PORTFOLIO

FLOW

YUHUI QI

watercolour painting dipped in water

FLOW

0 Map of Smells

Invisible flow matters.

1 Care Response Machine

(Group work)

Flow saves, and kills too.

2 Brighton Pier Geography Researchbook

(Group work)

When flow makes miracle.

3 Haunting Parasite

Greed flows out of life.

4 Tidal Studio

Term1 main project

Time flows before you know.

5 Tate Modern Structure Researchbook

(Group work)

History flows in its way.

6 Immortal Gallery

Art flows endlessly, like life does.

7 Night Gallery

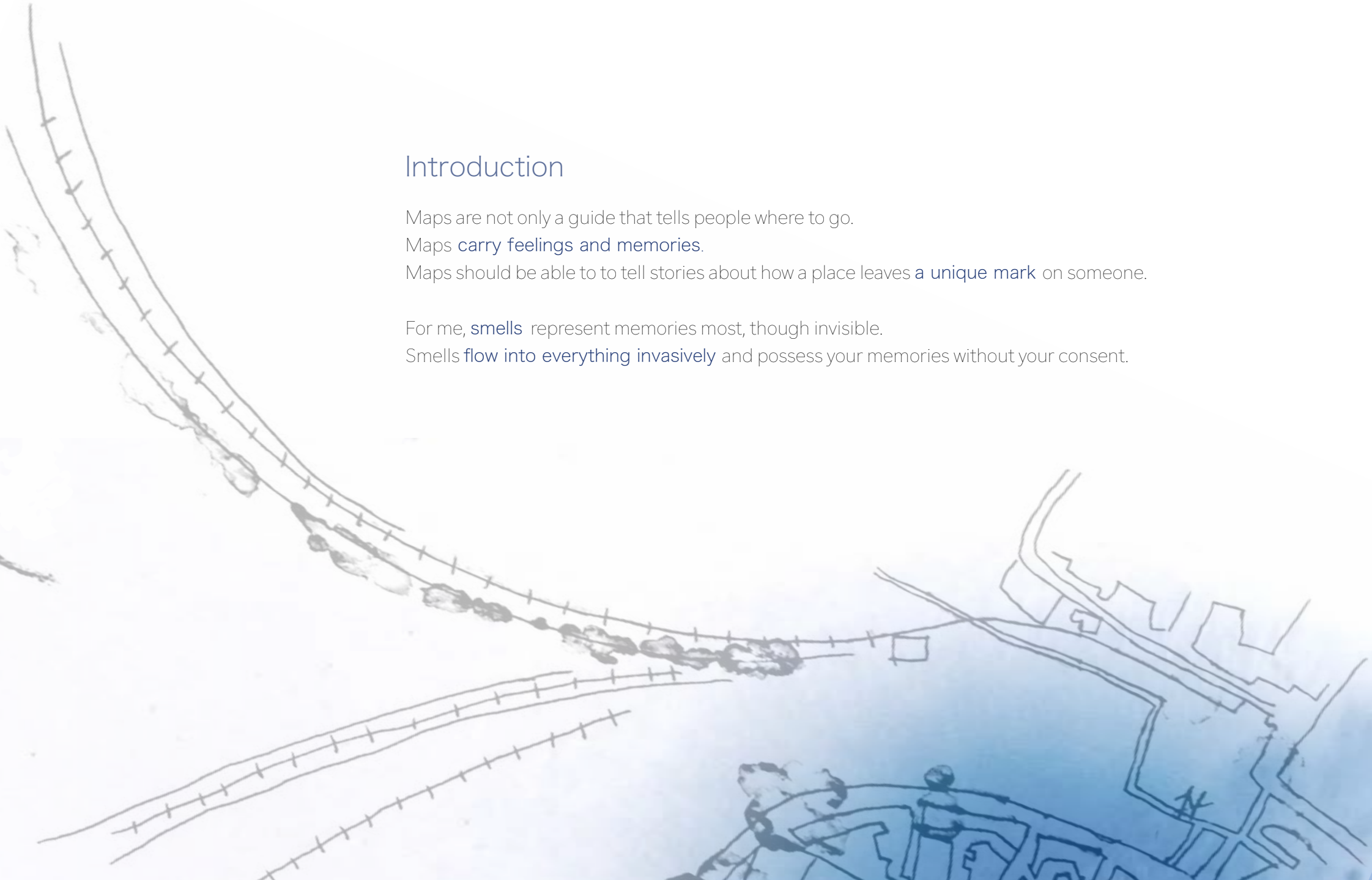
Term2 main project

Flow implies life.

Introduction

Maps are not only a guide that tells people where to go.
Maps carry feelings and memories.
Maps should be able to to tell stories about how a place leaves a unique mark on someone.

For me, smells represent memories most, though invisible.
Smells flow into everything invasively and possess your memories without your consent.

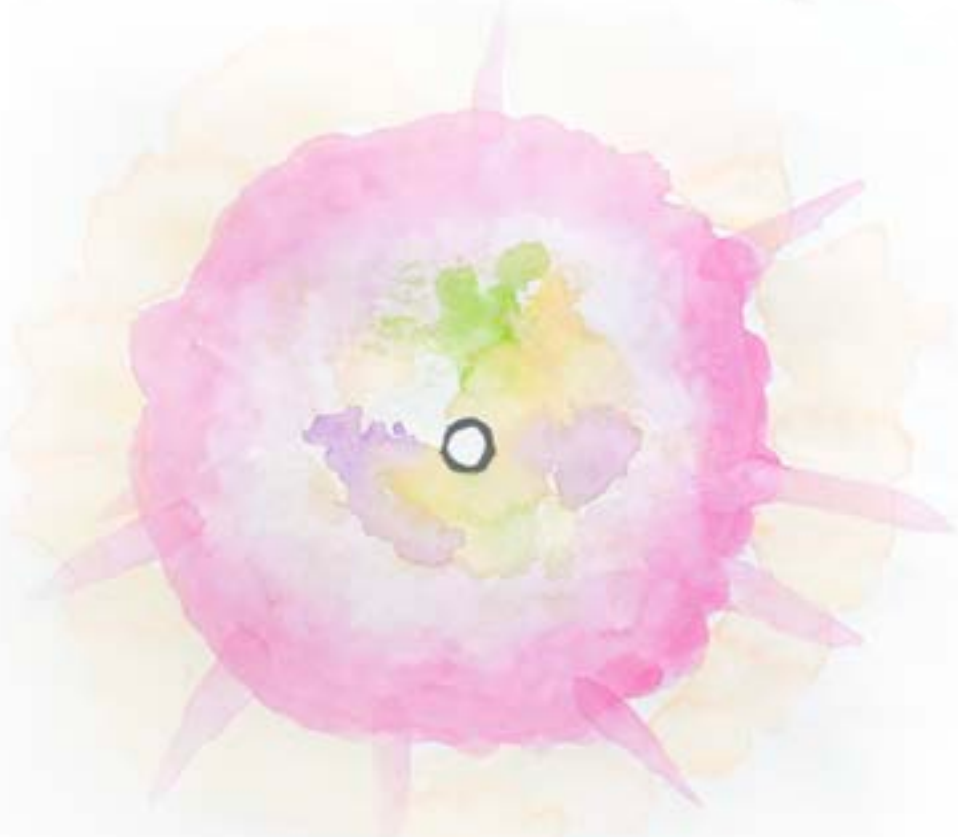


Study of Smells

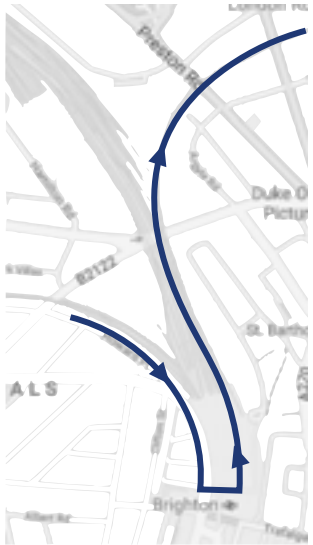
Smells invade into each other,

and into people.

Smells arouse feelings:



Map Transcription



Screenshot of Googlemap

Map Record

5 typical days in Brighton

Introduction

People might lie when being asked a question, but their first reaction to a scene is always honest. Do you really care about life and environment? You can't disguise anymore when a real life's fate is in your hand right in front of you.

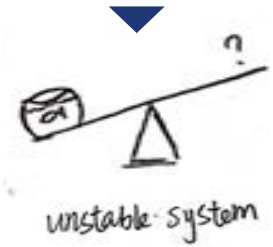
Artwork Research

Bubble Wrap Transformed into Mini
Goldfish Bowls

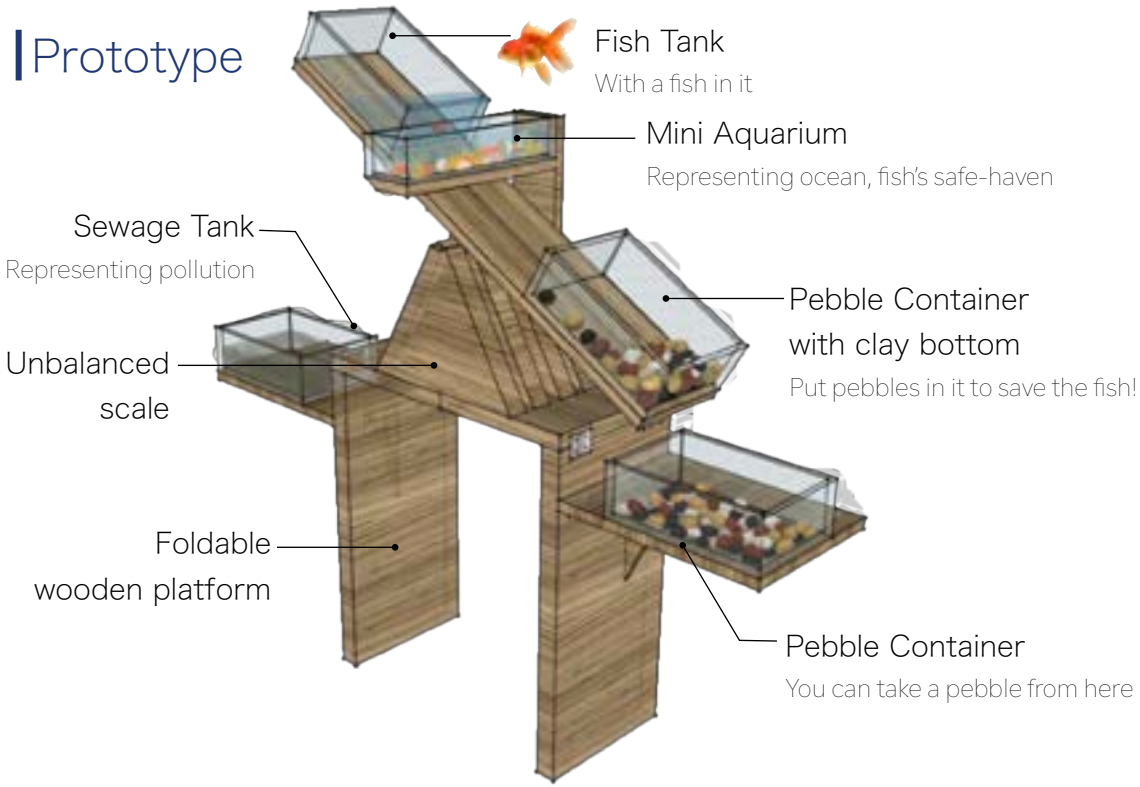
Inspiration & Concept

Cup on the edge of a table

Fish tank on the edge of a table



Prototype



Materials Study

Clay

- Melts in rain
- Vulnerable as life

Iron

- Easily get rusted
- Used as Hinges
- Unpredictably unstable

Rope/Fishing net

- Symbolises excessing fishing
- Ironically biodegradable

Plastic

- Lasts long
- Keeps unbalanced/risky

Interaction

Commuters would interact with the device as such:

Visual trigger:

The intriguing aspect of the device will draw some of the commuters in, out of curiosity, to get a more complete understanding of the object.

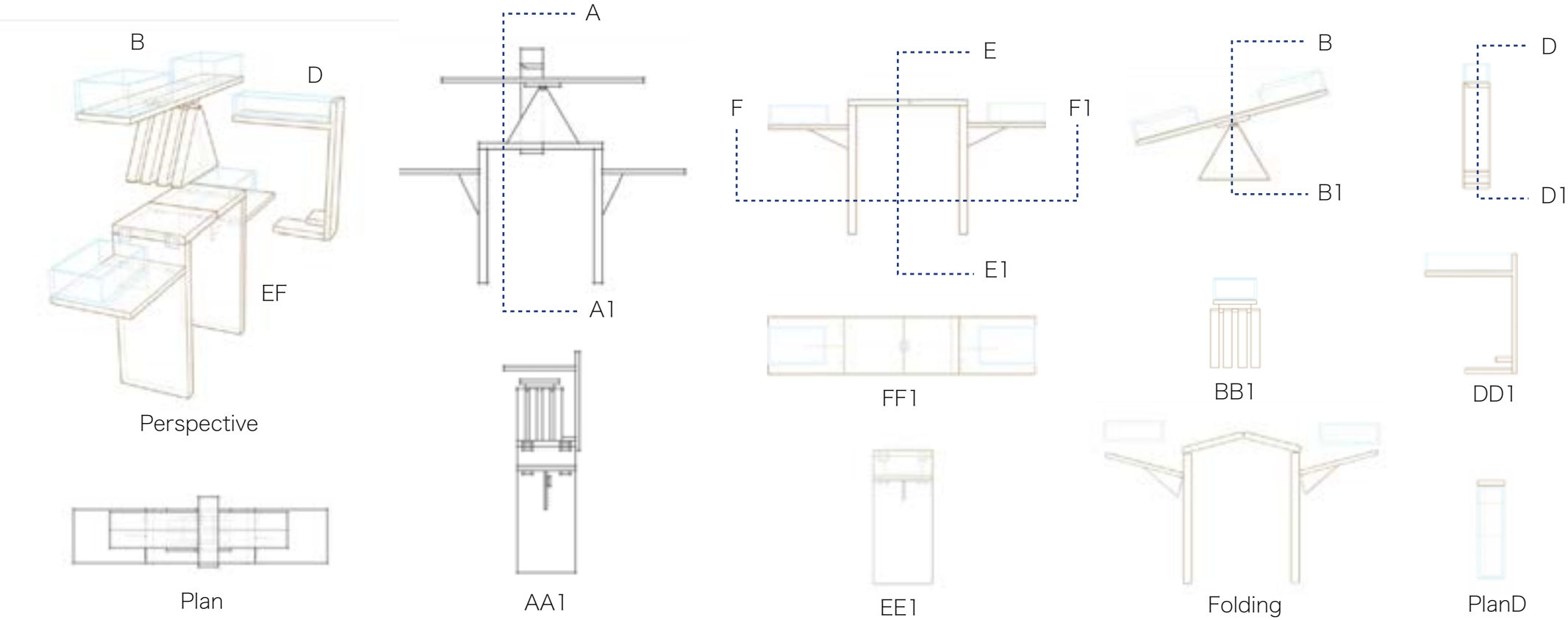
Surprise:

Much to their surprise, they would notice a live fish inside the tank which is bound to create either compassion or controversy.

Action:

The user would then take action; either balance the fish with the pebbles so it would not slip down to the polluted tank or simply leave in confusion.

Sections (1:10@A1)



Device Making Process






Function

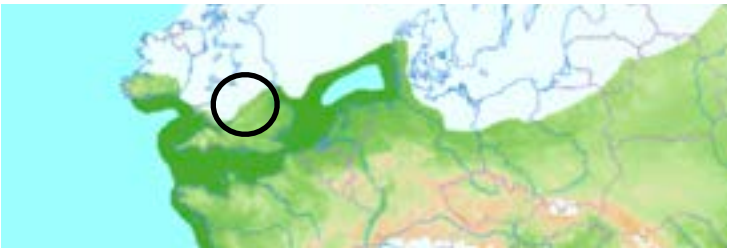
If you drop a pebble…

Brighton Pier Geography Research book

(Group work with Emma Page, Joonyoung Choi, Junxian Liang, Siwei Chen and Naiwen Zhang)

Geographic History

Pre-history



Origin of English Channel

Britain and Ireland were part of continental Europe around 10,000 years ago. They were connected by an anticline known at Weald-Artios. The land mass was separated by glacial lake floods that breached the anticline. By the end of the glacial period sea levels rose and covered any remaining land connections between England and Europe.

The grains on the cliff of the Southern coastline of England match with the ones on the Northern coastline of France.

9th Century

Domesday Book (1086)

The first geographical history of Brighton was recorded in the Domesday book, which was published in 1086. They recorded the following geographical advantages of Brighton.

- Flat ground behind the beach provides shelter for boats.
- Downs meet the sea, providing easy valley routes.
- Protected from the force of the channel by an offshore bar of shale.

16th Century

Polluted London

The effects various pollutants within London left the residents in bad health. This lead to an increase of people traveling from London to Brighton to escape from the bad pollution and receive the health benefits of the clean Brighton air.

Smoke from burning sea coal.

19th Century

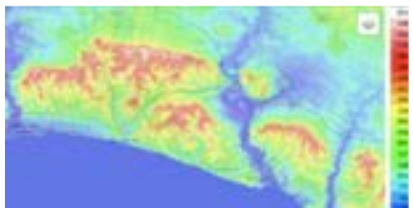
London's population rapidly grew and became the world's most crowded city.
The population growth put strain on London's fresh water supply, sewage, and waste disposal
The river Thames was polluted with sewage and dead animals, creating an overwhelming smell that deterred people from going outside.

20th Century

The introduction of vehicles into the city created smog that went into people's houses.

Topography

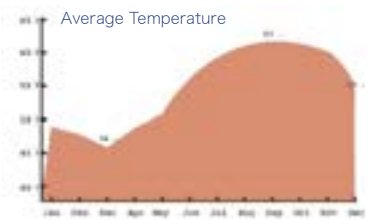
Minimum elevation: 0ft
Maximum elevation: 755ft
Average elevation: 220ft



Brighton is encircled by the South Down hills, with the English channel on the south. The built-up area of the city today extends to the eastern Coastal Plain and to the north of the minor valley of the South Downs.

The main road running through Brighton was constructed between a valley. The railway line running from London to Brighton was hard to construct because of the many hills surrounding the city.

Climate



The climate of Brighton is affected by the proximity to the ocean.
Autumn and Winter: The ocean raises the mean temperature because the ocean is warmer than the land.
Spring and Summer: The ocean decreases the mean temperature because the ocean is colder than the land.

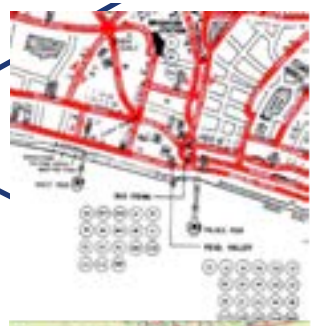
The wettest seasons in Brighton runs from September to February. December is the wettest month, with a 37% chance of a given day being wet. The driest month is July, with an 18% chance of rain.

Transport

Palace Pier 1899

The Palace pier finally opened on May 1899. Perfectly situated at the end of the Old Stein, the pier attracted crowds of tourists. The pier received two millions visitors a year. It popularity was further enhanced by the addition of a theatre in 1901, a band stand, and a winter garden.

Transportation Map 1962 - 2019



Comparing the 1962 and 2019 bus route map, the stops near Brighton Pier are not more dispersed, but the total number of bus lines has not changed much.

Attractions

The seafront from Brighton Pier to the peace statue has undergone significant improvements and development over the last 10 years.

Around the West Pier is yet to be developed as part of the i360 attraction. This section of the seafront is the most visited and contains the majority of bars, nightclubs, restaurants and facilities as well as having gained the blue flag status for the quality of the beach and sea.

Beach Geology

Rocks within Brighton are sedimentary, and the South Downs that surround the city are formed of white chalk limestone and flint rubble. Brighton's beach is not sandy because the chalk is too soft and the flint is too hard. The chalk does not break down into sand, instead it forms into mud or is dissolved and washed away. The pebbles are formed from flint and then transported down the coastline by longshore drift. During low tide there is visible sand on the lower section of the beach, this is where the flint has eventually eroded.

Royal Pavilion 1815

In 1783, the Prince of Wales visited Brighton. Since then he regarded Brighton as his leisure resort. In 1815, the prince commissioned John Nash to build a palace (Royal Pavilion) for him in Brighton.

Brighton Station Opened 1840

Chain Pier 1822 - 1823

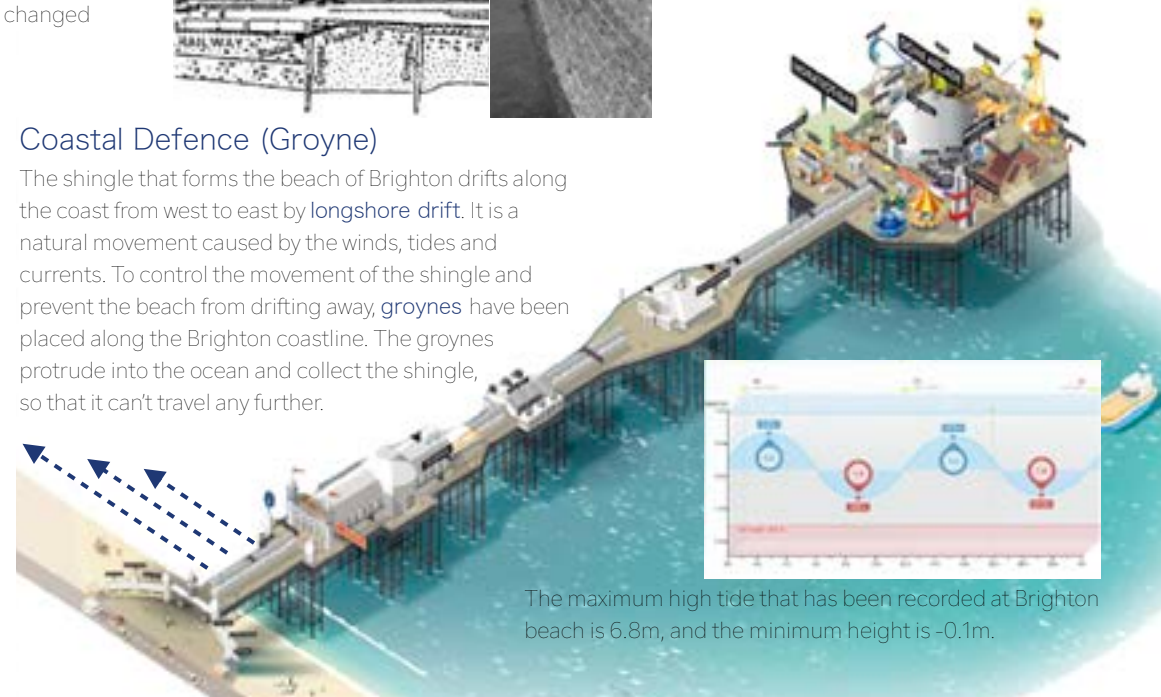
During the 19th century, Brighton needed a landing stage because there was no suitable place to build a harbour. However, the bad weather made it hard for boats to land and the pier lost its function.

Train from London to Brighton 1841

The railroad that opened in London in 1841 made travel to Brighton much easier. Resulting in an increase of visitors to Brighton, by 1860, 250,000 visitors came by train every year.

Coastal Defence (Groyne)

The shingle that forms the beach of Brighton drifts along the coast from west to east by longshore drift. It is a natural movement caused by the winds, tides and currents. To control the movement of the shingle and prevent the beach from drifting away, groynes have been placed along the Brighton coastline. The groynes protrude into the ocean and collect the shingle, so that it can't travel any further.



The maximum high tide that has been recorded at Brighton beach is 6.8m, and the minimum height is -0.1m.

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Images:

Picture 2:
"August 1, 1086 The Doomsday Book" Rick Long, todayinhostory.blog. Image, 2018. https://todayinhistory.blog/2018/08/01/august-1-1086-the-doomsday-book

Picture 3:
"August 1, 1086 The Doomsday Book" Rick Long, todayinhostory.blog. Image, 2018. https://todayinhistory.blog/2018/08/01/august-1-1086-the-doomsday-book

Picture 4:
"Appreciate Your Bikini: A Brief History Of Women's Swimwear." Kiri Picone, allthatsinteresting.com. Image, 2015. https://allthatsinteresting.com/history-of-womens-swimwear

Picture 5:
"Names on the Buses." history.buses.co.uk. Image, 2019. http://history.buses.co.uk/history/fleethist/420rr.htm

Picture 6:
"Built in 1813" Alan Hobden, mybrightonandhove.org.uk. Image, 2003. https://www.mybrightonandhove.org.uk/places/placesea/hobdens-baths/hobdens-baths

Picture 7:
"National Library of Scotland." maps.nls.uk. Image, 2019. https://maps.nls.uk/geo/explore/side-by-side/ #zoom=14&lat=50.8277&lon=-0.1386&layers=161&right=BingHyb

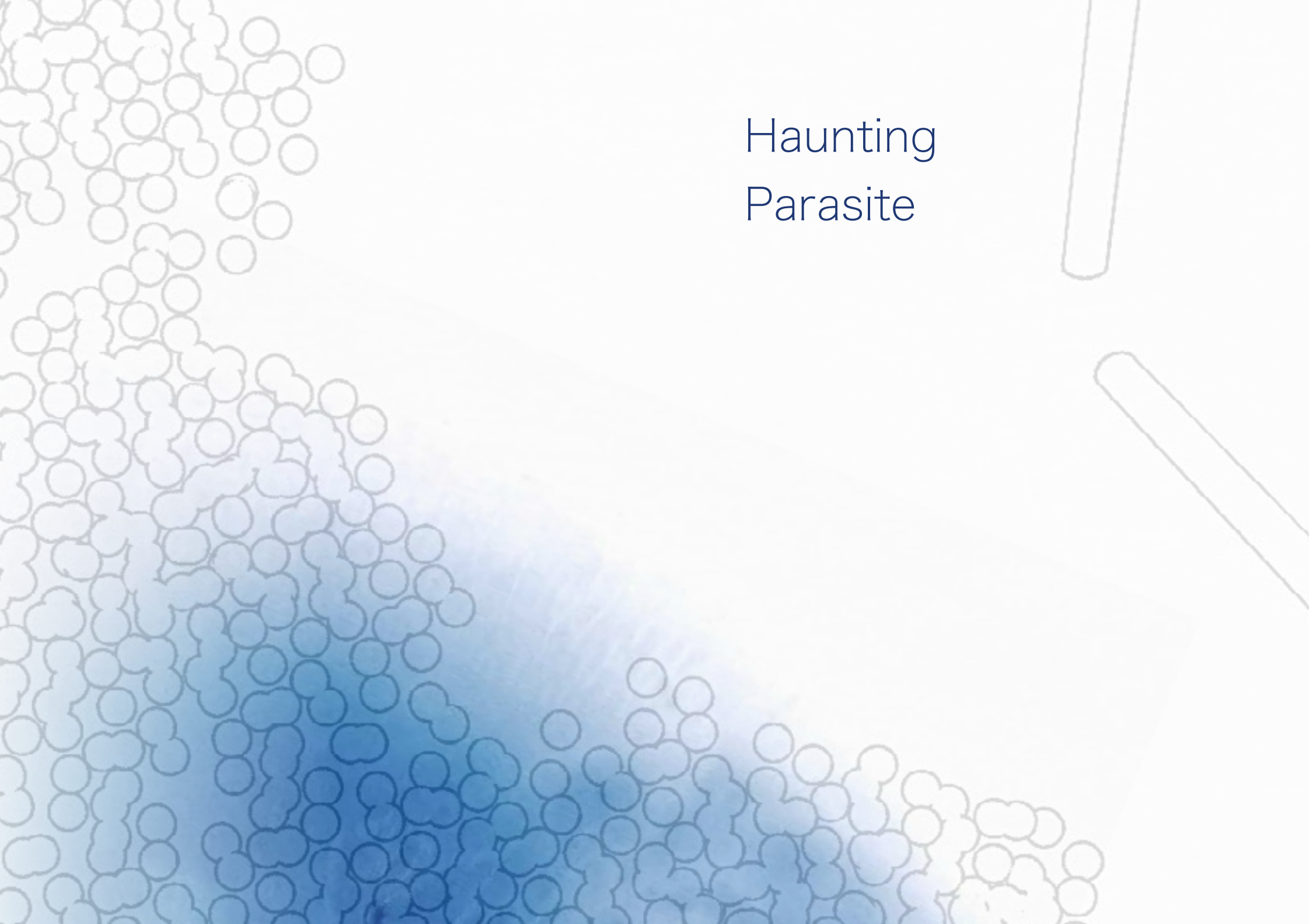
Picture 8 :
"National Library of Scotland." maps.nls.uk. Image, 2019. https://maps.nls.uk/geo/explore/side-by-side/ #zoom=14&lat=50.8277&lon=-0.1386&layers=161&right=BingHyb

Picture 10: Google maps (2019) no title [online] Available at: https://www.google.com/maps[Accessed 25.10.2019], Digimap https://digimap.edina.ac.uk/roam/map/os

Picture 11:
"J. Marchant's Map of Brighthelmstone c. 1815." D. Green, mybrightonandhove.org. Image, 2019. https:www.mybrightonandhove.org.uk/places/maps/maps-3

Picture 12 :
"Old Maps." mybrightonandhove.org.uk. Image, 2019. https://www.mybrightonandhove.org.uk/places/maps/ maps [Accessed 27.10.2019]

Picture 17 :
brightonpier.co.uk. Image, 2019. http://www.brightonpier.co.uk/



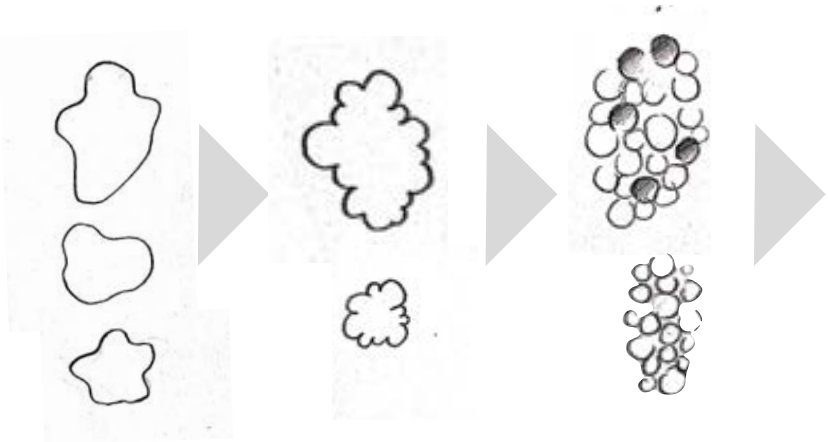
Haunting Parasite

Inspiration

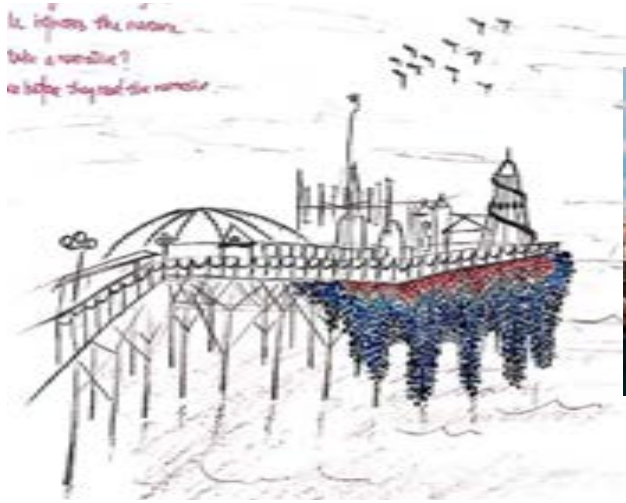
"History hides the fact that man is
the universal parasite…
Always taking, never giving."[2]

—— Michel Serres
<The Parasite>

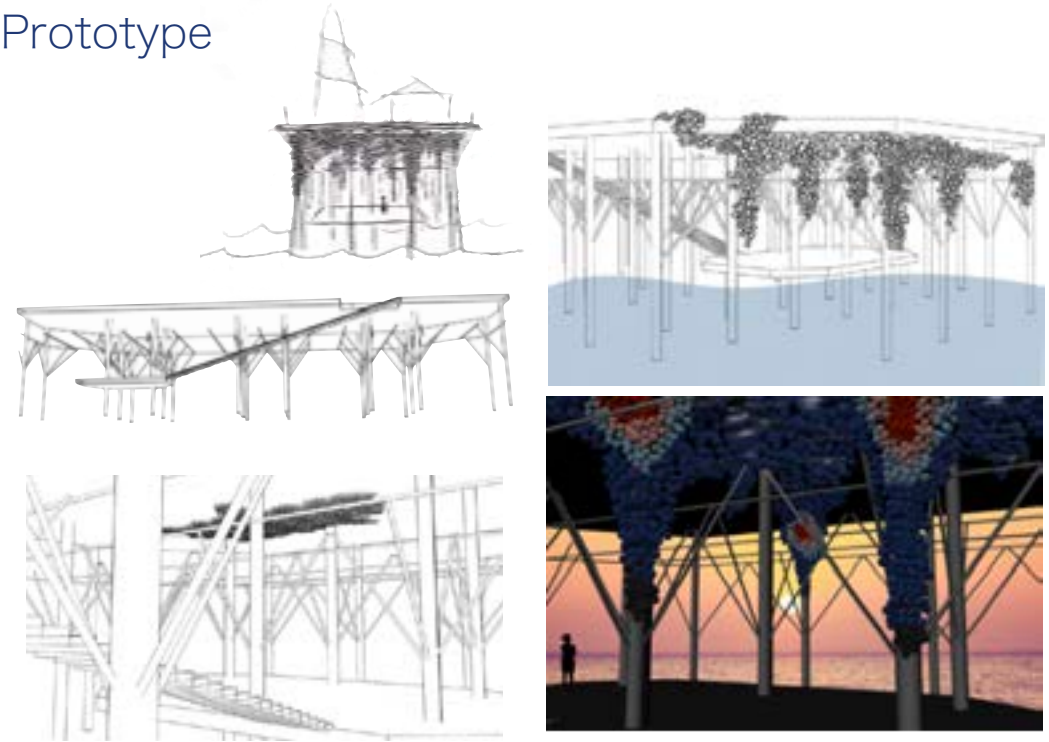
Sketches (flowing, work as group, out of space)



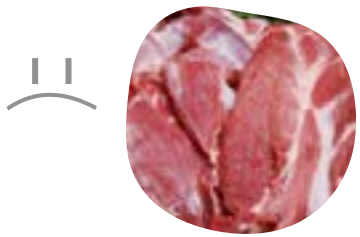
The pattern of real flesh gives the feeling of "living".



Prototype



Materials



Real flesh

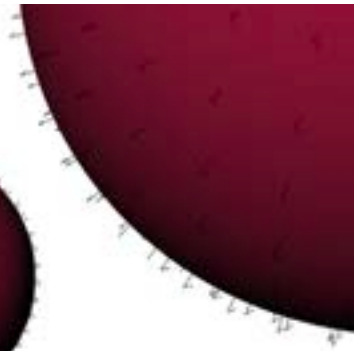
- Stunning, eye-catching, vivid;
- Not practical in a big amount.

Ocean balls

- Ironically made of plastic with the name "ocean balls";
- Ironically suits the amusement atmosphere at the pier with a dark essence;
- Look like living cells.

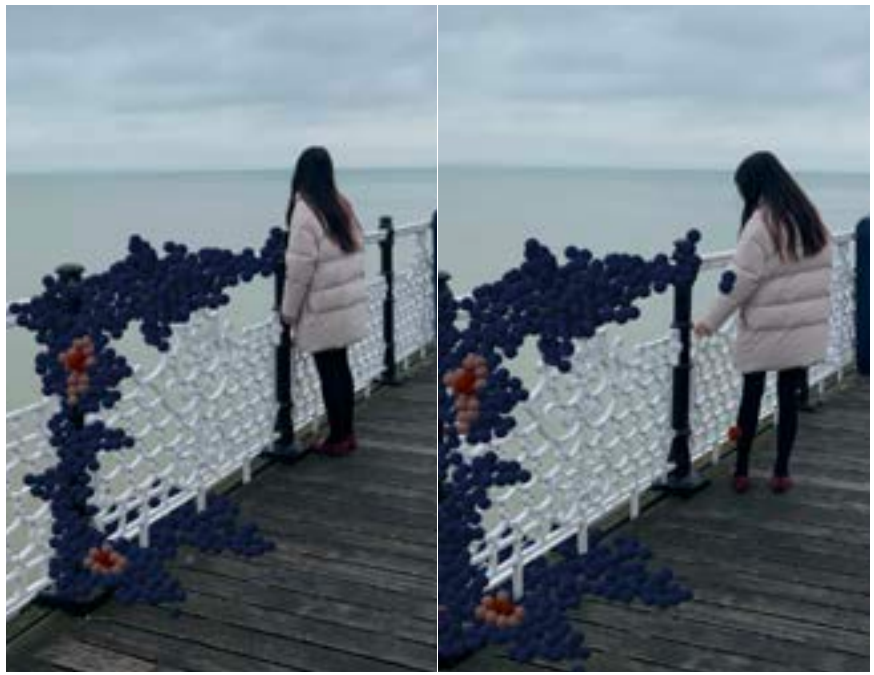
Study of seeds (Contagious)

Hooks on her cells (ocean balls) help the haunting parasite to breed too.

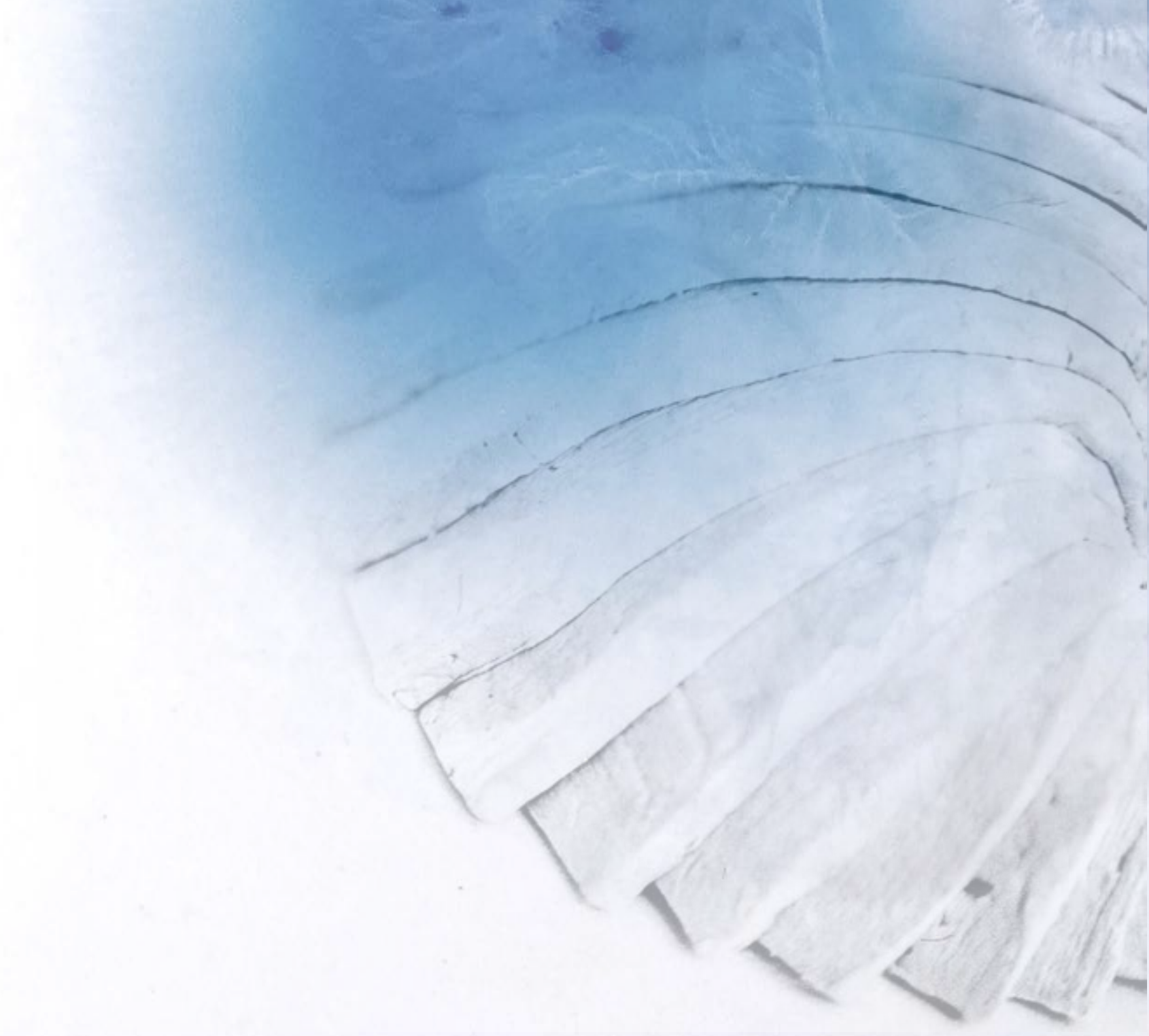


Cocklebur uses the small hooks on the seeds to attach on animals' fur and clothes in order to spread its seeds.

The parasite's seeds get attached to passers-by.



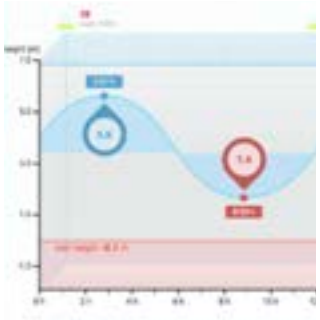
Tidal Studio



Intention & Manifesto

To create an unpredictable and challenging working environment for the artist due to the special natural condition on the seaside, in order to remind people how powerful nature is.

Inspirations



i.Sand writing

Words written on the sandy beach will be washed away by waves.

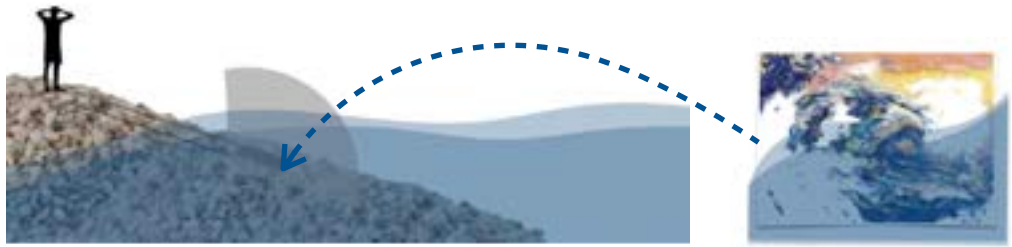
ii.Tidal change[1]

On average tide in Brighton goes up to around +5m and goes down to around -1m twice everyday. The highest point and the lowest point alternate at a time range of 12 hours.

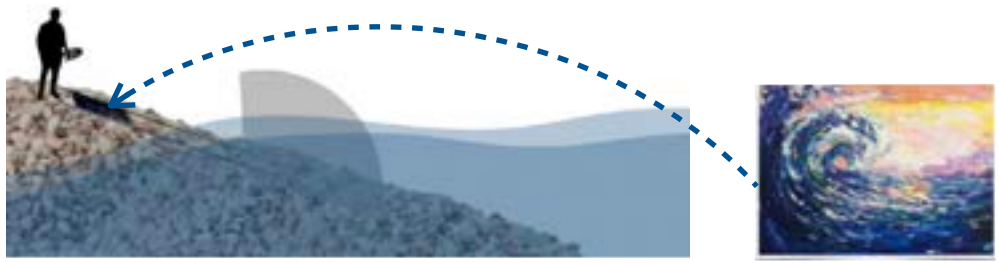
Initial design

The artist makes his artwork in a shelter (studio).

Rising tides swallow the studio.
The artist has to go out and the artwork is washed away.



Thus the artist has to push the artwork up before tides go up.



On the pier, humans make the decision.
In tidal studio, nature makes the decision.

[1]https://post.naver.com/viewer/postView.nhn?volumeNo=21924968&memberNo=1583161

Prototypes

Inspirations

i.Sea shell

The perfect Fibonacci sequence.

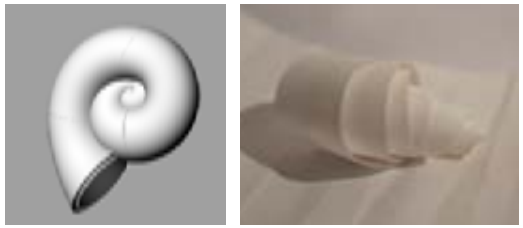
ii.Wave

Waves' stream-lined shape shows nature's power.

iii.Paper folding art[2]

To simulate the wave and the sea shell.

I. II.



Watercolour paper

III.

Watercolour paper

IV.

Watercolour paper

V.

Fabric, steel and clay

VI.

Watercolour paper

VII.

Clay

VII.

Clay

[2]Richard Sweeney, "We fold watercolour paper.", https://www.flickr.com/photos/richardsweeney/4757536692/in/photostream

Material

Prefab steel

- Strong, contemporary style;
- Doesn't react to the environmental change;
- Doesn't look natural.

Limestone

- The material from Brighton cliff;
- Looks natural;
- Difficult to build.

Concrete

(with steel structure)

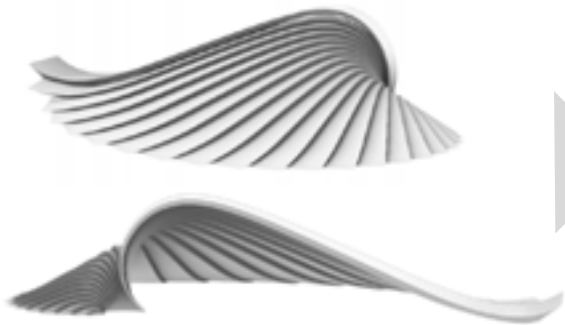
- Strong;
- Looks natural;
- The color change with the tides.

When the concrete is soaked, its color gets darker.

Digital models

Model 1

Model 2

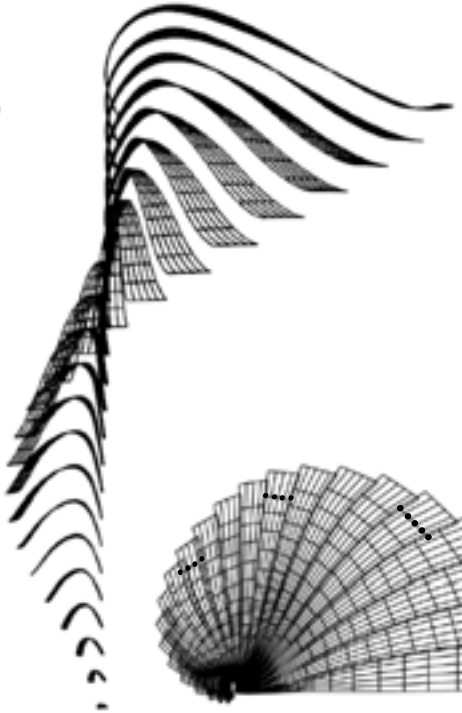


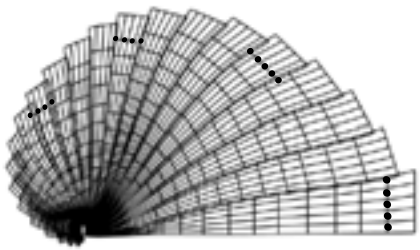
Final Model

Structure

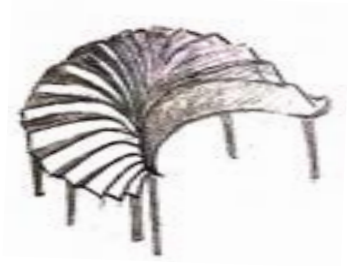
Concrete

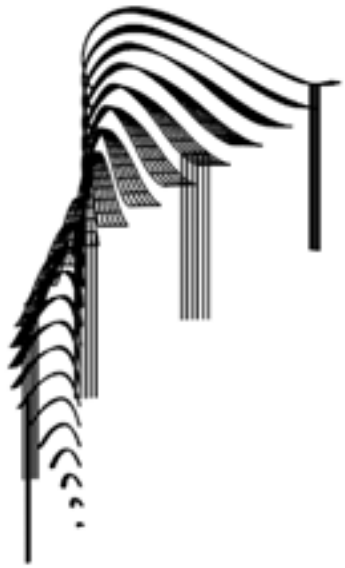
Steel skeleton





Fixtures





Initial scene

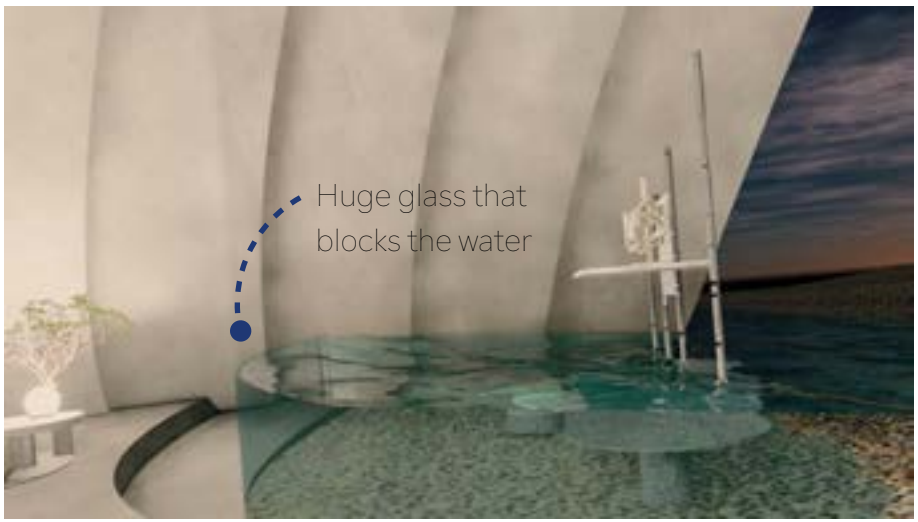
When more functions and details are added to it

Living area, working area, entrance……see next page.

Working area

When tides go down

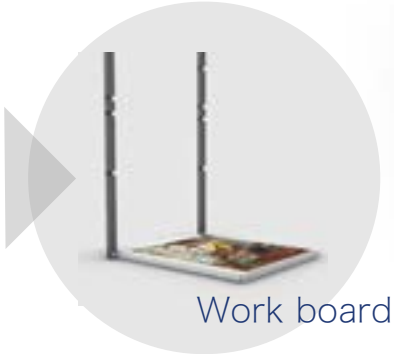
Normally in the day, the artist can work here using the work board.



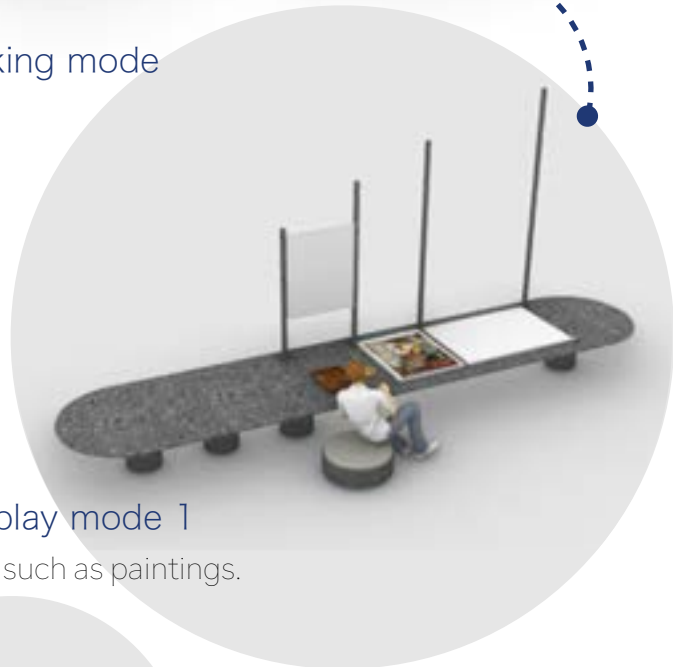
When tides go up

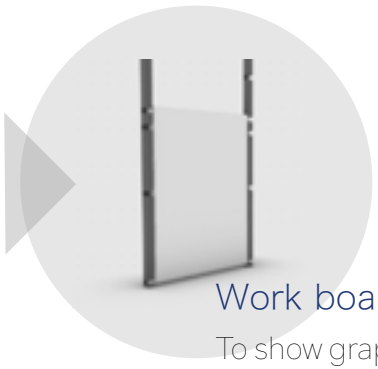
Work board can be put into display mode in order to protect artworks from drowning, or to show them to people on the beach.

Plan



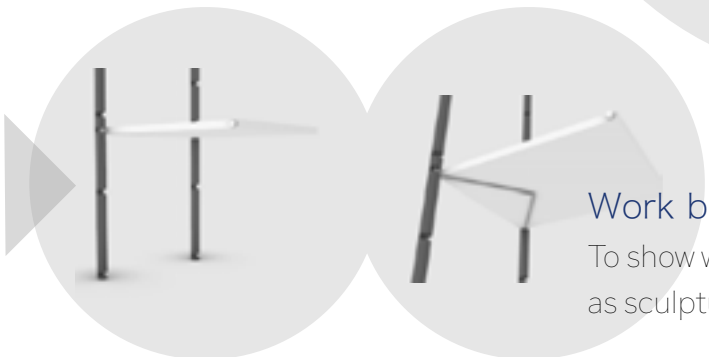
Work board in working mode





Work board in display mode 1

To show graphic works such as paintings.



Work board in display mode 2

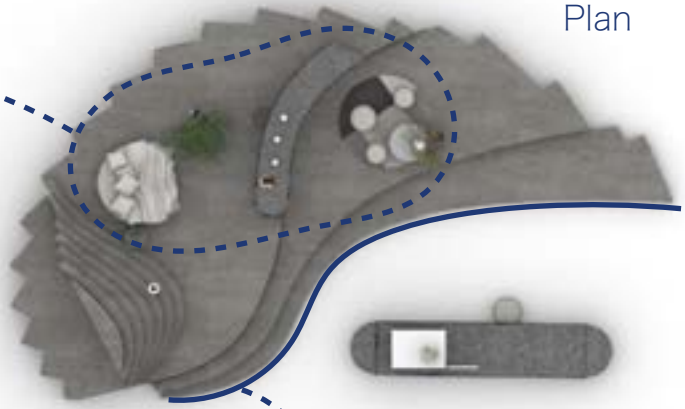
To show works of three dimensions such as sculptures.

Living area

The living area provides the space for the artist to rest (a bed), to work (a desk) and to meet visitors (a testable and stools).

A huge piece of electronic frosted color change glass is placed between the living area and the working area to block sea water out. The color of the glass can be turned into frosted black when the artist needs privacy.

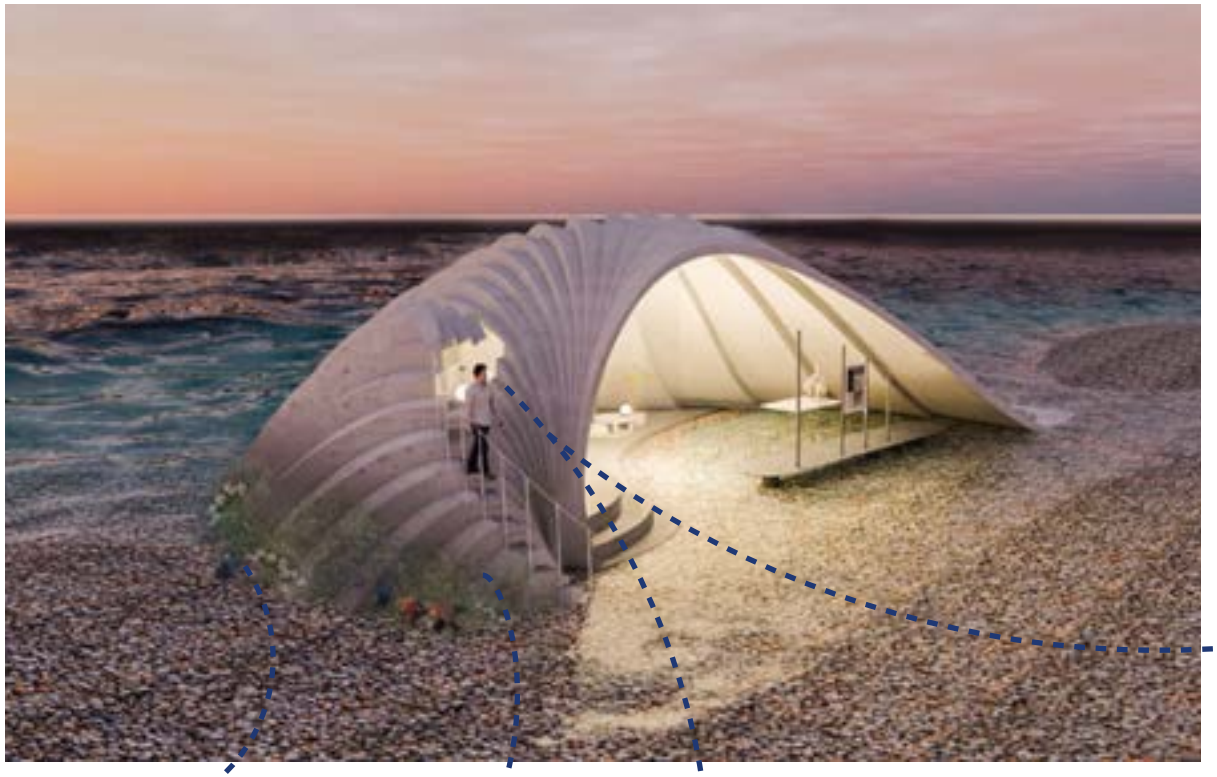
Plan



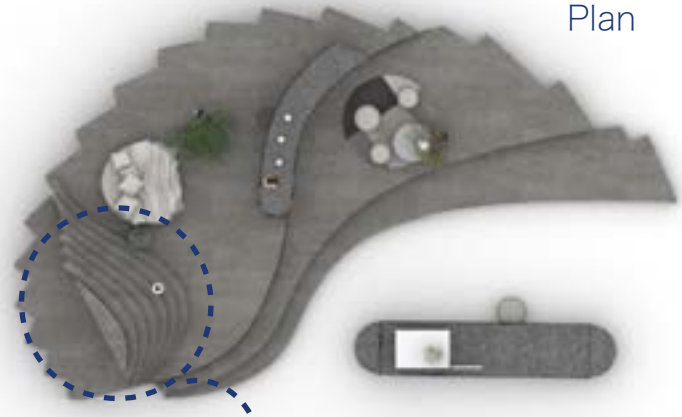
Privacy design

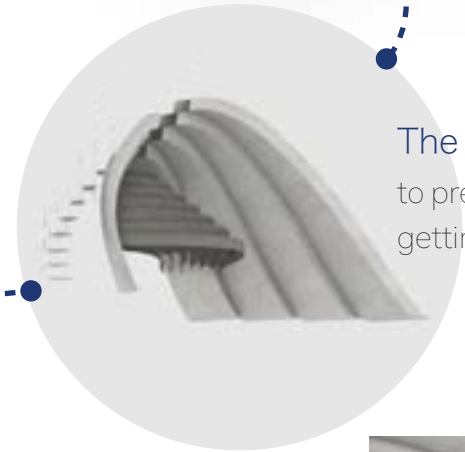
Visitors on the beach looking at the artworks

Entrance



Plan





The entrance is raised up

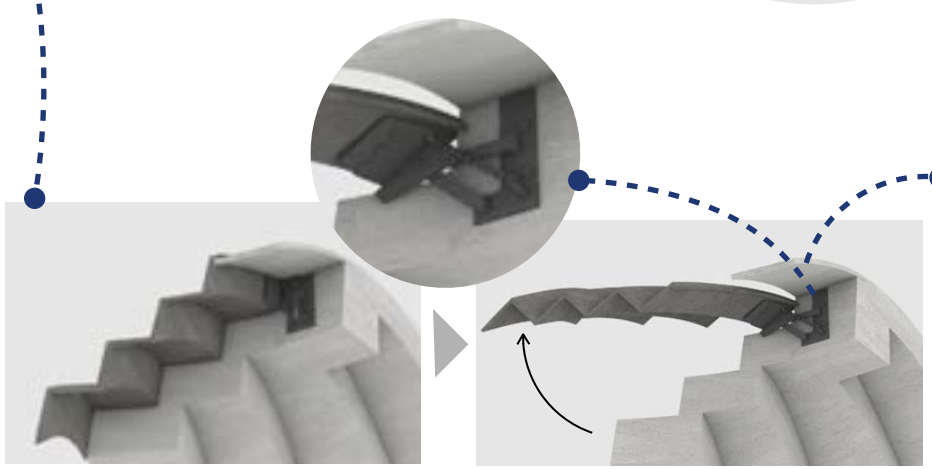
to prevent the sea water from getting into the living area.

A micro environment is formed.

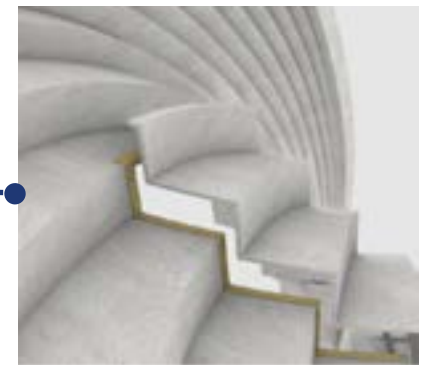
Creatures like barnacles, starfish, seaweeds and shells accumulate here.

Concrete gets darker in color

When it is wet.



How the hinge of the door works[3]



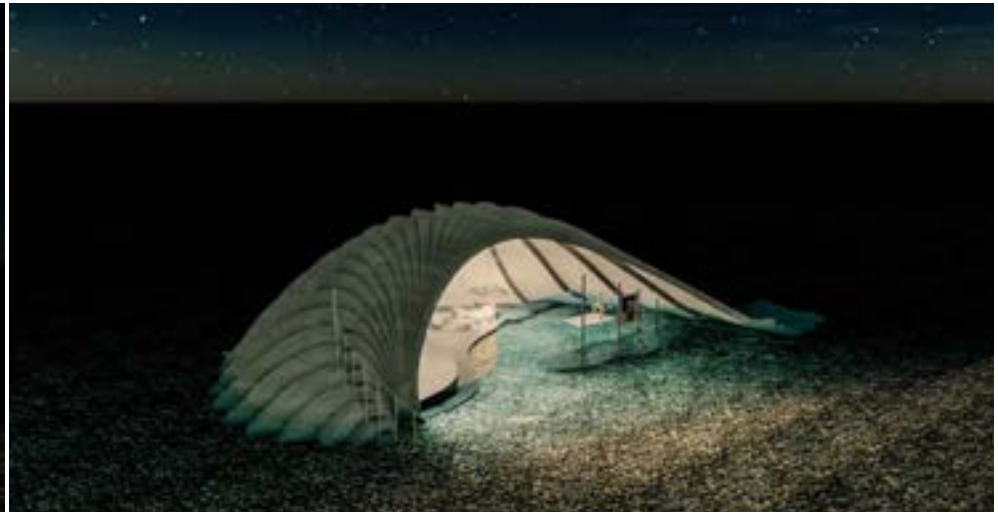
Waterproof door

Silicon rubber is attached to the edge of the door frame to block the rain.

Night View

Normally tides rise up in the night.

Half of the studio and the whole working area is under water. But artworks are safe pushed up.



Extended thinking

…Or shall we corporate with nature,
instead of running from her?

Tidal studio is also ideal for artists who complete their work with the help of water flow:

I. To illustrate "The earth that covers us speak", Ana Mendieta made Earth body that will be erased by high tides.[3]

II. Eroded Man from artist Kim Keever changes its colour and shape due to the water surrounding it.[4]

[3] Kim Keever, https://kimkeever.com/eroded-man/.

[4] "ANA MENDIETA: 'THE EARTH THAT COVERS US SPEAKS'", https://www.tate.org.uk/whats-on/tate-modern/film/ana-mendieta-earth-covers-us-speaks.

Tate Modern Structure Research book

(Group work with Charbel Eid,
Wei Si, Zhiyang Gu, Zuizui Lin)

Analysis of Design

Shape origin of the Bankside Power Station

Sir Giles Gilbert Scott

The Bankside Power Station was designed by Sir Giles Gilbert Scott, an English architect who designed numerous public buildings. **At that time he was the chairman of the RA Planning Committee.[1] Like his famous grandfather, Sir George Gilbert Scott, he was primarily a church builder.** The new Liverpool Anglican Cathedral was regarded his most famous work. The construction of this huge Gothic structure begun in 1904, and was completed only in 1980 by two of his associates, F.G. Thomas and R.A. Pickney. The library at the University of Cambridge, the Bodleian Library, Oxford, Waterloo Bridge and Battersea Power Station were also his well-known designs. The iconic red public telephone box was designed by him in 1924 and modified in 1936 as well. [2]

Sir Giles Gilbert Scott,
National Portrait Gallery

[1] Rowan Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.177.

[2] "Sir Giles Gilbert Scott", National Portrait Gallery, https://www.npg.org.uk/collections/search/person/mp04000/sir-giles-gilbert-scott.

Battersea Power Station

Giles Gilbert Scott was the consultant architect hired by the London Power Company for **the exterior of Battersea Power Station. He was unable to alter the upturned table configuration of the power station although he did not like it, but he remodeled the four chimneys like classical concrete columns,** and on the walls placed beautiful brickwork which was enlivened with vertical jazz-modern along the parapets.

Battersea Power Station
By *Alberto Pascual*

Without changing the original sublime scale and industrial style, Scott had humanized the monster with an excellent "coat".[1]

[1] Rowan Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.186.

[1] Rowan Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.186.

W.M.Dudok's design of Hulversum Town Hall was very much admired by British architect between the world wars, and it also had its influence on Scott's **brick industrial style,** with an obvious similarity between the works of the two architects.[4]

Hilversum Town Hall
By *Kyle Simonsen*

The London Millennium Footbridge

The design of Millennium Bridge start from a competition, they decided to design a new footbridge across the River Thames. The 'corridor' of Peter's Hill on the north bank leading to Saint Paul's Cathedral and the new Tate Modern art gallery on the south, influenced the choice of the bridge axis. The team decided that the axis of Peter's Hill was so strong that the bridge should follow this line directly, giving a clear view straight to St Paul's Cathedral from the bridge deck as a result. This decision placed the bridge in the zone of influence of the St Paul's height restrictions, allowing a thin sliver for the structure between the navigation channel and the height limit.

https://www.tandemnomads.com/uploads/2007/10/17/Millennium_Bridge_2.jpg

https://www.tandemnomads.com/uploads/2007/10/17/Millennium-Bridge_part_1_middle_shore.jpg

General description: The bridge structural diagram is that of a shallow suspension bridge, where the cables are as much as possible below the level of the bridge deck to free the views from the deck. Two groups of four 120mm diameter locked coil cables span from bank to bank over two river piers. The lengths of the three spans are 81m for the north span,144m for the main span between the piers and 108m for the south span. The sag of the cable profile is 2.3m in the main span, around six times shallower than a more conventional suspension bridge structure.

https://www.tandemnomads.com/uploads/2007/10/17/Millennium-Bridge-underneath_1_afternoon_or_night.jpg

The river piers themselves comprise a steel 'V' bracket fixed to a tapering elliptical reinforced concrete body which is founded on two No.6m diameter concrete caissons.
The cables are set wide apart in plan and well beyond the width of the deck. This was chosen to increase the torsional stiffness of the bridge. This geometry has two advantages. Firstly the torsional deflection due to an asymmetric live load across the width of the bridge is minimized. Secondly, the increased torsional stiffness helps separate the torsional and translational frequencies of the structure. This improves its aerodynamic performance.

The cables are locked longitudinally at the top of the pier against the saddles by a series of friction clamps. The steel pier V-brackets are in turn fixed to the concrete body of the pier via the pretensioned high-strength steel bars described above.
The bridge was shown to be aerodynamically stable in wind speeds up to and beyond a 10000-year return period wind event. The slim depth and round edges of the cross section contribute to the bridge stability.

https://www.tandemnomads.com/uploads/2007/10/17/Millennium-Bridge-Underneath_architecture_at-night.jpg

Unexpected excessive lateral vibrations of the bridge occurred at the opening day. Analysis of video footage showed a maximum of 2000 people on the deck at any one time. The strong lateral response of the Millennium Bridge was caused by resonance. It will dead down if the number of people on the bridge reduced, or if the people stopped walking.

The Design Competition

The international architectural competition received around 150 requests from architects worldwide, among which 13 got the chance to propose initial design strategies and 6 passed to the second round.[19]

Those who presented more detailed proposals where:

Tadao Ando Architect and Associates (Japan), whose design includes 2 giant glass boxes towards the Thames, serving as gallery spaces and viewing platforms.

Model
Tadao Ando Architect and Associates

David Chipperfield Architects (the sole British representatives) was the only one to removed the chimney and replaced it with a glazed central tower.

Model
David Chipperfield Architects

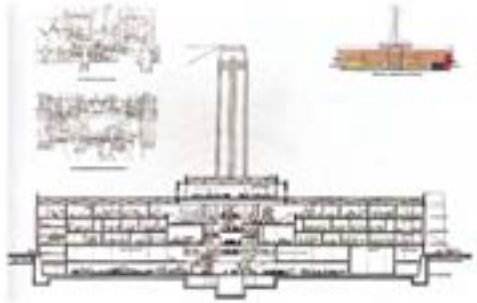
Rafael Moneo (Spain) placed an expressionistic cafe breaking out towards the Thames. The scoops on the roof invite natural light into the whole gallery.

Model
Rafael Moneo

Model
Rem Koolhaas/Office for Metropolitan Architecture (Netherlands) with Richard Gluckman (US)

Rem Koolhaas/ Office for Metropolitan Architecture (Netherlands) with Richard Gluckman (US) places three separate blocks behind a layered glazed skin.

Renzo Piano Building Workshop (Italy) turned the chimney into an observation tower and a high-tech roof which could control the light was added.



Sketches
Renzo Piano Building Workshop (Italy)

The winner, Herzog & de Meuron (Switzerland), **instead of hiding the industrial characteristic of the power station, heightened it.** And that concept agreed with Tate who was initially attracted to the industrial look of the power station. The chimney, the brick skin and the structure all remained the same so citizens would still be able to recognize the power station.[20]

[19] Rowan Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.19.

[19] Rowan Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.19.

From The Power Station to Art Gallery

Tata's architects designed a style for the new art gallery that still pays its respects to the old power station opened by the Queen in 1962.

The architect of power station Giles Gilbert Scott believed that industrial building should still have decorative elements as in Bankside crisscross roof lights.

Tall cathedral style windows and the generous use of space above the turbine halls heavy generators. Even its location seemed extravagant for a power station, right in the heart of London.

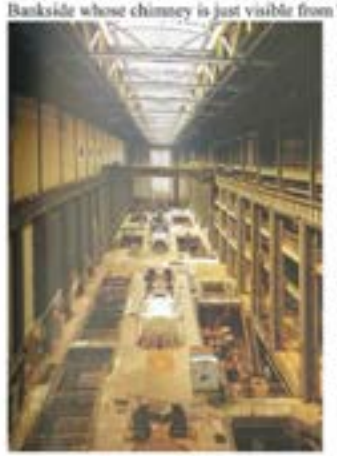
the generous use of space above the turbine halls heavy generators.

When the Tate first announced its ambitious plan for the Millennium in December 1992, it mentioned as an interim idea the possible establishment of a temporary Tate Gallery of Modern Art. Though this was soon abandoned, attention had focused for a period on Billingsgate – the former London fish market- which was leased to Citibank and converted in 1985-6 by Richard Roger and Partners to provide a major dealing-room in the City, but had never been used. Though it had good environment condition and spectacular views over the river, there were a number of drawbacks to this building; and when Millennium funding became a strong possibility, the Tate decided to put all its energies into the search for a permanent site.

It was thought essential that the site should be easily accessible by public transport ad in reasonable distance of Millbank.

The first, the most suitable location seemed to be the car-park on the west side of Hungerford Bridge Overlooking Jubilee Garden, which was owned by the Arts Council and leased to the South Bank Board. But its principal drawbacks were the limited space available and planning constraints which prevented the building of more than one storey in height on a large proportion of the site.

Bankside wasn't the TATE's only candidate, and they'd looked at several sites within a couple of miles of Millbank including Bankside whose chimney is just visible from Tate's roof.



Various other alternatives had been considered, including a number of commercial sites principally on the south side of the river between Vauxhall and Tower Bridge, as well as sites in public ownership likely to be developed over the next ten years, such as hospitals and stations.

The Tate team was enthusiastic about the industrial origins of the power station. They received criticism about they are not doing a building from scratch, but Tate believed that if they start a building from scratch, the size of the building would have been the quarter of these space capabilities of this power station.

Demolished

The architects tried to keep as much as posible of the original building, but during the demolished, the roof has to be removed, and the engineers discovered a type of corrosion in the concrete roof surrounding whether roof lights have been. So they have to remove that as well. So that is the whole roof of the turbine hall.

Footbridge

When the construction team finally sets about removing the roof, the architects of Tate trying to sort out the disagreement with the architect of new footbridge.

This footbridge will bring visitors across the river to the new gallery. The competition was won by Norman Foster and sculptor Anthony Caro. But the first design of this footbridge was disliked by others.

The end of the bridge would have to land on Tate's landscape which would be designed to fit in with the architects' approach to the building simple and rather spare. So the Tate team are not happy with Foster and Karos's very sculptural landing.

And that wasn't the only issues that they were facing. The bridge has to rise quite high over the river to allow boats to pass underneath. This will create a big difference in levels if it came all the way down to Tate's landscape, so the architects proposed to have a little hill at where bridge landing.

And the Tate architects persuaded the bridge team to make their southern landing smaller, and it became what was called for a while the eye of the needle. It is smaller than the first version but still larger than the Tate liked. In the end, the mount disappears and so does the needles eye.

Foundation

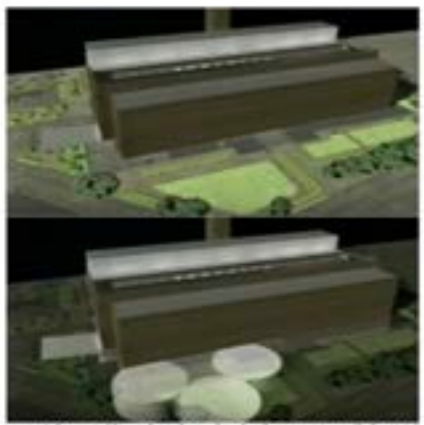
The steel cage of reinforcing bars will provide strength for the concrete before it is poured workers has to thread pipes drains and ducts through space. All the connection need to be appropriately set, or it will be costly to dig out afterwards.

This is the east end of the building, and there will be the same area to fill with concrete on the west. This is one of the most significant foundation work in London.

The concreate poured in sections, each sections separated by wooden shutters.

Hidden spaces

The Tate team discovered the oil tanks under the lawn at the southern side of the site, and they realized all sorts of possibilities began to come to mind because it is a fast base.



There are three oil tanks that don't form part of the original plan for Tate Modern, and there is some distance from the main museum area. But the Tate team worried about the budget and the whole project is already late for the schedule, so the transform of oil tanks was on hold.

At their base in knotting ensure all staff are working on fabricating the thousands of columns and beams required. The first columns form one of the four steel cause towers which will hold some of the essential services and fire escape stairs then the floor beams will link the cause from one end of the building to the other.

The steel structure had finally taken from December 1997 to July 1998 to erect, more than twice for 15 weeks Tate planned.

After the steel skeleton and the new roof are finally put in place, the team can now turn to the interior of the building.

Staircases

The five-floor of galleries are linked by the grand staircase which will thread its way through the building from the basement to the roof.

This staircase is to be made of steel, and it will weigh 50 tons, and it is a monster of the staircase and presents monstrous problems.

The construction team in charge of the staircase has never come across one quite like this. This staircase is a big challenge for them and architects.

The Swiss architects took great pride in their unusual staircase, but there are several issues appeal when it threads its way through the building. The first issue accrues when the position of a lift motor room intrudes on the vertical line of the staircase.

They have to move several steel columns by 30 centimetres. But this solution will cost a few thousand pounds and a two-week delay. So the Tate team rejected this suggestion.

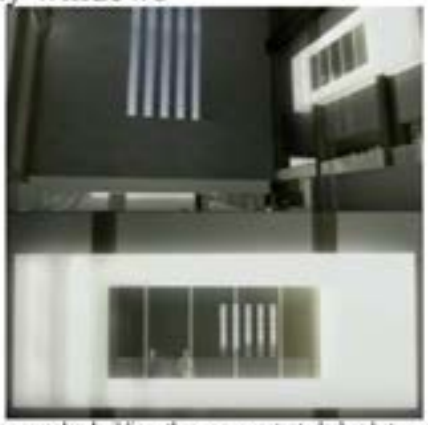
In April 1998, the steelworkers reached the highest point of the steel structure.
In the summer of 1998, the main element of the grand stair is in place connecting all seven floors of the gallery, but the issues of it still did not solve.

Near the bottom of the staircase, these flights of stairs are too close together, and it was designed right on the statutory minimum. The Tate team is going to gain an extra hundred fifty millimetres by cutting the staircase and setting it back horizontally.

For the interior, Herzog and de Meuron have very strong ideas about the surfaces they design. They've chosen a very unusual type of wooden floor for some of the galleries. On top of a layer of plywood, there are 90 kilometres of Singh Oak strip, and the architects have decided that the wood surface will be rough and unvarnished. The floor contractors have never seen anything like it. Oakley is very susceptible to sustaining, it marks very easy, and it is not a smooth finish. The architects have taken an industrial building, and they want to keep an industrial look. The architects are satisfied with the floor will grow with the museum.

Tate modern is designed for 1.5 and 2 million visitors, as the time closer to the opening, the director of Tate modern starts thinking about how to make people feel welcome, avoiding lines and cues outside.

Bay windows



In any complex building, there are constant clashes between the vision of the architect and the real world. The Turbine Hall bay windows surrounded by fluorescent tubes behind frosted glass. The architects described that these bay windows would be clouds of light; it should be a strong statement, but at the same time, almost unreal. Translucency becomes a big issue.

Steel struture

In the old boiler house, there are five floors of galleries and public spaces while the Turbine Hall is to be a vast entrance area. Throughout the building, the architects have chosen finishes that reflect the industrial origins of the building. They are insisting on high quality on surfaces like the smooth concrete floor on this indoor bridge.

Light Beam

Herzog and de Meuron had designed this shining new roof extension called the light beam, which is nearing completion.

Reasons of extending the museum

In the fifth year after the original idea, Tate's staff realized that the museum could not only be used to display art, so they were ready to add education, entertainment and other functions, and the participation and learning of the audience would become the core of the new museum. It is a key place for social and educational exchanges. In addition, they also found that the world has undergone tremendous changes, the expectations of the Internet generation are more complex and demanding, and some large arts require more space for exhibitions. ***In October 2003, Tate Modern showed a weather project. It is a huge installation art, composed of a huge artificial sun and bursts of steam.*** It makes people aware of the lack of architectural space. ***Coupled with the success of the Tate Museum, it has attracted three times as many visitors than originally expected.*** The crowded building quickly stimulated the museum's expansion plan. ***As time passed, in July 2006 it was announced that Tate modern would be expanded, that is, the second phase of the construction of the Switch House.***

Olafur Eliasson's extremely popular Weather Project

Spatial analysis of the Switch House

Shape and Window

Switch House is a modern building that resembles a twisted pyramid. Based on the original Oil Tank, The building gets thinner as it goes up, like a tower. Before designing Tate Modern, the architect always believed that the building must be like a block and should have no windows, but in a questionnaire he did to a previous museum user in 2005, he found that the observation deck on the top floor was well received, and the architect was aware Users are eager to look inside and out of the building, which is why Switch House has windows everywhere.

Herzog and de Meuron's de Young Museum in San Francisco

Switch House

Exterior wall

In addition, in order to achieve unification with the exterior wall of the old power station, the architect used the same bricks and used a new arrangement to form the exterior wall of the Switch House. The difference is that the light hits the ground through the brick wall and creates the same Light effect of shutters.

Light effects inside Switch House and how to install

Oil Tank

The Switch House was built on the basis of the original Oil Tank of the power station.

Construction site of Oil Tank

The original structure of the clover-shaped Oil Tank is retained. The concrete structure of the old Oil Tank can be clearly seen on the ground floor of the Switch House, but its structure Not enough to support the weight of the entire new building, so the architect added new inclined concrete columns to the old structure. In addition to supporting the whole building, it also coordinated the transition between Turbine Hall and Switch House. People are buffered in this space, instead of going directly into a completely new building.

New and old structure of Oil Tank

The main structure

Switch House's framework was primarily made of steel because this material provided the best and most effective way to create the 18-meter span needed to create a gallery space. On the fifth floor, the steel structure actually supports the entire north elevation of the tower. The steel frame is formed by a series of large precast beams with a depth of 1,200mm and a span of 18 meters. The beams not only need to be used as a transmission structure for the four-story roof that supports the facade, but also need to support the gallery floor that will accommodate some heavy exhibits. In addition, the observation deck at the top of the building requires additional fixing because it is at the highest level of the building, so it uses a steel structure mixed with concrete.

Switch House Steel Structure

Switch House Observation Deck

STAIRS

All the functional area are connected by a complex route of ramps and stairs, which is called " The ceremonial route".
Herzog and de Meuron underscore the belief that risers and treads are never solely an element of circulation—they are generators of dynamism and rhythm that influence the essence of their projects.

https://cdn.archipanic.com/wp-content/uploads/2016/06/herzog-de-meuron-tate-modern-switch-house-staircase-1.jpg

https://www.architekt.com/BETON/de-collection-of-herzog-and-de-meuron-stairs-inside-tate-modern-switch-house-in-london-herzog-and-de-meuron-stairs-in-living-with-concrete-image

The staircase, ever a preoccupation of Herzog s de Meuron is one of their most elaborate yet. It begins in the basement as a grand sweeping spiral, tapering out as it spills on to level 1, it moves to the southeastern corner of this floor, and sharp turn to level 2.
It grows again in the opposite corner, stretch over two more levels, visitors who walked on it could see the staff offices across the full height windows, so that visitors could aware that there's a work team behind what they're seeing.

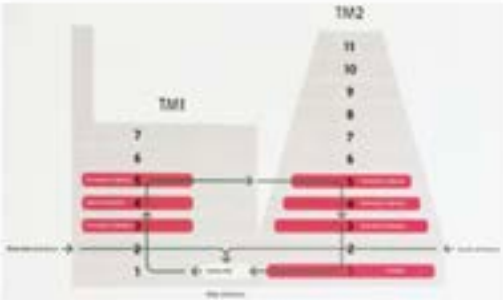
Throughout this journey, there are frequent places to pause and linger. The twisted geometry of the building create areas to perch or lean in the clopped corner which are hardly to use.

This looping, switchback flow of spaces creates a meandering pace, forcing visitors to slow down as they wander up the foothills of the mountain. When the stairs rises and breaks free from the Boiler House, things begin to change. What feels like a languid horizontal landscape on the lower levels transforms into an emphatically vertical sequence as the Switch House shoots for the skies. From level 4 onwards, the staircase narrows to half its width, pulled into the central concrete core of the tower where it runs back and forth for the remaining Six floors, marching at a brisker pace as it advances towards the summit.

Whereas most structures get progressively thinner and lighter as they rise, due to the need to support less mass, the tapering geometry of the Switch House means that the cage of columns and beams becomes ever more dense. Just when you would expect the hefty concrete grid to fade into a gossamer crown, it is more present than ever, converging in a contorted knot at the top of the building, where spectacular views of London's skyline are framed by the muscular enclosure.

TRAVEL LINE

The diagram below shows the level 1 arrival principle. The new south entrance has created a 'street' running through the Turbine Hall. The bridge, which used to be a dead end space, now becomes an 'arrival hub' at the heart of the building. The stairs in the Turbine Hall Bridge pull visitors down to level 0 where they find the main information and ticket desk and can clearly see the Switch House and Boiler House entrances on either side -the perfect place to start their visit.



On the level 1, the architect designed a route that can directly cross the whole building. This route enables the employees who working at the back of the building can directly reach their work area through these two entrances without bypassing the whole building.

There is a walking bridge on the level 5, which connects the newly built part with the original building. It forms a circular moving line inside the building, guides the visiting route and reduces the traffic pressure on the main route.

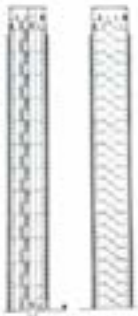
Spatial analysis of the old building

The gallery gives people an impression that everything has always been there, which is very misleading. In fact, almost everything has been redesigned and reinvented, but all the old elements are related to the new facilities in a harmonious way.[5]

Chimney

Tate Modern and St Paul's
Google Map

"It has been said that the power station will dwarf St Paul's." Scott told a press conference.[6] But in Scott's design, the chimney, the tallest part of the Bankside Power Station, is at a height of 93 meters, which doesn't reach the height of St Paul's.



Section of the chimney
Herzog & de Meuron

Undoubtedly the chimney played an important role in a power station as all gas flew through it. The chimney of Bankside **is separated from the entire building**, standing at the centre. However, it seems obvious that the chimney was designed in a way that only has its technical and functional use. It was actually **a city landmark that echoed to the central dome pf St Paul's Cathedral on the opposite side of Thames. The two structures shared a similar shape vertically and horizontally.**[7]

Preliminary sketches for Bankside
Sir Giles Gilbert Scott

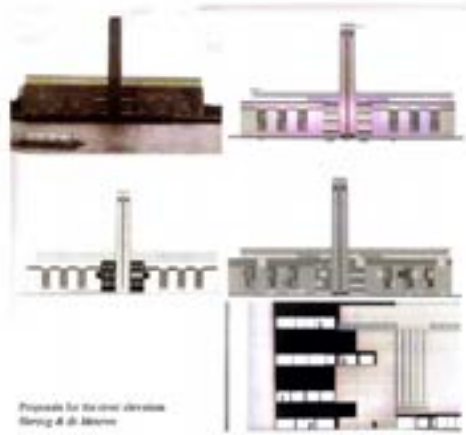
The first design produced in January 1947, however, was very different, with two **tall brick chimneys at both ends of the power station.**

In addition, due to public fears of dirt and smells, the building was installed with **a gas-washing plant** at roof level behind the chimney. This removed 95% of polluting gas from the exhaust smoke.

Glasshouse/Light beam

Model
Herzog & de Meuron

Herzog & de Meuron came up with the idea that **a huge body of light hovers above the heavy brick structure of the power station** to provide strong contrast and make the whole building look lighter. It should also pour daylight into the rooms on the top floor of the gallery and reserve the artificial illumination which can magically shine into the London sky at night.



Proposals for the river elevation
Herzog & de Meuron

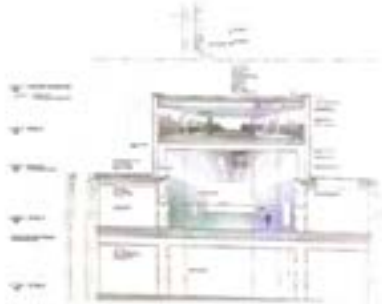
The river elevation as built
Herzog & de Meuron

[5] "Tate Modern", architecturelab.net, https://en.wikipedia.org/wiki/Tate_Modern#

[6] "The Bankside Power Station Blake, Sir Giles Scott England", The Builder, 23 May 1947, p.491

[7] Rowan Moore and Raymund Ryan, Building Tate Modern, Tate Gallery, p.128.

There were many proposals regarding this idea. To form a glass strip at ground floor covering most of the length of the building, giving the brick skin a feeling of weightlessness, to break up the chimney into glass panels, to replace the recess on either side of the chimney with a black brick to let the glass wall flush with the existing wall...[8]



Section through the light beam
Herzog & de Meuron

Clerestorey

Light could only reach Level 5 through the clerestory windows Scott designed for the power station, to ensure that **individual artworks's different needs for precise lighting control are met and conservation is made easy.**

[8] Power Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.137.

Gallery on Level 5 with clerestory lighting
Tate Modern

Direct sunlight and shadows need to be avoided but **the color of the sunlight should not be distorted and the intensity needs to be ensured.** The glazing should be translucent too. Thus, two layers of glass are placed at the clerestory windows with two sets of blinds in between. Two blinds have different responsibilities: either to adjust the light intensity or to completely block all the light.

Bay Windows

The floating light boxes that can be seen from turbine hall are clearly following the same designing style with **the light beam** added at the top of the building.

Bay windows
Tate Modern

Birch planting near the north entrance
Tate Modern

Landscape in progress, spring 2000
Tate Modern

One main idea Herzog & de Meuron had when they designed Tate Modern was that as a representative of modern art, **it should be accessible to everyone and there should not be a clear boundary between the inside and the outside, so as to show that modern art was not unreachable.** [10]The gardens surrounding the building, therefore, are used to blur the distinctions between the city environment and the museum from four directions.

Bankside gardens were designed by the landscape architect Kienast Vogt Partner. Gardens are divided into three areas: north, west and south.

[9] "Tate Modern", wikiarquitectura, https://en.wikiarquitectura.com/building/tate-modern/#

[10] Power Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.137.

The gravel that covers the ground has the color that matches the brick façade of the building. At the same time, it can be regarded as the extension of riverbank, as well as the link up of the plaza and the lawns.[11]
Domestic birch trees that frame the plaza resemble the woods that grow along riverbanks. **As a pioneer thriving on fallow urban, birch is a symbol of transforming abandoned land.**

Ramp

Section through the ramp
Tate Modern

For similar purpose with the landscape, visitors can naturally enter the ground floor of the building through the huge slope

Model: the west court and ramp
Tate Modern

Model: the turbine hall and ramp
Tate Modern

west of Tate modern.12 Another function of this slope is to transport art works. In addition, for tourists, the slope increases the internal terrain changes, and visitors can even lie down to see the entire Turbine Hall on a slope.13

Turbine Hall

The over all spatial design of Tate Modern is neutral. It's designed in a way that it doesn't add any narrative to the presentation of artworks — **it is trying to be totally independent from the organization of exhibitions.**[14]

[12] Davison and Dorella, (21 Aug 2016). Dilate Modern building a museum for the 21st century[]. ...p.21

[13] Wright, (1 Aug 2016). ...«designcurial»... 'SWITCHING PLACE: HERZOG & DE MEURON'S TATE MODERN EXTENSION'. http://www.designcurial.com/news/switching-place-herzog-de-meurons-tate-modern-extension-4865466/

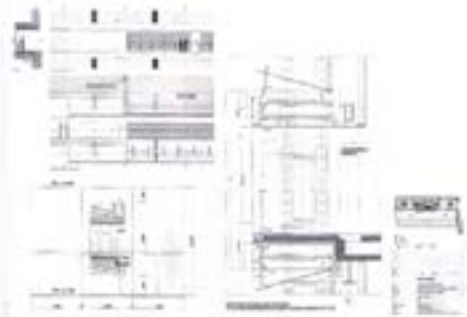
[14] Kali Tzortzi, "MUSEUM BUILDING DESIGN AND EXHIBITION LAYOUT: patterns of interaction"

[15] Reuben Gaviths, "The Void and the Void On Tate Modern's Turbine Hall and "The Unlover Series" "

Plant removal in the boiler house
Tate Modern

Plant removal in the boiler house
Tate Modern

Martin Gayford labels 'the huge cavern of the Turbine Hall' as 'the most startling and novel feature' of the new museum and an 'unprecedented' space for the display of art in 'A New Space for a New Art'.
Ron Smith believes that the turbine hall has **the sheer scale that is able to easily absorb a huge flow of visitors.** What's more precious is that **the layout of turbine hall doesn't imply any instructions for the visitors, which means that one can experience the museum in any way one likes. There's no recommendation about how to plan your route.**[15]



Bay windows details
Tate Modern

Bay windows under construction
Tate Modern

Drawing attention to the relationship of the galleries with large central nave, monumental yet intimately achieved through brilliant "boxes" attached to the fronts of the galleries that have the function of balcony towards the turbine hall. **The crystal surface of the boxes is in contrast to the severe, strong and dark metal columns of the structure supporting the vessel.**

[16] Power Moore and Raymund Ryan, *Building Tate Modern*, Tate Gallery, p.136.

These so-called "bay windows" are built for several purposes. They are the **stops between gallery rooms** where visitors can take a rest, as well as **the viewing platform** where the artwork in Turbine hall can be clearly seen. Compared with adjacent concourses or galleries, bay windows are more intimate proportions.[9]

Landscape

Landscape plan
Dawson Kiel Partner

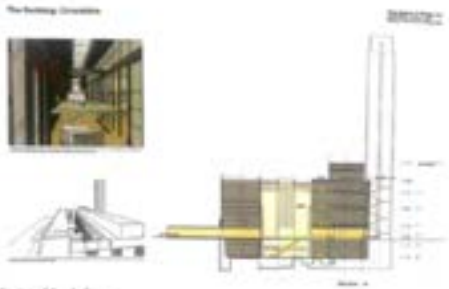
Competition entry: the turbine hall platform
Rem Koolhaas

Once the heavy industrial equipments in the Boiler House and the Switch House is removes, with the giant turbine hall in the middle, the building becomes a very spatial envelop protected by steel skeleton and thin brick skin. **It's in such a large size that it becomes a "sufficient patina [...] for the art to be comfortable rather than simply on show".**[16]

The original steel structure and the thin vertical windows created **a controlled light** inside of the hall.
The turbine hall used to have no ceiling or floor, with numerous machines working in a open steel structure.

through the turbine hall that **runs through the entire length and height of the building**, one can see all the structures including cafeteria, shops, exhibition areas, concourses at a single glance.
The turbine is also an example of Herzog & de Meuron's idea of making modern art accessible to everyone. One can enjoy the massive piece of artwork here with no barrier, get into the hall from four directions or simply use it as a path on one's way to work.[17]

Platform



Section of the platform
Herzog & de Meuron

[16] Ibid. p. 46.

[17] Rowan Moore and Raymund Ryan, Building Tate Modern, Tate Gallery, p.147.

An overview of Tate Modern's infrastructure

Tate modern-John Hirst

- In the conventional fashion, the plan form of the power station was divided into three: the Boiler House in the northern part, the Turbine Hall in the middle and a Switch House to the south, the latter remaining operational today.
- The building was disused, leaking, in need of fabric repair and still contained all the plant from its time as an operational power station. Interim measures were undertaken to reduce the rate of deterioration of the structure and fabric of the building, and remained in place during the contract to 'deplant' the power station
- The combined Turbine Hall and Boiler House was a huge volume, 160m long, 54 m wide, with a height from basement to roof of 34 m.
- Exhibits vary enormously in size and some are very big and heavy; some use unusual materials or electronics that need to be connected to support systems; many are highly sensitive to the display environment, particularly variations in environment; all are valuable and many are priceless. Art works are framed or unframed; sculptures are displayed with or without plinths; some objects are displayed on walls, some on the floor; some are hung from the ceiling. The response to these issues has been to provide rooms of differing sizes and proportions, all with a clean and uncluttered appearance, so that visual distraction is minimal and with the potential for adapting the room layouts in the future.

Refurbished Turbine Hall

Within the walls: Equipment and lighting

- A key component of the design developed was the concept of a double skin, wide cavity display wall. The cavity is accessible and, as well as leading to the ceiling space, provides a route for air distribution to the floor plenum for the displacement air conditioning system.
- The lighting system is designed to avoid veiling reflections, which would obscure the detail of exhibits, and to provide an even distribution of light on display surfaces. The spacing of the lights is such that, if a wall were removed, the space left is on the lighting grid. Similarly, if any new wall is built, its top will coordinate with the gap left by removing a luminaire. This reduces to a minimum the disturbance created by adapting wall and, therefore, room layouts.
- There is equipment above ceilings that needs regular inspection. Wherever possible, this is close to walls, so that it can be accessed by climbing up inside a wall, but some had to be located further than a safe stretching distance from walls.
- Internally the boxes have removable sides and top and all equipment needing servicing or inspection is located within arm's reach of the nearest light box. The ceiling is, therefore, kept clean and clear of any access panels. Visually the light boxes are a glowing surface, which is achieved by spacing the light tubes from diffusing glass below. In the upper level side galleries, the light boxes link to rooflights to allow natural light to be used. Lighting levels are enhanced or reduced using artificial light or filtering blinds as appropriate.

The obvious criterion was to maintain conditions suitable for the display and preservation of the artefacts with very widely varying population densities and lighting arrangements.

Energy efficiency and simplicity in operation were high on the priority list

The Vast and the Void
On Tate Modern's Turbine Hall and 'The Unilever Series'

Wouter Davidts

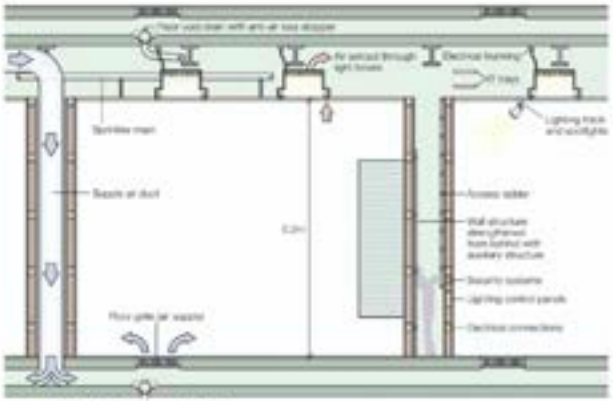
- A spatial analytical study on how Tate modern was spatially designed to fit the art and the museum within it
- Martin Gayford labels 'the huge cavern of the Turbine Hall' as 'the most startling and novel feature' of the new museum and an 'unprecedented' space for the display of art.4 Ron Smith, in 'The Political Impact of Tate Modern', believes that the building is one of the few that 'take(s) your breath away - especially when you walk into the Turbine Hall for the first time'. While the 'sheer scale' of the space is fascinating, its 'vastness [...] means that even with huge numbers coming, the building happily absorbs them'. The Turbine Hall, he continues, 'is a huge free gift to the public. Imposing though it is, it does not dictate to visitors how they should experience it, which, in a time when public space is used ever more intensively to market, to sell and to deliver messages, is a precious quality'.
- 500 foot (155m) long, 75 foot (23m) wide and 115 foot (35m) high Turbine Hall

Examples on how artists have used the space:

- Louise Bourgeois used the hall simply as a large gallery, but made, in addition to the 'three gigantic steel towers', her 'biggest spider ever'
- 'Double bind' split up the second part of the hall with a massive floor, serving as a vast support structure for a dozen of his well-known intro- vert characters. With the spectacular 'The Weather Project' Olafur Eliasson successfully transposed his previous mostly small-scale perceptual and sensory investigations to the size of the Turbine Hall, trans- forming the latter with a mirrored ceiling, a bright yellow artificial sun and puffs of smoke, creating a magical environment which has by now become legendary.
- Tate Modern was not to become an architectural prima donna or a signature building, but a museum that would suit the needs and desires of contemporary art and artists, a building with 'sufficient patina [...] for the art to be comfortable rather than simply on show'

Within the walls: Ventilation

- After analysing several systems, we chose low velocity, low level air supply through grilles in the floors, with extract through the light boxes and into the ceiling void. This system has the fewest active components at high level and thus requires minimum elevated access for maintenance, which is beneficial in terms of costs, disruption to the use and appearance of the space. The system is also energy-efficient and robust. As the supply air temperature is only slightly below room temperature, outside air can be used for much of the year, providing 'free cooling'. This system can also make best use of the thermal inertia of the structure, in the event of short-term failure of cooling plant.
- Air extracted from the galleries is discharged into the Turbine Hall to temper conditions, which would otherwise be close to those outside.



The principles of gallery servicing

Tate modern compared to other museum spaces

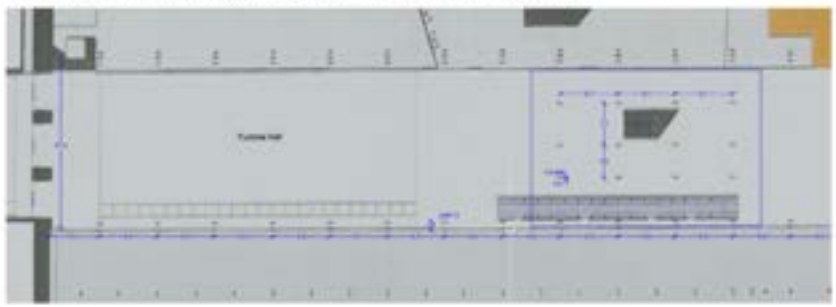
MUSEUM BUILDING DESIGN AND EXHIBITION LAYOUT: Patterns of Interaction by Kali Tzortzi

- Tate Modern and Pompidou: the neutralized spatial design distances itself from the objects, and the layout appears to unfold almost automatically and quite independently from the presentation of the collection. What seems particularly intriguing is that, though the spatial properties of their layouts resemble to a large extent those analysed earlier (cf. Sainsbury Wing, Castelvecchio), they appear to have no critical role in the organization of the displays. The intersecting axes organizing the plan, both at Tate Modern and Pompidou, are not exploited to enhance the impact of objects nor used to add to the narrative; the distant visibility, key quality of both layouts, is seen as a functional end in itself, contributing to the clarity of plan, rather than a spatial tool for expressing the intended message or lending emphasis to the experience of space.
- Theoretical Synthesis In the light of the above discussion of alternative solutions to the key issues involved in the design of museums -which have been described above in terms of tensions between three things: the ordering of spaces into viewing sequences and the gathering space; the informational and the social function; and the spatial design and exhibition set-up-, the final part of the paper attempts a theoretical synthesis, building upon the recurrent in space syntax theory short, long model distinction it proposes a fundamental distinction between the two extreme theoretical possibilities of laying out space and objects: the long model set-up, meaning a strongly structured organization, which is associated with a conservative (or reflective) way of using space, aiming to restrict relations (i.e. among objects, among viewers) and reproduce something already known; and the short model layout, less structured and so less redundant (or more original), which is associated with a generative (or morphogenetic) mode of using space, acting to produce emergent relations, to create something that did not exist before.

The space and display layouts of the sample on the short-long model grid

A structural skeleton of the Turbine Hall

- One of the most challenging parts of the project, we had to come up with an estimated data of measurements. To do that, we imported some of the Tate Modern plans in the books to a CAD program, rescaled the plan by taking an object of the plan as a reference (ie stair runs, since they're always at a standard of 30cm), took a rough estimate of the space, beams and column grids and worked on the 3D skeletal model of the Tate Modern.
- It is worth keeping in mind that those values are approximate. Real world values may vary slightly.



Floor system and loading

- The gallery floor system had to have a high load-carrying capacity, provide a sufficiently airtight plenum for air supply, and separate fire compartments at different levels. The solution developed comprises an upper structural slab with high local load capacity, supported by a lower slab integral with the overall frame.
- Sculptures are clearly critical in assessing floor load requirements. They apply quite large loads over relatively small areas. However, once installed, the surrounding areas are only subject to loads from people and the gallery walls.
- In addition, the effect of art handling – moving loads through the building – needed to be considered. The capacity of the art handling lift was agreed as 10 tonnes, approximately 100 kN. It was, therefore, also agreed that the floor should be capable of supporting this load equally distributed between four points. The minimum track of the supporting trolley was agreed at 1.5 m. The minimum wheelbase was 2.6 m, which means that a pair of 25 kN loads can only be applied to one floor beam at any time.
- The effect of concentrated load is greatest on the local, short-span structure of the upper plenum floor. The greater spans of the lower floor are less affected by local, concentrated loads, as these are averaged over the whole area supported.

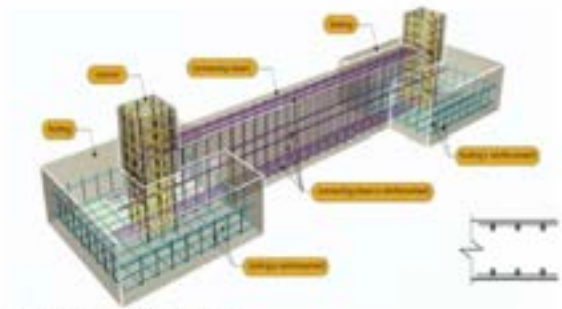
Artist	Exhibit	Load and Area
Rodin	'The Kiss'	32 kN over 1 m²
Rodin/Bell	'Untitled'	4 @ 20 kN over 2 m² (displayed linearly against a wall)
Hirst	'Mother and Child Divided'	2 @ 60 kN = 120 kN over 6 m² + 2 @ 15 kN = 30 kN over 2 m²

The Tate provided, from their database, information on weights and sizes of exhibits which had historically caused loading problems

- The approach adopted has, therefore, been to use high local loads for the design of the plenum structure and lower overall loads for the design of the lower floor structure.
- It was also agreed that the level 5 galleries would be designed for slightly greater loads than other floors. At this level, the upper floor was designed for: 20 kN/m2 or two point loads of 25 kN at 1.5 m centres.
- The lower floor was designed for: 2 12 kN/m .

Initial foundation works

- The selection of the structural frame and foundation systems depended on several issues, the most influential being the presence of the massive concrete pad and strip foundations of the original building. Breaking through these would have been costly in terms of both time and money. Also, it would not have been possible to locate piles to best suit the new frame, as the existing foundations to the central line of retained columns and to the perimeter retaining walls had to continue to function.
- The preferred foundation solution was therefore a raft constructed above the original foundations and ground bearing slab. The raft was designed using iterative analyses of soil and structure models.
- The fabrication of the frame proceeded in parallel with other construction, allowing a programme advantage. The structural grid coordinates with both that of the retained building envelope, allowing the lancet windows to be unobstructed, and with the room layouts, so that vertical structure is mostly concealed within the display walls.
- Columns from the new frame are seated either directly on the raft or onto the top of the mass retaining walls at level 2. Where seated on the retaining walls, it was necessary to provide resistance to splitting or shear failure within the concrete. This was provided by tensioned bars placed in holes drilled through the retaining walls at the stanchion bearings. The raft foundation was cast into pockets cut into the retaining wall, in order to provide load transfer from the retaining walls to the raft.

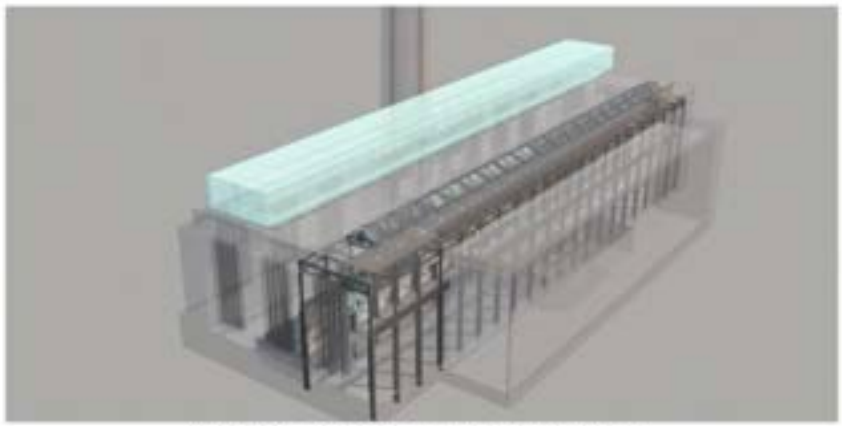


An example of a raft foundation

Elements of the turbine hall space

- Herzog & de Meuron's choice for a very plain finishing of the space, only amplified the void status of the space. On the ground, the architects provided a grey, polished floor. They restored the steelwork and painted it dark charcoal grey. They repaired the brickwork on the Switch House wall to the South and painted it grey as well. The solid bridge that breaks the Hall in two and connects the North entrance with the future South entrance, is painted black, as well as the stairs descending to the ground floor. The only bright elements are four light-box windows that overlook the Turbine Hall from the new gallery levels to the north. These provide artificial light for the Turbine Hall, indicate separate levels, and afford views both over the Hall and from the Hall into the gallery levels.
- The space apparently lacks those architectural elements - windows, doors, stairs, thresholds, etc - that have traditionally been seized upon to 'reveal' the particularity and contingency of the architectural and institutional 'framework'. And if they are present, they simply vanish in the vapid space of the Turbine Hall. In addition, the space most shrewdly secretes its own history. Those few elements that recall the industrial past of the building have either received an insipid finishing or smoothly blend with the new architecture. The industrial architecture of Tate Modern does not constitute a historically resonating context, but an aesthetically pleasing background. The result is a site that appears to be devoid of specifics, a context that seems to confront the artists with the critical impossibility to draw something 'specific' from it. It is as though there are no stories to unravel, no details to amplify, no hidden or back spaces to disclose, no hidden mechanisms to expose, no institutional regimes to divulge in the Turbine Hall. The only 'thing' the Turbine Hall has to offer, as it were, is a vast and empty space: a void

A focused look of the Turbine Hall empty interior

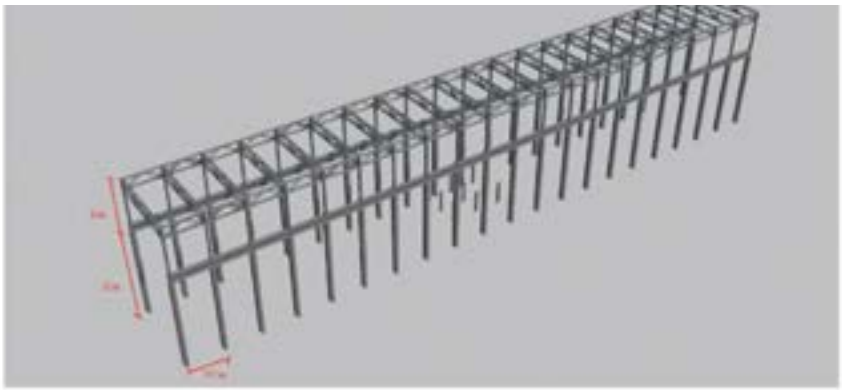


A stripped down Tate Modern with the structural skeleton exposed

A closer look at the I-beams within the walls of the Turbine Hall

Function of the turbine hall

- In reality, the Bankside Power Station did not correspond to a customary warehouse building at all. The only space in which initially - i.e. before the conversion - the architectural specificity of the Bankside Power Station could be experienced, was the giant Turbine Hall in the middle. Both the Boiler House and the Switch House, respectively at the left and right side of the Turbine Hall, were completely filled to the ceiling with heavy industrial equipment and machinery. Once these were removed, the building emerged as a colossal spatial envelope, supported by a steel skeleton and enclosed by a thin brick skin. Eventually the power station was just a large and empty hall of such size that there was simply no architecture to be converted.
- Of all the participating teams in the first stage of the competition, only Herzog & de Meuron preserve the space of the Turbine Hall in its totality. Their plan is to convert it into an 'entrance hall whose generous space reminds [them] of urban passages'.
- They define it both as public vestibule and display space: '[the] Turbine Hall [is] not only spectacular because of its bold industrial appearance and because of its logistical advantages for orientation and access to all internal areas: it will also be a wonderful exhibition space for temporary and special installations, whose dimensions are beyond the possibilities of the display spaces in the Boiler House'
- The Turbine Hall will function as 'the building's centre of gravity' and the starting point for all further visits.
- After having entered the museum from the North entrance and standing on the platform in the middle of the Turbine Hall, the reader is addressed as a future visitor and invited to descend into the Turbine Hall and look at the artworks due to its functional circulation design
- In Herzog & de Meuron's final design, tension between the old building and the newly inserted architecture is largely absent. The only relics of the former Power Station are the original gantry cranes that have been retained in the Turbine Hall, to be used in moving works of art and to carry a flexible lighting system.
- The Turbine Hall is the only place where the so-called art-friendly character of the industrial structure actually appears, and this is paradoxically the space in which the representational aspect and spectacular nature of the architecture of many new museums is at its best.
- It is a type of space that was supposed to make the artists feel at ease and stimulate them to get to work, is blown up to such dimensions that it no longer corresponds to a regular working space.



The structural skeleton holding the Turbine Hall together

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Immortal Gallery

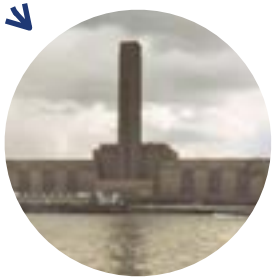
Inspirations

Immortality

Life cycle of Bankside power station

It was born, demolished and brought back to life through years.

Bankside Power Station starting to produce electricity In 1891[1]

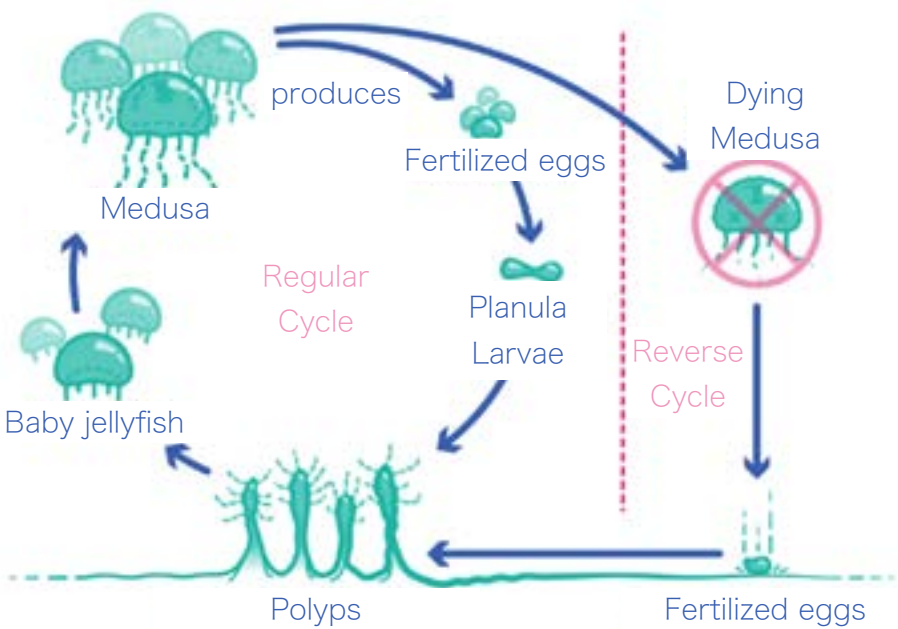


Bankside Power Station closed in 1981[2]

Tate Modern completed in 2000[3]

Life cycle of Turritopsis (Immortal jellyfish)

Turritopsis can bring itself back to the stage of newborn when it's dying, which means it is immortal[4]



Life cycle of Art

Art was doubted, challenged and evolved again and again in history. [5]
Art is alive and art doesn't die.

Ancient art

Renaissance[6]

Contemporary art

[1]Rowan Moore and Raymund Ryan, Building Tate Modern, Tate Gallery, p.180
[2]"The Bankside Power Station State. Sir Giles Scott Explains", The Builder, 23 May 1947, p.494
[3]Wouter Davidts, "The Vast and the Void On Tate Modern's Turbine Hall and 'The Unilever Series' "

[4]https://www.science.org.au/curious/earth-environment/animals-can-live-forever
[5]Art History Timeline: Western Art Movements and Their Impact, https://www.invaluable.com/blog/art-history-timeline/
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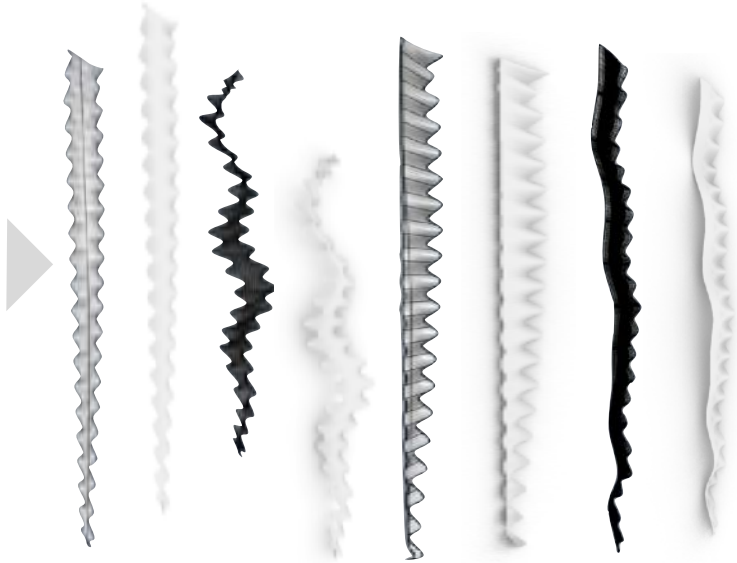
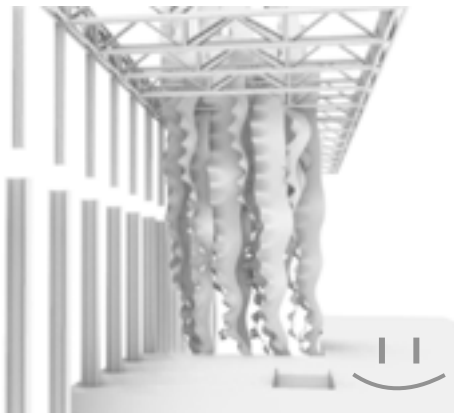
Intention & Manifesto

To design an installation in the turbine hall that shows the immortality of art.

Prototypes

Inspiration





Material

White transparent fabric

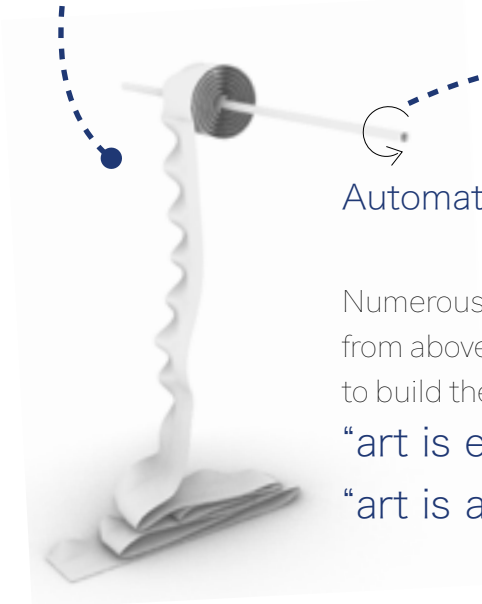
+

fluorescent white pigment

Functions

Tools panel

Everyone is encouraged to create their masterpieces with them.

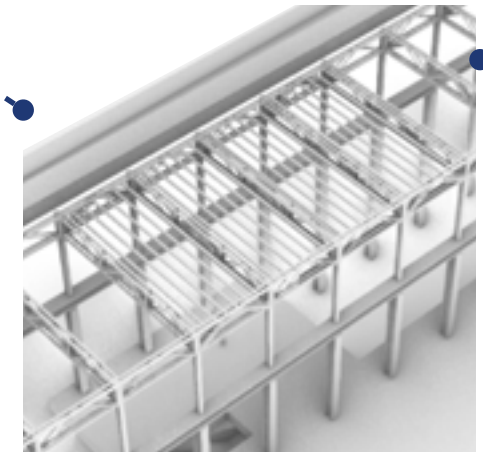


Automatic paper roll

Numerous papers continuously grow from above and pile up on the ground to build the feeling of

"art is everywhere" and

"art is alive and immortal."



Poles

that support the paper rolls on the skeleton above.

Night Gallery

Inspirations

1. Study of Western art history

From Ancient time to Modern art: Art was only created by trained artist.

Art was for religious, symbolic and mytholitical use and usually used as decorations for utilitarian objects[1].

Humanity was denied and art mainly worked for religions[2].

500 — 1400

Ancient Art | Medieval

The Parthenon
432 B.C.

Code of Hammurat
1754 B.C.

Duomo di Milano
1386

Lamentation
Giotto di Bondone
432 B.C.

Humanism, rationalism and equality were expressed in art.
Art usually worked for people from royal and wealthy classes by trained artists.

Modern Art began to think critically about the society, people's daily life and even art itself, based on Sigmund Freud's theories.[3]

Mona Lisa
Leonardo da Vinci
1503-1506

The Last Judgement
Michelangelo
1534-1541

Girl with a Pearl Earring
Johannes Vermeer
1665

Napoleon Crossing the Alps
Jacques-Louis David
1801

Woman with a Parrot
Gustave Courbet
1866

Princess Hyazinthe
Alphonse Mucha
1911

Woman with a hat
Henri Matisse
1905

The Blue Rider
Wassily Kandinsky
1903

1400 — 1600 — 1750 — 1830 — 1870 — 1890 — 1900 — 1935 — 1939

Renaissance | Baroque | Neoclassicism | Realism | Art Nouveau | Fauvism & Expressionism | Art Deco

Rococo | Romanticism | Impressionism | Post-Impressionism | Da Da & Surrealism

1699 — 1780 — 1850 — 1860 — 1885 — 1910 — 1916 — World War Two

Venus Consoling Love
Francois Boucher
1751

The Nightmare
Henry Fuseli, 1781

Dance in the City
Pierre-Auguste Renoir
1883

The Starry Night
Vincent van Gogh
1889

Chrysler Building
William Van Alen
1928-1930

Fountain
Marcel Duchamp
1917

utomatic Drawing
André Masson
1924

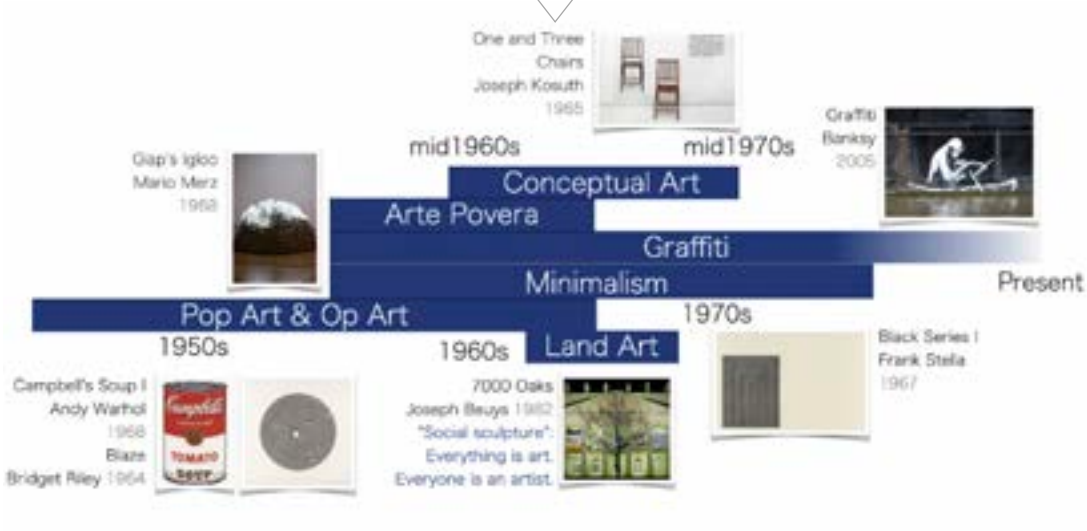
[1]Art History Timeline: Western Art Movements and Their Impact, https://www.invaluable.com/blog/art-history-timeline/
[2]Timeline of Art History, https://www.identifythisart.com/timeline-of-art-history/
[3]Modern Art Movements: 1870s to 1980s, https://www.theartstory.org/section-movements-timeline.htm

Inspirations

I. Study of Western art history

Contemporary Art:
Everyone could be an artist.

Contemporary artists break the boundaries between artists and audience, and blur the division of daily life and art[4].



Contemporary Art from my perspective :
Everyone is a piece of art. Life itself is art.

Life is designed in a way so complicated, beautiful and unique that even the best artist can't draw. Life itself is art[5].

II. Study of nature



It is nature and life who teach us what beauty is.

The definition of beauty was formed during millions of years of humans' life experience in nature[6].

[4]Contemporary art, https://www.tate.org.uk/art/art-terms/c/contemporary-art
[5]modern and Contemporary Art Movements, https://www.preceden.com/timelines/241050-modern-and-contemporary-art-movements
[7]619 Facts About Sydney Opera House That'll Make You Go "Huh", Simon Crerar, https://www.buzzfeed.com/simoncrerar/unpeeling-the-orange

Inspirations

III. Cymatics art

Nigel Stanford,
a composer form NZ
created a video where every sound had a corresponding visual element (in forms of water, sand, fire or image) in 2014[7].

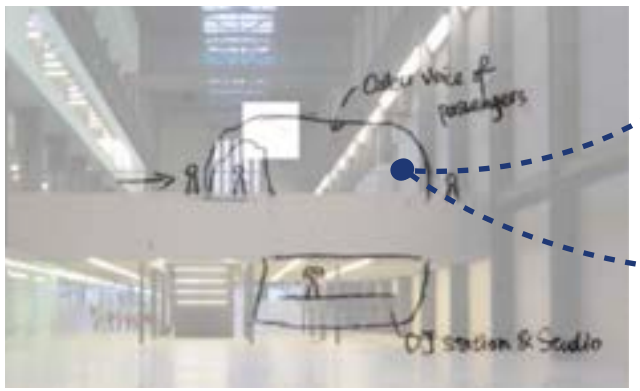
Hans Jenny[8],
the forefather of cymatics created several televised experiments 'bringing matter to life' back in the 1960s, to make sounds seen.

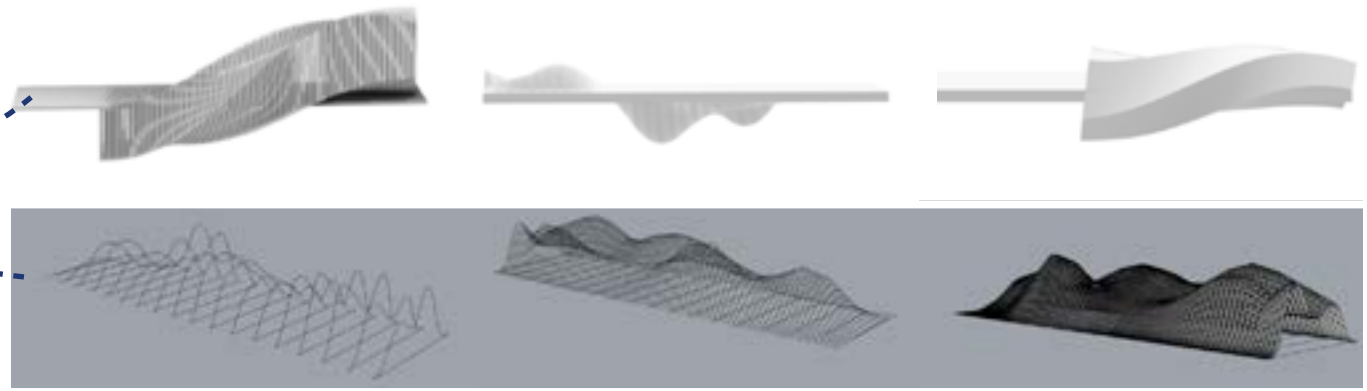
Nigel at work looks very much like a DJ in night club.

Intention & Manifesto

1. To design a space where people's voice becomes a unique art piece, to tell people "everyone is a piece of art. Life is art." ;
2. To build "a night club" in Turbine hall for sound artists like Nigel, in order to challenge the normal rules of a gallery.

Prototypes



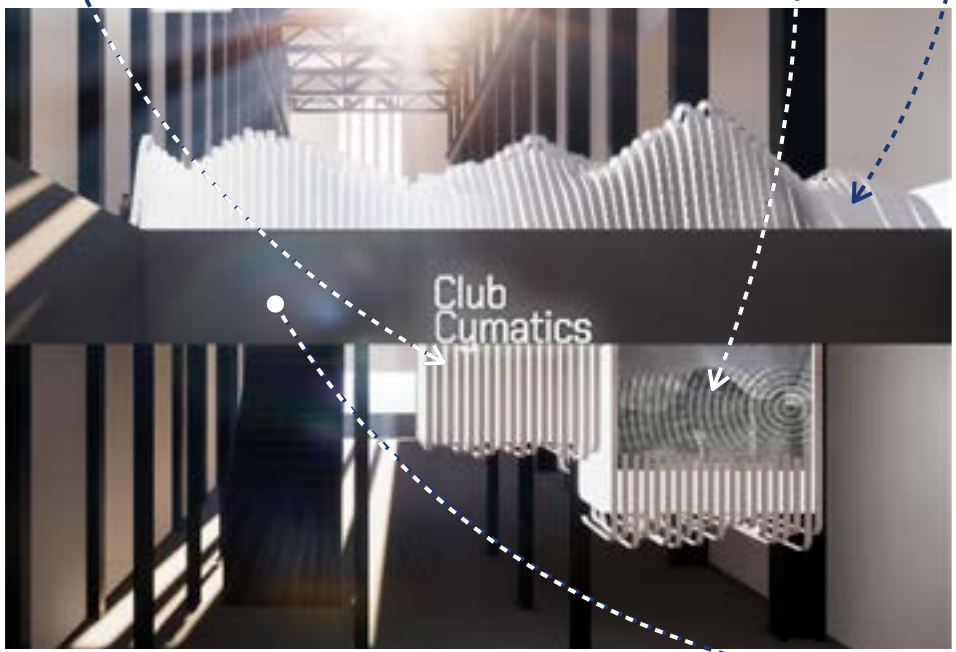


Function

Visitors' voice is collected in the passageway and sent to the artist at the DJ station below.

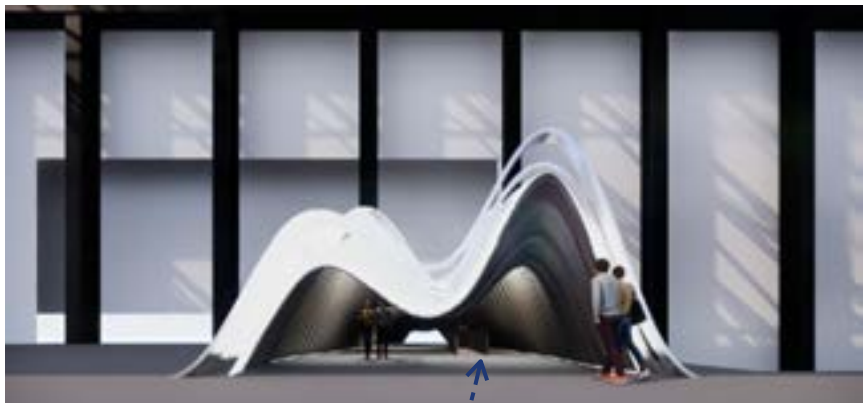
The artist turns the sounds into art pieces and they will be shown on the transparent LED screen.

The artist is able to teach visitors to record their voice and turn it into art piece in the 2 professional guest studios.

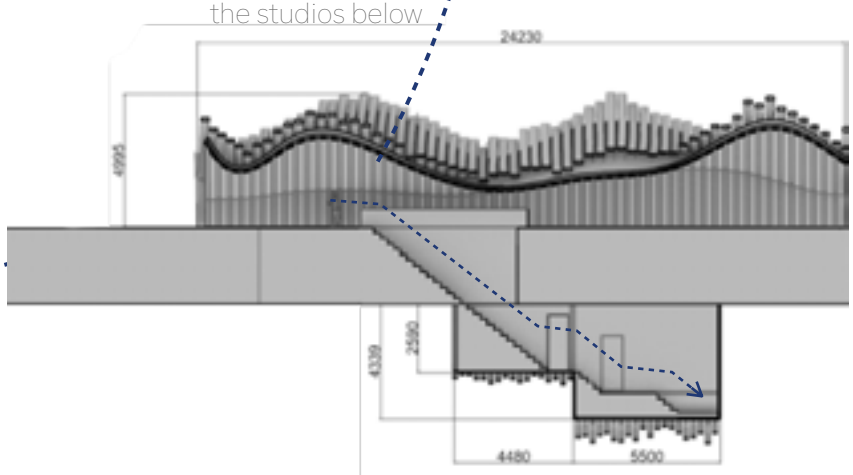


Passengers can use the stairs in the passageway to get to the DJ station/studio below.

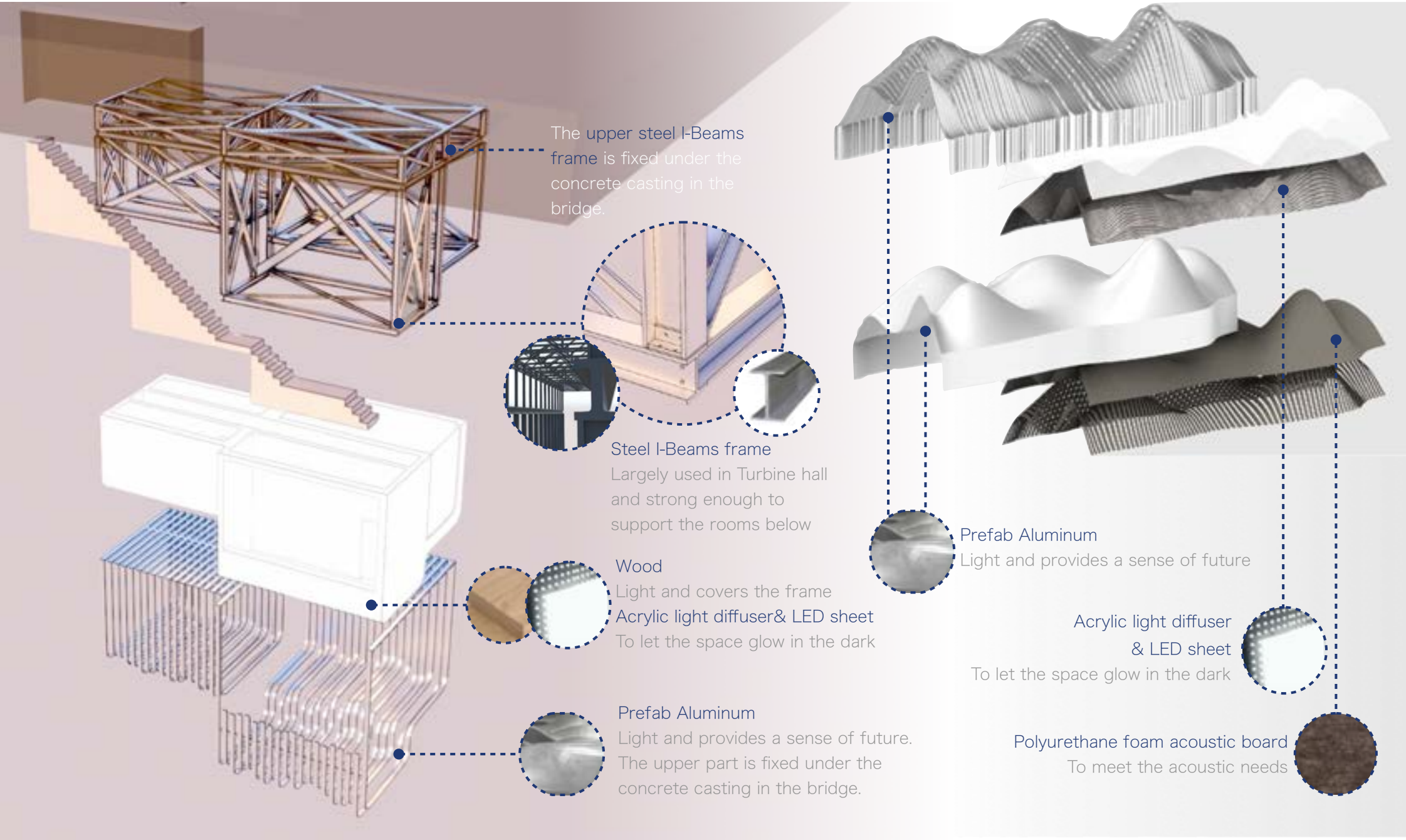
Views of sound-collecting passageway



The entrance of the stairs towards the studios below



Structure and Materials



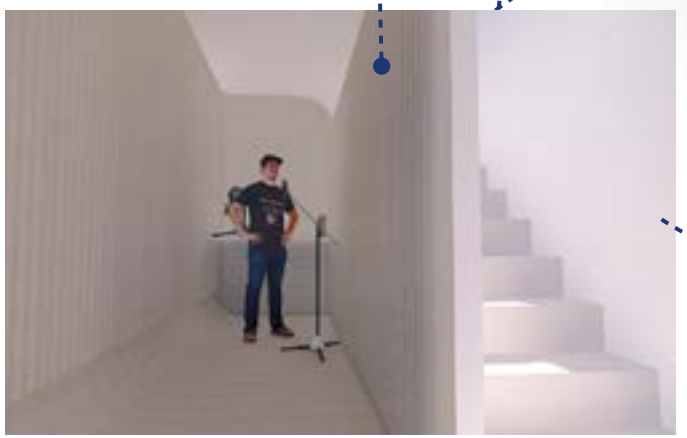
Rooms below the bridge

Artist's living area
(future style to echo the outlook)

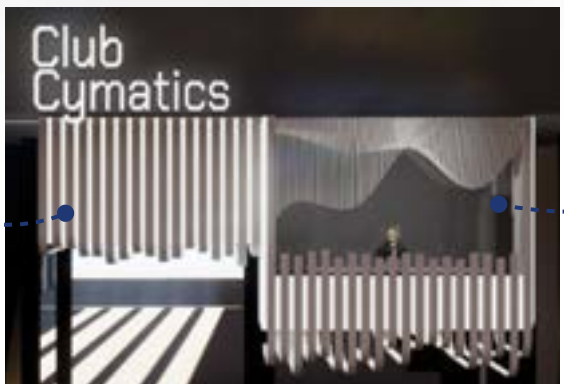
Plan

Polyester fiber acoustic board

2 Guest studios



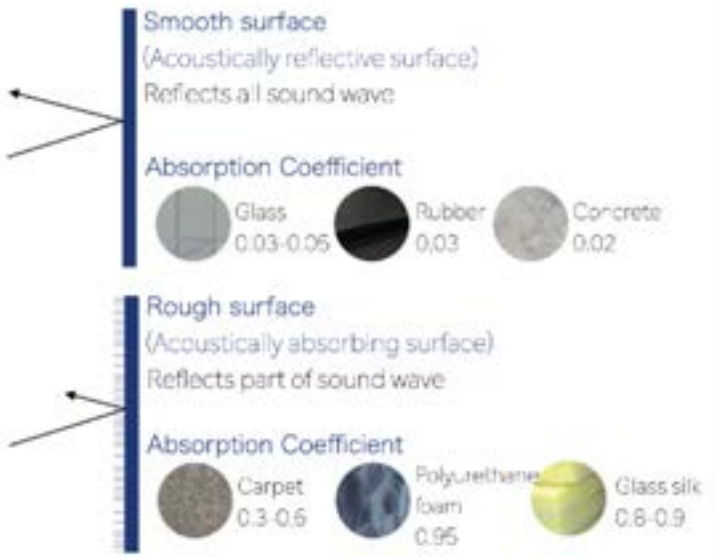
Front View



DJ Station

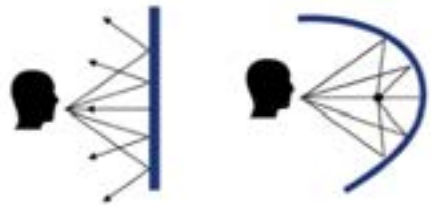
Acoustics study

I. Rough surface absorbs more sound that smooth surface to reduce echo[9].

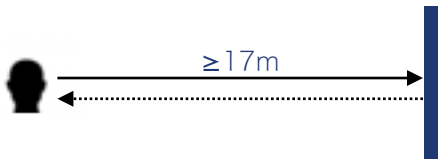


II. Irregular surface absorbs more sound than flat surface to reduce echo.

III. Curved surface concentrates sound waves, while straight surface amplifies them[11].

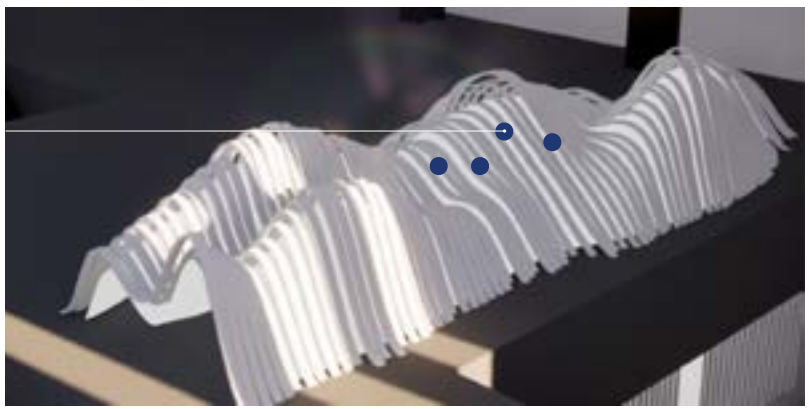


IV. To cut echoes, the distance between people and walls should be less than 17m[13].



The sound speed is around 343 m/s at 25 ° C. The human ear can only distinguish echo from the original direct sound if the delay is less than 0.1 second. Therefore, the distance between the observer and the obstacle should at least be 340m/s×0.1s=34m, 34m/2=17m.

Since the two entrances cannot be closed, microphones are only placed in the middle part of the passageway, to avoid catching sounds from outside.



The passage way needs to meet acoustic standard in order to better collect passengers' sounds.

The inner view of the passage way

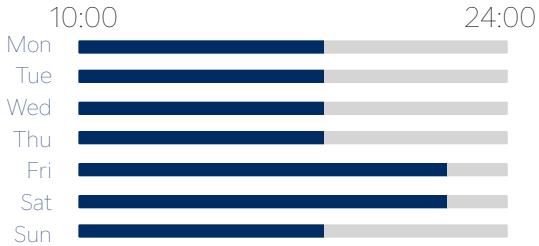
Rough, striped and curved under surface made of polyurethane foam.

Distance between people and walls is between 0.3 to 2m, which is far less than 17m and cannot produce echoes.

[9]Room Sound Absorption - Sound Absorption Coefficient, https://www.engineeringtoolbox.com/accoustic-sound-absorption-d_68.html
[10]Trevor Cox ,The Acoustics of Eavesdropping ,https://slate.com/culture/2014/06/the-acoustics-of-eavesdropping-how-curved-ceilings-and-walls-redirect-and-amplify-sound.html
[12]Vercammen, Martijn L. "Sound concentration caused by curved surfaces." In Proceedings of Meetings on Acoustics ICA2013, vol. 19, no. 1, p. 015053. Acoustical Society of America, 2013
[13]Khan Academy India - English, Minimum distance for echo, https://www.youtube.com/watch?v=LnZSnlQ7shs

Opening hours adjustment (to challenge the normal rules)

Opening hours of Tate Modern now[14]



Nine-to five office workers

It will be much more convenient if the opening hours of a museum is longer, so that we can **visit it on work days** after work.

We want to **make art closer to people's life**, so we let people use the bridge as a **daily shortcut**. But that does not change **the essence of art**.

Tate Modern

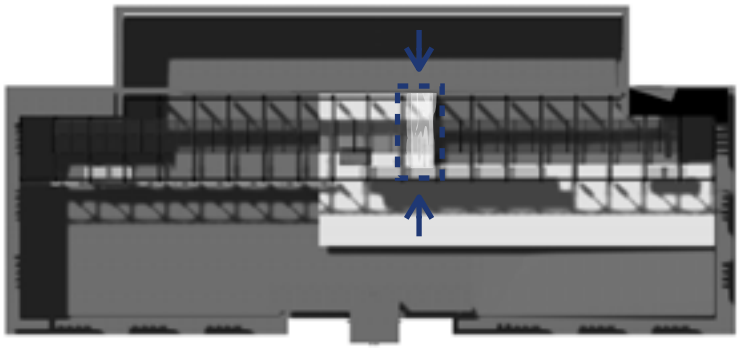
Extra opening hours of Club Cymatics

After Tate Modern is closed, Club Cymatics glows in the dark.
People gather in Turbine Hall, watch the art pieces from the day and enjoy the music.

Normal rules in a gallery	VS	Rules in Club Cymatics
Keep quite		Make sounds as you like
Keep your eyes on the wall		Learn and make your own art piece
Come in the day		Come after work
Visit our art pieces		Enjoy you yourself as art
It is high-end education		It is daily entertainment

[14] Tate Modern, https://www.tate.org.uk/visit/tate-modern

Extra entrance (to break the boundaries of inside and outside)



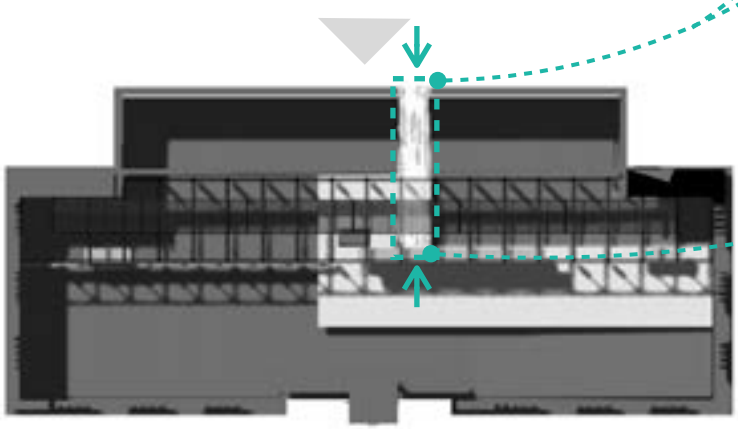
Initial plan: the 2 entrances of Club are inside Turbine Hall

Security

Since Club keeps open after Tate Modern is closed, it will be more convenient if it has its own entrance at the outside.

When Tate Modern is closed, I wish people can notice Club from the outside so they will not miss it.

Artist



Now: one of the 2 entrances is extended to the outside.

The entrance at the outside of Tate Modern in the day

The entrance at the outside of Tate Modern in the night

The entrance inside Tate Modern in the night

More functions

Are there other artists who illustrate "life is art" and can use the Club?

I. Pulse - Hirshhorn Museum[15]

The interactive exhibition held "Pulse" in Washington D.C turned visitors' pulse in to art, in forms of water, light, videos, etc.

Visitors will place their hands on the sensor in the passage way, and their heartbeats will be shown in the form of lights, water, music or pictures.

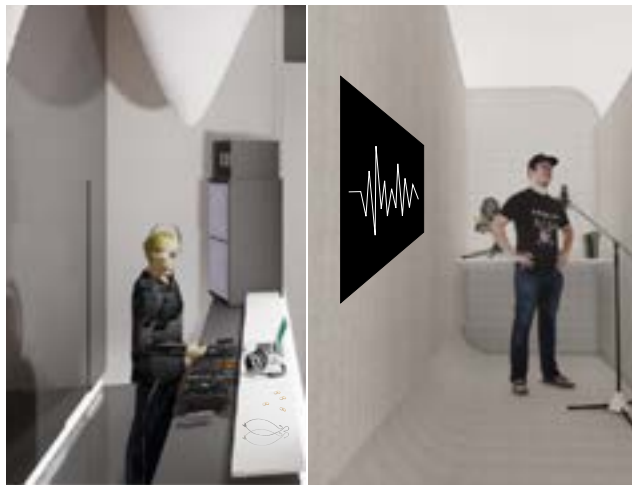
II. Presence - Daan Roosegaarde[16]

A beam of blue light constantly scans the space, like a photocopier, leaving behind a ghostly imprint wherever a visitor blocks the light.

Both the passageway and the turbine hall in the night can be used as the 'dark room' for the artist.

III. Sound wave jewelry - Maliangxing[17]

"Wear your voice." The jewelry brand 马良行 turns people's meaningful voice recordings into jewelry pieces as good memories.



Visitors record their voice in guest studio and artist turns them into unique jewelries in DJ station.

[15]Giles Gibson, 'Pulse' interactive exhibit turns heartbeats into art, 2019, https://america.cgtn.com/2019/02/20/pulse-interactive-exhibit-turns-heartbeats-into-art

[16]Rima Sabina Aouf, Daan Roosegaarde's Presence exhibition encourages visitors to make their mark, https://www.dezeen.com/2019/07/07/daan-roosegaarde-presence-exhibition-groninger-museum-installation/

[17]MALIANGXING, 2020, http://www.malianghang.com/index

Masterplan Extension

1. Apart from our flesh and bones, does our unique thoughts and consciousness make life art too?
2. What if I deepen the idea of “night” and explore its connection with art?

Inspiration

I. Study of Surrealism

Breton in 1924

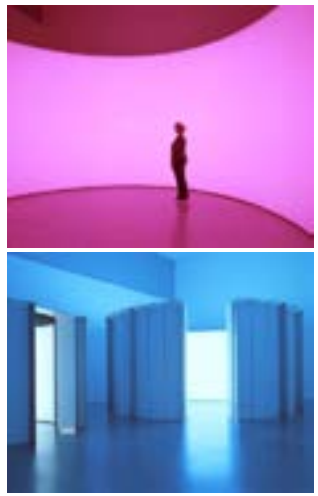
Salvador Dali, 1939
Ballerina in a Deaths Head

Surrealism officially spread in Paris after André Breton made his first Surrealism manifesto in 1924. In his revolutionary movement,Breton aimed to liberate people from the imposed rational order. The unconscious was to be liberated and dominant, taking over logic and reason that have, in Breton’s opinion, done nothing good for the society. [18]

The Surrealist intent to liberate expressive form, to release the world of the subconscious, of dreams and nightmares, paranoia, suppressed eroticism, and the dark side of the mind, creating an enduring and ever-lasting legacy.[19]

II. Art in dark

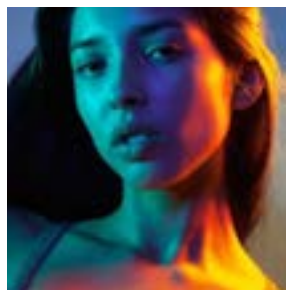
Tommy Hilfiger fashion show[20], 2020
In Tate Modern



Olafur Eliasson[21], Beauty, 2007 ;
Your Double-Lighthouse Projection, 2002

Robert Henke[22], 2014,
Destructive Observation Field

TEAMLAB[23], 2014,
Borderless



Maggie West[24] , 2014,
Light portrait

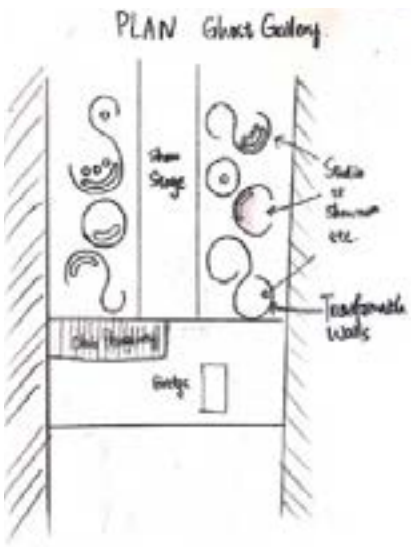
[18]David Fox, Dark Surrealist Art, 2020, https://davidcharlesfox.com/dark-surrealist-art/
[19]Angie Kordic, All You Need to Know About the Surrealist Movement, 2016, https://www.widewalls.ch/surrealist-movement/
[20]Ana Rosado, CNN, How it’s made: Backstage at Tommy Hilfiger’s global, celebrity-filled show, 2020, https://edition.cnn.com/style/article/tommy-hilfiger-tate-modern/index.html
[21]Olafur Eliasson, https://www.olafureliasson.net
[22]Robert Henke, Destructive Observation Field, 2014, https://roberthenke.com/installations/destructive.html
[23]Teamlab, Borderless, 2019, https://borderless.teamlab.art/shanghai/
[24]Maggie West, 2020, http://maggiewest.co

Intention & Manifesto

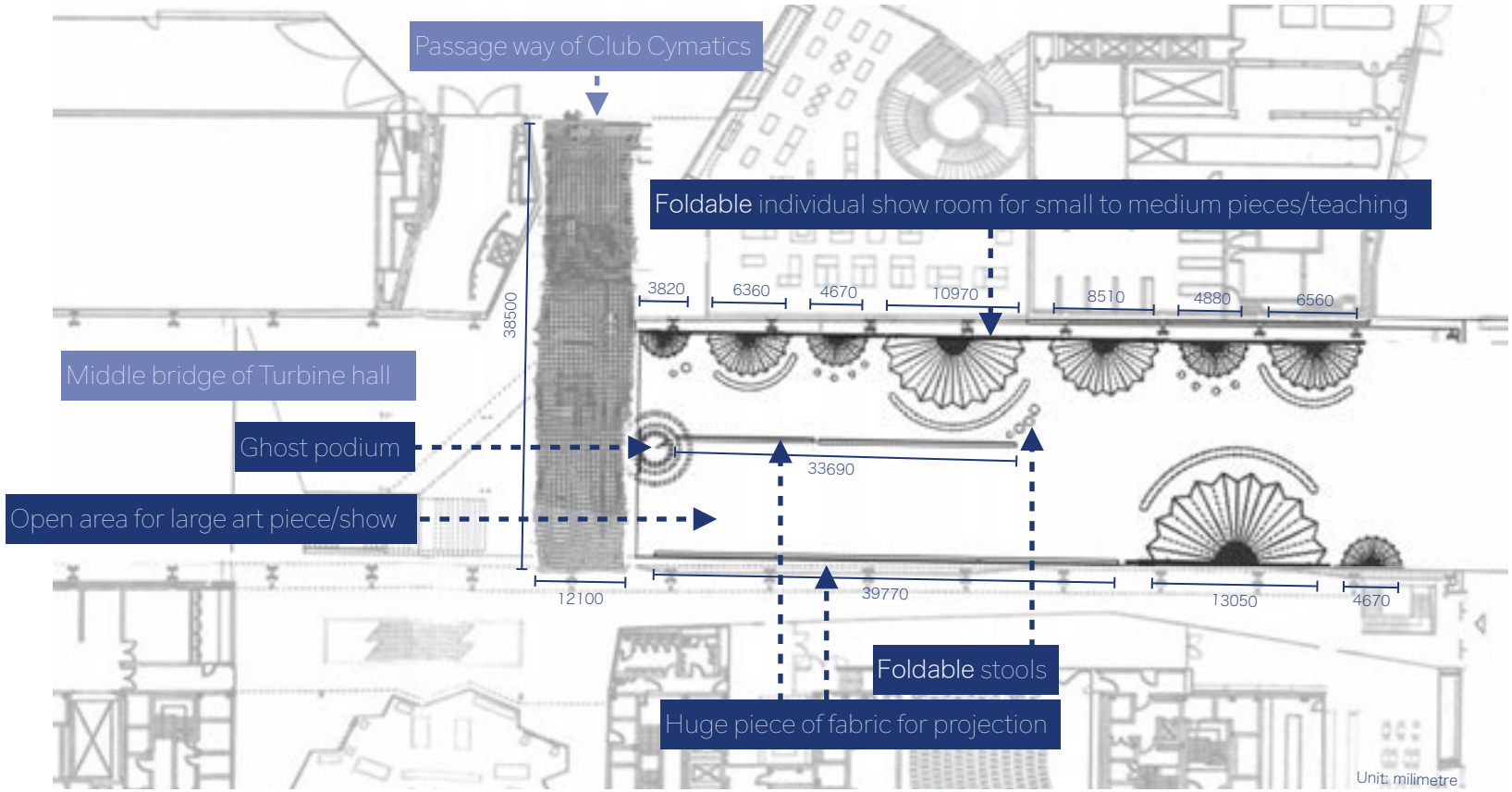
1. To create a "Ghost Gallery" that only appears in the night and disappears when the sun comes up, to state the existence of 'subconsciousness', and to challenge the normal image and rules of a gallery;
2. To gather artworks that only exist in the dark, slow people down, invite people to participate and let people become a part of it;
3. To set a "Ghost Podium" where people can freely and safely give speeches (voices) that will be forgotten the next day.

Plan

I.



II.

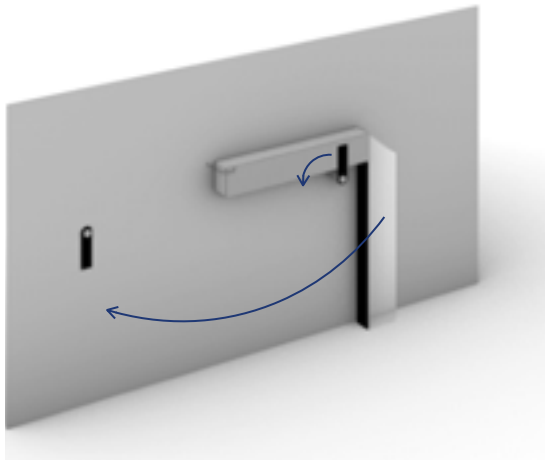
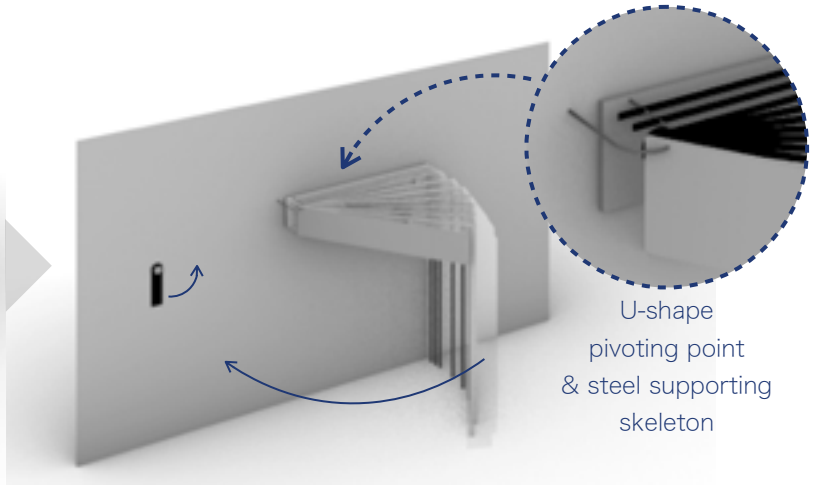


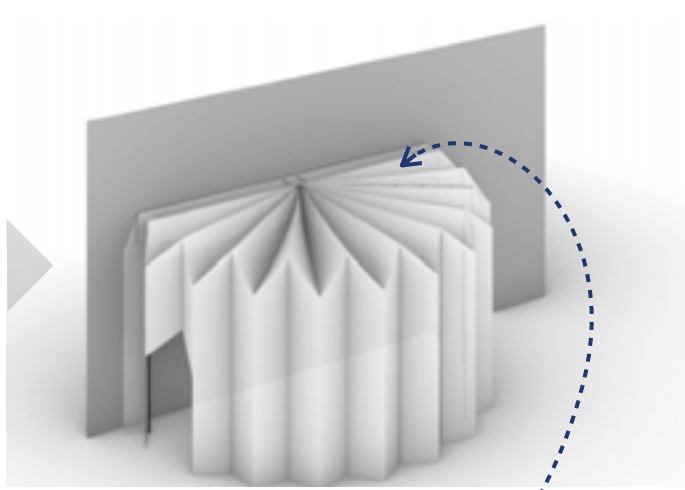
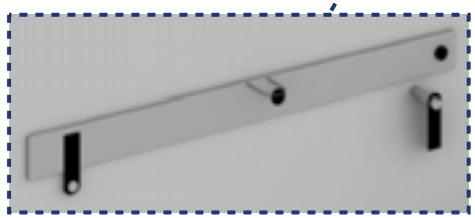
Foldable individual show room



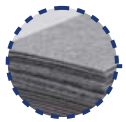
Inspiration

Origami[25];
Convertible bed

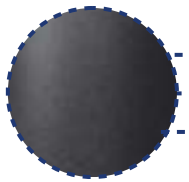




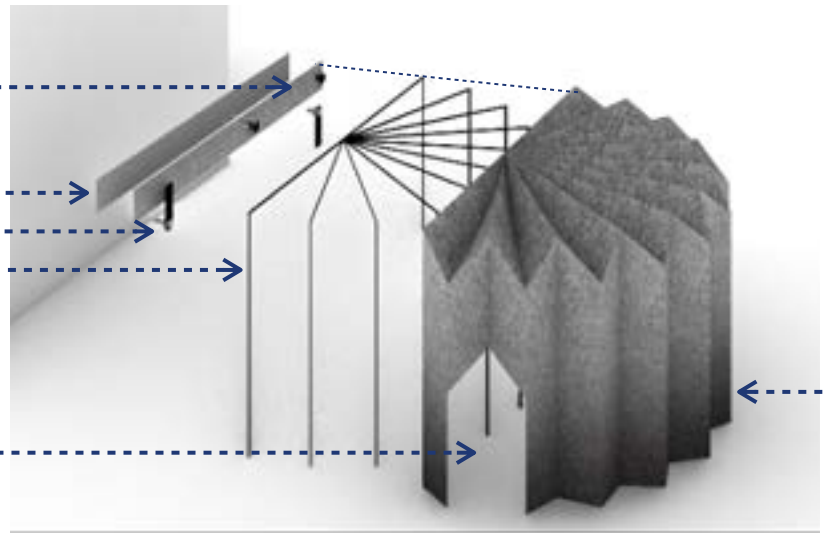



Hard polyster felt (sheet)
connected with the main part

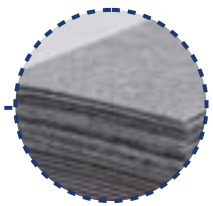


Black steel
bolts and skeleton





The entrance to the inside



Hard polyster felt (main part)
- Gradient grey and black;
- Hard enough to stand with steel skeleton but foldable;
- Does not reflect lights in the dark;

[25]My Attic: Today's Crush: The Home of Designer Lisa Marie Andersson, https://entermyattic.com/

Night view 1 of Ghost Gallery

Inside of individual show rooms [27] [28]

Artists place their special artworks that slow people down in the dark show rooms. Here they also hold discussion with visitors or teach visitors to make their own art pieces.

Foldable cardboard stools[29] (by Molo)

These stools are easy to be moved anywhere and can be folded during the day. Artists use them to hold discussions with visitors. Visitors rest here enjoying the night.

Huge projection on the fabric

Visitors are able to create photos in front of it[26], or just to feel the environment the projection creates.

Ghost Podium

The LED light in the ground is normally off, but automatically turned on when a visitor steps into the middle to give a speech.

Nothing people say here is recorded. it's all forgotten once the sun comes up.

Inspiration

How do we look at "voice"?

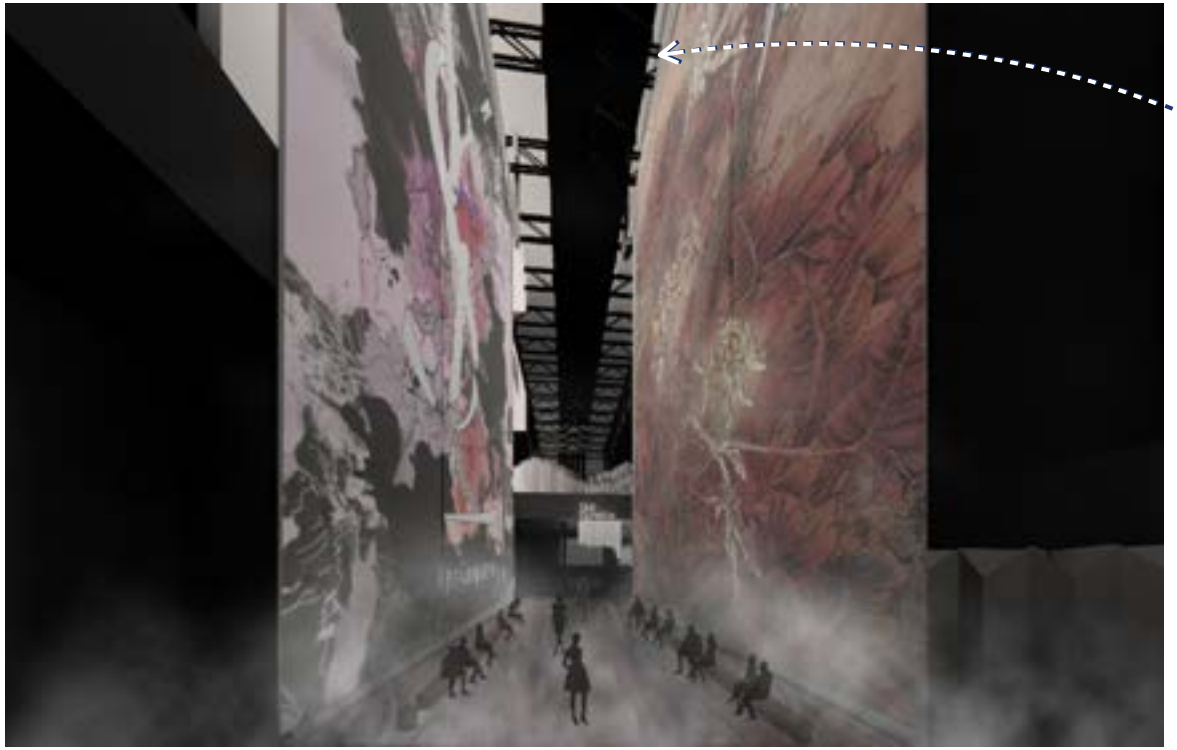
In club cymatics, "voice" itself is turned into art. But I want to dig more meanings from "voice". The content of voice, as thoughts, also speaks for the uniqueness of each of us and should be emphasized too.

Protect the voice

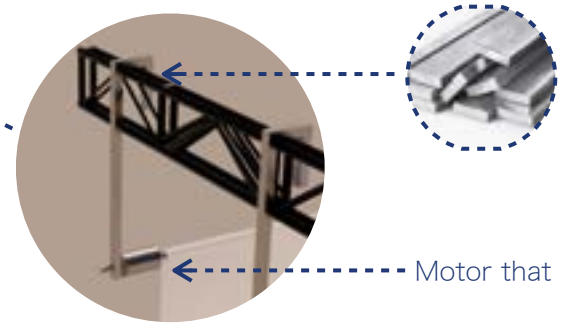
The movie <Burn After Reading> [30]and the app Snapchat both reveal people's need to protect what they say and the speech freedom.

[26]Teamlab, Borderless, 2019, https://borderless.teamlab.art/shanghai/
[27]Anthony McCall, Solid Light Films, 2018http://www.anthonymccall.com
[28]Julien Breton, https://kaalam.fr
[29]Gilded paper softwall + softseating, https://molodesign.com
[30]Christopher Orr, 30 Years of Coens: Burn After Reading, 2014, https://www.theatlantic.com/entertainment/archive/2014/09/30-years-of-coens-burn-after-reading/380666/

Night view 2 of Ghost Gallery

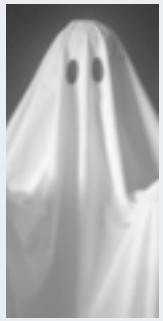


The open area between the two pieces of projection cloth can be used in many ways, such as a dark fashion show, or a large 3D projection show.



Inspiration

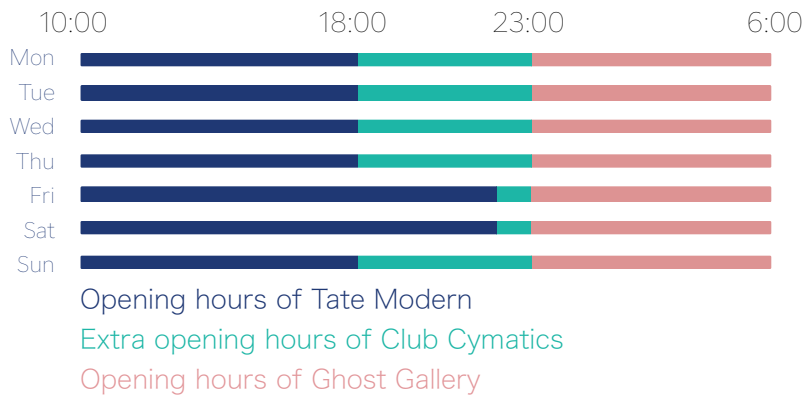
Immortal Gallery
The shape of huge projection cloth is borrowed from my pilot project that simulates jellyfish.



Ghost
The amorphous, ever-changing, irrational and complex shape gives people the unsettling feeling of ghost.

Opening hours & Rules

- Everything disappears at 6am everyday. All visitors need to leave before 6am.
- The transformation of the gallery into the night mode begins half an hour before the opening of Ghost Gallery in order to give visitors a hint what will happen in the night.
- All visitors need to sign a confidentiality contract to confirm that they will not leak what they have heard from the ghost podium.
- Visitors can slow down, participate in the process of making art and enjoy the night.
- Only artworks that can only be seen or felt in the dark and are good at engaging visitors can be placed here.



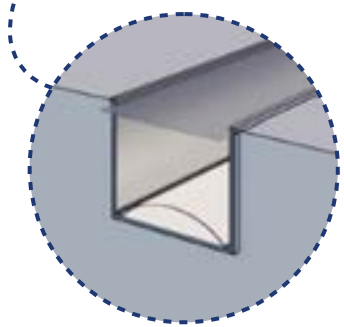
Day view of Ghost Gallery

A glimpsed of the night

— Consciousness is complex.

the shadows of the visitors from last night are cast on the floor in the day, like "ghosts".
The shape of the individual show room is illustrated by the LED lights in the ground.

Both shadows and light shape offer a hint for the day visitors to wonder what happened in the night, in order to vague the boundary between dream and reality, day and night, and to create the unsettling feeling that implies the existence of subconsciousness.



LED light

the lights are embedded in the floor with aluminum frame and acrylic surface.

Inspiration

— Works from Surrealism

Man Ray,
Glass Tears, 1932

The woman in the photo is not real, the tears are not real either. where she's looking and what is the source of her distress?

Ray's photography relied on various techniques that blurred the line between the dream and reality, the real and unreal by challenging the meaning of still-life photography[31].

Rene Magritte,
The Lovers 2, 1928

Is our consciousness lying to us?
Is what we perceive truly what things are?

Rene described his works as visible images that conceal nothing, but evoke mystery[32].
Featuring everyday objects placed in unusual contexts and juxtapositions, he challenges the assumptions of human perception and force the viewer to reconsider things usually taken for granted.

[31]Glass Tears, 1932 by Man Ray, https://www.manray.net/glass-tears.jsp
[32]David Fox, Dark Surrealist Art, 2020, https://davidcharlesfox.com/dark-surrealist-art/

Transformation view

THANK YOU

YUHUI QI

Process of making the background picture