



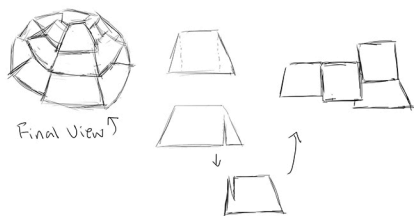
GLUE STRIP

SUSTAINABLE SYSTEMS
WINNIE WONG

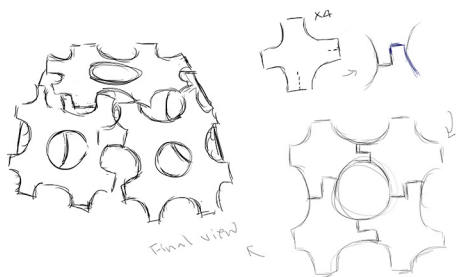
PARSONS THE NEW SCHOOL FOR DESIGN, FALL 17

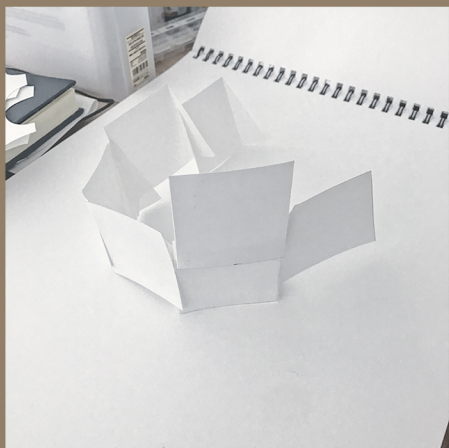
INSTRUCTOR: CAROLIN MEES

IDEA 1 BRICKS HEAD



IDEA 2 HONEYCOMB HAT



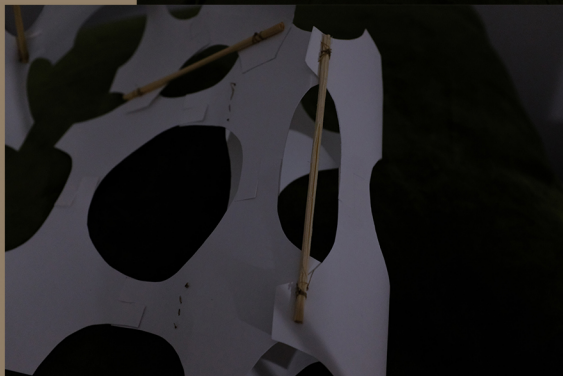


Process of Brickshead

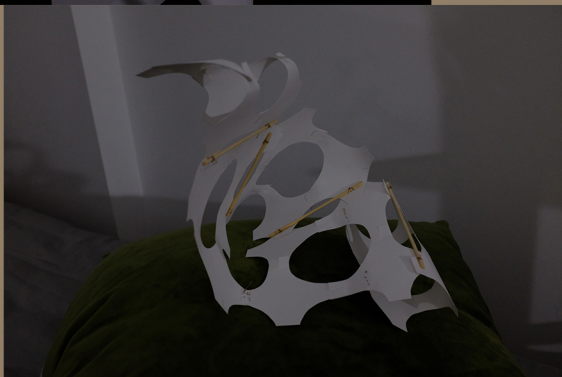


Process of Honeycomb

Final choice

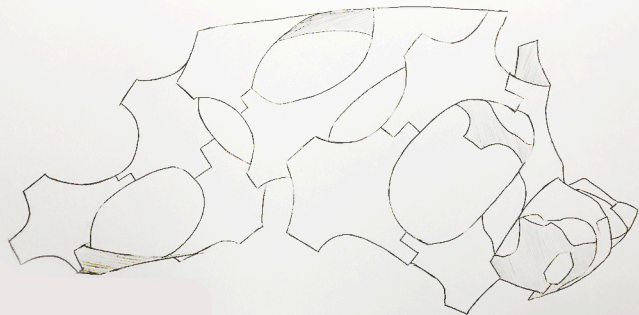
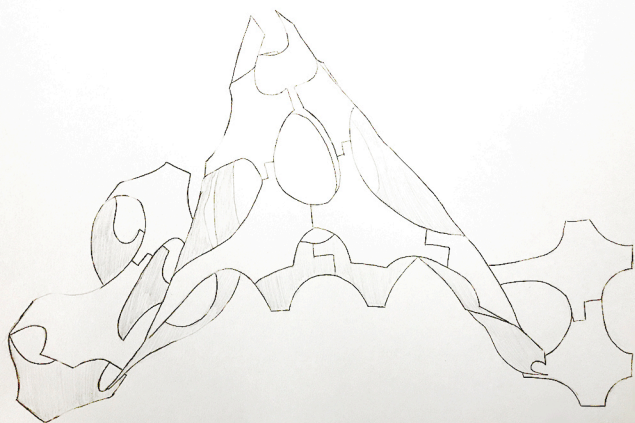


Process looks



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Two views drawings of the Honeycomb Hat



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W A T E
R
M A T E
R I A L

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KOMBUCHA



[HTTPS://THECONVERSATION.COM/WILL-WE-SOON-BE-GROWING-OUR-OWN-VEGAN-LEATHER-AT-HOME-68498](https://theconversation.com/will-we-soon-be-growing-our-own-vegan-leather-at-home-68498)

LEATHER

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WHAT DOES THE SCOBY CONSIST OF?

SCOBY IS AN ACRONYM, A SYMBIOTIC CULTURE OF BACTERIA AND YEAST. IT CONSIST OF BACTERIA SUCH AS ACETOBACTER, SACCHAROMYCES, BRETTANOMYCES, LACTOBACILLUS

WHAT CONDITIONS DOES IT NEED TO GROW?

1. NEED SWEETENED TEA, SUGAR, WATER
2. PUT THEM INTO 68-85°F WARM TEMPERATURE
3. LET THE SUGAR COMPLETELY MELTED, PUT SCOBY. OUT OF DIRECT SUNLIGHT.
4. WAIT FOR 2-4 WEEKS.

WHAT IS NECESSARY FOR THE METABOLISM OF THE BACTERIA?

METABOLISM NEEDS HUNDREDS OF COORDINATED, MULTISTEP REACTIONS, FUELED BY ENERGY OBTAINED FROM NUTRIENTS AND SOLAR ENERGY, ULTIMATELY CONVERT MATERIALS INTO THE MOLECULES REQUIRED FOR GROWTH AND MAINTENANCE.



HOW CAN A SCOBY AND KOMBUCHA TEA BECOME BIOLEATHER, I.E. A SUSTAINABLE MATERIAL GROWN UNDER SPECIFIC CLIMATIC CONDITIONS?

SCOBY AND KOMBUCHA TEA CAN BECOME BIOLEATHER BECAUSE ITS TEXTURE RANGES FROM A LEATHER-LIKE MATERIAL TO A PAPYRUS. IT IS NOT LEATHER BUT ABLE TO REPLACE LEATHER, WHICH IS A MORE SUSTAINABLE WAY TO MAKE GARMENTS. ITS SHAPE AND COLOR IS ALSO DETERMINABLE BY THE MAKER.

Background of natural dyeing of cellulose fibers.

Most natural dyes come from dye plants, the best-known ones being woad, weld and madder from Europe, and brazilwood, logwood and indigo from the tropics. Some, such as cochineal, come from insects and a small number, including iron and copper salts, come from mineral sources.

Plant dyes may contain several compounds and their proportions vary with the type of soil and the climate where the plants were grown. A yarn dyed with madder roots has a wealth of colour variation, while the same yarn dyed with its synthetic equivalent, alizarin, lacks this subtle variation in colour and can look very uniform.

The traditional method of scouring cotton and other cellulose fibers is to boil it well for several hours with a mixture of soda ash and detergent or some other wetting agent.



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How is the color pigment extracted from the plant and fixed to the cellulose fibers? What is a “mordant” and what can be used as a mordant? Does natural dyeing work without a mordant?

Mordant is a substance, typically an inorganic oxide, that combines with a dye or stain and thereby fixes it in a material. It can also be called as a chemical link that combines dye pigment to form an insoluble compound. The most commonly used mordant for wool is alum powder, with cream of tartar being used as an assistant. Cream of tartar improves the consistency of the colour as well as the consistency between batches. Most natural dyes need a mordant to fix the color to the fiber and increase lightfastness. Natural dyeing work without a mordant but the colors won't adhere very well to the fibres.



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What do you find out about dyeing and water pollution?

The variation in chemical use is closely tied to the high demand for variable patterns and unique colors for clothing and other textiles. These constantly evolving demands result in a highly fluctuating and diverse waste stream. The textile industry is one of the largest sectors globally and produces an astonishing 60 billion kilograms of fabric annually, using up to 9 trillion gallons of water. This massive water use is a key component of pollution. Water is used as cooling water, to clean equipment, and for rinsing and processing dyes and products. The top pollutants by population at risk found in the Blacksmith Institute's database are chromium, lead and cadmium. Other harmful pollutants include sulfur, nitrates, chlorine compounds, arsenic, mercury, nickel and cobalt. Chromium is a known carcinogen and lead produces neurological and developmental damage in children and cardiovascular disease in adults.

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Why is natural dyeing healthier for the environment and humans than chemical dyeing?

First, Natural dyes produce an extraordinary diversity of rich and complex colours that complement each other. Natural dyes from plants may also have dozens of compounds and their proportions vary with soil type and the weather. Natural dyeing is not dependent on non-renewable materials; allow for endless experimentation. It is also economical because only a small amount of plant extract dyes a large amount of fabric. Dye plant extracts have no waste in the form of wet leaves or roots to dispose of at the end. Makers save time as they do not require lengthy pre-soaking and simmering. Thus natural dyeing will only enhance the quality and appearance of the fabric, by a more sustainable and a healthier way.

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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?

Dyes can be extracted from roots, foliage, nuts, berries and flowers. Mud resist printing is famous for cellulosic fibers like cotton and Viscose. It is also called Dabu print. The printing is done with the help of a mixture of mud, calcium hydroxide (Chuna in Hindi) and wheat Chaff. the method of application is similar to block printing.



Jana Soiseth - Hand-made | Marketing Tips for Makers of Hand-made Goods and Artisanal Food Products react-text: 6970 saved to /react-text DIY Things

Based on your investigation of the natural dyeing process and, pick two different plants for your natural dye experiment in your group.

Raspberry and avocado

I choose raspberry and avocado first because they are available in all seasons and almost every market. I will boil avocado's skin and seed to dye the fabric, doing so will that waste the food. I will also put 1 or two raspberries in there so that it will create a darker color of the fabric. I think the overall color will be pinkish and closes to red and purple.

How to waterproof wool and bioleather?

First, I will try to waterproof the bioleather by spraying a light amount of waterproof spray on entire surface. Let them dry for few hours and then test it out. If it doesn't work, I will try to test how to make the bioleather resistant of water during the growth experiment. Wool contains natural water repellent properties it self, blindly testing may ruined wool's breathability and quality. According from my research, unprocessed natural oil (lanolin) will improve wool's water repellency. Such as hand knit Irish, Scandinavian fisherman sweaters, locally made alpaca ponchos

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Natural Dyeing Experiment

Raspberry
Original: Orange & Red
1. + Alum
color: darker, pink & purple
pH: 0 or 1
2. + Alum, + Soda
color: dark purple
pH: 3
3. + Alum, + Soda, + Iron
color: darker purple



4. Tartaric Acid
color: More orange
5. + Alum, + Soda, + Iron, + Tartaric Acid
color: Darker Red.




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Natural Dyeing Experiment

Avocado skin

1. + Soda
color: turns to orange & brown → red brown
after 20 min
2. + Soda, + Alum
color: light brown, transparency 0%
3. + Soda, + Alum, + Tartaric Acid
color: clear dark brown



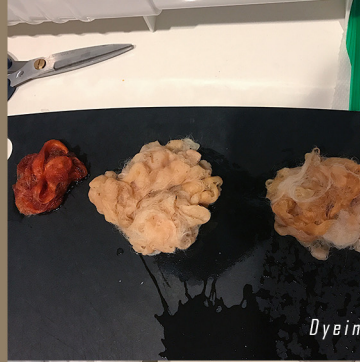
pH: 4

P.s: I didn't have a chance to dye my bioleather because it is dead



3.

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Dyeing with avocado skin



Dyeing with Raspberry



All combined (avocado skin & Raspberry)

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Design for shoe accessories on rainwater storage



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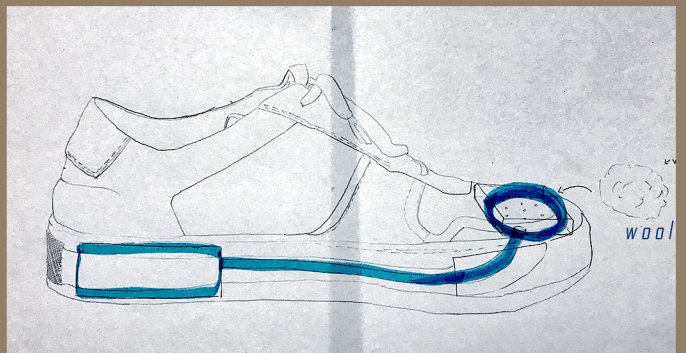
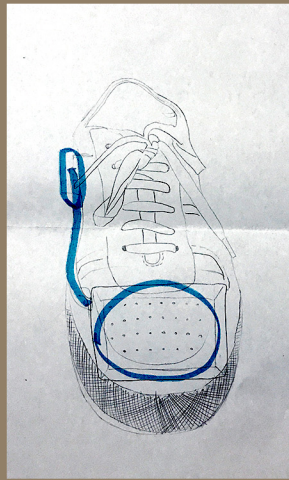


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Wearable Object to Collect Rainwater



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Climat change

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Map Satellite

Google

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Download the Application View in Google Earth

PEOPLE
 Health
 Food
 Water use

FRESHWATER
 Extreme wet
 Extreme dry
 Land ice

OCEANS
 Sea level
 Sea ice
 Ocean chemistry

ECOSYSTEMS
 Lakes and rivers
 Land
 Salt water

TEMPERATURE
 Air
 Ocean
 Water

North West: Sea level rise, wild fire
 North East: Heat waves, Montreal sea level rise
 Midwest: Drought, Flooding in coastal area
 South East: Problems happening, Wild fire, Drought, Flooding, Sea level rise

Check the boxes to turn global warming effects on and off and see which places are affected.

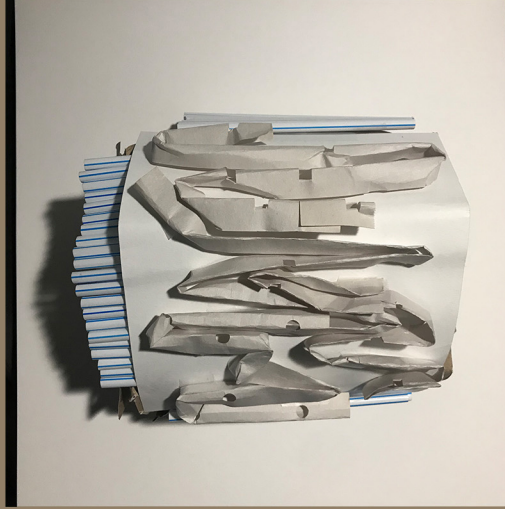
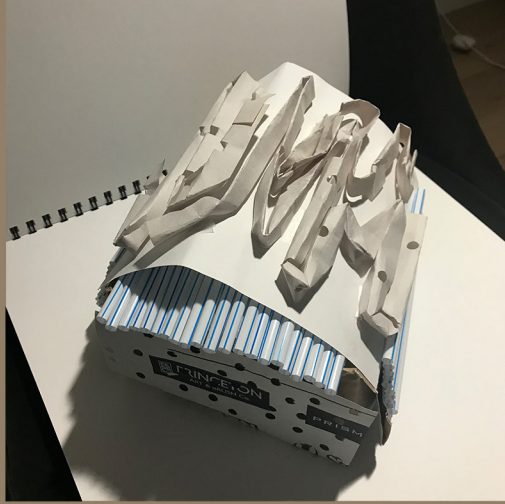
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Daniel is a farmer living in Oregon rural place. He experienced several times of inundation due to the unexpected sea level rise. The severe one will even flood and erode majority of his crops. Besides flood, he and many other farmers also have to deal with the insect outbreaks and wildfire. The heat affect their health and crops. Their earnings also decreased dramatically because of the disaster. He need an installation that enhances the environment and decrease the probability of disaster's happenings. He also need a shelter that can protect him and other farmers, as well as their crops. This shelter must be an enclosed one or must be really high and firm. The surface of the shelter will contain certain material that can let it be not damaged by the disaster.

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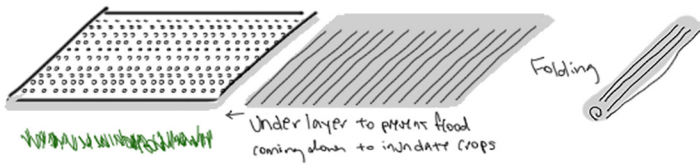


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Sketches for Sustainable Ground / Surface Design

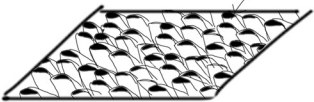


Recal. Glue sheet
allow water in but no out.

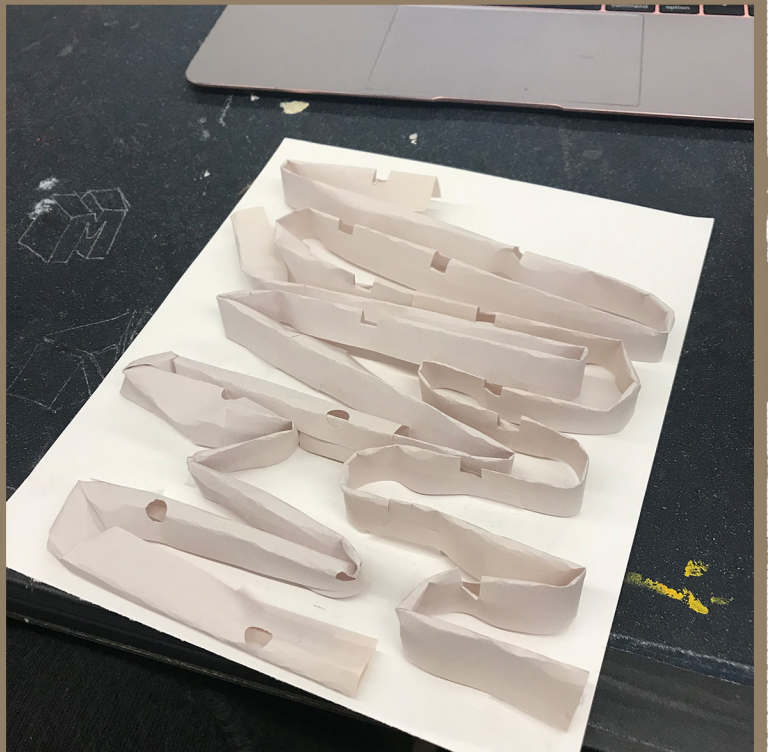


Pipe on the surface with holes on top
to bring water in.

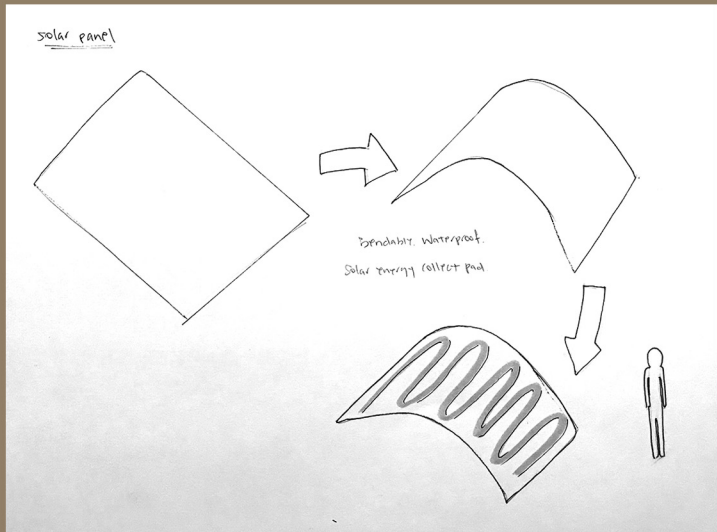
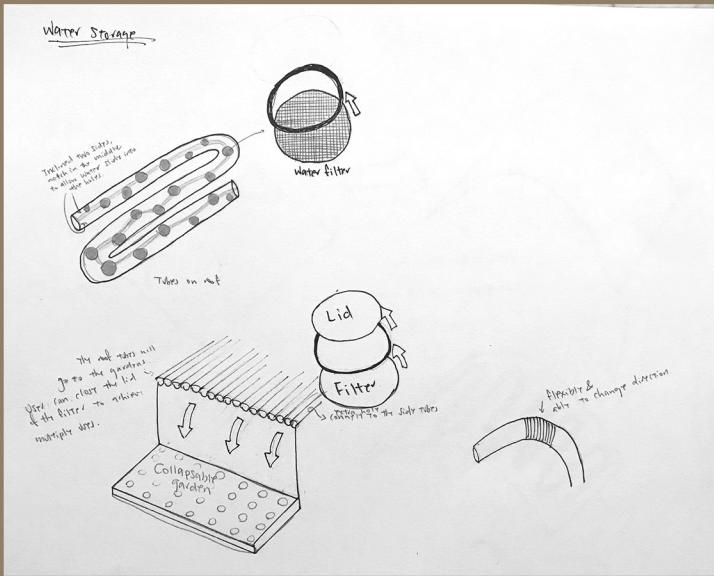
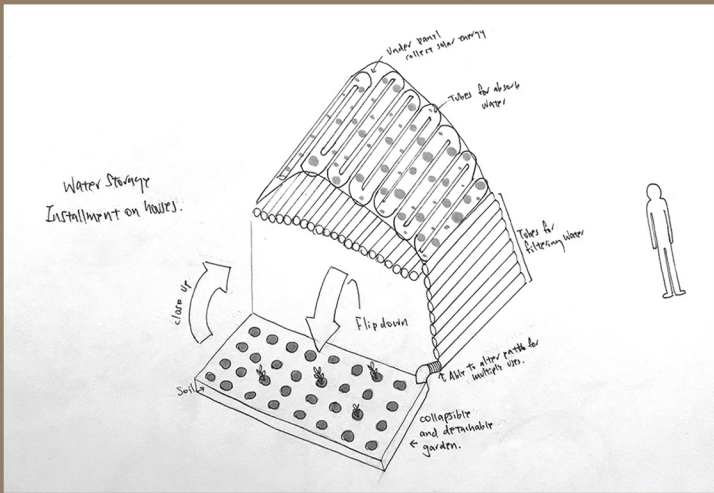
holes allow
water in



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Design for collapsible water storage shelter

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