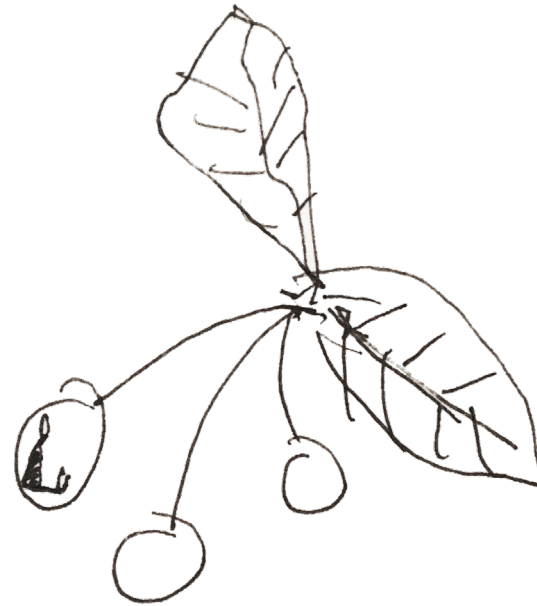


# THE SEA URCHIN IN THE ROOM

how to foster care and  
understanding for ecological  
issues with a designed  
learning experience to inspire  
more sustainable attitudes

A REPORT BY MATHILDA DAHLQUIST  
BACHELOR OF FINE ARTS  
DESIGN + CHANGE  
LINNÆUS UNIVERSITY, 2019





A mountain ash sway in the wind outside the window and a persistent berry caught her eye. If I were the size of a bug, she thinks, I would live in that berry. Or the berry could be huge. The berry looks encouraging at her.

"I see what you mean" she says, more to herself than to the berry,  
"that is what I'm gonna do!"

This is the journey of how a giant sea urchin came to the world.



## abstract

*The Sea Urchin in the Room* is a project that explores how a designed learning experience can bring up the issue of acidification in the ocean in creative ways. Emerging from the fact that it is hard to actively relate to what is happening with an ecological system that is distanced to us the project aims to create new inspiring levels of engagement to life under the surface. The learning experience is informal and put emphasis on learning by doing for best remembering what was experienced. It offers the conditions of learning about an ecological issue by actively involve the non-scientific public. When knowing more about the issues, sustainable attitudes can be inspired. The project zoom in to one specific species that gets to be the ambassador of the acidification, namely the sea urchin. The outline of the practically researched-based project is an enlarged sea urchin that stands in a public space for two days. The scale of the sea urchin challenges our perspectives to arrive at new ones.

## key words

LEARNING EXPERIENCE, ACIDIFICATION, INFORMAL LEARNING,  
LEARNING BY DOING, SUSTAINABLE ATTITUDES, SEA URCHIN,  
PERSPECTIVE TAKING



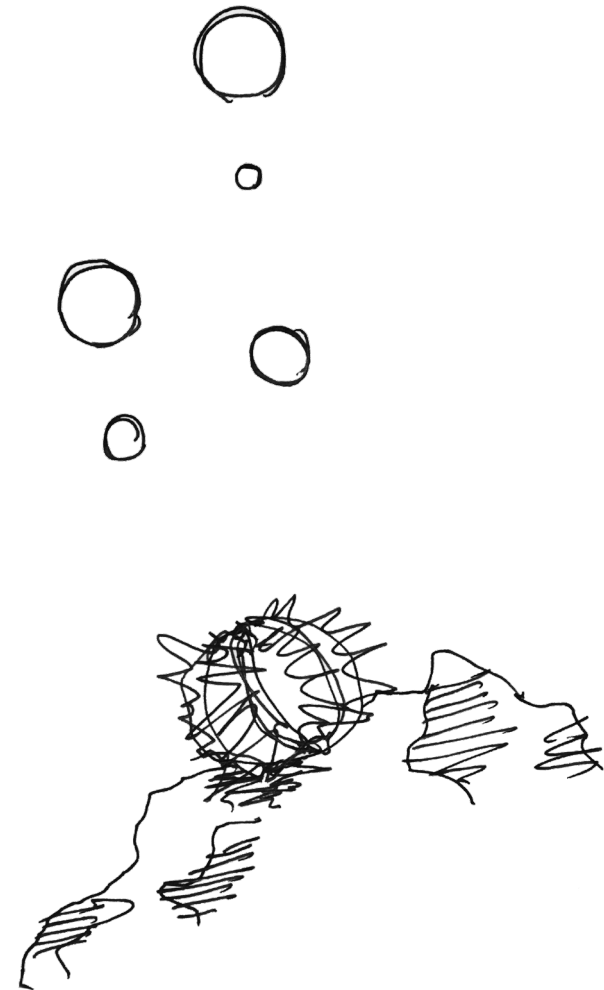


# acknowledgments

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My classmates that over and over have been used as a sounding board. The crew in the classroom, you know who you are. A special thanks to Nicolas for letting me take of your time in the wood workshop and to Leah and Cornelia who gave me strengths to set up the sea urchin. Thank you, Kennet Lundin and Marie Mårtensson for navigating me in the fields of marine biology and nature guidance. To my tutors for giving me valuable feedback and advice of how to be a good change agent in the last journey at Linnaeus University. And then, of course, thanks to my family for the support, a creative design process is not always a walk in the park.

Last but not least a thank to the sea urchin, may we have a lifelong relationship.



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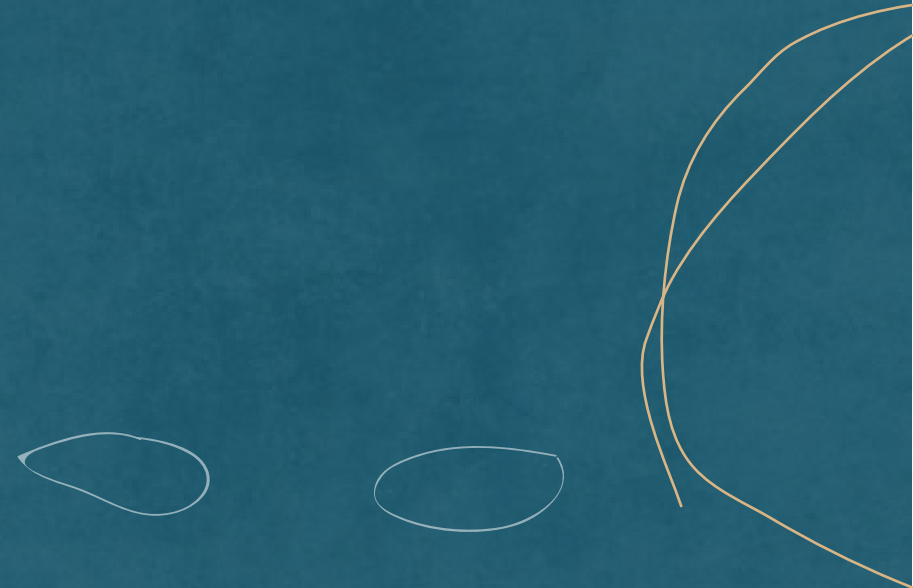
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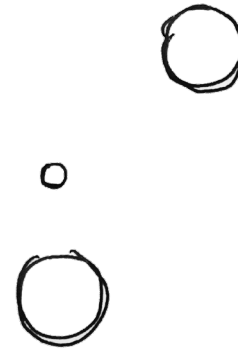
# introduction

Unless we, on a daily basis, work with what is beneath the ocean's surface, like divers or marine biologists, it is hard to actively relate to what is happening with the ecology that are so distanced to us. The geographical and mental distance threatens to distort the relationship between us humans and the countless life forms and forces which whom we share the earth (Chaudheri, 2019). For instance, the access to see and experience how life in the oceans are affected by climate change is limited. The acidification of the ocean is one, maybe less known, ecological issue. As for many of the climate issues, it may not be hard to understand the science presented: carbon dioxide emissions rain down in the ocean and react in the water to carbonic acid, but perhaps it is more complicated to relate to and decompose what the fact actually means. To get the whole picture of what is happening in the acidified ocean we need to take a closer look and challenge our perspectives of what we think we know. By putting emphasis on learning by doing a learning experience have the potential to raise awareness of the broad health of an environment, or highlight specific concerns (UnderwaterMuseum, 2019), in an inspiring way (Naturumkronoberg, 2019). That is, for instance, what the Eden Project, the underwater artist Jason DeCaires Taylor, Naturum Kronoberg and I strive to do.

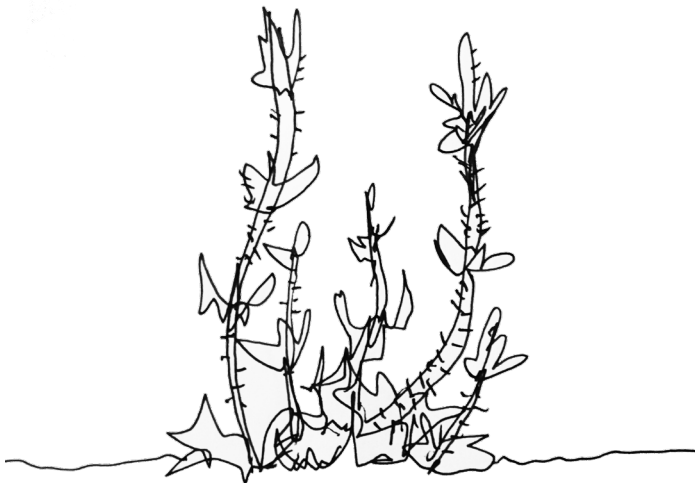
hello!

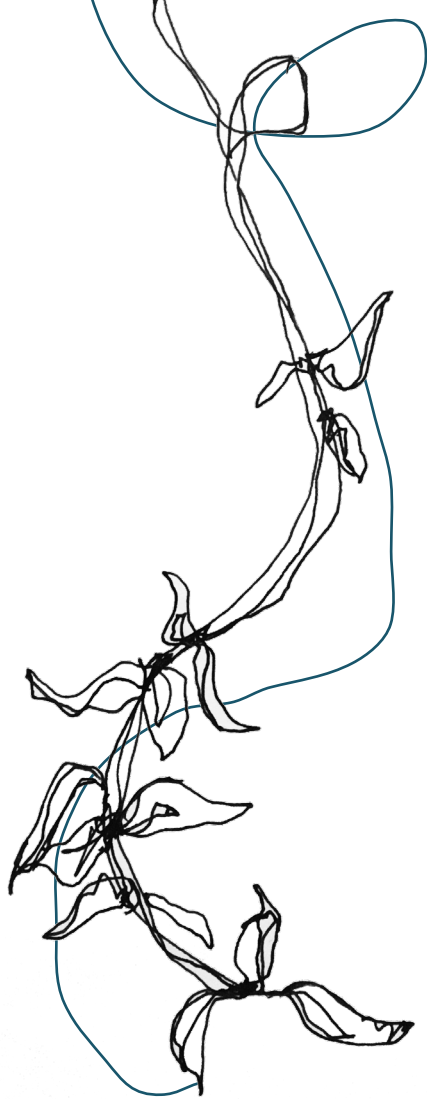
## PURPOSE

With the intersecting fields of science and art, learning design and sustainability, this design project explores how one might design a learning experience that brings information about the acidification of the oceans to the public in creative and understandable ways. The project aims to zoom in to the acidification to make the issue less general and more relatable. It is offering the opportunity to broaden the minds and perspectives of the non-scientific public, so that we can educate ourselves on fields that are outside our daily lives. The project strives to create new inspiring levels of engagement to life under the surface and explores how our attitudes can change to more sustainable ones when our emotional and personal relationship to the issue is strengthened. These inspiring levels of engagement refer to learning methods that include more senses than we use when we are, for example, reading.



HOW MIGHT ONE FOSTER CARE AND  
UNDERSTANDING FOR ECOLOGICAL ISSUES IN  
INSPIRING AND CREATIVE WAYS TO ARRIVE TO  
A NEW PERSPECTIVE AND ACKNOWLEDGE THE  
SMALL THINGS IN NATURE?





## PERSONAL MOTIVATION

I want to execute a project that could start conversations about the ocean in a physical and inclusive space, having in mind that my own best learning experiences have been when given the possibility to actively engage with the topic. Or even better, when allowed to literally step into ‘something else’. I want to use my designerly skills to create different dimensions of engaging and/or learning about a climate issue, where the learning experience is a space that challenges how we usually perceive the world.

This project emerged from an itch that sustainability in many cases can be a word that is complex and distanced to us individually. Hence we are uncertain of what to do differently or where to start to contribute to the better world. To understand the big picture we sometimes need the pieces of the puzzle first. That is why this project zoom in to one specific species that represents a bigger whole. To start discussions about the ocean as a type of nature was a conscious choice for the reason that I myself feel a particular disconnection to what is going on underneath the sea surface, living inland. I saw an opportunity to be in the same position as the public I’m targeting. By bringing about an ecological issue of the ocean in a creative and understandable way I hope to encourage discussions about it on grounds that make sense to each and every one of us.


## BACKGROUND

How might one design a good learning experience that puts us in new situations so that we can arrive at new perspectives and understandings? That communicates the complexity of the acidification in the oceans in a creative way? How can one design a learning experience that inspires sustainable attitudes? The fields of design in which this project is moving are learning design, sustainable design and experience design. They are all to be placed in the so-called emerging design disciplines, that is somewhat of an antidote to designing for consumerism. It shifts the focus from the objects of design to a focus on the purpose of designing (Sanders, 2012:17). The exploration in this project of sustainable design, for example, is rooted in the purpose of change in attitudes that has derived from the urgent need of tackling unsustainable ecological changes. Designerly methods, moving across the design fields mentioned, are in this project the entrance and tool of how I intend to make that difference, explored by experiments and practice-based research.

This design proposal consists of two main parts, this written text along with an executed practical design work to explore how to make climate issues more relatable and to foster care and understanding of the acidifications in the oceans in creative and inspiring ways. Accordingly, the theoretical framework in this text contains a brief pedagogical analysis of how we learn and take in new information as well as a presentation of the ecological issue itself, which is after all what the project strive to enlighten.



Algae.

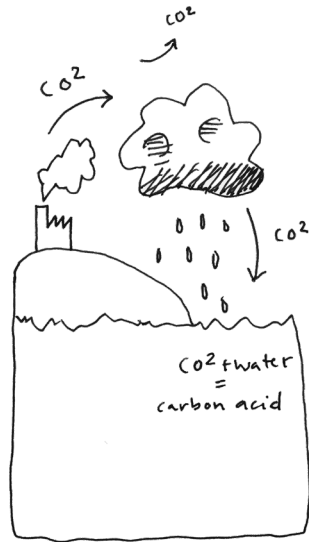


TELL ME AND  
I WILL FORGET,  
SHOW ME AND  
I MAY REMEMBER,  
INVOLVE ME AND  
I WILL UNDERSTAND

(CONFUSIUS 450 BC)

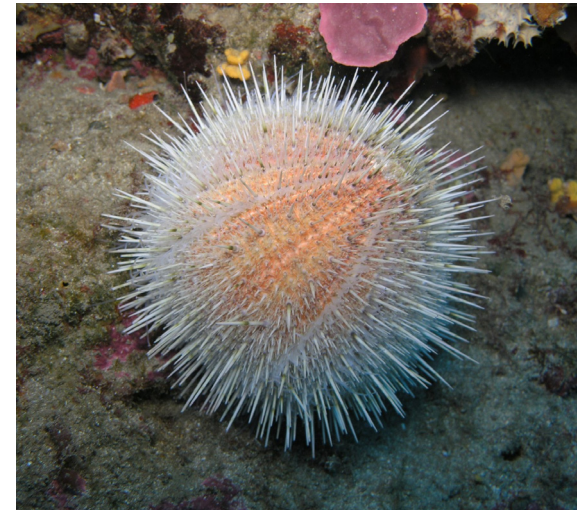


# theoretical context

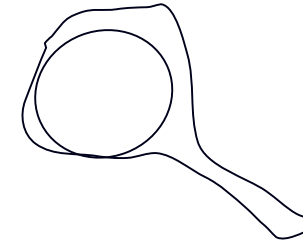


**WHAT IS ACTUALLY HAPPENING** in the ocean is that carbon dioxide emissions rain down in the ocean where it reacts in the water and becomes carbon acid. The acid leaves less loose lime remaining in the water for species to make their shells and skeletons. Sea urchin, starfish and corals are some of them. When it takes too much energy for the species to make their shells they decrease in number. The sea urchin gets to represent them all in this project, it is the ambassador of the ocean.

The sea urchin lives in many forms and colours all around the world. We may know them from accidentally stepping on one when holidaying, or perhaps tasted one? Their function in the ecosystem is similar to grazing animals on land like cows and sheep as they are a part of the dynamics of the sea bed and keep it open for other species. The urchins eat big amounts of algae and one known consequence of their disappearance would be a rise of algae in the water that eventually can block the sunlight to reach the sea bed. Their existence keeps the marine ecosystem stable and what concerns all species, the world will look different without them.



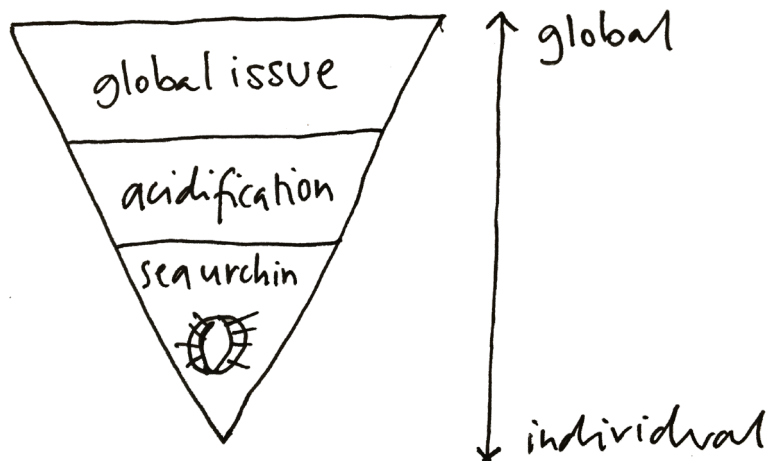




## PERSPECTIVE TAKING

**TO HELP US UNDERSTAND** what is happening under the surface of the ocean we can try to challenge the perspective we currently have. What if we approach an ecological issue such as the acidification in a different way, by actively engage with the sea urchin? If we put ourselves on the bottom of the ocean to see things from a new perspective? Perspective taking is described as “taking another person’s vantage point” (Ku, 2019) and for this project the description will be transformed to: “taking another species vantage point”, because it is a specie that is in focus. One example of how to do this is presented in the essay The author of the acacia seeds by the author Ursula Le Guin, in which she observes different levels of perspective taking of other species (Le Guin, 2007). She narrates the text from the perspective of ants and intersperse it with facts. The language which the ants uses is in her text is of course human made, but it is a meaningful attempt to take someone else’s perspective. The reader are guided to think like an ant and get down to a new level. After all, we may not know what it would be like to be an ant or a sea urchin but by at least try to take its perspective we can imagine and see the specie in contexts that may be new to us.

The illustration below clarify the levels from small to big, individual to global which the project addresses. The sea urchin represents a bigger issue.



## INFORMAL LEARNING EXPERIENCE

**TO BE ABLE TO** design a good learning experience one should to some extent be familiar with how people learn and how to get the listener's attention. In this project, where to enlighten a human made problem, there is a fine line of involving people by blaming or by inspiring. Therefore, with the aim to inspiring sustainable attitudes instead of pointing the finger, the project is more of an exploration of how we can challenge our perspectives and arrive to a point where we can feel individually and perhaps emotionally related to the acidification and not least the sea urchin.

When designing a learning experience one can not know what it is that people will actually learn for we all interpret experiences differently according to background, earlier experiences, culture, etc. With this in mind this project is instead proposing an opportunity to learn, it is holding conditions for learning. When relating to literature the type of learning when we may not be able to define the learning outcome is called informal learning that is “usually intentional but not highly structured”, where, “the control of learning rests primarily in the hands of the learner (Marsick, 2001:25).”

One example of a learning experience that is intentionally informal is The Eden Project, a project and a tourist attraction

that opened in Cornwall 2001. The destination is placed in an old clay pit with spaces shaped as bubbles that holds rainforests, plants and exhibitions for the visitors to walk into (Edenproject, 2019) to offer ecological significance (Blewitt, 2004:175). To give the best chance to concentrate on and remembering something, learning experiences include senses through our eyes, ears and body (Seedsforchange 2012:4). It follows:

“If it makes a difference to visitors' attitudes, values and behaviours then what is seen or experience must have the power to reach out beyond its formal boundaries to a larger world, to evoke in the viewer the complex, dynamic cultural forces from which it has emerged and for which it may be taken by a viewer to stand, and stopping the viewer in his or hers tracks to convey arresting sense of uniqueness.” (Blewitt, 2004:175)

Here it is argued that what is learned is about how the viewer relate emotionally to the subject and its previous interests, but that the experience has to be empowered to reach out to those interests. So, even if the learning lies on the viewer both the Eden project and this design project is obviously designed to have guidelines for what people can learn from experience it by a theme or a topic. Further on, ‘stopping the viewer in his or her tracks’ addresses how to attract the viewer or how to get their attention.

There are in pedagogical terms an idea that we have two separate parts of the brain that are in control: the conscious, verbal, thinking brain and the automatic, emotional, visceral brain, the latter called “the elephant”(Dirksen, 2016:125). The latter, the elephant, is to be most emphasized in this project with the aim to make complex issues more creative. If one can attract the visceral and emotional part of our learning brain, is it possible then to, with a broader perspective, inspire sustainable attitudes towards the chosen ecology? Can the striving to attract the emotional be a way not to point finger?

More like a parenthesis to the framework of how to design a learning experience is how we remember the experience, for when designing for sustainability the aim is of course that it will generate something that the participant can take with them. In the figure it is suggested that we remember best from the experiences in which we actively participate in. After two weeks we remember best the learning experience in which we got to discuss the subject or actively do and try out what the theory is suggesting. Thus, comparing reading about life in the ocean versus getting to actively do or interact with it, the interacting will clearly be most remembered.

Now we know how to attract the attention of the ones that will take part of the experience and how we best remember our experience. In conclusion, the intended learning experience design is now an active learning experience (learning by doing) that is informal in the way the learning lays partly on the learner.



Figure (seedsforchange, 2012:2)

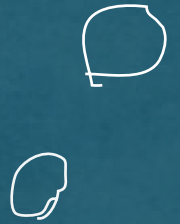
## SUSTAINABLE ATTITUDES

**UNLESS WE ON A DAILY** basis work with what is beneath the ocean's surface, like divers or marine biologists, it is hard to actively relate to what is happening with the ecologies that are so distanced to us. Bringing data or science to the public in creative ways is for marine ecologies, according to the underwater artist Jason DeCaires Taylor, a significant benefit as they are an environment that most people will only experience briefly while holidaying, if at all (UnderwaterMuseum, 2019). DeCaires is one artist who aims to use his creativity, his art, for higher ecological significance by taking the viewer to the depths of the ocean. His underwater museums consists of figures that are part of an underwater realm that brings forth fantasy and the imagination (ibid, 2019). Common for Jason DeCaires and the earlier discussed Eden project is that they both, with informal learning experiences

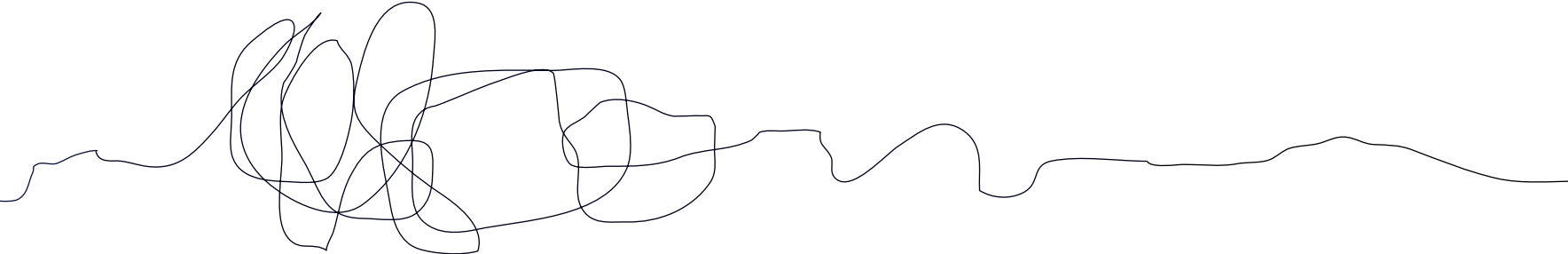
“seek to expose, disrupt, and replace the myopia and alienation that currently limits and lethally distorts the relationship between us humans and the countless life forms and forces which whom we share the earth”. (Chaudheri, 2019).

In other words, these informal learning experiences seek to empower the public with knowledge and understanding. Learning experiences can provide information but do not necessarily provide the solution. Instead this can be left open for the visitor but are presumably an underlying force: to inspire more sustainable attitudes. Due to Gerald. T. Gardner attitudes (including awareness of an issue) does not always correlate with behaviour though but can lead to action (2002:74) but “small changes can be made that can ultimately have a big impact, the first step of which is bringing about environmental awareness” (UnderwaterMuseum, 2019). For this reason we may not know if the learning experiences that focus on bringing environmental significance do foster sustainable attitudes but we could be sure of one thing. The interaction with a learning experience like this is most likely to plant a seed which the visitor can bring with them and grow.

THE SEA URCHIN GOES ON ITS DAILY ROUTINE, SWEEPING OVER THE SEA BED, CHEW ENTHUSIASTICALLY ON ALGAES AND STIR UP SOME DUST. IT PASSES A BROWN SEA GRASS THAT WAVES DREAMINGLY WITH THE MOVEMENTS OF THE WATER. A LEAF GET STUCK IN THE SEA URCHINS SPIKES. THE SUNBEAMS SHINES THROUGH A SURFACE OF SALTY WATER AND THE URCHIN PERCEIVES THE SHADOWS DANCING FOR ITS CHUBBY BODY. MEANWHILE SMALL TUBULAR FEET FEEL A WAY OVER THE GROUND.

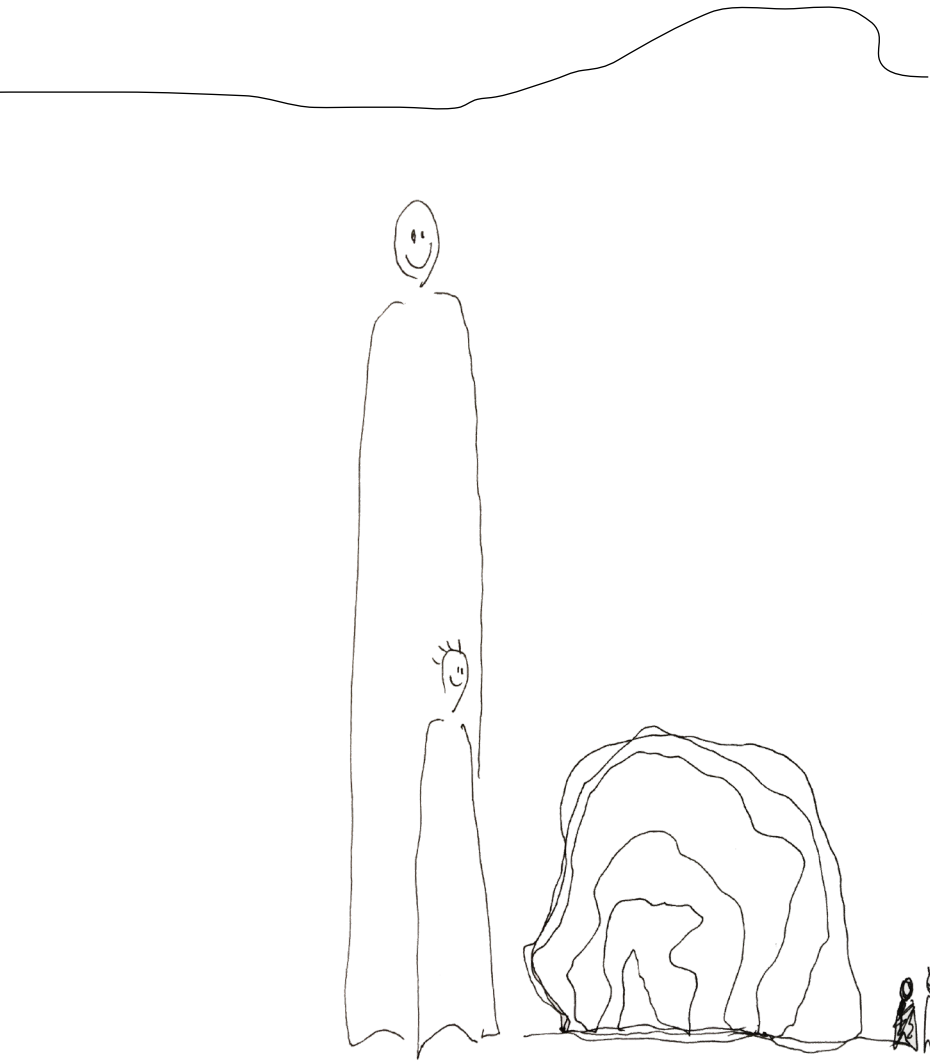


# process



THE EMERGING FIELDS of design, mentioned above, holds processes that are developed with defined needs as a driving point. In this project, for example, the need is to bring about the acidification of the ocean. To enrich the credibility for how to meet this need more stakeholders than the me alone should be involved in the process. In this project I have taken the role to gathered information from others and transformed it for new contexts. The sea urchin has been the most close collaborator while my human collaborators are crucial for giving this project depth and a reliable foundation on marine ecology and nature guidance. They will be presented along with the process.

So, on one hand the research has been informative, on the other hand explorative. The latter has been conducted with practice-based research that include experiments, prototyping and other design methods.



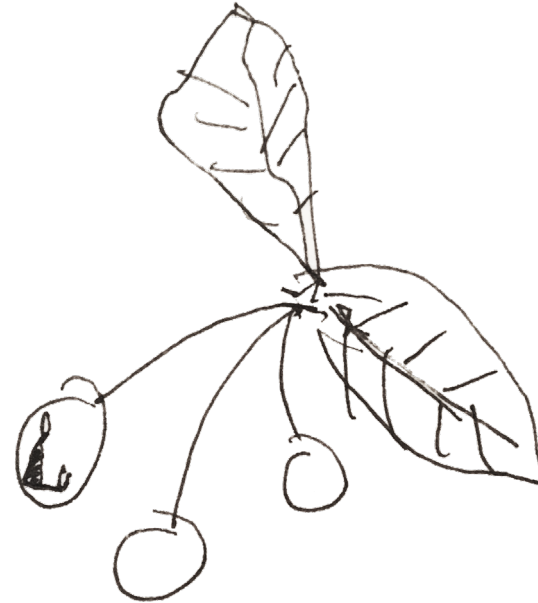
## ITERATIONS

**FOR EXAMPLE,** I have recurrently come back to one of the experiments that was done in an early stage of the project. With a puffed up one litre plastic bag on the table I asked my classmates in the presentation of the draft project proposal to imagine themselves to be the size of a bug. I asked them to walk into the plastic bag that now became a space for us.

What do we see in here, experience, feel? My classmates got the picture and many of them shared enthusiastically some kind of referens where scale is acknowledged, one of them being the children's book about *Nils Karlsson Pysling* by Astrid Lindgren. Talking about children's books I myself referred to *James and the Giant Peach* and *Gulliver's Travels* to strengthen my point. Most importantly, this quick experiment with the plastic bag represent very clear what the project is and has been about from the start: taking new perspectives by playing with scale and space.

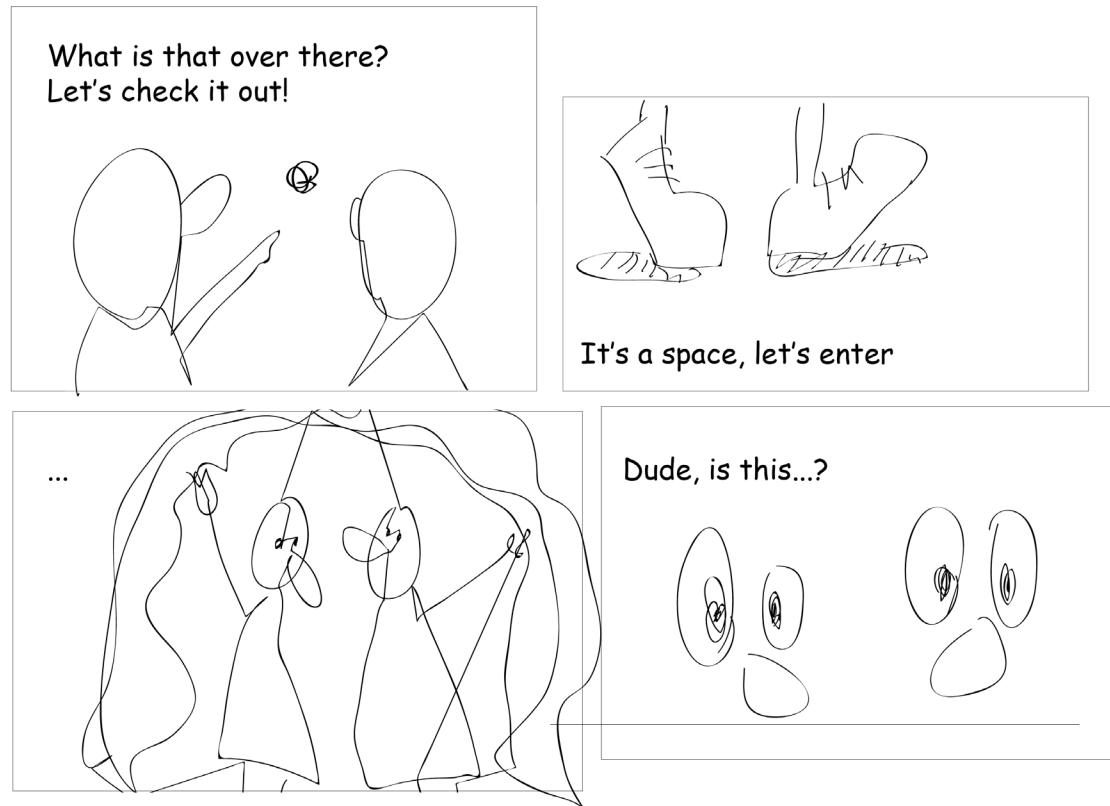


How might one foster care and understanding for ecological issues in inspiring and creative ways? The outline of the project has from an early stage been to create a learning experience in which we can physically experience something to challenge our perspectives, just like with the plastic bag. In the draft project proposal, assigned after four weeks of planning of the independent project, I wrote:



“WHAT I TAKE FROM THIS [EXPERIMENT] IS THAT I CAN  
CONTINUE TO PLAY WITH SCALE, PERHAPS IMAGINING  
THAT THINGS ARE BIGGER THAN IN REALITY OR, THAT  
WE ARE PARTICULARLY SMALL. THIS IS, I ARGUE, A WAY  
TO EXPLORE PERSPECTIVES.”





To clear my own thoughts of how to bring about this challenging of perspective I illustrated a users journey for a space where I had not yet decided the topic.

Moving from how to learn and why I had to focus on what: what is it I want people to take part of? The decision to zoom in to the ocean as a type of nature and also the acidification was vital for how the project proceeded and was the result of an idea generating mind mapping on natural environments and issues within.



## A SEA URCHIN AS COLLABORATOR

**HOW TO TREAT A COLLABORATOR** that is not human? To use the sea urchin as a representative from the ocean was a decision made in the research phase. This is a specie that has the potential of being enlarged and is a species with a message. Its chubby body triggered my creativity just as much as the biological reasons that this species is one of the first to encounter the acidification. For me it was important to from the start take my collaborator seriously and try to get to know it from new angles. I wrote a permission slip to the sea urchin which was a humorous yet serious act.

The upper sea urchin is seen from underneath. The thing in the middle is the masticatory apparatus (the mouth) called Aristoteles lantern. This sea urchin comes from the Swedish westcoast outside of Bohuslän.

## Permission slip for the sea urchin

I am a design student doing my independent work in the last year of the programme Design + Change. In this project I will explore the interdisciplinaries of art and science, experience and learning design as well as sustainable design. I am currently researching on how to bring data about the acidification of our Swedish oceans to the public in a creative and understandable way:

In addition to the effects of a lower pH in the water, sea acidification also leads to less loose lime remaining in the sea for the animals and plants that use lime in their shells and skeletons, as you would know. Examples of these are starfish, corals and you, the sea urchin. The situation is exacerbated by the fact that many of you are already living under other stress from fishing to exploitation and eutrophication.

The design project strives to take this data to the human public on land by a designed experience, a space. The space will most likely to be in a common place where we can learn about the topic and getting to know you in a different way than before. Accordingly, my aim is to start reflections upon individual involvements in addition to the mentioned issues. The visitors will walk away from the experience with a new perspective.

The process of the project proceeds with experiments, meetings with marine biologist Kenneth and a “getting-to-know-phase” with you, the sea urchin, and how you can represent the acidification in the oceans. The process will mainly be documented with photographs and sketches and all information will be used along the project as well as in the final proposal that will go public both in form of a written text and an exhibition.

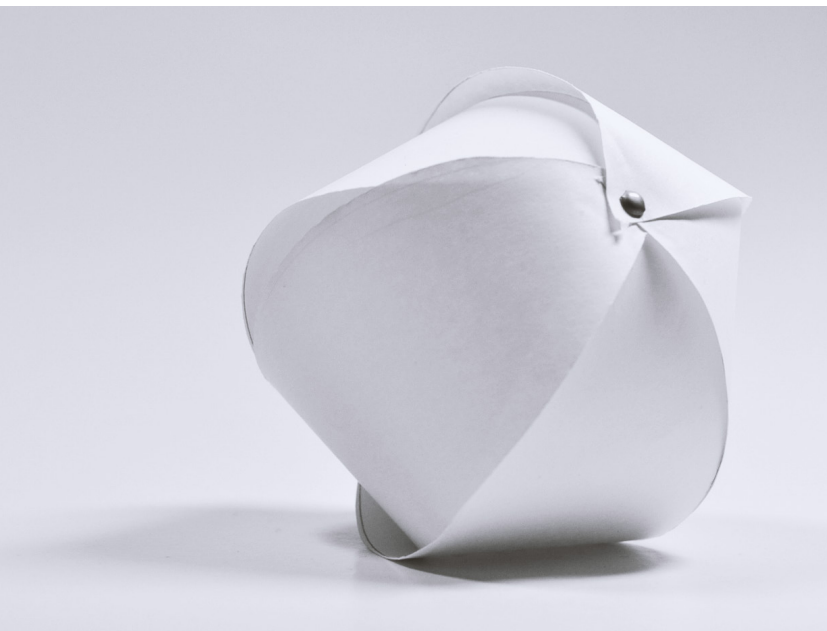
When signing the document you agree that:

- All information about your personal health status will be exposed
- Your outer as well as inner features will be examined
- Prototypes in various forms and shapes may come to represent you
- Your task in this project is to act the Ocean's ambassador on land

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Sign here

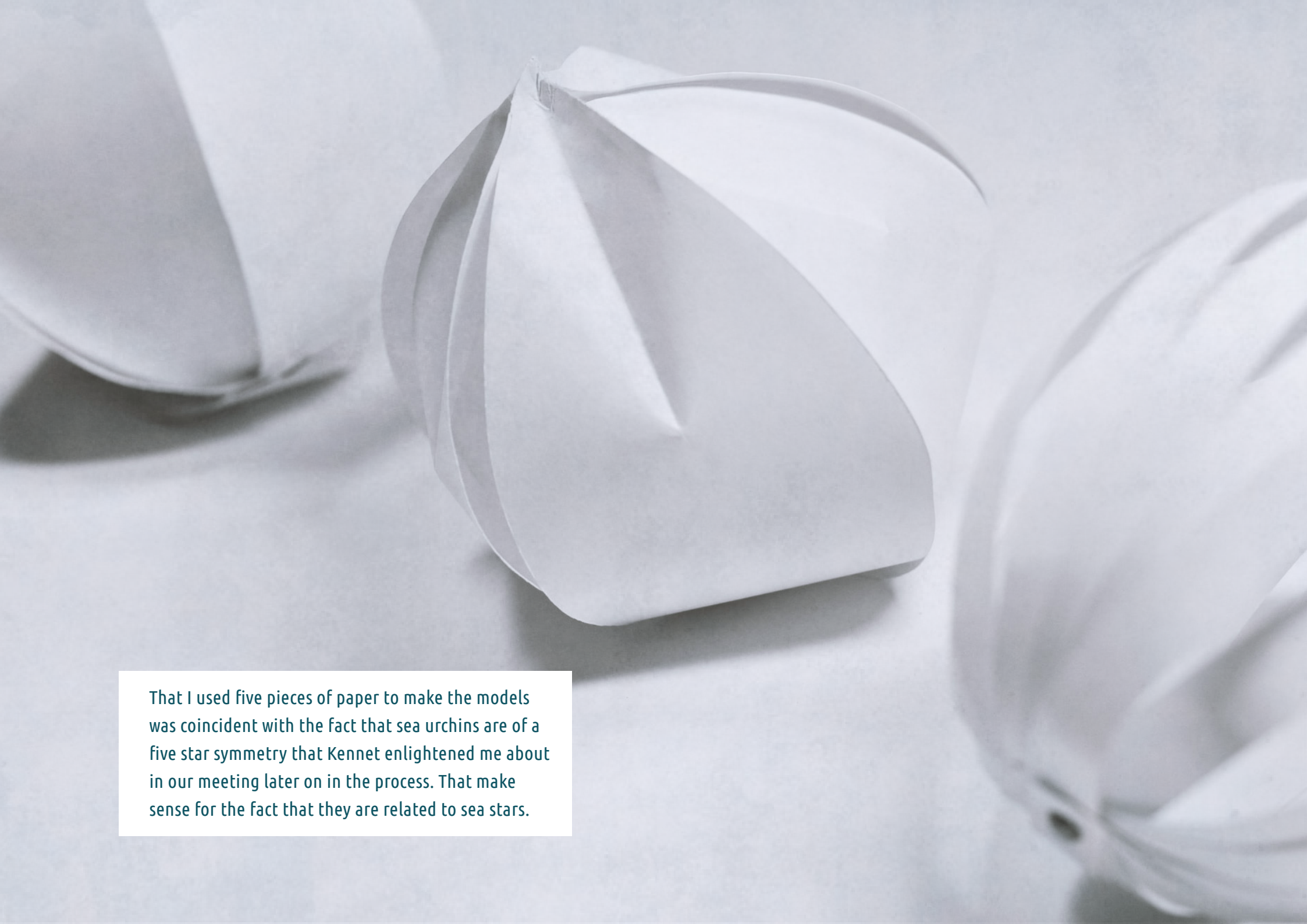




I researched the sea urchin on the internet to get information about how they look, what they do and where they live. Having in mind that iterative prototyping is a way to “grow” early conceptual designs (Sanders, 2014:6) I started to make paper models trying to capture the sea urchins appearance with shape and form. The paper was to me a symbol for the fragility of the sea urchins shells in acid water and I even put it in water to experience the process when the paper would fall apart. (After six weeks the paper model was still intact though). The modelling of the sea urchin was a way to gestalt the problematics that I had decided to work with and was the first exploration of how a space could look like for the learning experience .

Now afterwards I know that this paper model was a representetative for the giant sea urchin that was not yet thought of.





That I used five pieces of paper to make the models was coincident with the fact that sea urchins are of a five star symmetry that Kennet enlightened me about in our meeting later on in the process. That make sense for the fact that they are related to sea stars.

## VISIT AT THE NATURAL HISTORY MUSEUM

**IN NEED OF MORE** information about the ecological part of my project I made contact with a marine biologist by email. Kennet Lundin welcomed me to the Natural History Museum in Gothenburg. I brought with me the paper models of the sea urchin that was “bringing my insights to the surface” (Sanders, 2014). They were a helpful design tool to refer to when explaining the project to someone not yet involved. The meeting was a relaxed interview documented with audio recording and we started right away to discuss the one little life now in focus. The framing and focus on the acidification and the sea urchin was possible because of the timing in the process. If the topic would not yet be specified the received information would be much broader and non-specific. Kennet, clearly passionate for his job, could now tell me everything worth knowing about the sea urchin, its larvae and the specific connection to the acidification. When discussing that the sea urchin, apparently, perceive light and dark with its whole body Kennet said something spot on coming to the discussion of how to take another species vantage point: “Isn’t it tantalising to imagine how the urchin see the world?”. I was inspired of his way to express perspective taking and agreed with him.

Likewise as for the sea urchin I did of course write a permission slip for Kennet too for usage of pictures and audio, even though this one was handwritten. I got to visit the museum to see sea urchins and other echinoderms such as starfishes. I was happy to be able to look at the species in reality which was one step closer to experience them than I had when researching on the internet. Nevertheless, I felt that even though I got to see the urchins I could not experience them in their real environment, and by the way alive. I suppose that is something that I would prioritize if I got to do this project over again. However, I was after the visit more familiar with the sea urchin than ever before.

So, when reflecting upon “how to take the information about the sea urchin and acidification to make a learning experience?” I already had the answer: The sea urchin will be enlarged to a space big enough to walk in to for a human public. It was time to challenge some perspectives.



The five star symmetry illustrated. It is clear that the sea urchin and sea star are related.



*Echinus granulosus*  
Mahon, Balear

This sea urchin is from the Swedish westcoast outside of Bohuslän. Because the urchins have no brain the tubular feet, hanging down, are controlled by nerves and small muscles.



*Echinus esculentus* L.  
med utsträckta sugfötter.  
Bohuslän.  
1906-1127. Echin. 250.

## FULL SCALE PROTOTYPE

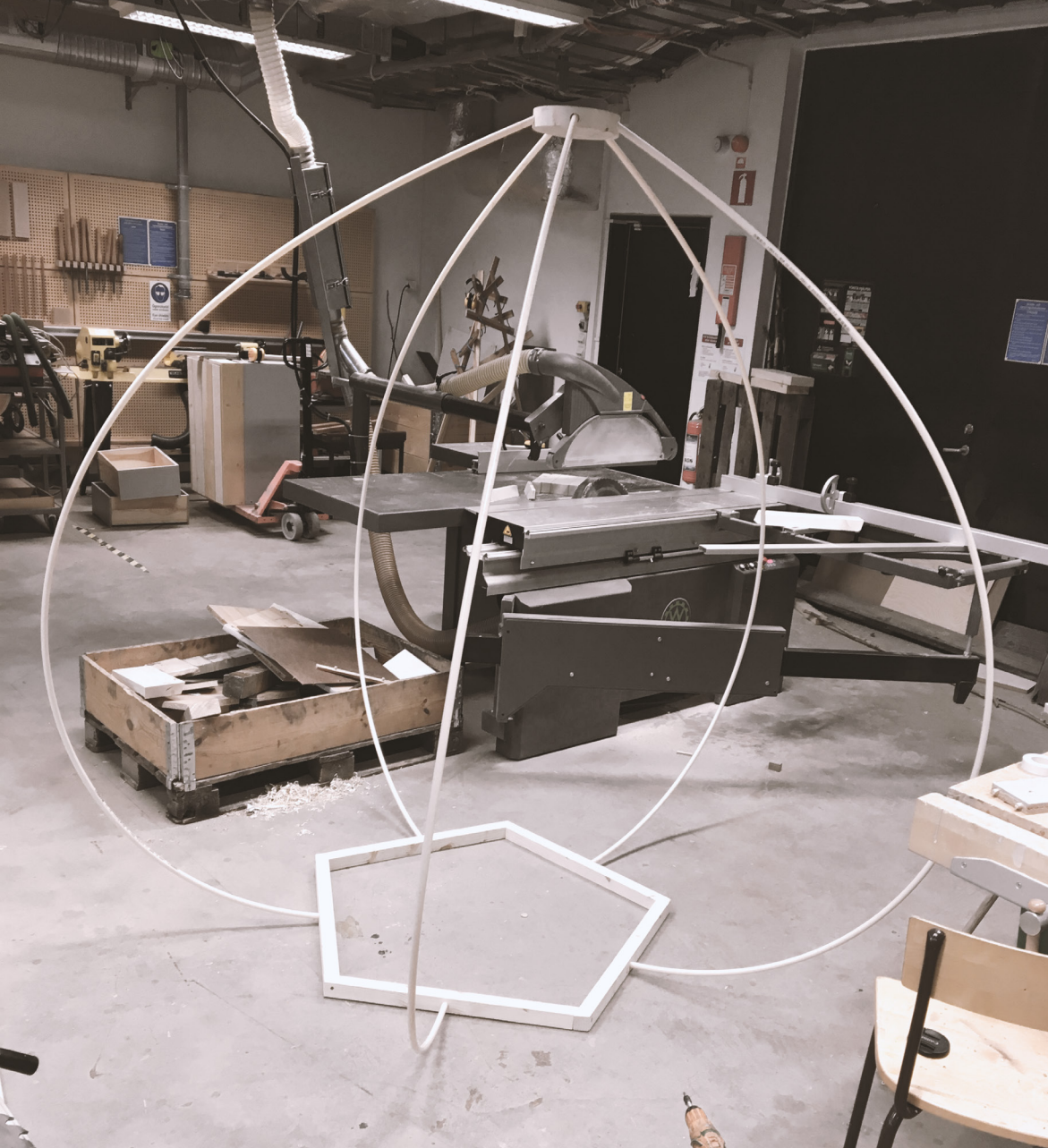
**DURING A TUTORING** session, one of my tutors, Anna-Karin Arvidsson, said “one can never be good with space if one doesn’t create the spaces” . This made me think of that in a project, where the aim is to explore how to get new perspectives by the actual experience of walking into something, the space had to be done for real. What is more, Sanders words that making activities are making sense of the future (2014:6) pushed me to go down to the workshops, knowing that this prototype could make things more clear to me about the planned learning experience. I started of by constructing a frame in wood with help from a handy woodworking classmate. Plastic cable ducts was then used and assembled in the wooden structure to hold it together in the bottom and at the top. A skeleton of a sea urchin emerged measured 2 m high times 2,5 m wide. See pictures on next page. On the finished frame I taped up sheets of semi transparent plastic to cover it from the bottom to the top. See picture on next page. Reminding myself that this was a prototype I tried to ignore the facts that the tape was shitty, the plastic smelled unpleasantly and dirt got stuck in the static plastic, but, it was a space!

The prototype stood finished and the positive side was that one could now walk into something to get an idea of the space. I could also see how much space the sea urchin took in a room. I sat down inside the space and I reflected upon what I experienced. From my project book:

**“THE SOUND IS AS MUCH OF AN EMBRACE AS  
THE SOFT WALLS AROUND ME. I SMILE BECAUSE  
I KNOW I AM NOW SITTING INSIDE OF A SEA  
URCHIN... TALK ABOUT REVERSED ROLES.”**

Instant and informal responses from some classmates were “It is so cozy here!” and “I could sit here and read!” Considering this feedback along with my own intuition the creation could as well be a ball or in that sense a reading corner as a sea urchin. To achieve my vision that the ‘visitor’ should be able to recognise the sea urchin at first sight without being told I had to make the space more sea urchin-like. Another reflection that arose from the prototype was that plastic as a material can send a message about the issue of plastic in the ocean, which felt wrong in a project about acidification.





The picture to the left shows the frame in the wood workshop. The cable ducts is attached in drilled holes in the wood which make the structure de-mountable. The picture on the right is when the frame is partly covered with semi-transparent plastic. Due to the flexibility and strengths of the cable ducts the plastic covered prototype could stand on its own.

## NATURE GUIDANCE

**MEANWHILE THE ENLARGED** sea urchin was in the making I turned to Marie Mårtensson at Naturum Kronoberg, who runs educational activities about nature as a ‘naturvägledare’, a nature guide. Their work is highly similar to what I aim to do with this project: “Naturum describes, explains and gives understanding of the nature’s values and wants in an inspiring way increase knowledge about nature, nature conservation, [...] and people’s impact on nature.” (Naturumkronoberg, 2019). I visited Naturum to take a look at the exhibition and had the interview over phone some days later. What I found most interesting was our common view of making general sustainable issues more emotional relatable which makes the enlarged sea urchin a learning experience that could fit in an interactive exhibition like theirs. This meeting was helpful in my process of making because Marie gave me advice on what to think about for my learning experience since she for instance got experience from their own exhibition at Naturum. For instance, she agreed with the plan of not focusing on written information. Instead I should let the sea urchin be the first to catch the visitors attention as a “mystical moment” that wakes curiosity.

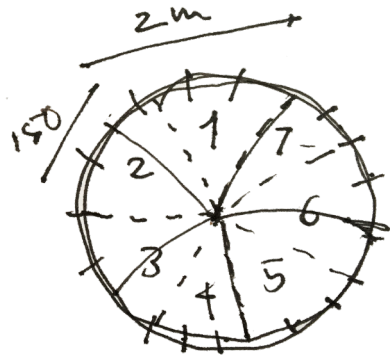


Naturum Kronoberg is located in Huseby Bruk in Småland. Here, one can visit an exhibition and explore the diverse nature.



## THE MAKING OF THE SEA URCHIN

I DECIDED TO MIMIC the aesthetics of a swedish sea urchin with natural colors and relatively short spikes, one of those I met at the visit of the Natural Museum. I made an artistic interpretation based on the fact that the sea urchins shell and skeleton production are affected by the acidification and chose a covering material with some transparency. Fabric had this quality. To be able to cover the frame that was broader than ordinary fabric measurements I first searched for disposed spinnaker sails, which after a life on the ocean would add a nice touch. Without any luck though I ended up at IKEA to buy cotton fabric to sew together with a realisation that sometimes some material has to be used to serve a bigger purpose.



The sketch is from above. The width of each five sides is 200 cm. I needed at least 7 pieces of fabric (length 300 cm, width 150 cm).

I dusted off my sewing skills from high school and sewed the fabric lengthwise together to make one big sheet. From that sheet I cut out pieces to sew the cover for the frame. Twentyone meters of fabric was used.





When making the sea urchin I wanted to incorporate the spikes because I find them fascinating. It is the sea urchins natural protection from enemies but they can not protect from the threat of acid water. It is also an element that very much defines the species. I found hard grass to use as spikes, see the picture to the left. The mounting was too time consuming so I decided to cover one side only to prove the point and then focus more on getting time for the intervention. The knots on the side was inspired from the pattern of the sea urchins skeleton so my sea urchin ended up with influences from both the inner and outer elements.

The giant sea urchin got both spikes and knots.  
The picture below is the skeleton of a sea urchin. Those can be found on the sea bed or washed up on the beach.





I'M SURROUNDED OF A PEACEFUL  
UNDERWATER SOUND. I PEEK OUT  
BEHIND A PILLAR. THE SPACE IS BIG  
AND UNFAMILIAR. PEOPLE THAT PASS  
LOOK AT ME, THEY ARE CURIOUS,  
WONDERING. SOME OF THEM STOP  
TO TAKE A CLOSER LOOK AT ME. TWO  
YOUNG ADULTS, POSSIBLY STUDENTS,  
LITERALLY DIVE IN AT THE SAME  
TIME. AFTERWARDS THEY HAVE A  
DISCUSSION. I WOULDN'T KNOW  
THOUGH, BECAUSE I CAN'T SEE THEM,  
NEITHER CAN I HEAR. AT LEAST I AM  
HERE, AND THAT IS WHAT MATTERS.







The sea urchin, learning experience, intervention. Dear child has many names. It was set up in a building at the University for two days.



## THE SEA URCHIN IN THE ROOM- INTERVENTION

**THE FINISHED LEARNING** experience consisted of a giant sea urchin and three more elements to complement the information, two type of sound and questions. The sound of underwater was playing from a speaker as a voice (my voice) was telling a story with the sea urchin as narrator inside the sea urchin. The story could be listened to in headphones that was placed inside the sea urchin on the soft floor. Outside the sea urchin I placed question cards where visitors could write down their thoughts of the experience. I decided to have question cards to assemble feedback instead of standing there in person. That might have been uncomfortable for the visitor or give the feeling that something is expected from you.

The mounting of the sea urchin was made at sight. The plan was to place the learning experience outside on Campus, with the argument that students and other campus oriented people are open minded and curious. Unfortunately the creation became too heavy and collapsed without support. Instead, the sea urchin got its place in the entrance hall of one of the buildings of the University where it could get supported by a string from the ceiling.

The sea urchin, the learning experience, was put in the public space for two days. I wondered: Would the visitors be able to relate differently to sea urchins after the experience? Would they learn something, or try a new vantage point? I call the intervention “the sea urchin in the room”.

The picture below is showing the question cards on which the visitor could write down their feedback. The small sign beside is a complement to guide the visitor once they approach the sea urchin.



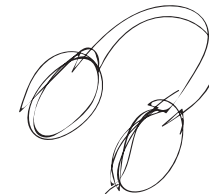


” As you may see I am a sea urchin. We live in many forms and colors around the world. My favourite food is algae and I am a part of the dynamics of the sea bed. Did you know that I perceive light and shadows with my whole body? I may be covered with prickles but on the inside I’m soft. Or more like water filled, actually.

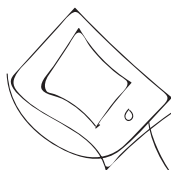
I’m here to talk about the acidification, because the acid leaves no lime in the water for us to make our shells. That has made my family smaller. It’s taking too much energy to produce the shells and what is more, our larvea can’t cope with the acid.

I’m here to make a climate issue more visible. I represent the species in the ocean that are affected.

Am I visible enough in this angle? “

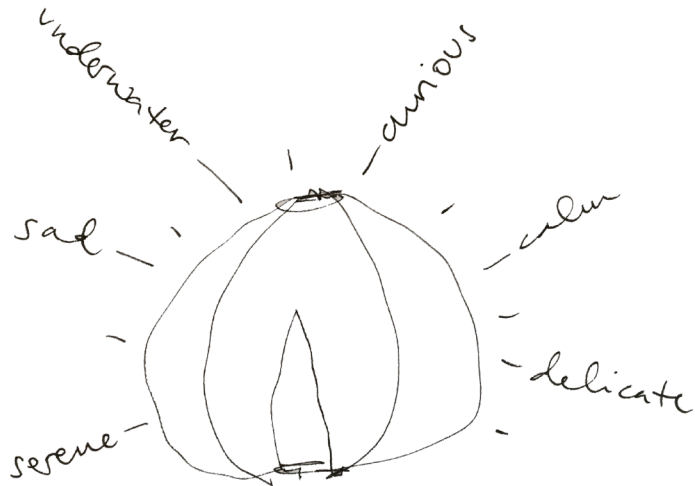


This story was being told inside the sea urchin from a phone with headphones.



# results

The visitors answered  
that the experience  
made them feel this:



**TO BE ABLE TO** analyze the ideas of what the learning experience brought about the most useful results in this project are from the intervention of putting the giant sea urchin in a place out of a marine context. The learning experience was “giving the opportunity to broaden the minds and perspectives and create new inspiring levels of engagement to life under the surface”. I analyzed the feedback from the question cards to get an idea of what ideas, reflections, feelings and thoughts the experience had actually generated. The questions were:

Did you learn something?

Did the experience help you to get to new perspectives, if yes, in what way?

What does the experience make you feel?

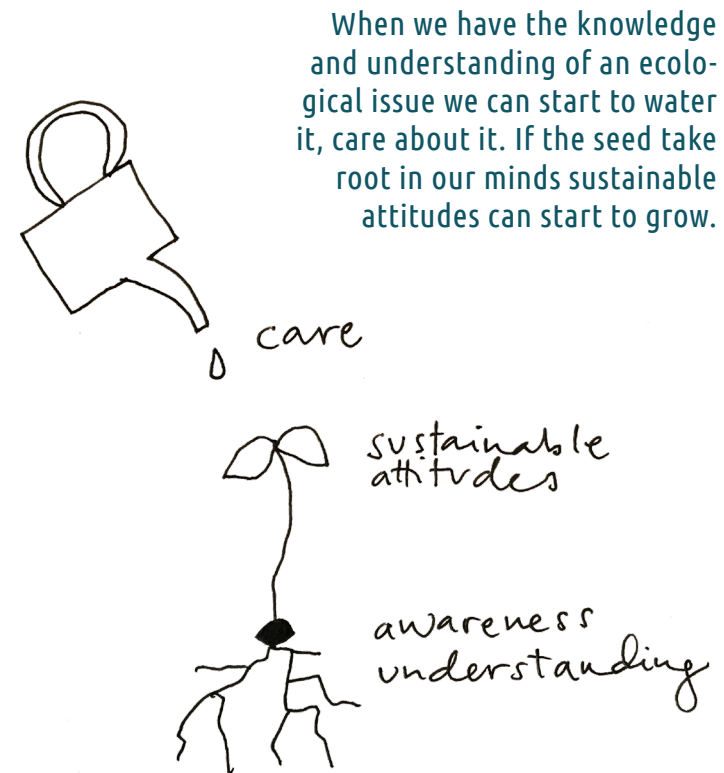
Other thoughts.

## DISCUSSION

**ON ONE HAND** a visitor seems to actually have learned something: “I had no idea that the sea was becoming acidified, what happens with the ecosystem then?” Not only did this person learn about the acidification but also reflect over its bigger impact. The question of what happens then is in a way rhetorical and not answered and I would take the liberty of interpreting it as a seed planted in this one person’s mind. What happens then?

On the other hand another one answers “I learned how our behaviour affects species we don’t even consider”. First of all he/ she acknowledge the strive in this project to reveal the hidden. What is more, this answer addresses the human involvement in the issue presented which is a fact that I did not actively point out. Instead I have been assuming that the public targeted would know where carbon dioxide emissions are coming from. The human involvement in the issue of acidification is, in this answer, simply taken for granted, maybe because our previous perception that climate issues that are discussed are almost always human made. Someone comes to the conclusion that the new perspective he/she arrived to was “To understand how peaceful the lives are that we (humans) disturb.” Another human oriented reflection that point at that the ecosystems do fine on its own. Maybe, just maybe, this is a reflection over what the person can do differently, or at least have the quality to develop into that.

I understand these answers and reflections to go along with the aim to ‘broaden our minds and perspectives so that we can educate ourselves on fields that are outside our daily lives’. Restrained with only four questions the visitors came to various conclusions. Many of them, led by the question if they learned something, share their experience of that they learned something. Someone comes to the insight that he/ she arrives to a new perspective. The comments are all part of a discussion of the topic given and it is clear that they engaged to life under the surface, if even so for a few minutes. I compare their learning experience with a seed. They were given a seed of knowledge and awareness and if they choose to give it water maybe the seed can take root and grow into sustainable attitudes.



## INSIGHTS

**WHAT I NOTICED** from observing from a distance was that it was more people that passed than who stopped to enter. Obviously, it was in general few people moving in the space these two days so another place and another time could have given other results. Intentionally, as part of the experimenting, was that the learning experience was placed out of a marine context to ‘stop the viewer in his or her tracks’ (Blewitt, 2004:175). To place it in the entrance of a public aquarium may have been more natural but would not be as surprising as sea urchin integrated with daily routines. For the ones passing and not stopping the “out of place” could have added an uncertainty about what was allowed to do and not, what was public or private. Or people are just shy to crawl into a sea urchin knowing that someone could be watching.

How can I make the experience different so that the public gets comfortable to enter? What I do know is that when the sea urchin in the making was placed in the design department both students and lecturers interacted with it, hence the context is surely playing a part. From earlier in this text I also keep in mind that the background of the visitor can have an effect on how people relate to things and what it is that people learn from an experience.

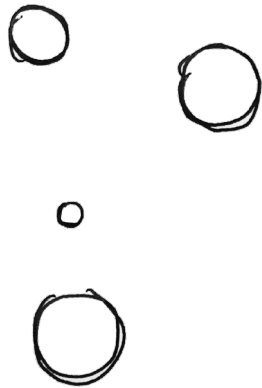
Probably the people in the design department understood that a giant sea urchin is there for them to engage with. An insight from this is that when I decide where to place the learning experience I also target a public and consequently what the public will most likely pay attention to. If I were to place it in a science centre the people would pay attention to the experience as a whole. In a design department maybe more people think about the execution of the concept and if I were to place it in a playground it would without doubt be a climbing mission.



To set up a giant sea urchin in a public space made me more nervous than I expected. Partly because it was ungainly to handle for one person and setting it up among people didn't help (imagine five three meter long plastic cables get loose from its place and a student desperately trying to catch them but still look casual). What was even more nervous though was to put something out there that I realized was very personal. Artists must be so brave! After this insight I respected even more people behind the Eden project, the underwater museum and the exhibition at Natuurum. From very nice comments and encouraging words I am happy I stepped out of the comfort zone.

It is obvious now but it occurred to me during the making that the bigger (physical) project, the more resources are needed: material, time, skills and costs. I also realized that few things are impossible really, but as for many situations in life we have to restrain to the limitations of these resources. I wanted, for example, the urchin to be urchin-like to mimic the real ones with a lot of spikes. My artistic interpretation was necessary though, I mean, have you ever seen a giant sea urchin before? Making big scale prototypes surely demand lots of resources but it is worth it when it is finished. I will bring these insights with me next time I decide to make a giant sea urchin. Or perhaps I'll make a sea cucumber?





My role in the project has been to design for learning, sustainability, and to combine these. Likewise Jason DeCaires uses art to do so, I explored how a designer can intervene in a climate issue with physical objects. One of the comments from the feedback cards was: “It’s such a nice way to portray an important issue“. I pay attention to “portray an important issue”. This puts words on the possibilities on which we can discuss sustainability and climate issues, from different angles and on different grounds. This learning experience, the sea urchin, was an experiment to make the acidification more tangible. According to myself it has been done with seriousness, humour and the creativity of making. This project has been an exploration to me of how to use design as a tool to create new situations in which we can have meaningful discussions and that, I argue, is to be a change agent.

## CONCLUSION

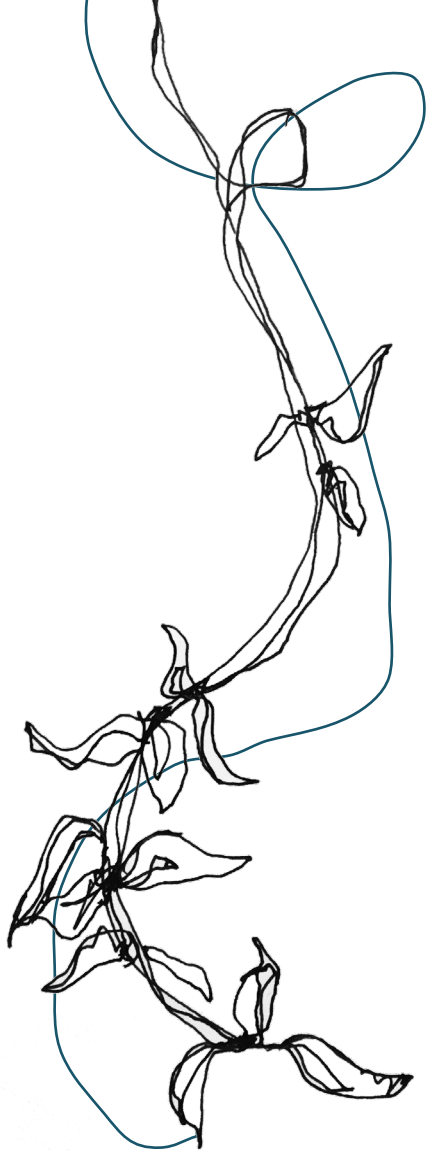
I GO BACK to the feedback that tells me the project fostered some understanding: “I had no idea that the sea was becoming acidified, what happens with the ecosystem then?”, “I think becoming another species, even metaphorically, puts yourself in another perspective”, “I learned about how the acidification affects the sea urchin ecosystem”, “I learned how it feels to be a sea urchin”. The experience has clearly been giving new insights (mission accomplished for the sea urchin). This project has offered the conditions of learning about the acidification. To get a better understanding of what is going on under the sea surface we had a closer look on the sea urchin. The offered opportunity to actively be involved with it and sit inside a space further helped us to arrive at a new perspective.

I remember still when I was eight and got to experience the galaxy in a giant igloo to see the stars in a way I had never done before. That childhood memory (together with my research of course) certify that the things we experience with our senses and the body is remembered. Perhaps someone will say in two weeks “You know, when I went to school last week there was a sea urchin in the building that I walked into and...”. Since this project has strived to reach out to our visceral and emotional brain, the elephant, maybe we have also developed and/or strengthened a relationship to the sea urchin. From countless weeks of collaboration with it I know at least that I have.

Question cards with feedback







The fundamental issue in this project about the acidification is indeed upsetting and sad. However, I have come to a conclusion that how we portray an issue can matter to how the discussions follows. A serious topic can obviously be communicated with a creative approach as a driving point and still foster significance. I have during these weeks played with scale and space and challenged what is big and what is small which has been my way to portray an ecological issue.

By changing our perspectives we can acknowledge the small things in nature. Maybe learn something new. To do so one can either look closer or use a magnifying glass. But sometimes, to really understand what it is that we are dealing with, we need a sea urchin in the room.

## EXHIBITION

After producing the report and finalising the independent work I, together with my classmates at Design + Change, designed an exhibition in which these works were exhibited. The following text is about the experience and process of designing that exhibition that was standing at Kulturparken Småland for two weeks.

In a dance between individual contributions, independent works and collective efforts, we have, in addition to our role as designers also been curators. The curation of our exhibition has involved to, as Hans Ulrich Obrist would describe it (2014), display and arrange the independent works. In this case, we used those independent works, as a starting point to developing a common denominator. Together, we designed the concept Re and in the description of our work we write:

“Re is a way to show the reworking of things, ideas and concepts, showing that our work is accumulative, building, transforming, reiteration and reappropriating what has been.”

In addition to the concept Re, every work had one re-word each. I defined my independent work with “relate”, for the exploration of how to relate differently to other beings. With my project as an intended platform where to reconnect to the nonhuman species and replace the systematic alienation to them as such, re is definitely recurrent throughout the process of this work.



This pillar introduced the visitor to the exhibition and the concept. On the shelves are booklets with information about every independent work.





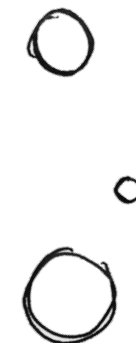
From the place in the middle of the room the sea urchin tells you a story. Outside a sign ask you to take off your shoes. Inside there is a sign with the story in Swedish and English text.



Despite a challenge in designing an exhibition with many others, the most interesting, and perhaps most challenging with this work, has been to design a condensed form of a complex work. How might we communicate our work that are familiar to us to others ? For sure, in order to get others to understand one's work, the ability to communicate it is key. With this in mind I have challenged myself to take the perspective of a visitor to think about what levels of information are necessary to make the project understandable for outside eyes. Moreover I thought of who I want to understand my work. With both playfulness and seriousness I have been trying to engage as many as possible. Young, old, Swedish speaking, non-Swedish speaking and many of the decisions was made with those target groups in mind. In terms of what was going to be exhibited was quite clear from the recent module. Although the sea urchin was demounted from recent module it was ready to be put together for the exhibition. For this new context though, some changes in the total experience had to be done.

To be a curator is, according to Obrist, to set up an “extraordinary experience” and how to do that, he argues, is by producing the idea rather than illustrating it (2014). I interpret that as to actively work to make people involved and take part of the work instead of looking at it from a distance, which for me have been a priority and a driving-force. So by, once again, emphasising “learning by doing”, I worked to offer the public an interactive experience with my exhibition, with the purpose to contribute to “ecological significance” (Blewitt, 2004:175).

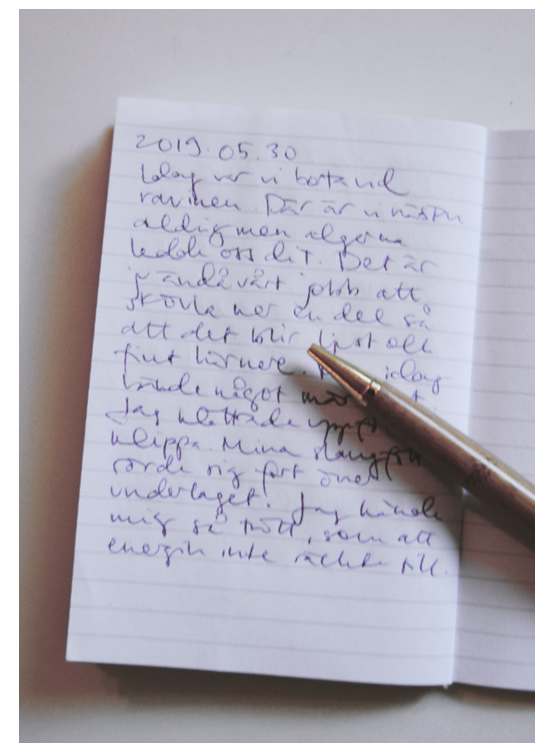
When developing this new experience I came to the understanding that the feedback from earlier experimentations with the sea urchin among people was a valuable resource. For this reason, I decided not to actively ask the visitors of the exhibition to give their feedback as I did with question cards in the earlier intervention. Instead, it has been about to create the best experience for them, “extraordinary” or not, I wanted to offer a memory for the visitor to take home, a thought, an experience, a feeling, or a reflection. The most urging feedback that I considered in the development of the exhibition was to not excuse my work but to let it take the space that it needed to communicate its message. I realised that when I earlier put the giant sea urchin in a public space I had been compensating the large size by toning down the other elements, for instance, presenting the audio recorded story in headphones to not disturb the surrounding.



Derived from the feedback I formulated a to-think-of list:

1. The sea urchin will talk to the audience. The sound should come from a speaker, which means from the sea urchin (in opposite to have it in headphones inside the sea urchin).
2. Since I have created a Swedish sea urchin it would most likely speak Swedish. Be exclusive by recording in Swedish but complementing with an English text.
3. The recorded story must be more personal if I want to touch my audience, think storytelling.
4. How can the experience be more performative and interactive for the visitor?
5. For the appearance, take the time to cover the whole body with spikes, a sea urchin has spikes.

I started off the process of reworking the experience with the sound. To make it more personal this time I started to write a sea urchin diary. Thanks to earlier research about the sea urchin I could, to a certain degree, put myself in the shoes of a sea urchin. At least I could imagine how a sea urchin experiences its surroundings for a few days. Some days the writing came more natural than others, some days I focused on daily routines, some days on the perception of the acidification. This method was allowing and non-judgemental to make place for the sea urchin in me and it became easier for each day. The results was a much more involving story in the way it communicated a personal and honest point of view. Sometimes we have to allow ourselves to take someone else's vantage point to be able to understand better, and that, I believe, can be useful for many situations in life.



I wrote the diary by hand in a note book, like I used to write my own diary

Another change I worked on, was to make the sea urchin performative and interactive, by exchanging the supporting string from the ceiling from a static to an elastic one. When standing or sitting inside of the sea urchin you could now pull a string and so make the urchin move. The sea- like movements made the sea urchin come alive (see picture below) and the interaction make possible a layer of interplay and sense of being one with the sea urchin. From the position of the middle of the room, the improved version of the sea urchin claimed its existence, which was probably thanks to the call to let it take place and the decision to let it do so.

The movement of the sea urchin.





At the opening of the exhibition,  
before the sea urchin mingle started.  
The acid drinks are prepared.

At the opening I hosted something that can be called a ceremony or a ritual where I offered “acid drinks” to the visitors. The drinks were more correctly ordinary sparkling water but the sparkles were holding a message- just as the acidification, the sparkles consists of carbon acid. The thought with serving acid drinks was to acknowledge the marine poisonousness and to invite to interaction with the sea urchin, a combination that, underlying, holds an ethical controversy.

Just as my work has aimed to make us relate differently to the sea urchin, putting my independent work in an exhibition context taught me to consider the relation to other’s work. To be a part of an exhibition is about a collective collaboration. But simultaneously, I learned that it is important to find a balance between the collective effort and the individual work so that all the works have a chance to deliver their very own and important message.

This exhibition has allowed me to be the mediator that transformed a complex climate issue to an experience for the audience, with the purpose to bring empathy and awareness to the topic. My role as designer has been to take the information and knowledge from my collaborators, about marine biology and the nature guidance, and transform it to a new form and put it in a new context. I strongly believe that my personal learning experience does not stop here, of how to work with design in this field. I believe it is just the beginning.





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A REPORT BY MATHILDA DAHLQUIST  
BACHELOR OF FINE ARTS  
DESIGN + CHANGE  
LINNAEUS UNIVERSITY, 2019