision of grants to students.

Charitable activity has included: 'Design Awards' for expenses of final year projects, 'Exhibition Awards' to support student exhibitions of work, '4D Design Workshops', and recently a major initiative of the INTERPLAY 'Kinetic Design' Competition to encourage the design of 'elegant and playful' motion.

"Everything needs to be well designed but a foremost purpose of 'activist' creative design is to lift the spirits of people through 'enjoyment' of beautiful objects, services and systems within the everyday world.

Alec Robertson DET Trustee

INTERPLAY
INTERPLAY
INTERPLAY
INTERPLAY

The built environment is becoming ever more dynamic as new technologies, such as smart materials and robotics, enable it to be more responsive and adaptable to people using everyday things.

INTERPLAY is aimed at encouraging the design of 'elegant and playful motion' as well as function movement into the built environment for making it more enjoyable for people to live in.

This Exhibition of kinetic designs has a variety of ideas showing 'motion' as a valuable attribute to inspire creativity within designs.

PUBLIC EVENTS PROGRAMME:

- Symposium: Thursday 7th December 9 – 18hrs (only by invitation)
- Cyber Physical System Guided Tour: Friday 8th December (4pm- 5pm)
- Drop-in Family Workshop: Saturday 9th December (10:30 – 12:30hrs)

CREDITS & ACKNOWLEDGEMENTS

INTERPLAY

DET INTERPLAY DIRECTOR
Alec Robertson FRSA

EXHIBITION CURATION

Tere Chad MRSS

SPECIAL VOLUNTEERS

Niki-Marie Jansson (Architecture)
Tere Chad (Sculpture)

JUDGES

JASON BRUGES STUDIOS: Jason Bruges
KINETICA MUSEUM: Dianne Harris
ROYAL SOCIETY OF SCULPTORS:
David Worthington
4D-DYNAMICS.NET: Alec Robertson
ARTS-PSYCHOTHERAPIST: Rosemarie Fordham

MEDIA

Diana Todd, ZEALOUS.CO
Dianne Harris, KINETICA MUSEUM
TOR NEW MEDIA (Web design).
UNITED GRAPHICS & INSTANT PRINT (print)
FOUR POINT PICTURE COMPANY

ROYAL SOCIETY OF SCULPTORS

Caroline Worthington, Lorraine Pajak

CYBER-PHYSICAL SYSTEMS

Professor Gareth Laudon, Stephen Green,
Rebecca Stuart

EXHIBITING STUDENTS:

COTE: Jinhak Lee, Chanwoo Lee, Poh Asdathorn
FROM CALM TO CHAOS: Doruk Tan Ozturk, Keerthi Pradaa Balajee, Chaewon Lee
FINDING YOUR BALANCE (FYB): Jinhui Zhou, Siobhan Yeow, Yiran Lin
THE THREADS OF MOIRAI - KNITTING YOUR EXPRESSIONS: Vacha Patel, Juan Pablo Guzmán Álvarez, Xi Wang
PORCUPINE: Emile Meunier, Benedikt Huber, Tonghe Wang, Yi Ting
MUDRAS IN MOTION: Harith Wilson, Hsin-Tzu Chang (Cindy)
Perna Singh, Sonia Rettenmaier

INTERPLAY EXHIBITORS

THE EIGHT MAJOR AWARD EXHIBITS

UNCANNY DYNAMICS

Lead: Matthew Woodham

BEAM

Lead: Xin Wen

Team: Wei Zhang, Luling Wang, JJ Agcaoili

PARAMETRIC PAPER

Lead: Felix Malinder

Team: Ben Irons, Benedict Starling

SPECTRAL OBJECTS

Lead: Maria Nava

Team: Roy Brandys

FLOPOTO

Lead: Ramona Kingdom

Team: Ahmet Urfali, Aliza Kabani, Anna Van Gucht, Arina Pavlova, Hana Molokhia, Mengyuan Chen, Ramona Kingdom, Sebastian Eisen

KINETIC WAVES

Lead: Mara Ungurean

Team: Jacob Deakin

URBAN ELEGANCE

Lead: Joseph Jones

Team: Holly Souza-Newman

THE BIG ELECTRON 2.0

Lead: Nandhit Reddy Vasanth

Team: Sophie Bryer, Nina Gonzalez-Park

THE SIX COMMENDATION AWARD EXHIBITS

KINETIC SOLAR WINDOW BLINDS

Lead: Freddie Nicholson

Team: Stefan Saar

HYBRID RESONANCE

Lead: Teodora Rava

Team: Malou Van Der Veld

SILVERWEAR

Lead: Elizabeth Lee

IDENTISCENTORY

Lead: Jr-Yun Lin (Karen)

Team: Jaewon You

BREATH OF TRANQUILITY

Lead: Sojung Park

Team: Hong Seok Lee

ENERGY BALLOONS

Lead: Laura Janicka

The Trustee Board of the DESIGN EDUCATION TRUST would like to thank all the above contributors for their participation in its INTERPLAY charitable venture.



INTERPLAY
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INTERPLAY

'The Design Education Trust' is the operational name of the
WES Lunn Design Education Trust UK registered charity number 1159462.