

*NOTE: PLEASE ADD PAGES AS
YOU SEE NECESSARY*

STUDIO JOURNAL

DESIGNING MIGRATORY
STRUCTURES

Gene Lohasiriwat

SUSTAINABLE SYSTEMS

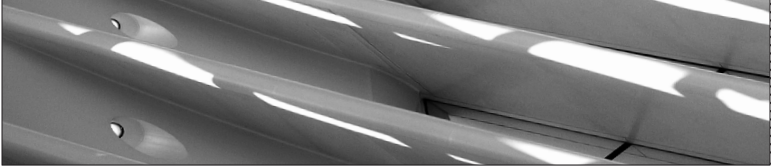
PARSONS THE NEW SCHOOL FOR DESIGN , SPRING 18
INSTRUCTOR: CAROLIN MEES

GLUE STRIP



GLUE STRIP

SOCIAL & SYSTEMS



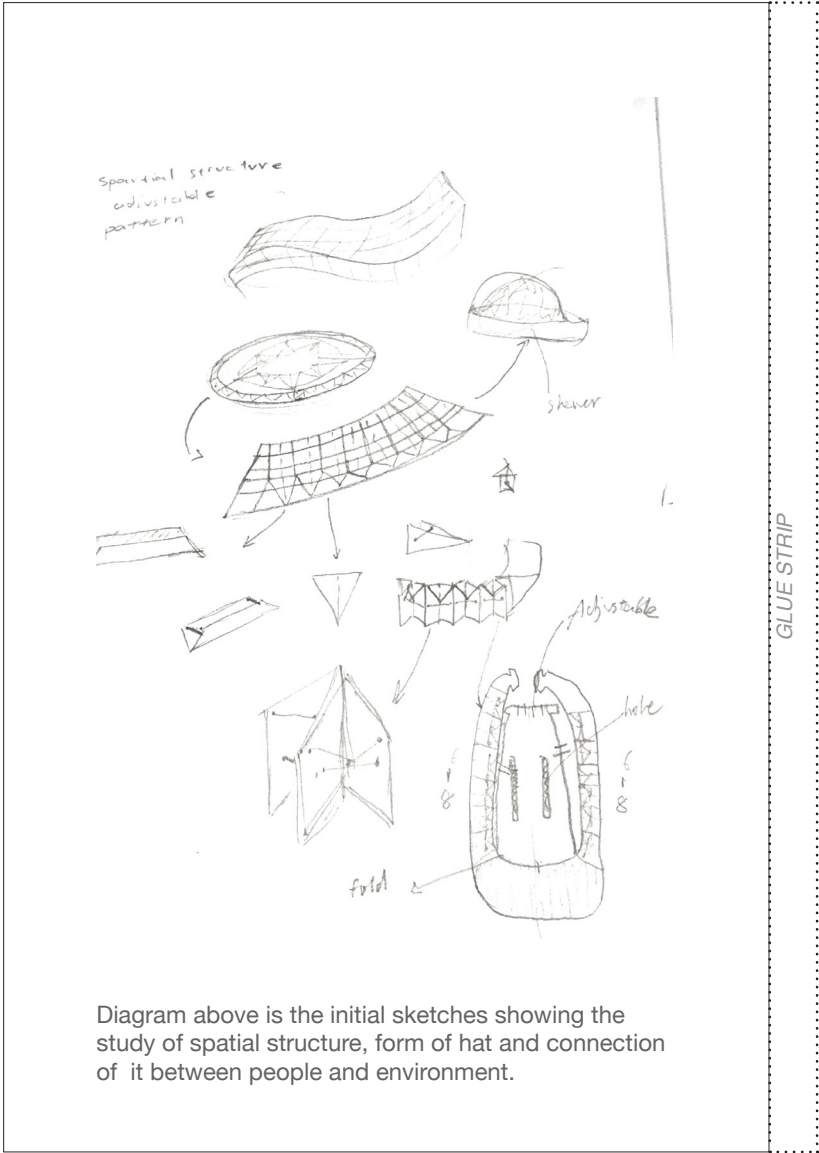
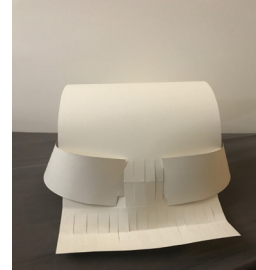
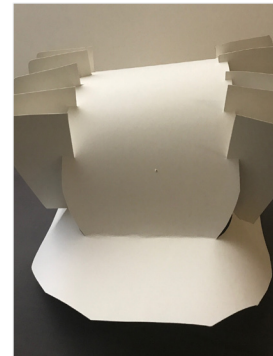


Diagram above is the initial sketches showing the study of spatial structure, form of hat and connection of it between people and environment.

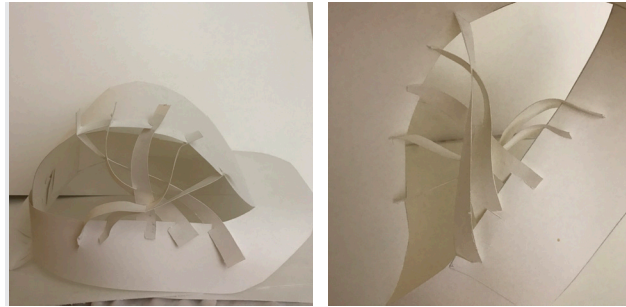


50% complete model of a hat which the whole structure is made up of bristol paper. The design is eco-friendly since no glue, chemical or hardly decomposed material are being used. Images above demonstrate the structure of the hat that will be decorated and strengthened by the spartail structure beside the hat. Below right image is the initial idea of developing the spartail structure .

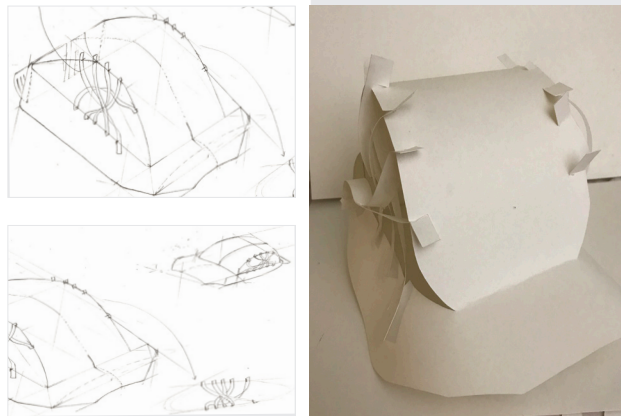


The picture above (left) is the inspiration of the use in spartail structure designed by heri&salli called reppentanz in 2012. „NACHRICHTEN Dossiers KALENDER Shortterm-Events Longterm-Events Ausstellungen WETTBEWERBE Ankündigungen Entscheidungen Information Links ARCHITEKTUR FÜHRERLINKS.“ Startseite. August 13, 2012. Accessed January 31, 2018. <http://www.gat.st/news/dancing-boundaries>.
Architektur: heri&salli

GLUE STRIP



(Above) 100% complete model. The hat is adjustable and have light weight. The inner side of the cap show how the stripes are connected with out using glue or tape. The design is strong enough with out using skewers. The final sketches are shown on the bottom left of the page, showing how spartial structures are used in the form and how it improves the overall image and the way of communication of people around the user.



GLUE STRIP



CLIMATE CHANGE & ENERGY

GLUE STRIP



A bioleather or as know as Kombucha leather is made up of the kombucha culture (Scoby) and the kombucha solution. In term of physical appearance, Scoby looks like a thick white jelly before it transforms into a darker color from the brewing in black tea. It is composed of yeasts and bacteria which included in its original name - Symbiotic Colony of Bacteria and Yeast.

The pack of these microbes in Scoby is function in turning sweet tea into a probiotic drinkable solution. It is composed of organisms that turn sugar into healthful acids for our body. Scoby will regenerate after it used in brewing process. And that's why it can be supplied for the nest round. Kombucha is drinkable and nutrient rich beverage since its basically is a fermented sweet tea with Scoby. The drink comes with a lot of benefits such as improving digestion, immune boost and strengthen your joints.

To grow Kombucha leather, it will approximately take 2 to 4 weeks but will be longer if the room temperature is low. So the best to grow it is to keep it at the room temperature around 70 farenhinpe. Temperature can make a huge difference in the growing process and without the right condition, bioleather may not be formed.



„What next?“ Jenny Yamada. March 22, 2017. Accessed February 17, 2018.

Before beginning the experiment, I made sure that the plastic container and my hands were clean by wiping it with alcohol. Unclean condition may affect the growth.

The equipment included from the Kit: A bag of sugar, 6 black tea bags, vinegar, pH indicator and SCOBY package. Extra equipment that I used for the whole process: spoon, pot and 7 glasses of water.



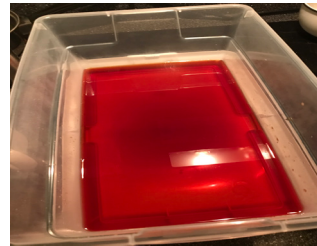
1. Pour 7 cups of water in the pot. Turn on the fire and dip 6 tea bags in the boiled water.



2. Sweeten the tea with a bag of sugar and stir it.



3. Leave the tea in the pot until it meets the room temperature.



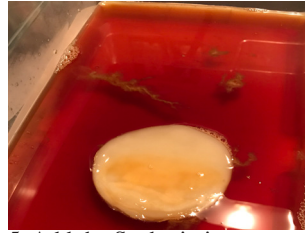
4. Pour the tea in the container

Temperature Chart in Celsius (recorded at the same time of the day 8am:

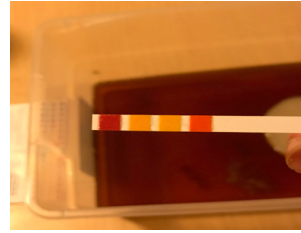
Day 1: 21c
 Day 2: 20c
 Day 3: 19c
 Day 4: 19c
 Day 5: 20c

Day 6: 21c Day 13: 26c
 Day 7: 22c Day 14: 25c
 Day 8: 24c Day 15:
 Day 9: 20c
 Day 10: 19c
 Day 11: 20c
 Day 12: 22c

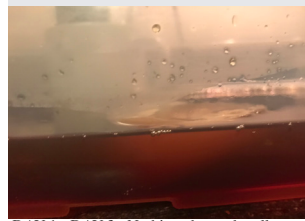
GLUE STRIP



5. Add the Scoby in it.



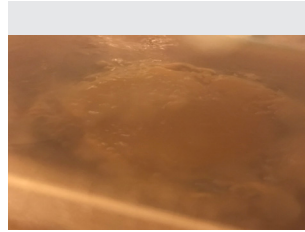
6. Check the ph level to make sure that it is lower than 4, if not add vinegar. Close the lid and store for 2 weeks



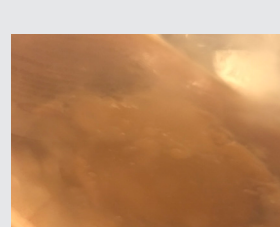
DAY 1 - DAY 3 : Nothing changed really much, but jelly fibre-like film is appeared. The tea is clear.



DAY 5- Day 8 : thick layer formed around the Scoby. Transparent film still be seen. More bubbles are shown up and the tea turned milky.



Day 12 : The growth rate is lower than expected as the room temperature (Day 8- Day 11) went lower.



Day 9- Day 14 : The thick layer around Scoby is distributed little bit further away from the mother Scoby.

My Scoby is rested on the table in the common area with no one touching it. My freinds who came for visit and my suitemates were amazed by this growing creature inside the container. At the begining of the process, the smell of vinegar was too strong so me and my roommate decide to cover the container with a towel.

According to the diagrams above , the growth rate of Scoby is lower than expected which may due to the unsteady and lower room temperature. The Chart on the previous page demonstrates the temperature of the room at the same time of the day where scoby is placed. As shown in the chart, the room temoerature is not steady and somedays has gone lower than 20 celcius ; normal room temnperature is about (20-25 celcius).

GLUE STRIP

Grow Your Own Food



Paper cup was spotted on the way back to the dorm. Equipment for this experiment : Paper cup, soil and weed grass seeds.



The seeds are soaked overnight in the water and then pressed in the cup full with soil. After the seeds, I decided to place the cup beside the window so that the sunlight will shine on it during the day.



During the first day, nothing popped up. Top left picture showing weed grasses on day 2 and day 4 on top right.

GLUE STRIP

Indoor or outdoor? Plants do not like cold and windy air as it will stress out the plants. By growing the plants indoor, seeds germination rate and plant growth can be easily observed and recorded. Moreover, indoor environment reduces the chance for the interaction between plants and pets, diseases, rain and snow which may destroy the cup and plats. Also inside has more moisture and warmth than outside environment. The Good: Indoor seed starting gives you the most control over your seedlings. You can easily track the germination rate of your seeds, and give them more moisture or more warmth as needed. In a contained environment, seedlings are less prone to pests and diseases.

Sun-lit area or dark area? Plants can not survive in the dark, they need sunlight which is their source for food in order to develop phothosynthesis. By starting to grow plants in the darkness may slower the growth



(Above) Weed glasses on day 8.



(Above) Weed glasses on day 14, look like they are full grown.

Since the plants are grown indoors, the properties of container such as water resistance and coating may not need to be considered. Latest observation (Above) shows the overall physical look of the plants that seems to be whilted and dried which may results from the chilly air that are sneaking in from the window. But this may comes from the insufficient of water or sunlight.

It can be seen in the picture on left side of the page that the plants tend to grow towards the window side as it is where the light directs toward. The insufficeint of the space and the soil that placed way too deep may be the causes. The result demonsrates that paper cup is able to grow the plants but it is not the best container for the plants to grow in. The better design of container that the plants will be fully grown and receive the same amount of sunlight might be the paper bowl. The bowl has more surface area comparing to the cup which will let plants abo-sorb the light in equal amount.

1- Research the background of natural dyeing of cellulose fibers.

The color pigment in plant is extracted through solvent. The color pigment together with the solvent move from one area of the solvent to let the pigment dissolves in. And as there's no solvent, the pigment is fixed to the fiber but not fixed to organisms. The color pigments are chemicals that have different colors from plant bases which is the reason why microbiologists introduce a mordant to these pigments in order to bind the dye and hold the pigment so that it could be attached on the organism.

Dyeing is the practice that most of the textile industries has as part of their making process since it can be seen on the objects in our daily life, colors on clothes, towels, curtain or mat, without knowing such practice gives a lot of impact on our water sources. In fact there are 72 chemicals produced by the textile industry that in the risk of getting them spill to the agricultural and clean water zones and by toxicant the water means the ecosystem is in danger from the expose of chemicals and hazards.

To lessen the impact on environment, dyeing the textile that came from the natural sources - plants and animals is one of the most effective ways of reducing water pollution. With only natural resources, there are various tone of colors to use as many species of insects, animals and plants are well sources of pigments.

GLUE STRIP

2- 3 Research what can be used as natural plant-based dye sources. Which of these natural dye sources are available in New York as a locally grown plant during this season? In your Studio Journal list these natural dye sources. Add a photo and a caption that explains the photo. Credit the photographer/ webpage. Pick two different plants for your natural dye experiment in your group.

Not every natural sources especially in plants will give a color pigment or dye your clothes. Research shows some example of plants that can be used as bases and what shades they will give :

- Orange: carrots and onion skins
- Brown: tea, coffee, acorns
- Pink: berries, cherries, red and pink roses, avocado skins and seeds
- Blue: red cabbage, elderberries, red mulberries, blueberries, purple grapes
- Red-brown: pomegranates, beets, bamboo, bloodroot
- Grey-black: Blackberries, iris root
- Red-purple: red sumac berries, basil leaves,
- Green: artichokes, spinach, peppermint leaves, grass, nettles, plantain, peach leaves
- Yellow: bay leaves, marigolds, sunflower petals

To choose two bases, I decide to focus on the plants that produce a great amount of dye pigment.

1. Raspberries - Shade : Red. Easy to find and buy from local supermarket. Gives a clear sense of red and doesn't need much time to extract the pigment out of the materials.
2. Sunflower - Currently it is the time of the year that sunflower usually blooms. Gives nice shade of yellow.

6- how you could waterproof both the wool and the bioleather. WATERPROOF refers to the highest level of water protection which means the surface of the object is impermeable. According to the research, to provide the flexible clothing material like wool that requires the process of sticking, the process seam sealing can be done as the inside parts fabric like holes are sealed from the outside environment. However, it seems like this process can only be done in the factory where machines and experts are required. Another option of preventing these materials from water might be using water repellent product which can be done in manual way.

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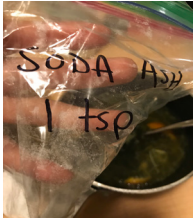
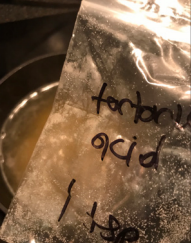
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Orange	Lemon	Coffee
		
		
		
		

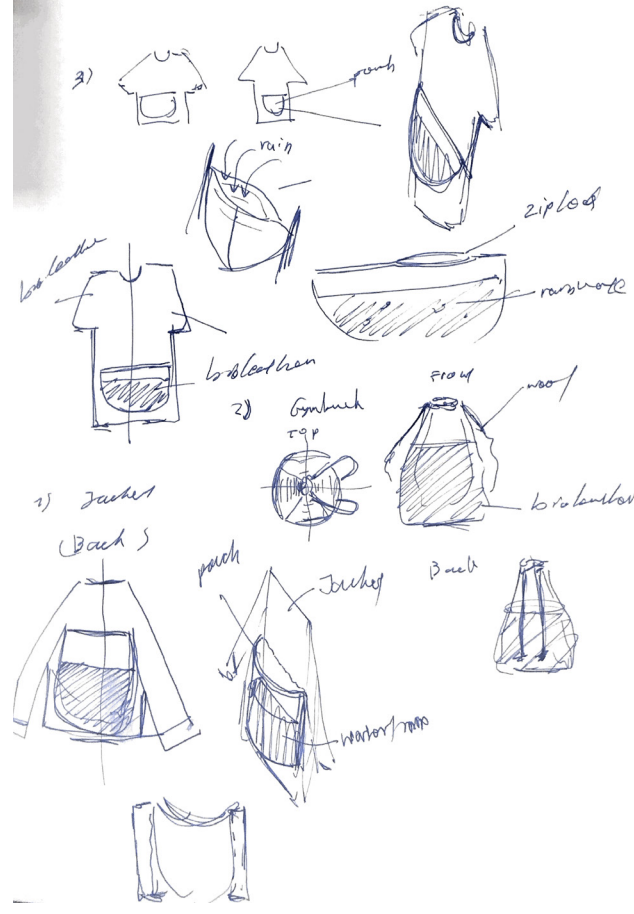
GLUE STRIP

		
		
 <p data-bbox="667 1320 751 1352">Green</p>	 <p data-bbox="926 1328 1094 1369">Light yellow</p>	 <p data-bbox="1178 1320 1339 1352">Light brown</p>

GLUE STRIP

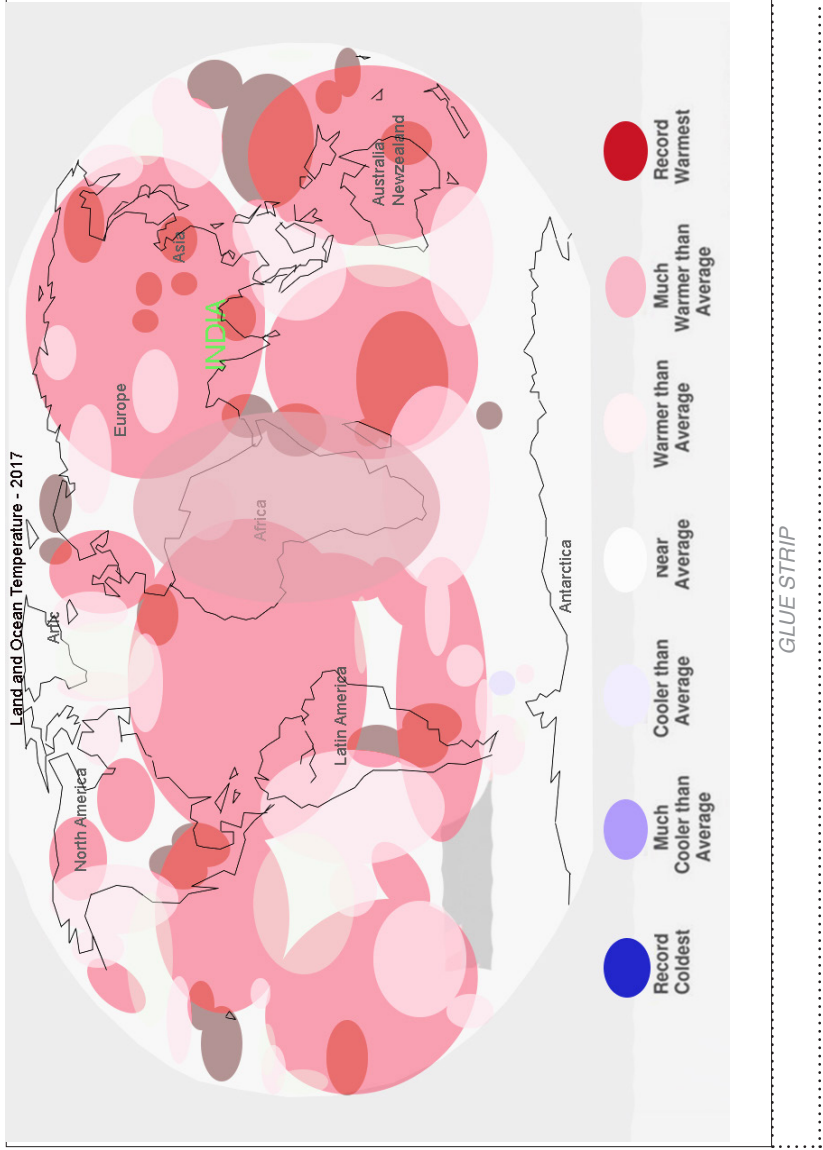
Initial Sketch

- Wearable ...
- 1) Jacket
 - 2) Bag / Backpack / tote bag / Gym bag 
 - 3) ~~Shirt~~ T-Shirt



GLUE STRIP

Land and Ocean Temperature - 2017



Extreme Heat

In India, New Delhi has hit 43.7 C on April 18 according to CNN and it is named to be the city's hottest day at that month since 2010. The heat wave strikes by rising the temperature up to 4 to 5 degrees above the normal temperature. The victim is suffered from heat by forcing his or her body beyond what his/ her body can do by trying to maintain the body at a normal temperature and evaporating water as least as possible as during such condition, drought and famine are what followed up.

Expecting result of shelter :

Thermoelectric installation

thermoelectric generators is the machine that take the heat temperature and turn it into electrical power. This generator has the materials that could be used to run reverse which means turning electricity into heat. By putting power into the thermoelectric generator, the temperature difference is created. And the example of some machine has thermoelectric installed is fridge and air conditioner. Thermoelectrics generators's work starting from Heating one end of a thermoelectric material which cause the electrons to separate themselves from the hot pole and move to the cold pole. And the movement of electrons that goes from the hot to cold side provides the electric current.

The initial idea of installing thermoelectric generator is to have them attached to the wall material so that the generator will receive the heat from the external environment while in return, gives the electricity to other devices and cool down the inner living area. However, the level of coolness depends on the difference between outside and inside of the shelter as the larger the temperature difference the more electrical current is generated and so does the power.

GLUE STRIP

Extreme Heat

Material of shelter:

Since the shelter will be used for refuge, the structure and material should be able to be assembled and disassembled easily when it needs to be moved to a different location.

Plant-based Polyurethane Foam is a safe and natural product that is made up of bamboo, hemp, and kelp. The benefit of this material is its resistance to heat and protection from mold and pests. And since it is foam, the material has high flexibility and light weight. (Below)

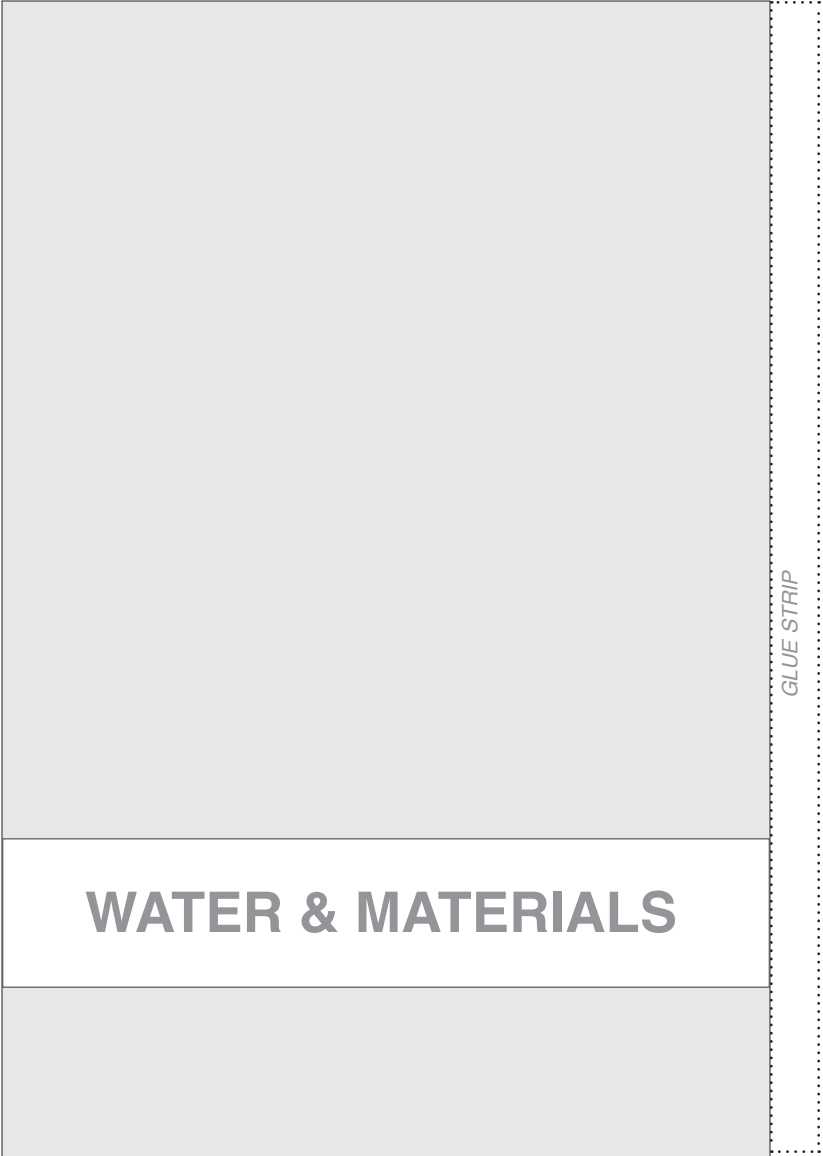


Level and shape of shelter :

The person that faces the heat crisis is not supposed to do activities that use a lot of energy since the kinetic work will generate more heat in your body and results in dehydration if the amount of water is not consumed in the right amount. In my perspective, as heat is not only present in the air only, the person may avoid letting his or her feet touch the ground as much as possible. When the feet touch the ground, the heat from the ground is absorbed by your body. Accordingly, the expected design in terms of structure or shape of this shelter has to meet these points :

1. Option 1 The small surface area of floor or walking area - prevent the person's body from absorbing the heat directly from the ground and lessen his or her activities to prevent him/her from sweating.
2. Option 2 The shelter should be lifted up above the ground .
Large surface area of roof or top part of shelter - To make the shelter breathable and for storage.

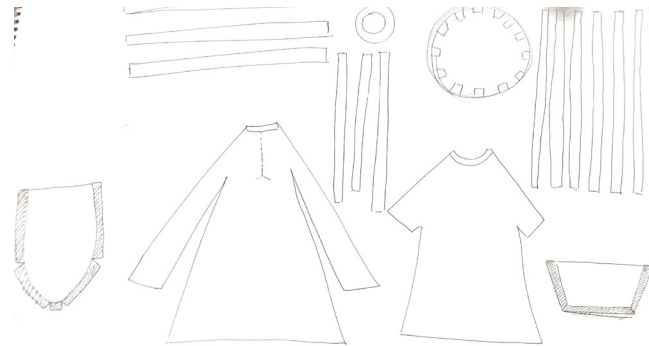
GLUE STRIP



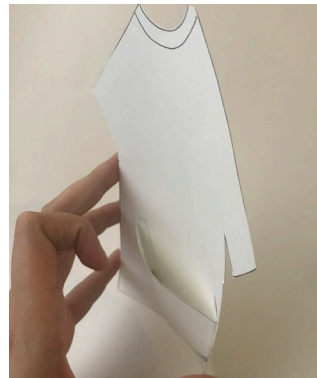
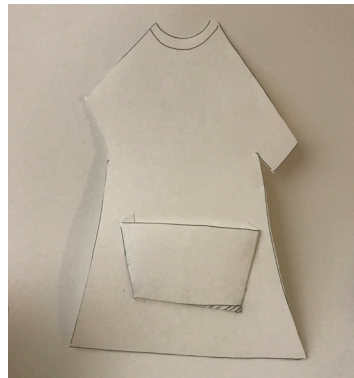
WATER & MATERIALS

GLUE STRIP

Model Outline

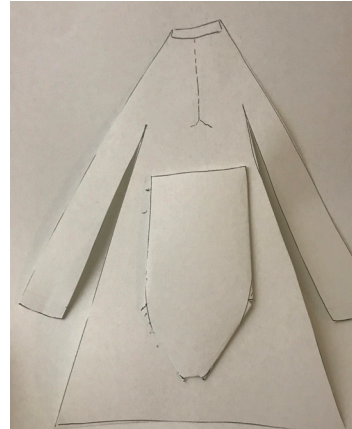


T-Shirt with pouch

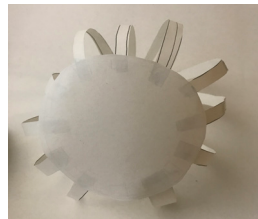
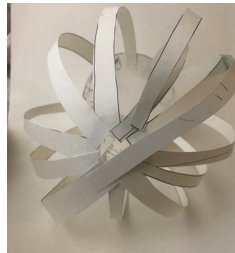


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Jacket with back-pack pouch

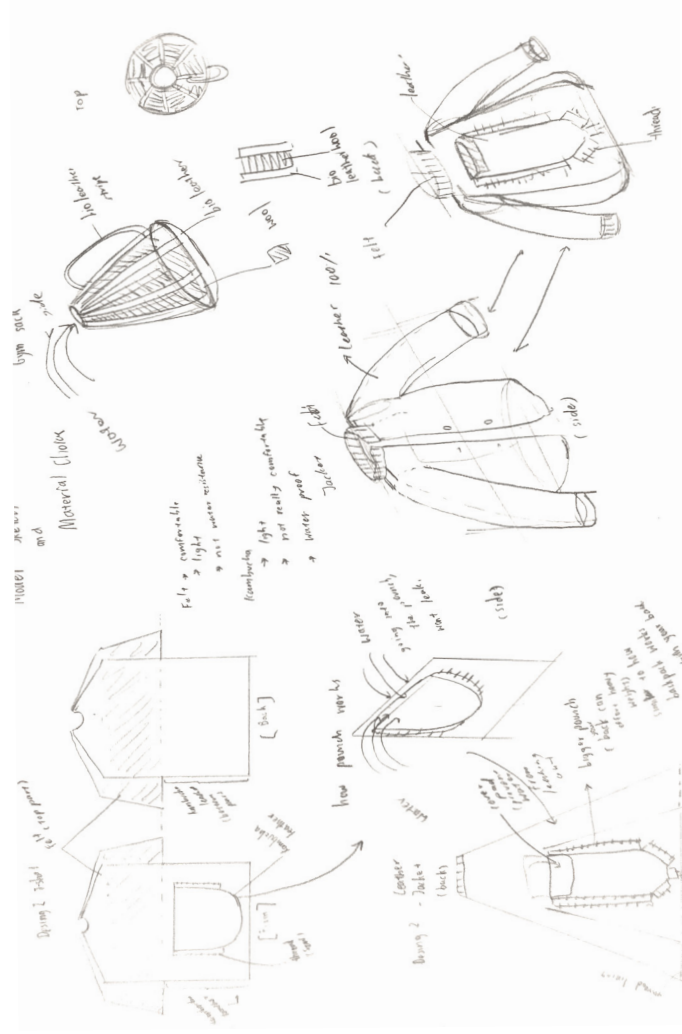


Wool Gym Sack



GLUE STRIP

Sketch



GLUE STRIP

Part 2

The chosen animal is armadillo lizard or armored lizard that lives in the deserts of south africa. Since india doesn't really have animal that fits to be an inspiration on my extreme heat condition shelter design. The name of this type of lizard is given by its specialty of movement when it wants to protect itself from enemies or something that makes it feels frighten. The posture is quite unique comparing to other types of lizard- rolling up into a protective ball by grabbing its tail with mouth to ward off attackers.



GLUE STRIP

Part 2

Similar to many lizards, the scales of armadillo is thick, helping it to protect itself from predators as it this makes the predators have difficulty in attacking or biting and at the same time, cause injury to that attackers.

The scales of lizard has water retention ability which means it allows them to retain retain moisture by preventing the evaporation of water through the skin. This allows the animal to become dehydrated less frequently and require smaller amounts of water to survive.

Another reason besides its unique rolling over move is the ability to camouflage. The scales of many reptile species are either plainly or elaborately colored to assist with camouflage. This includes certain species of leaf-tail geckos, who can completely blend in to surrounding tree trunks and branches in their natural environment. Chameleons also have an additional advantage, and can change the color of their scales at will. In the wild, the chameleon will use this ability for camouflage or to absorb sunlight by darkening parts of its body.

The shape of the design is mainly inspired from the rolling up technique armadillo lizard has. The overall look of the shelter will be in “O” shape featuring sharp-looking, triangular , geometric structure. The shelter will be foldable and connect with the hook and ring at the end of each poles of shelter.

GLUE STRIP

Part 3

Since new location is southern part of africa, the area is extremely hot due to sunlight, the scales liked structure (colored in red in the previous sketch) will be placed with solar panels for electric source. The bed will be inside floating in the middle of the shelter like a hammock. The water collectors are located outside the shelter at the end of each sides with also make this circular shelter stands steady. The food garden expected to be inside the shelter around the panels. The garden is run by the hydroponic system which means the vegetables will only need water to grow. (Picture below)



The design is in repetitively patterned by having the same geometric shapes of scale-like structure sticking to each other to make a circle. And after consider about the natural color and characteristics os each bio material. In my perspective, Kambucha leather is the best choice according to its brown-black color, water resistance and its flexibility. The metal wire will be used as the built in structure.

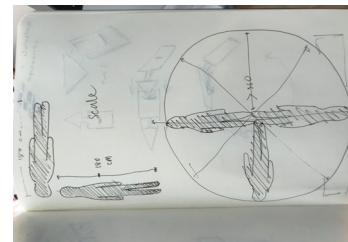
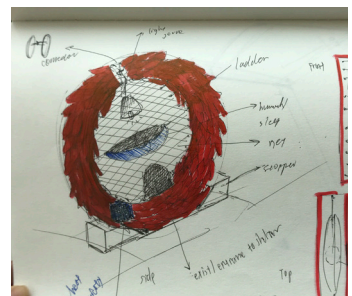
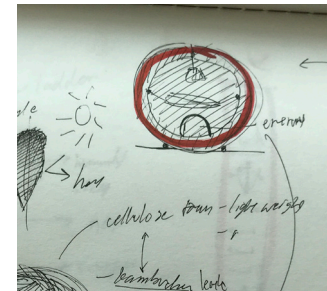
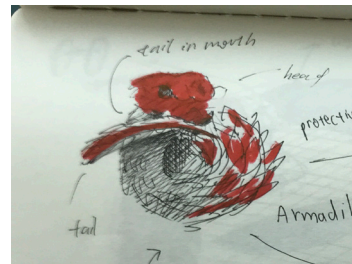
GLUE STRIP

First sketch on the left is the inspiration sketch (initial sketch).

Second one on the right is the study of how armadillo lizard interactions and how this can be developed into the design in term of durability and functionality.

Third sketch is the final design, the overall look of the model. The outer part of the shelter (red) are still in lizard scales as the pattern ideas is stallion progress.

Fourth sketch is the final design of the model. It shows how the model will be composed, human scale and the functions of the shelter.



GLUE STRIP

Part 4+5

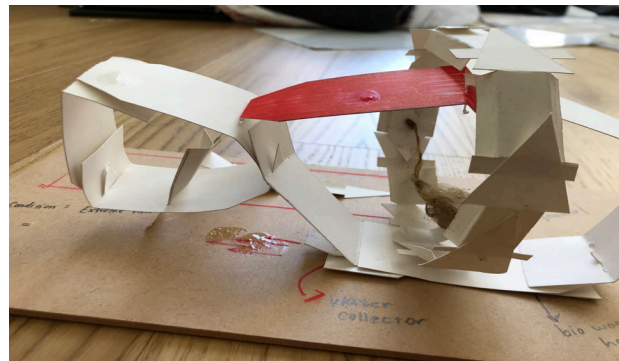
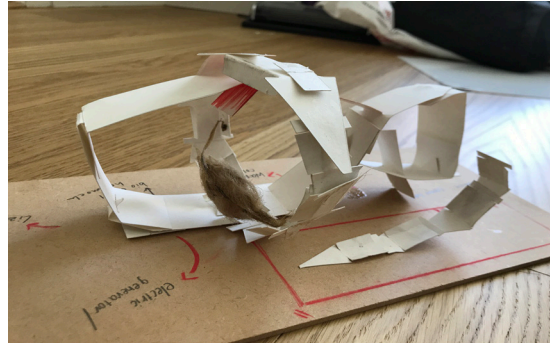
- Problem : According to the diagram below, the prototype of the model (50percent) is made up of bio wool, recycle wooden board and bristol paper. The reason for not using bio leather is it is too thick and not stand its shape when pasting on the metal wire. So the best way out for current situation is to use recycle briton papers. Unlike bio leather, paper can be fold and remember its shape after folding it once while bio leather is like rubber, returning to its original shape.

-
design: Because of the following problem, most of the part will be made by briton paper but I tried to use bio felt as part of the shelter as a hammock. The prototype is smaller than the upcoming final model as Im quite unsure about the replacement of my chosen materials.

GLUE STRIP

Part 6

You will complete your design of a to-scale prototype of a shelter structure for your specific location in an extreme climate condition.



GLUE STRIP

