

WELCOME TO RAINBOW ISLAND

A VISIONARY ENVIRONMENT MADE BY 100 % RECYCLED PLASTIC

Master Thesis By Elsa Boman Autumn 2014

*Chalmers Architecture
Studio: Matter Space Structure*

*Examiner: Morten Lund
Tutor: Daniel Norell*



PLASTIC NATURE

Plastic is a material with a bad reputation. Among architects and designers nothing else can be worse than having your work reviewed as "plastic", which is also a term for "tacky" and "fake". And why is that?

Maybe because the material plastic is considered to be a material for limited use and then thrown away? Maybe because plastic is a man-made material, i.e. an artificial substance?

It is interesting that so many materials that are considered as real are imitated using plastic as material. A posh "marble" bar, "oak" parquet floor and "terracotta" pots.

Not to mention the plastic flowers, all are examples of how we imitate nature with plastic.

Technically, plastic is a generic term for materials that blend polymers and other additives, based on mineral oil which is a limited resource. So as the oil wells are being emptied the mountains of waste are growing, it

becomes increasingly important that we start to re-use our plastic waste. Recycled plastic is fortunately something that is becoming more and more common, in order to reduce environmental impact,

reduce our dependency of oil and to re-use a very versatile raw material.

The plastic is all around us; from your toothbrush to the steering wheel in your car. Either you like it or not, the plastic is here to stay. One fact remains; the plastic is cheap. The plastic is easy to handle and can be molded and shaped in infinite array of shapes. The plastic melts at relatively low temperature compared to competing materials like metal, thus easy to recycle. The plastic protects against rain and wind and is waterproof.

When speaking about the definition considering real and unreal materials in our built environment, what is really real? It seems like the borders between what is real and what is not are blending more and more and

the difference between them are harder and harder to define. There is no doubt that the artificial is appealing. As a contrast to the grey everyday life, theme parks are an obvious excursion for any Svensson-family.

And some people live their whole lives in artificial virtual worlds of computer games online. Consider the expression "IRL"; "In Real Life".

There are good and interesting examples of using plastic in architecture (see pictures below) but architects of today still do not consider plastic as a fully accepted material. Because of that, plastic is an interesting material to work with. It is possible to create an environment that is not experienced as tacky and unreal by only using plastic?

Or simply, what is really real?

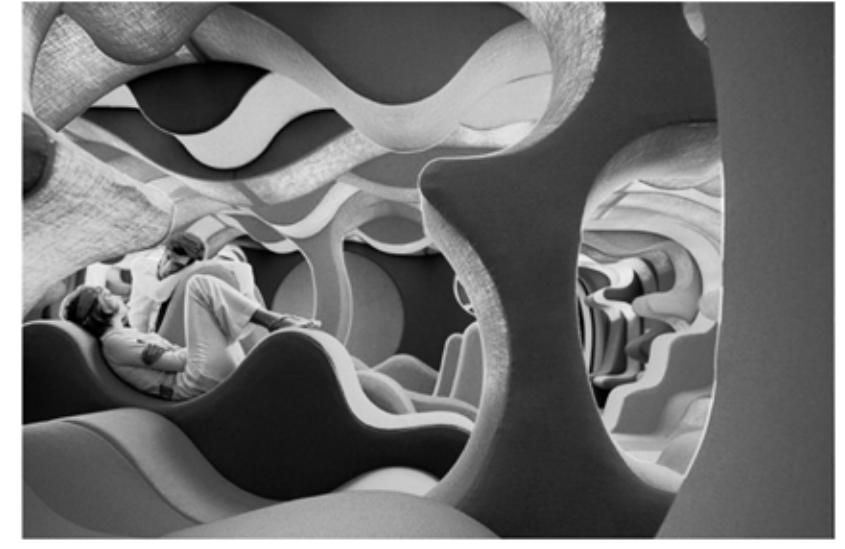
REFERENCES



"The Monsanto House of the Future" was an attraction at Disneyland in Anaheim, California, USA, from 1957 to 1967



"Studio 400 Book Show Installation" 2011 at Cal Poly San Luis Obispo



"Visiona 2", Verner Panton interior, 1970 Cologne Furniture Fair



Theme park: Disneyland



Virtual world: Minecraft



Plastic flowers

MATERIAL EXPERIMENTS

Plastic can be molded and shaped in infinite array of shapes. The esthetic value of these experiments are the irregular and unpredictable volumes that are experienced just as organic as the shapes of nature. Like cliffs and valleys, but in plastic.



PLASTIC SUMMER BATH AT RÖDA STEN

A summer bath located on the river bank by Röda Sten. A temporary plastic installation and a public city bath. Like an excursion to the archipelago, but in the city. Bring your packed lunch and thermos with coffee, put your watch in your shoes and change in to your swim wear.

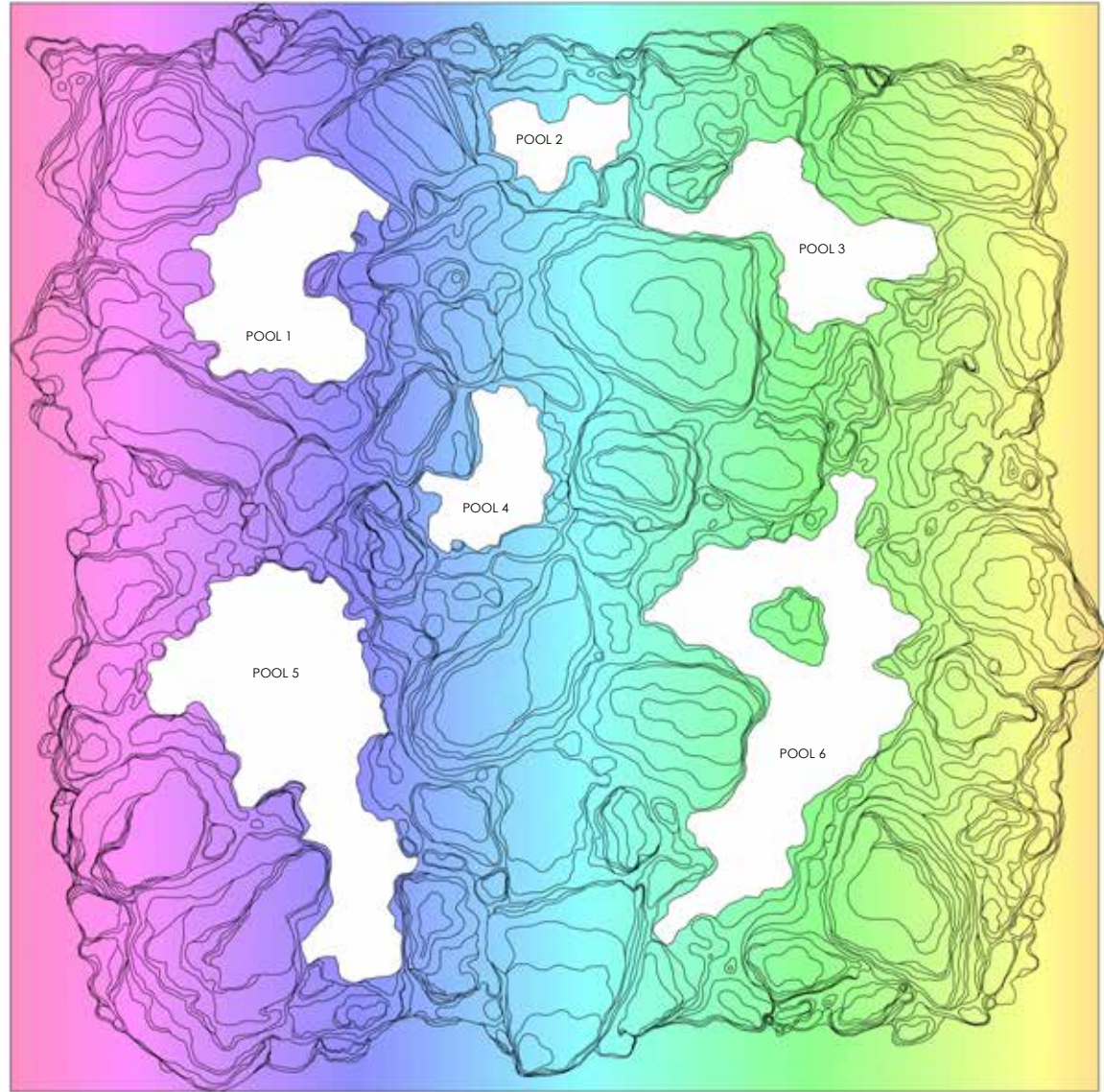
Find your own special spot in the irregular landscape. Just like you behave on a hot summer day in the archipelago.

But here, the risk of cutting your feet on sharp rocks or getting sand in your pants do not exist.

The bath is constructed like a plastic landscape on a floating platform. It is located at Röda Sten but it could aswell be transported to any other place on the river.

The contrast between the city, an urban nature with straight lines created by humans, and the plastic landscape creates an exiting environment.

What do we experience as authentic and fake?



PLAN 1:200



GOTHENBURG - RÖDA STEN - SITEMAP 1:6000

FLOATING PLASTIC PLATFORM

The platform is constructed as one floating piece, making it possible to move around to different locations. Every single location creates a new view of contrast between the plastic landscape and the surrounding.



City



Archipelago



City



Night



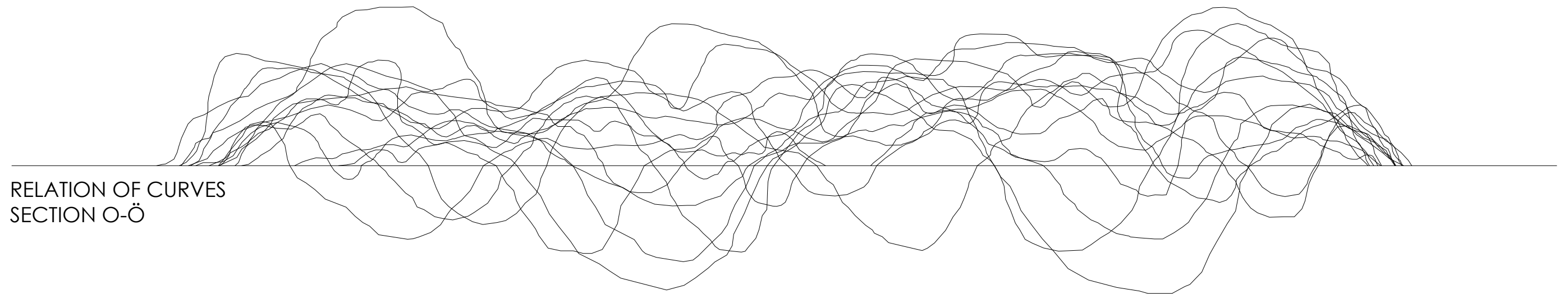
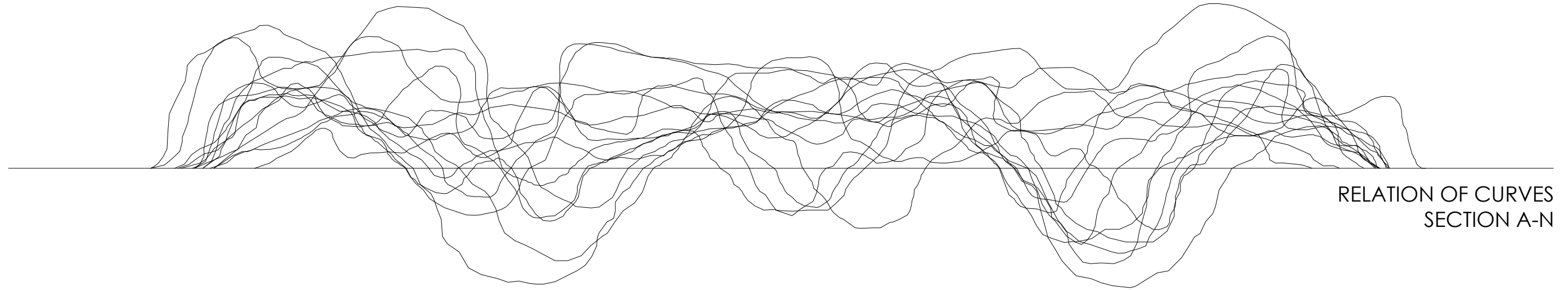
CLOSE-UP OF MATERIAL - DAY

When you come real close, the plastic is slightly sparkling. The surface is made by EPDM rubber (Ethylene Propylene Diene M-class). EPDM rubber is similar to the rubber used on playgrounds and running tracks, which creates a matte, soft and non slippery surface.



CLOSE-UP OF MATERIAL - NIGHT

During night-time the material is slightly glowing due to the incorporated LED lights. (See "Detail : Material and Construction".)

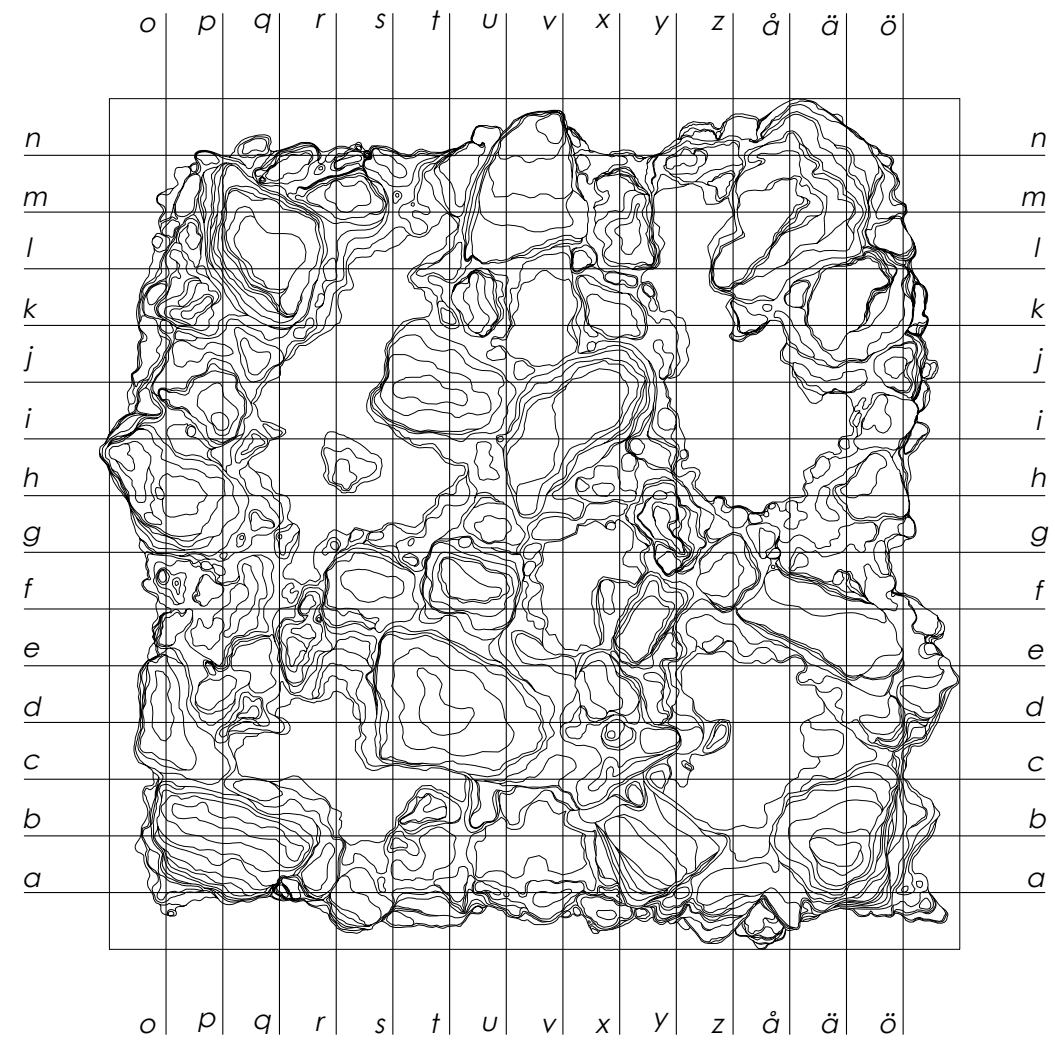




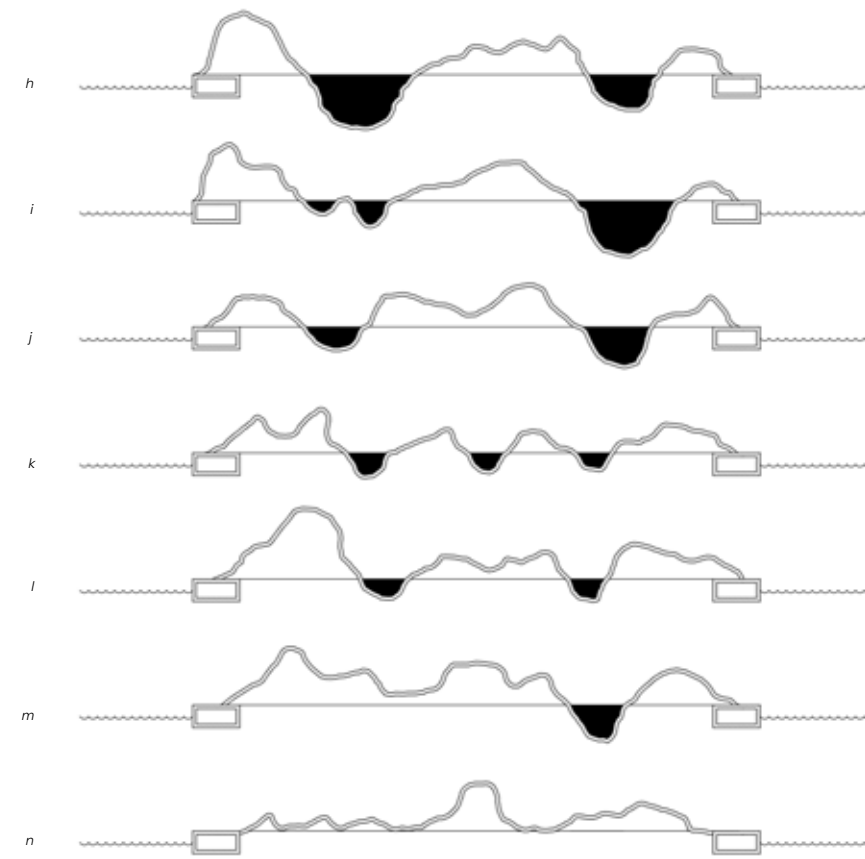
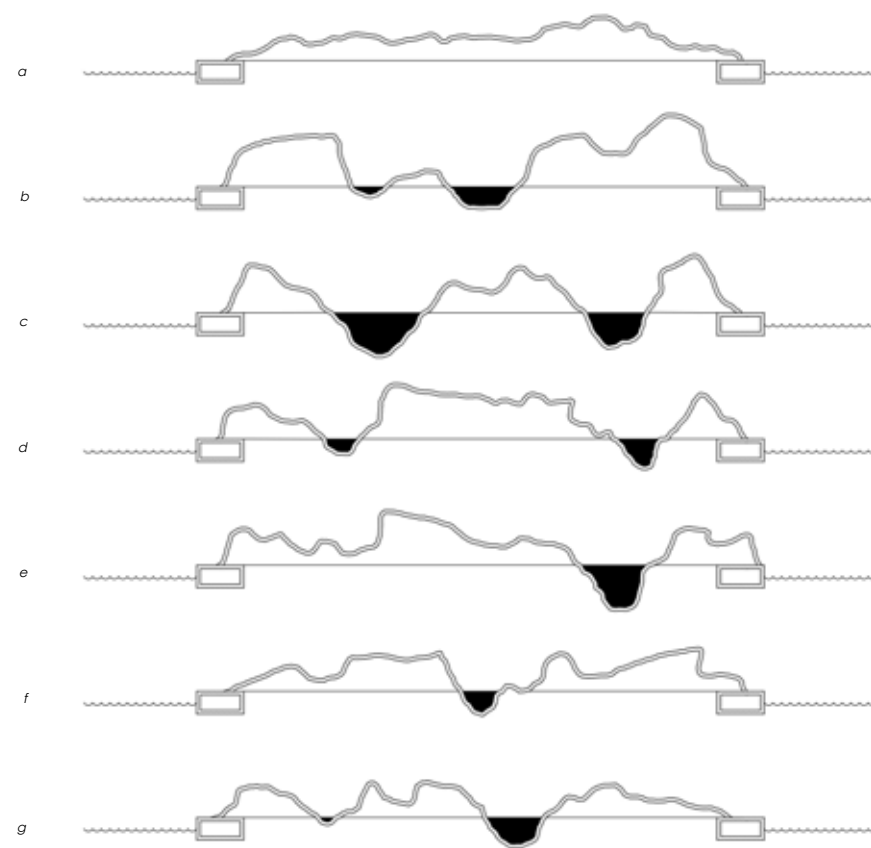
3D MODEL

Irregular volumes of nature. These volumes are experienced as random, just as we experience nature, but are constructed and put together to create a bath.

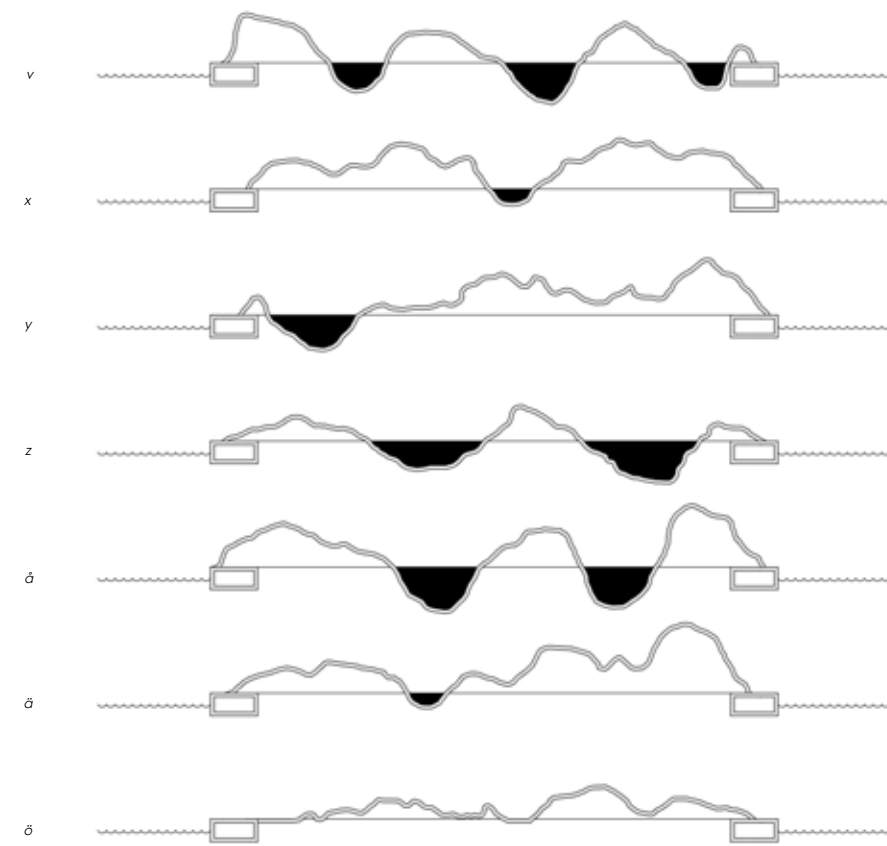
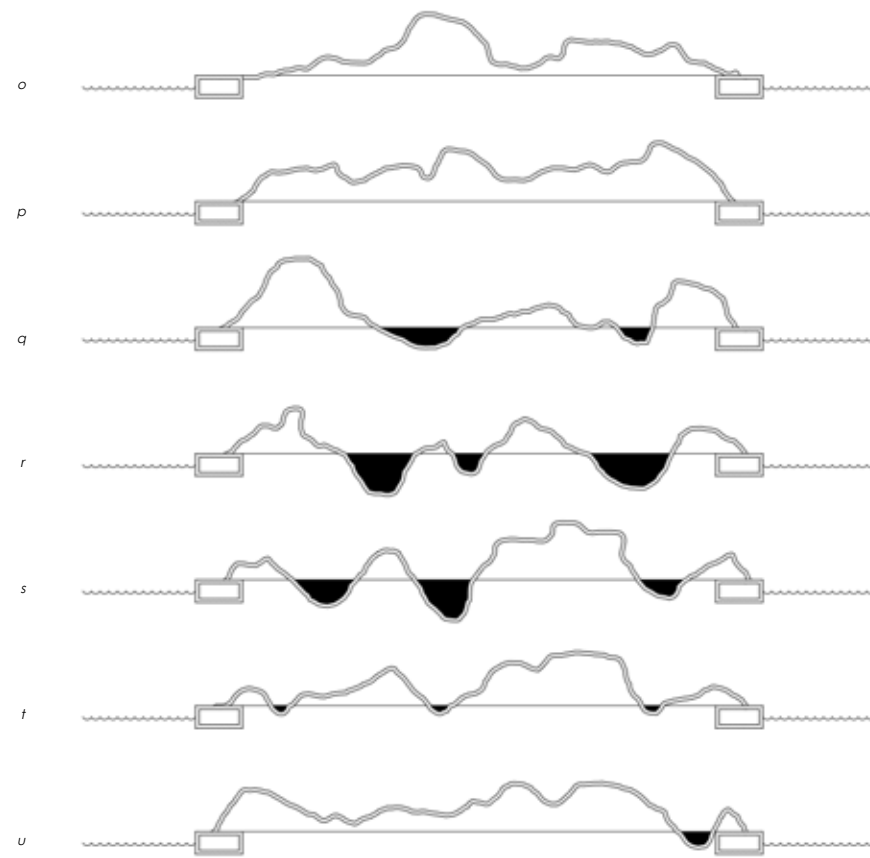
SECTION LINES A-Ö



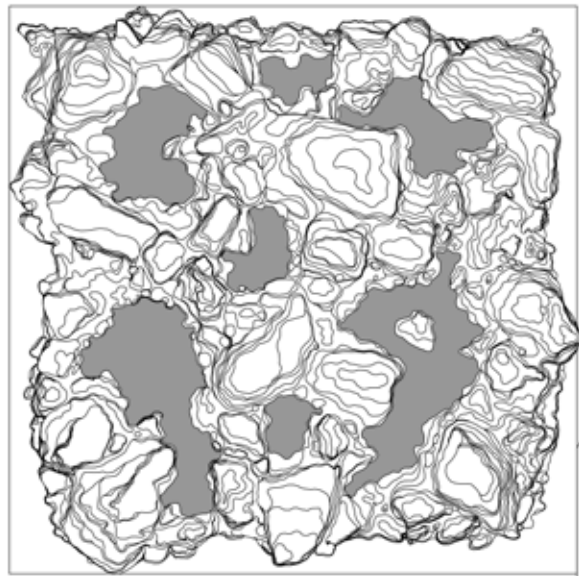
SECTIONS A - N, 1:400



SECTIONS O - Ö, 1:400

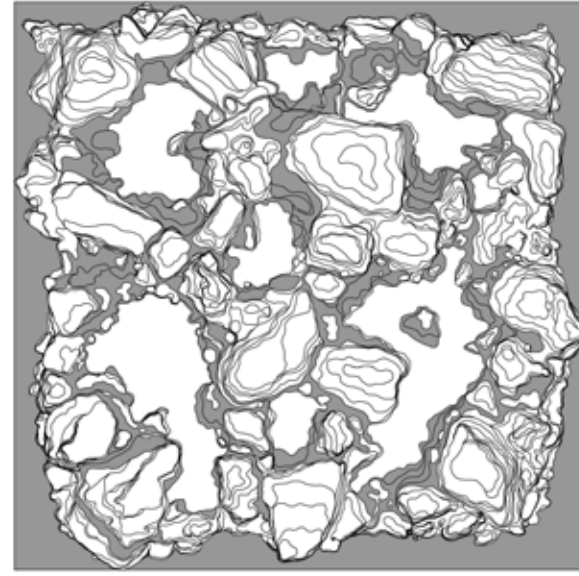


ACTIVITY PROGRAM : SCHEMATIC PLANS AND SECTION



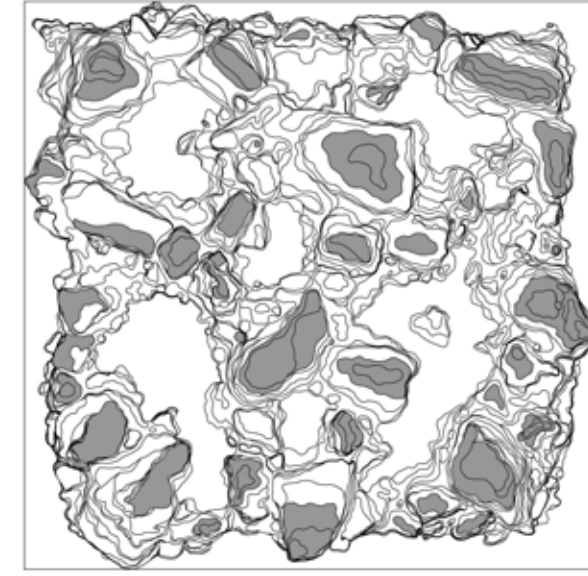
POOL-AREA

Rainbow Island consists of 6 pools of varying sizes.



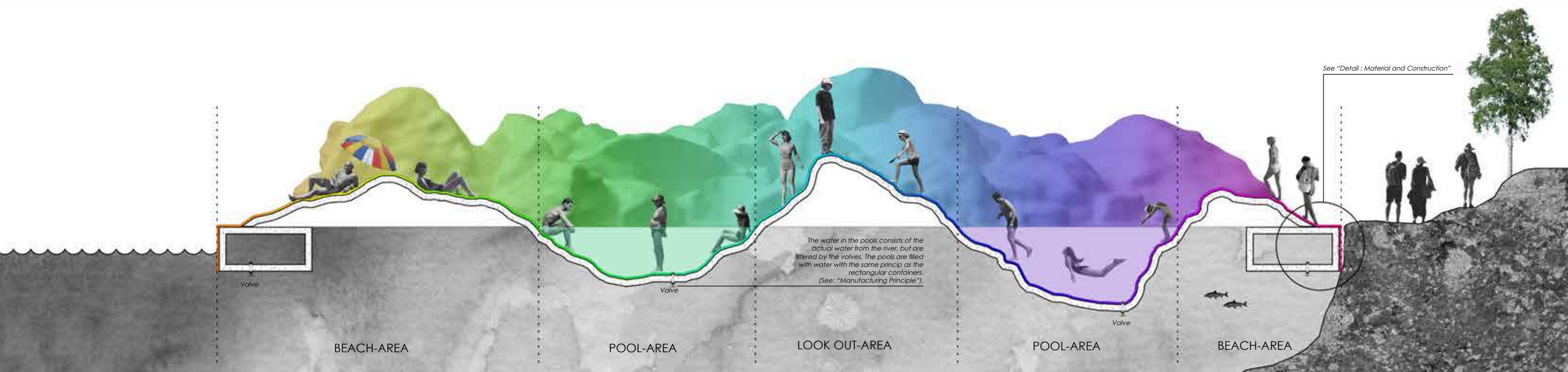
BEACH-AREA

Just like the sandy beaches and archipelago you used to know, but here there is no risk for itchy sand in your pants.



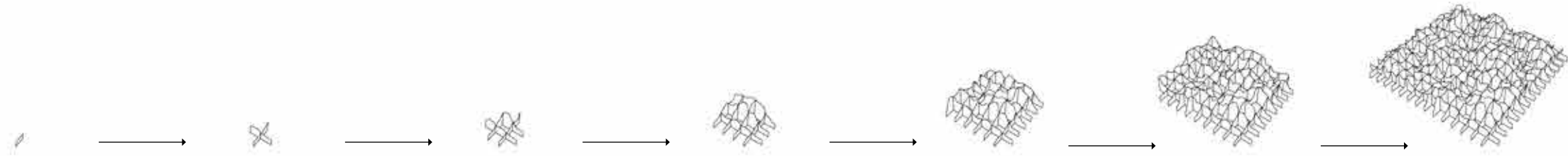
LOOK OUT-AREA

The highest points where you have an overview of the Rainbow Island.

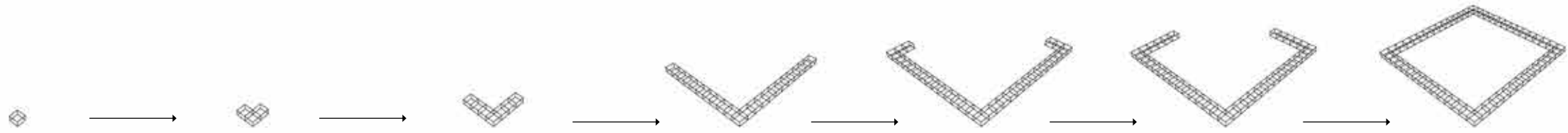


SECTION OF ACTIVITIES - Z - Z 1:100

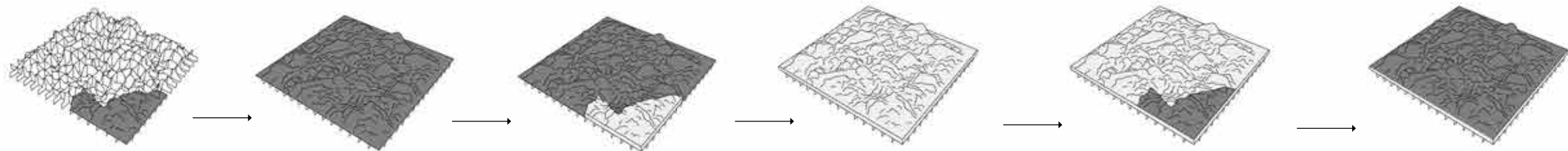
MANUFACTURING PRINCIPLE



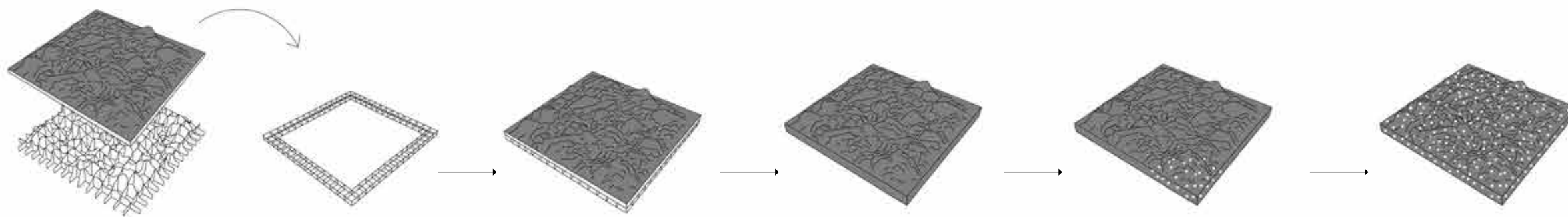
1. PLYWOOD SCAFFOLDING: *An egg crate construction is put together out of 217 pieces.*



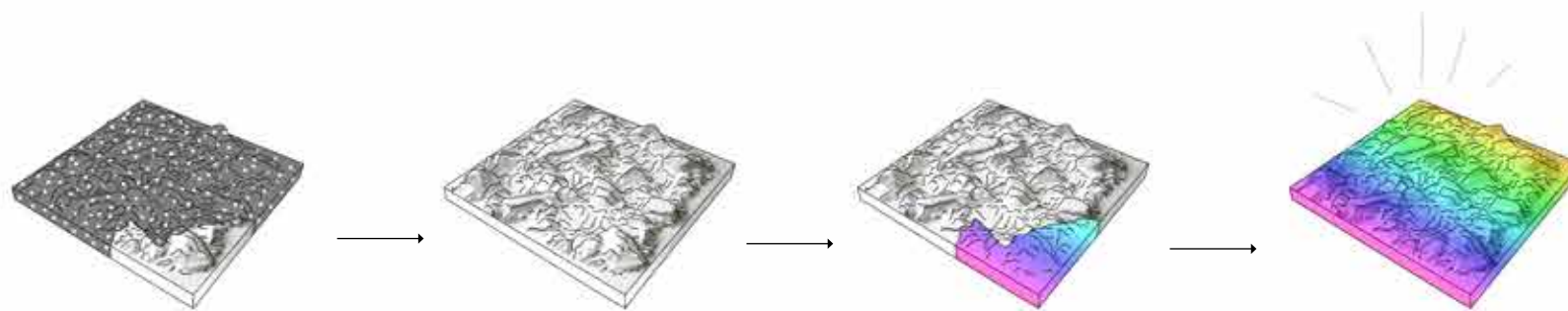
2. PLASTIC CONTAINERS: *A total of 60 containers are joined by ABS-bolts, together creating a 30 x 30 meter square. (ABS : Acrylonitrile Butadiene Styrene thermoplastic).*



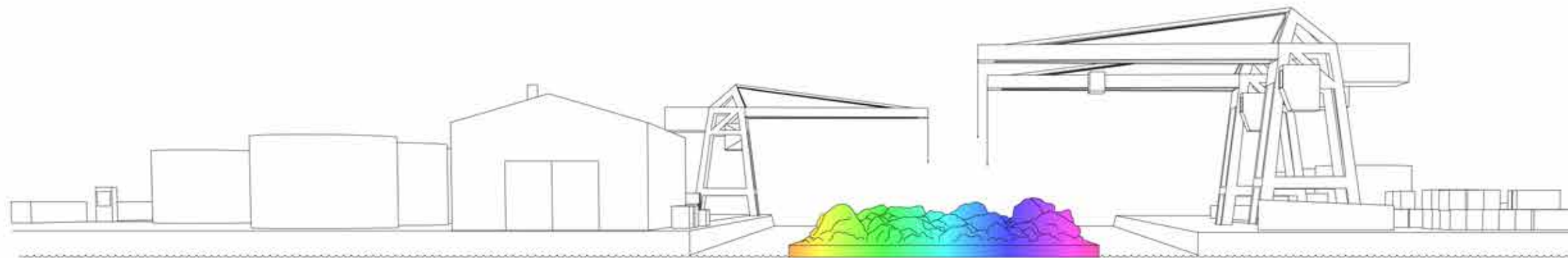
3. SANDWICH CONSTRUCTION: *The plywood scaffolding is covered with fibreglass. After that, the fibreglass is covered with PET-foam. (The foam is manufactured of thermoplastic polyethylene which results in a thermoplastic foam with excellent stability.) Finally, the PET-foam is covered with another layer of fibreglass.*



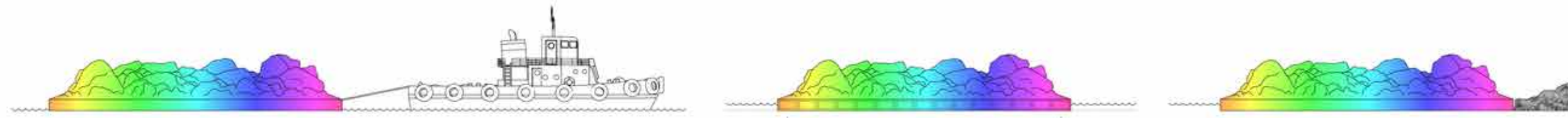
4. REMOVE SCAFFOLDING AND ADD LED-LIGHTS: *The sandwich construction is removed from the scaffolding and put on the already joined containers. The containers are also covered with fibreglass and foam. After that the platform is covered with LED-lights.*



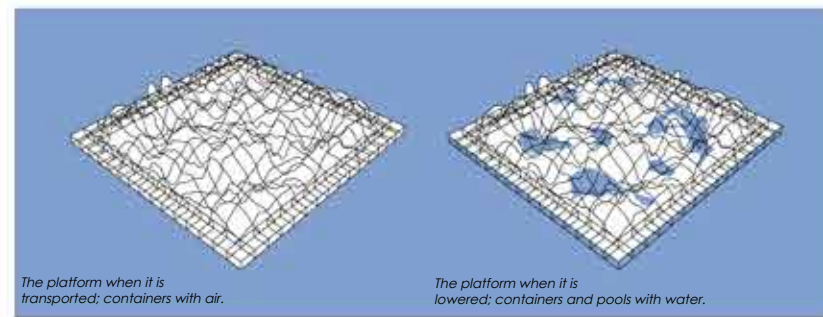
5. EPDM RUBBER AND COLOR COVER: *The platform is covered with EPDM rubber (Ethylene Propylene Diene M-class) and then the color-cover, also made of EPDM. EPDM rubber is similar to the rubber used on playgrounds and running tracks, which creates a soft and non slippery surface.*



6. BOATYARD: *The platform is lowered by cranes on top of the water.*



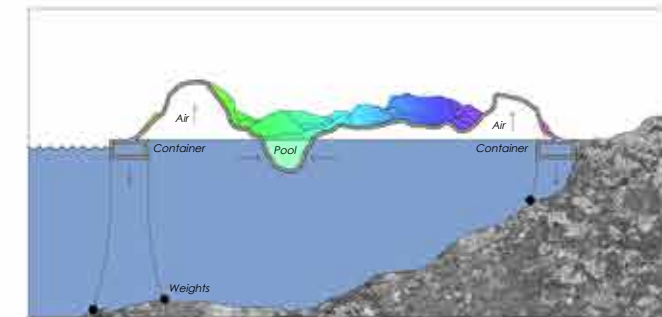
7. TRANSPORTATION AND ANCHORING: The platform is transported by tugboat to the final destination. Then, the plastic containers and pools are filled with water from the river by valves and then anchored to the shore.
(See "Detail 1:10 Material and Construction").



The platform when it is transported: containers with air.

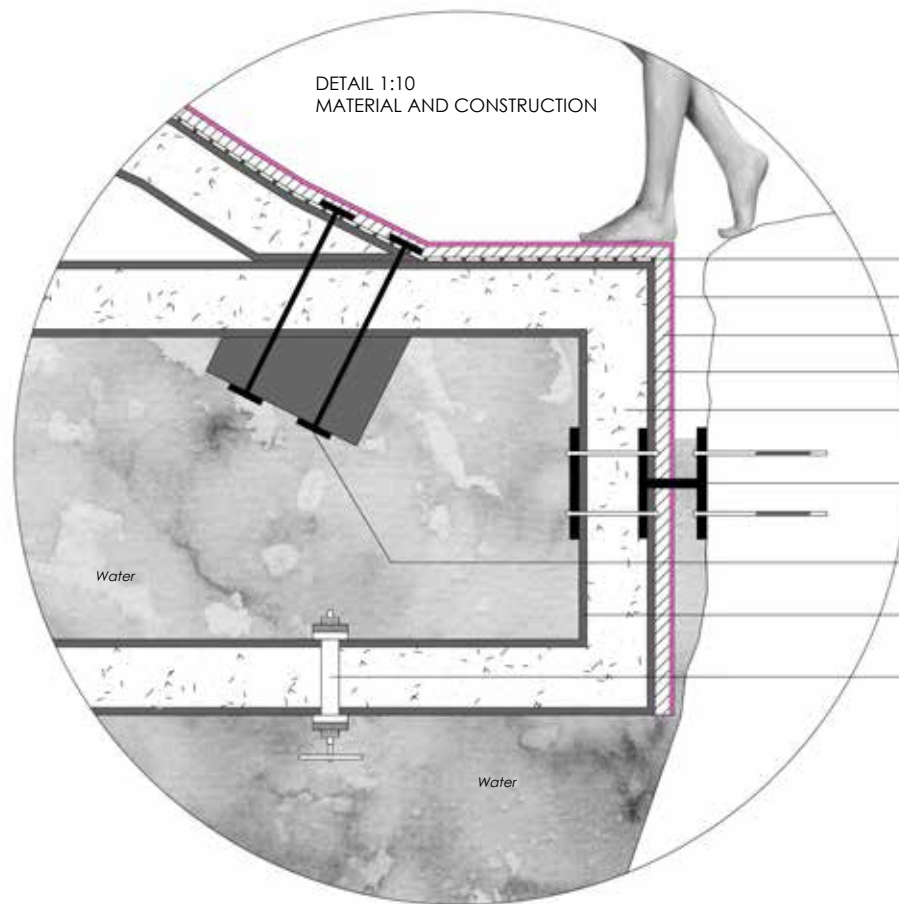
The platform when it is lowered: containers and pools with water.

X-RAY OF CONTAINERS



PRINCIP OF FLOATING

The platform is constructed as a plastic shell, with containers at the edges. When the platform is lowered on the water surface and the containers are filled with water through valves, the principle of floating is equal to the principle of a classic diving bell. The weight from the water in the containers prevent the platform from flipping over. The weight of the water in the pools is held up by the waterpower of the river Gôta Älv. The platform is also anchored by weights in order to prevent it to drift away.



DETAIL 1:10
MATERIAL AND CONSTRUCTION

- LED-lights
- Colored EPDM rubber (Ethylene Propylene Diene M-class)*
- EPDM rubber (Ethylene Propylene Diene M-class)*
- Fibreglass*
- PET-foam*
- Brackets in ABS-plastic (Acrylonitrile Butadiene Styrene thermoplastic)*
- Brackets in ABS-plastic (Acrylonitrile Butadiene Styrene thermoplastic)*
- Fibreglass*
- Valve in ABS-plastic (Acrylonitrile Butadiene Styrene thermoplastic)*



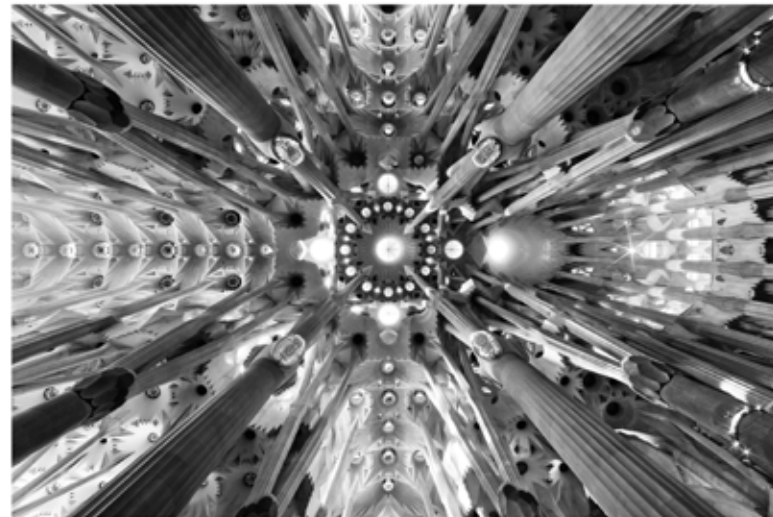
* All plastics are recycled

WELCOME TO RAINBOW ISLAND

A VISIONARY ENVIRONMENT MADE BY 100 % RECYCLED PLASTIC



"Palais idéal", Ferdinand Cheval, 1879-1912



"Sagrada Família", Antoni Gaudí, 1883-(not fully completed)



"Salvation Mountain", Leonard Knight, 1984-2010

A visionary environment is a term that defines extensive large-scale artistic installations, such as buildings and sculpture parks. A visionary environment can also be described as a fantasy world intended to capture intense subjective and personal experiences like dreams, fantasies and obsessions. Examples of well known visionary environments are Palais Idéal in Paris, Sagrada Família in Barcelona and Salvation Mountain in California.

*Rainbow Island however, is a visionary environment but can also be described as a visionary landscape. A landscape just like the archipelago outside Gothenburg, but the scale of the plastic cliffs are offset in order to create the experience of the visitor being a midget in a land of giants. During an excursion to the irregular volumes and shapes on Rainbow Island you can not predict the next step of where exactly to put your feet. This makes the discovery of Rainbow Island just as unpredictable and exiting as an excursion to nature, but without the risk of cutting your feet on sharp rocks or getting sand in your pants. And also, the tram-stop is just a 5-minute walk away.
Good to know, if you suddenly remember that you left your laundry in the washing machine.*

The shapes of Rainbow Island are organic and irregular and thus experienced as a natural landscape, but in contrast to the plastic material and artificial coloring the question is debatable. The color of Rainbow Island is what we consider as typically fake and unnatural. Sparkling pastel colors that are symmetrical shaded to each other, just like a factory produced plastic toy.

*The name Rainbow Island is ambiguously. Today the rainbow spectra is a symbol for tolerance and acceptance for alternative ways of living outside the frame of the grey concrete.
But also, a rainbow in the sky after rain is indeed a part of nature.*

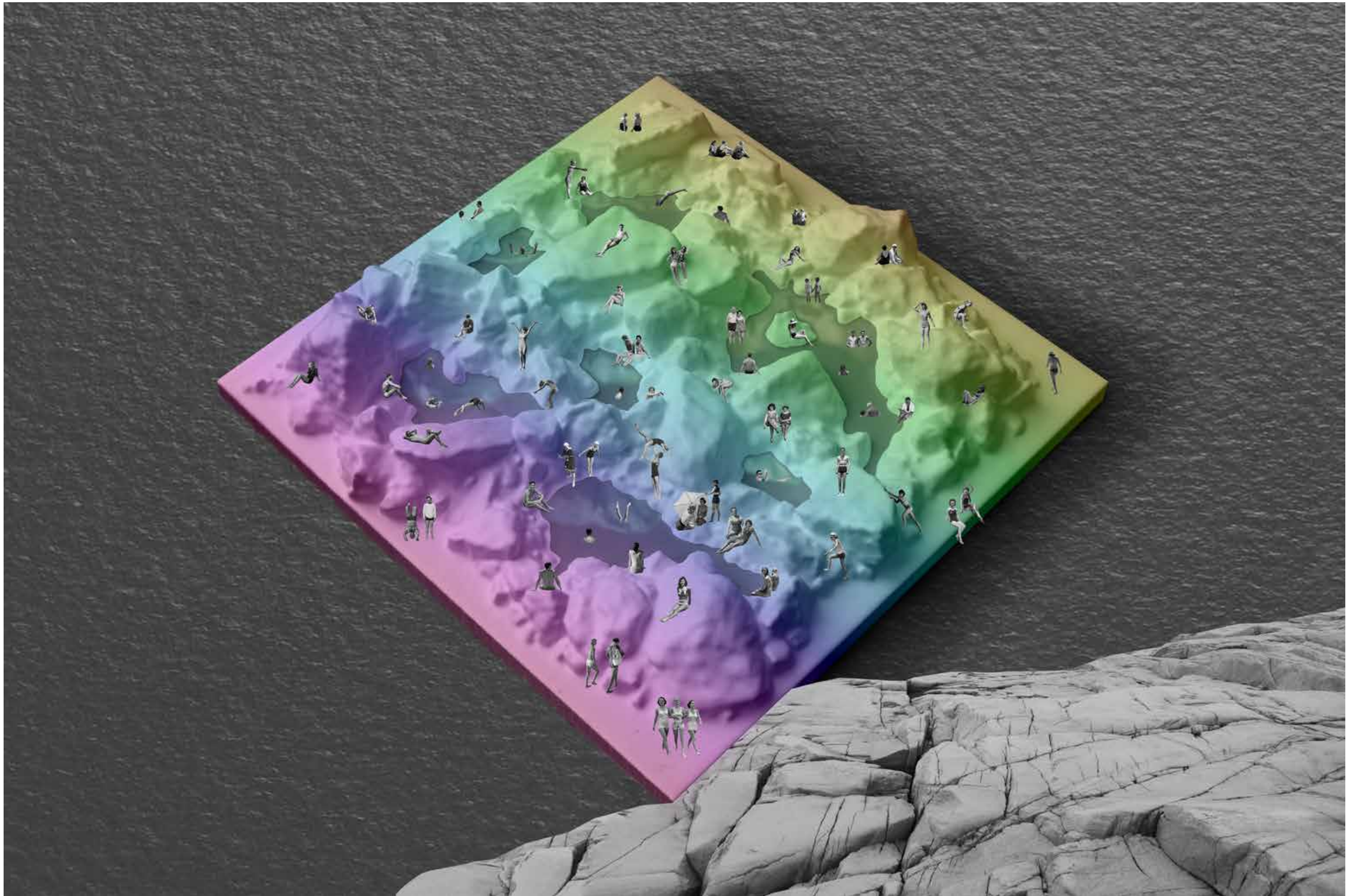
In contrast to the surrounding environment (the bridge, industrial buildings, cisterns and cranes) which is constructed as a calculated system of straight lines, the esthetics of Rainbow Island as an organic and artificial nature creates a cluster of impressions that are fundamentally different from the surrounding. Rainbow Island is more than a bath, it is a meeting place that hopefully will give birth to new thoughts, ideas and conversations about how we experience our world of today, and how we will design our environment in the future.



ILLUSTRATION OF ACTIVITY



ILLUSTRATION OF ACTIVITY



AERIAL VIEW OF RAINBOW ISLAND *You reach Rainbow Island just by walking from the shore at Røda Sten.*