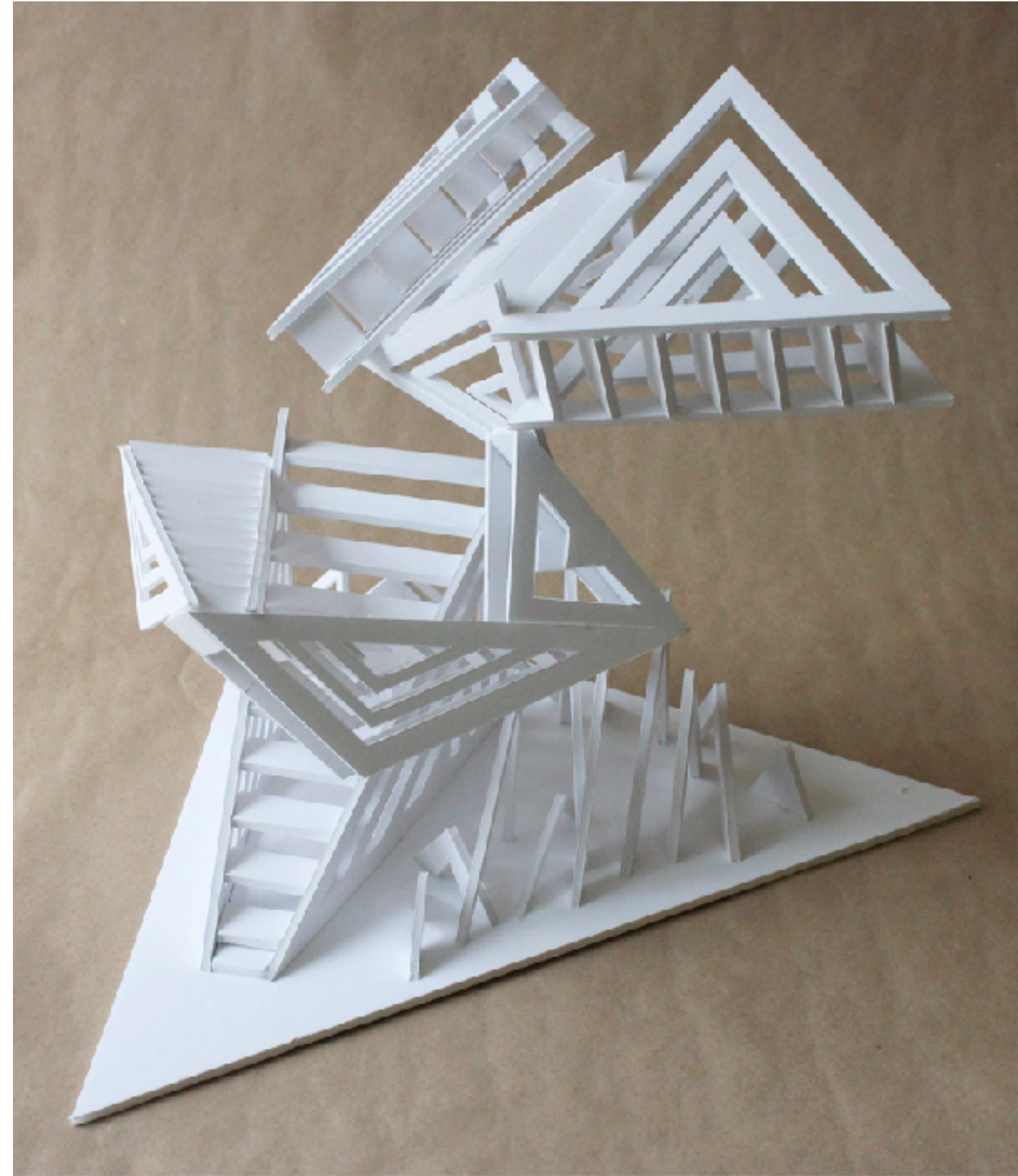


CS181DT Class 4: Analog form giving



Form exploration by
Gonzalo Portas



Student sculpture from Clara Lieu's
RISD course



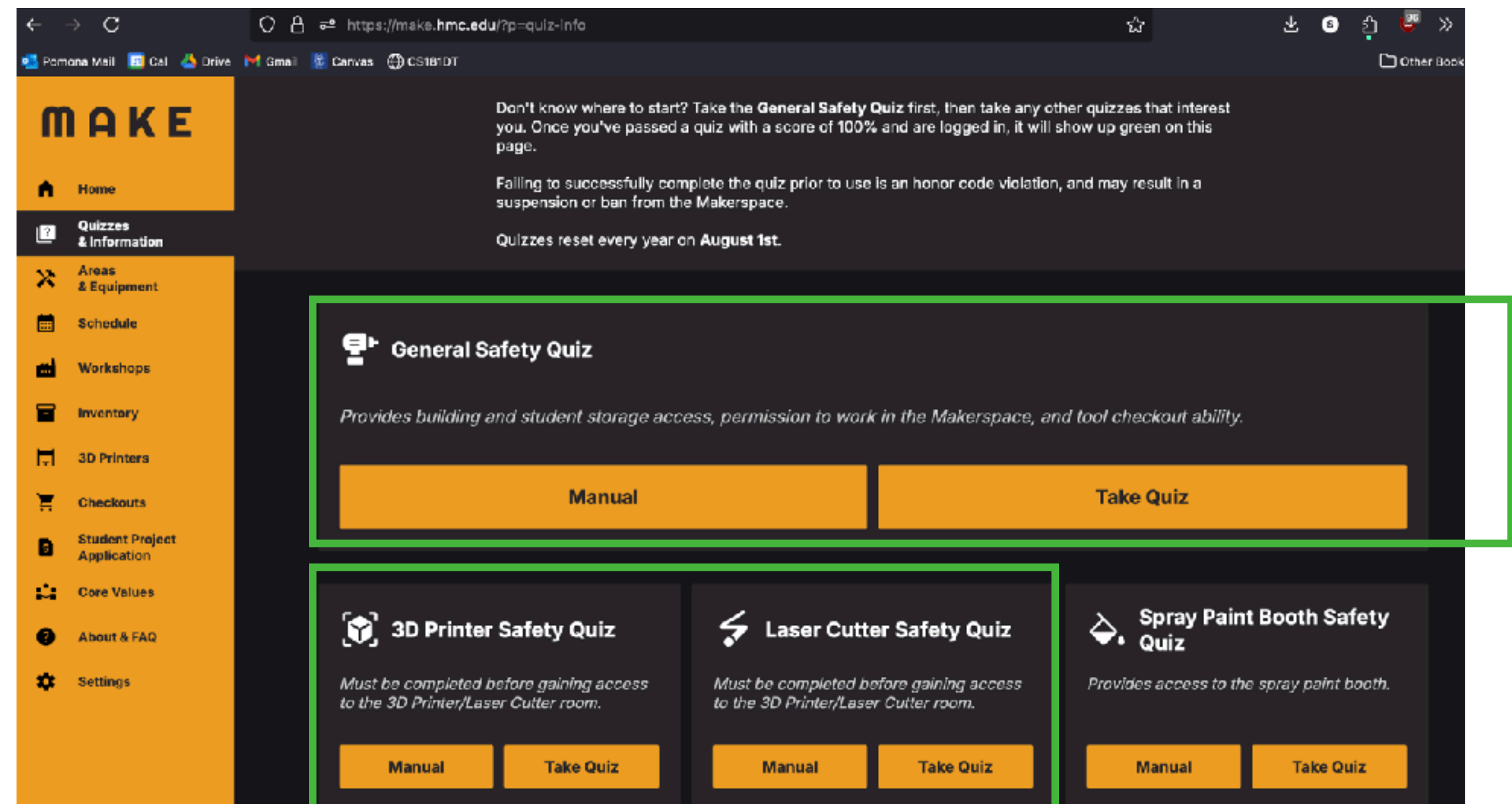
Foam Core Squares by odstmarinell on DeviantArt

Class 4 agenda

- Why analog making?
- Foam core studio: techniques tutorial
- In class design activity: hyper personalized phone case

Announcements

- Lunch sign ups - <https://calendly.com/jingyili/lunch>
- HMC makerspace training for next Weds Sept 18 - make.hmc.edu
- Take the general, 3D printer, and laser cutter safety quizzes by Weds



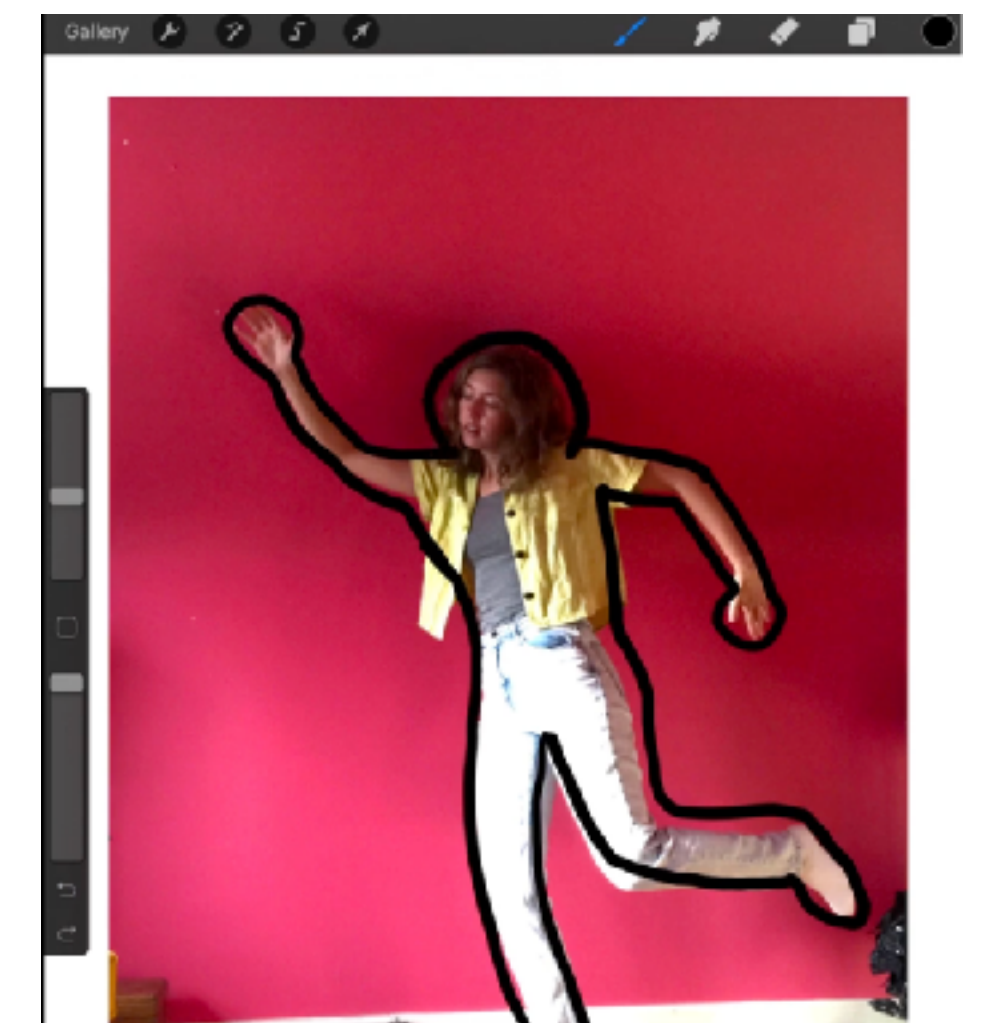
Analog making & reflection-in-action

Why analog making?

- Before computers, all making was analog



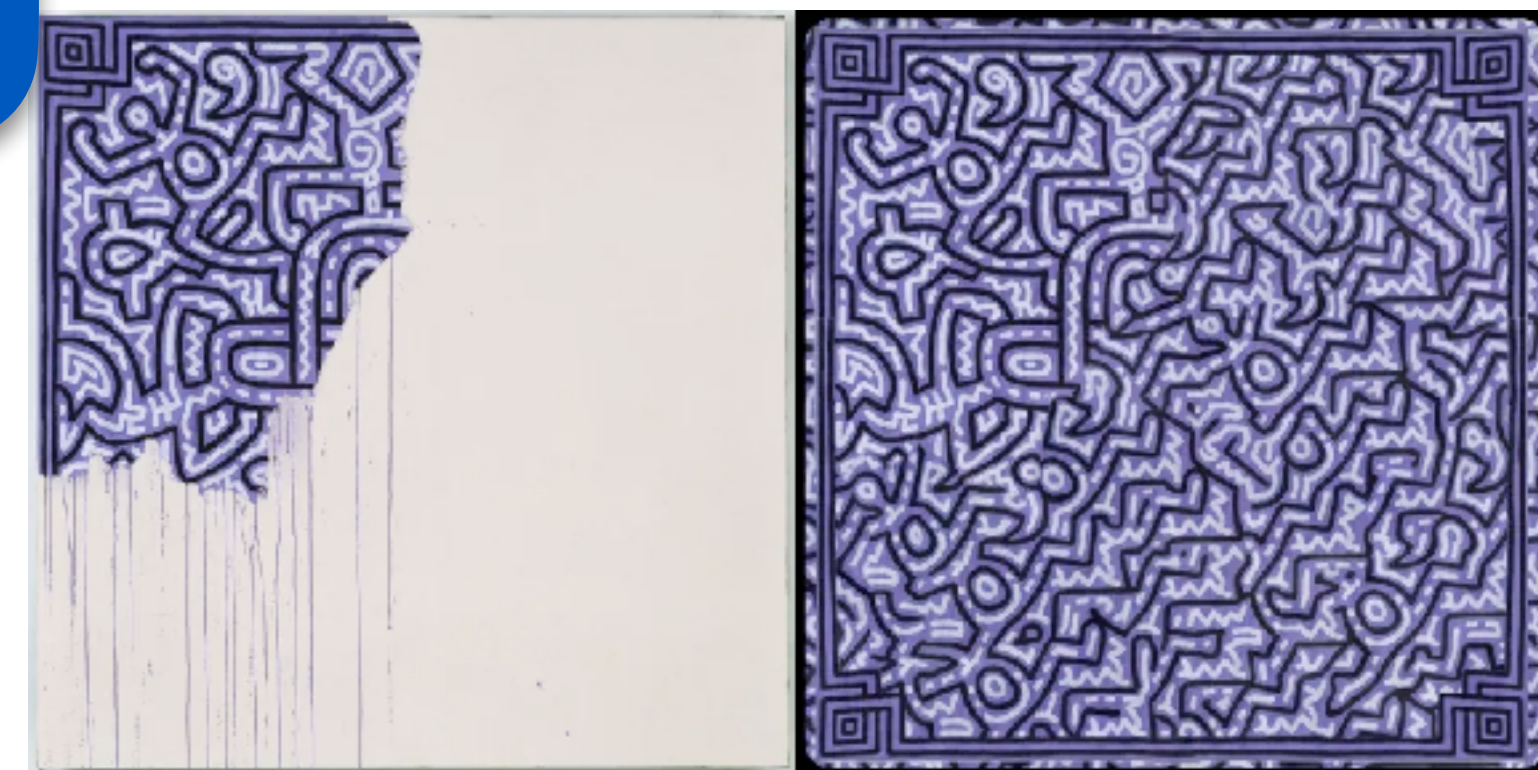
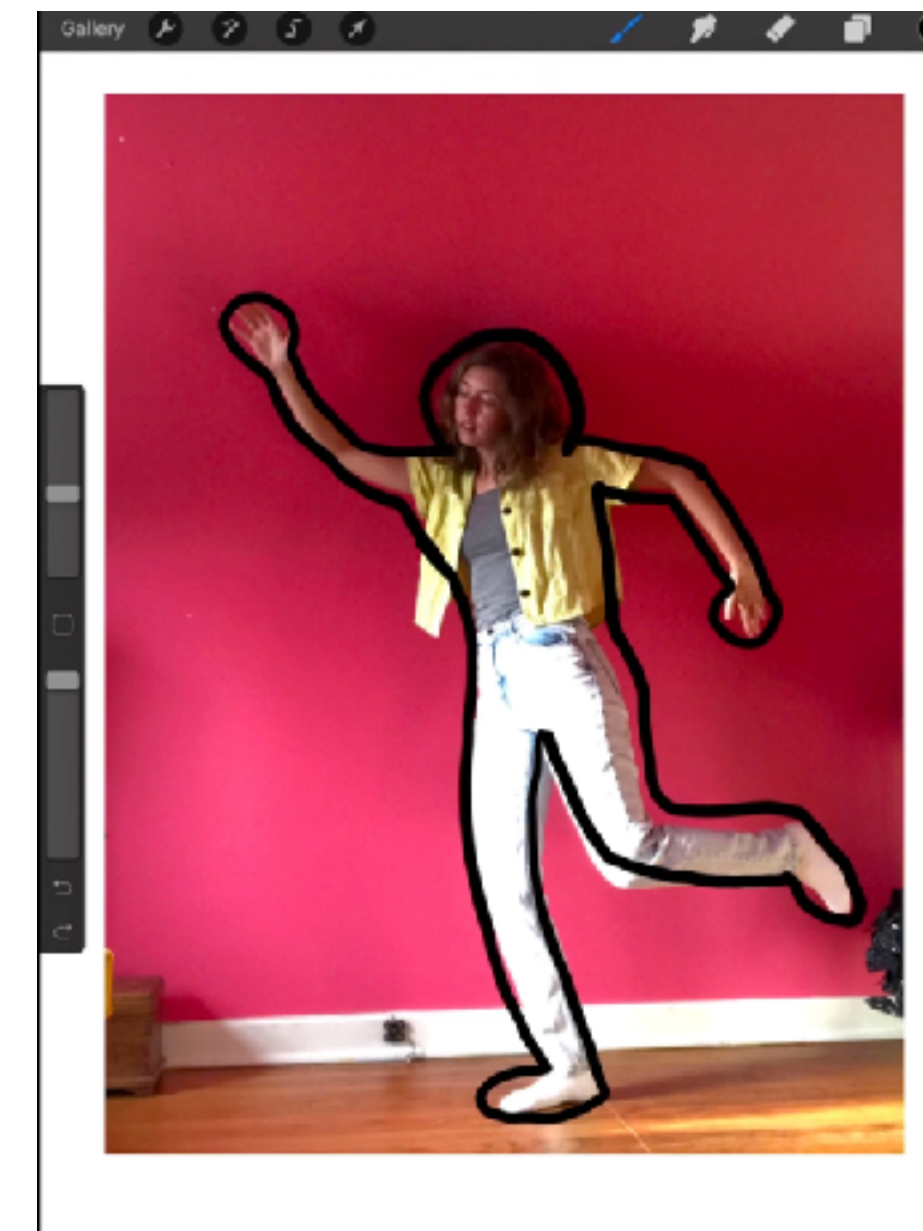
Technology (tools!) can help



Technology is good at automation



What do you think *should* be automated with tools?
What should be kept in the hand?



Keith Haring, Unfinished Painting, 1989. Private collection

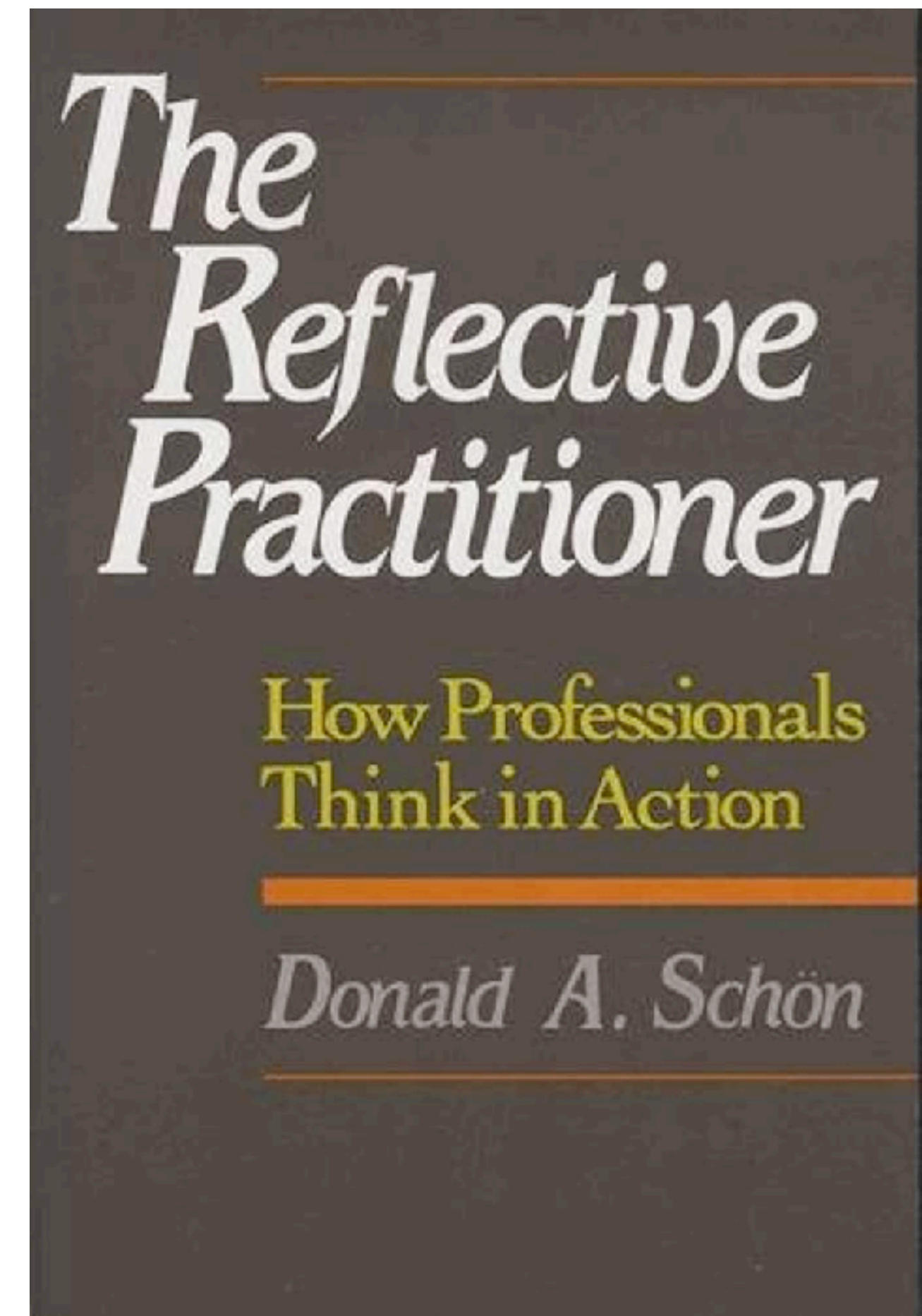
A Generated Attempt to Finish 'Unfinished Painting'

Why should you learn analog making?

- To inform the design of computational tools which respect, rather than replace, rich craft traditions
- To develop some of these skills yourself so you can respect them :)
- We live in a 3D world: let's make 3D things (not just software)
- Working with the hands releases serotonin and makes you feel good
 - *Flow state, movement is the foundation of thought...*

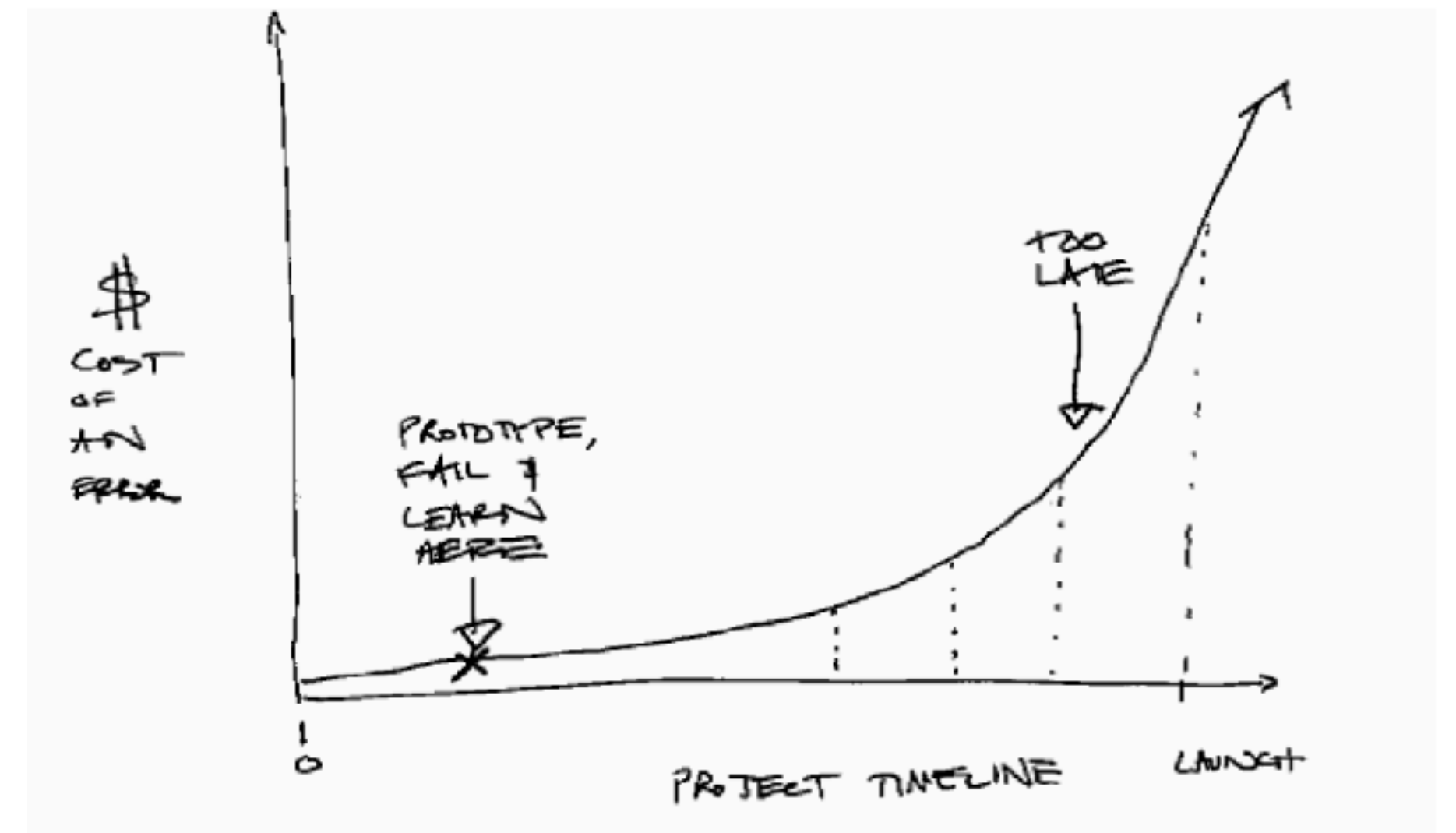
Design theory: Reflection-in-action

- Against “technical rationality”—the idea that using theoretical equations (like math formulas) can solve everything in life—sometimes you need to just do something and develop *situated knowledge* (rather than theoretical knowledge)
- Reflection-in-action is reflecting on something *as* it happens and changing your behaviors accordingly
- Reflection-on-action is reflecting on something *after* it happens for ‘lessons learned’
- Be aware of times you’re engaging in reflection-in-action today



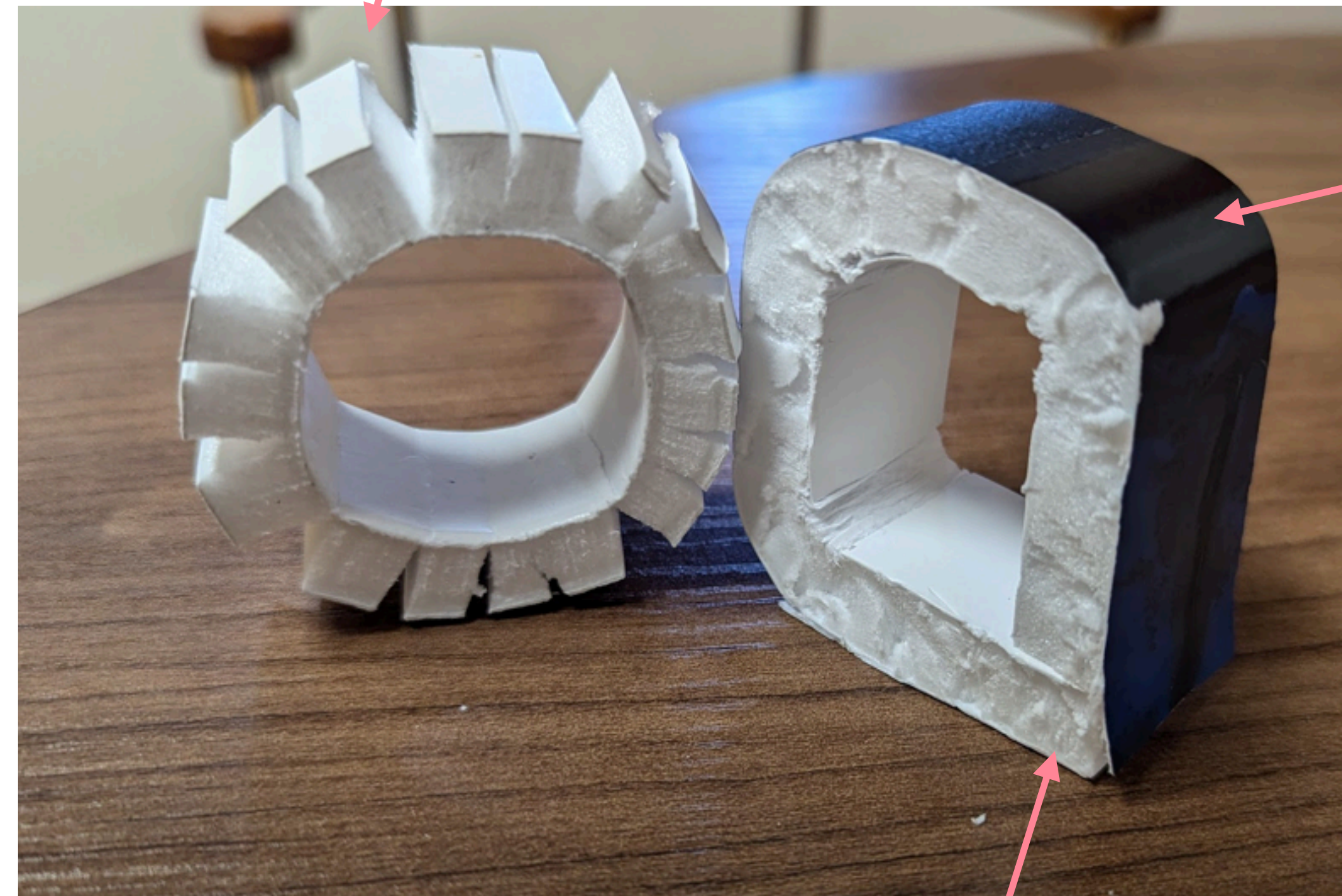
Why foamcore?

- Foamcore is great for **rapid prototyping**
- Quickly experiment with alternatives
- Get feedback earlier and cheaper
- Prototypes **answer questions** and **raise new questions**
- For 3D forms: size and scale, how to **interact**



Foamcore tutorial

Bendable shapes with scoring

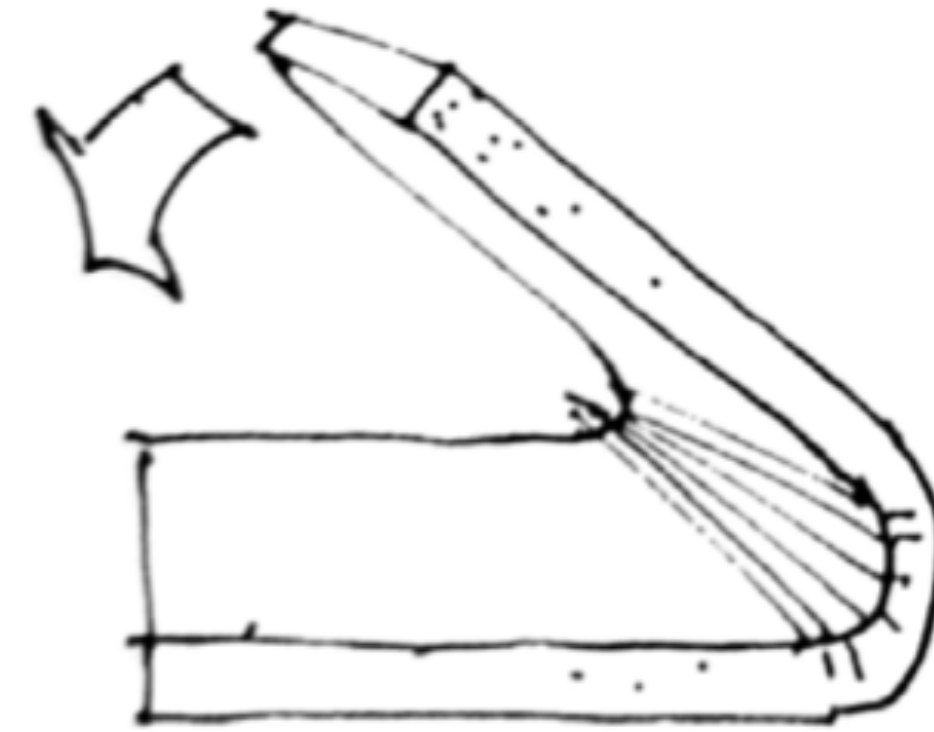


Folded joints

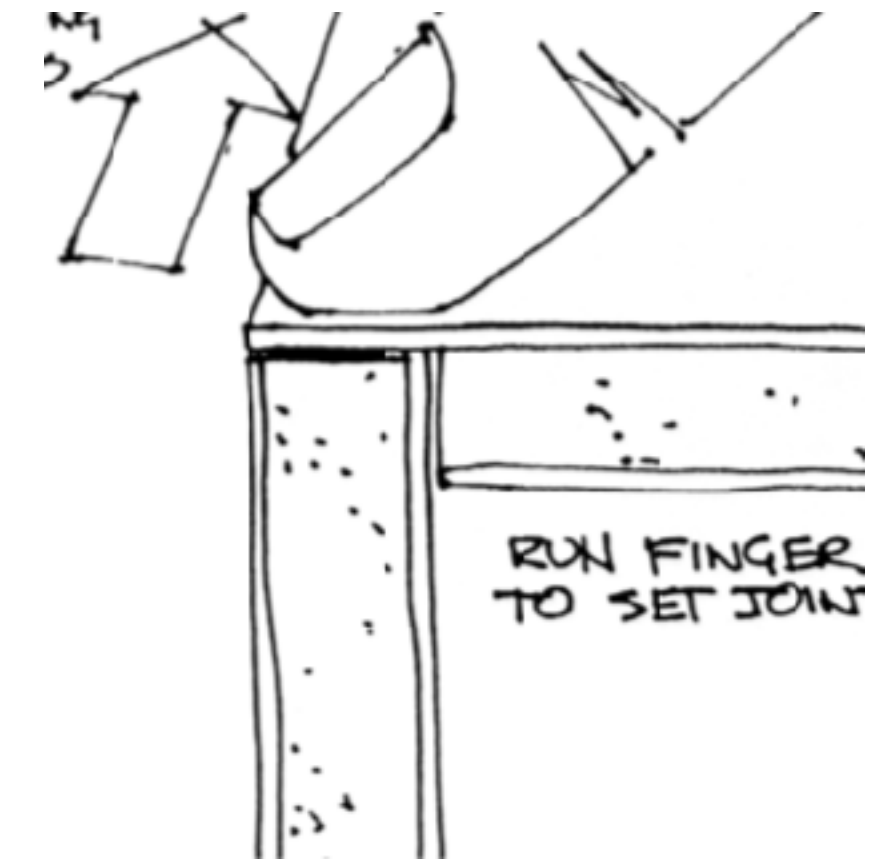
Lap joint

Foamcore has depth

- This foamcore is 1/2 inch thick made of paper - foam - paper
- All of our joints today will be made through cutting through one hard side, soft side, but not the other hard side, of the foamcore



Folded joint



(over)lap joint

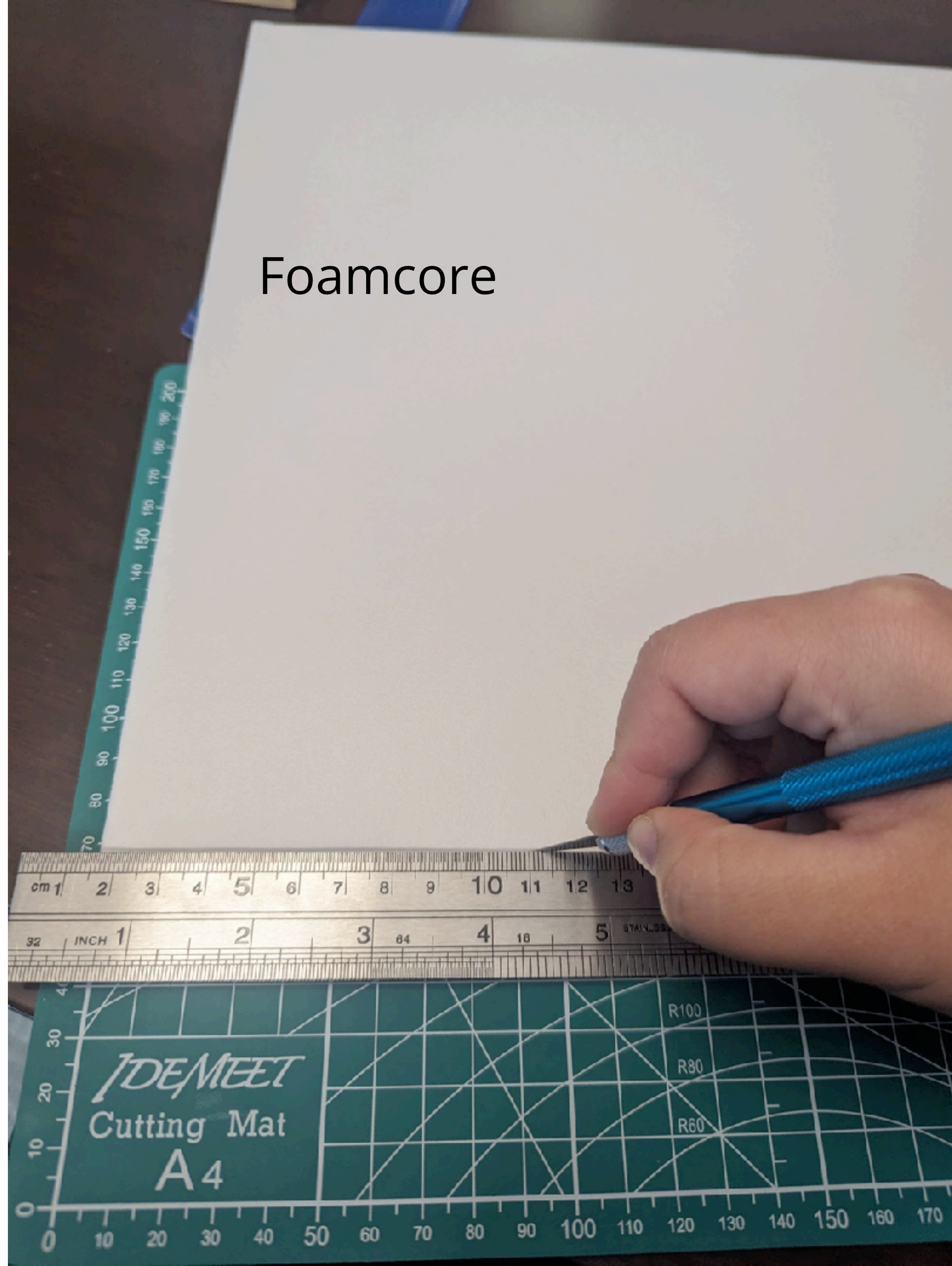


Cut

Cut

Don't cut

Materials



Foamcore



Hot glue: off



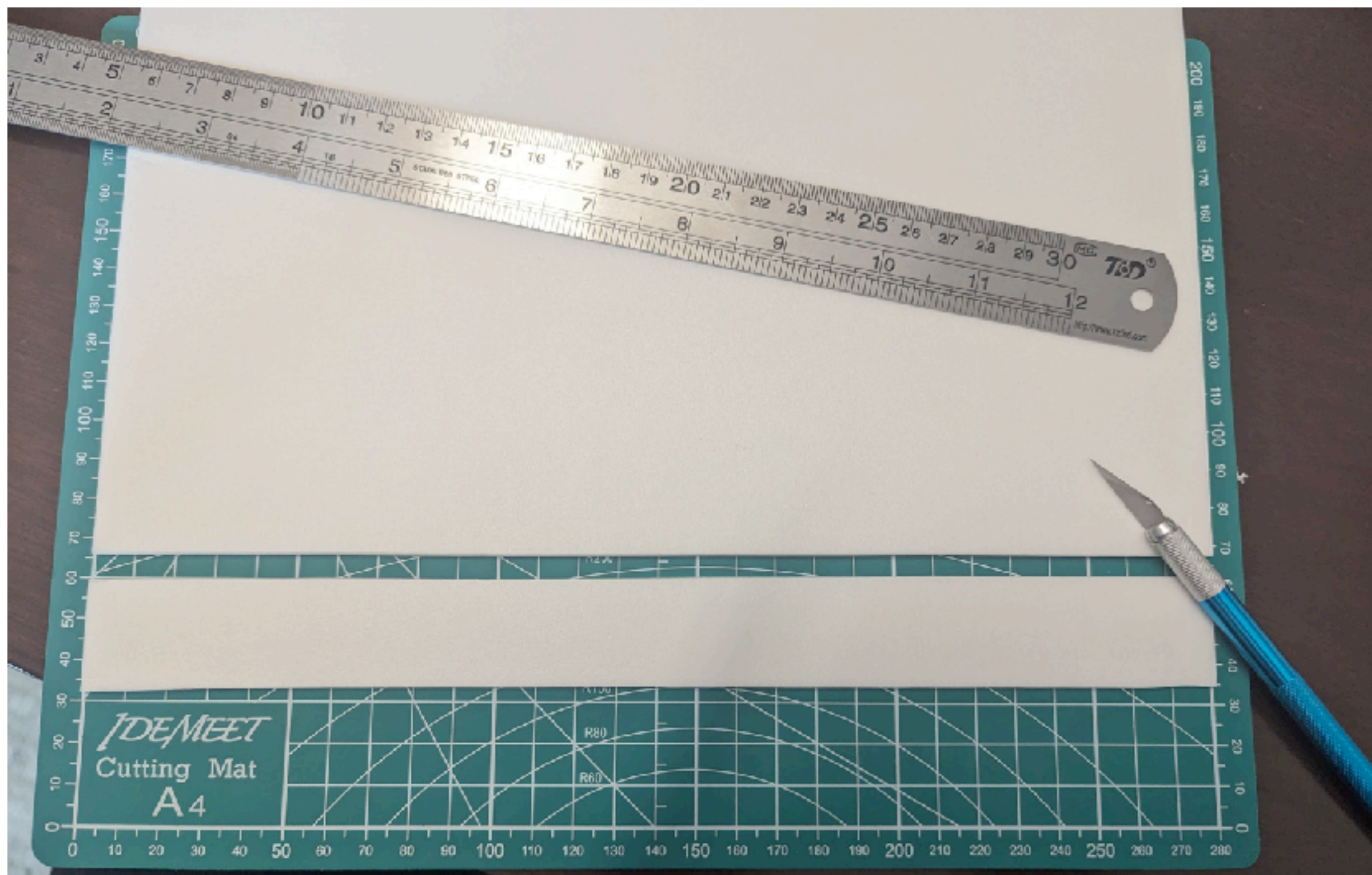
Hot glue: on

Xacto knife (be careful, sharp blade)

Twist the handle counterclockwise to tighten the blade hold - DO NOT cut with a loose blade!

Ruler (be careful, sharp edge)

Cutting surface



Measure & **cut twice (thrice)**

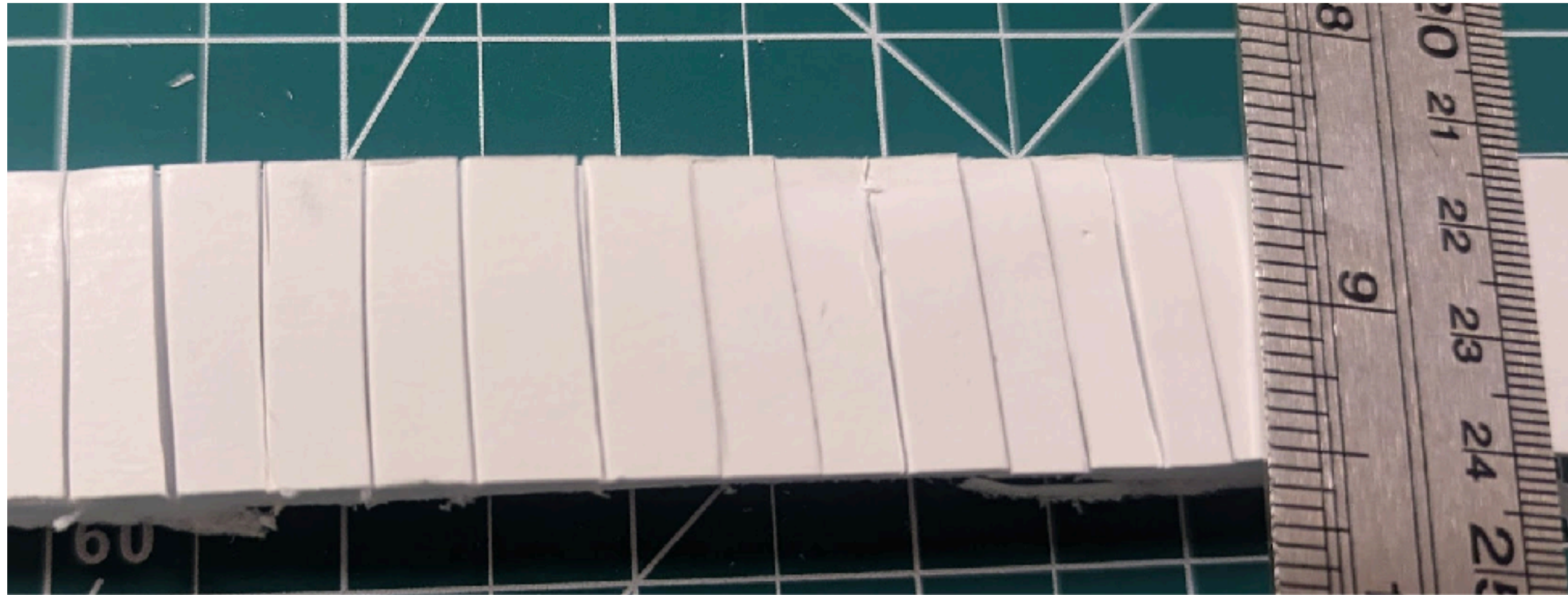
- Once, gently, to get the thin hard outer layer
- Once, deeply, to cut through the soft foam
- If necessary, flip over to get the hard layer on the other side

1. Cut out a 1 inch thick strip off the foamcore

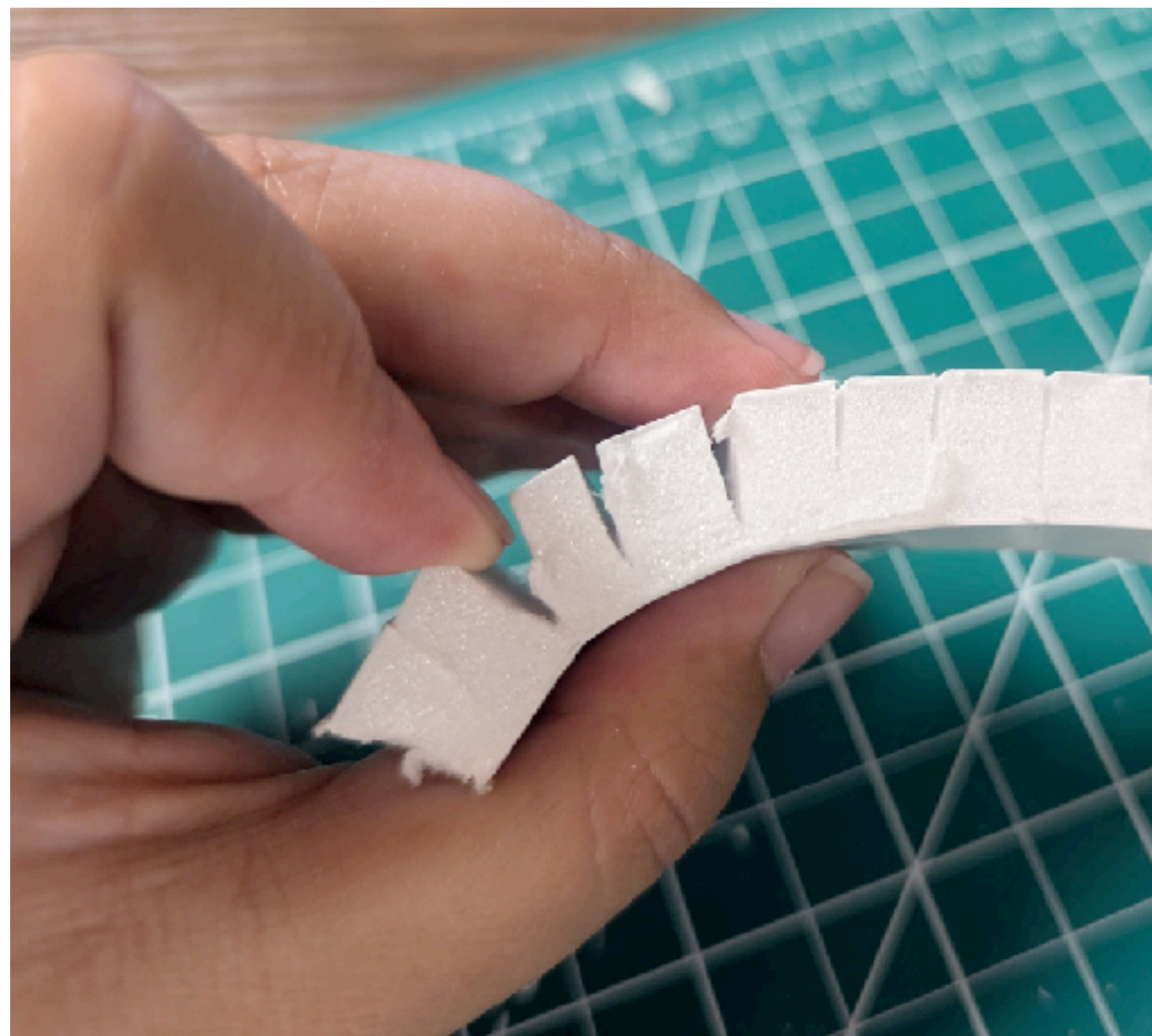
Cutting tips

- Even and heavy pressure, one confident stroke, lean the knife against the ruler
- Hold down ruler with other hand the whole way

Messing up is OK! Just cut another strip!

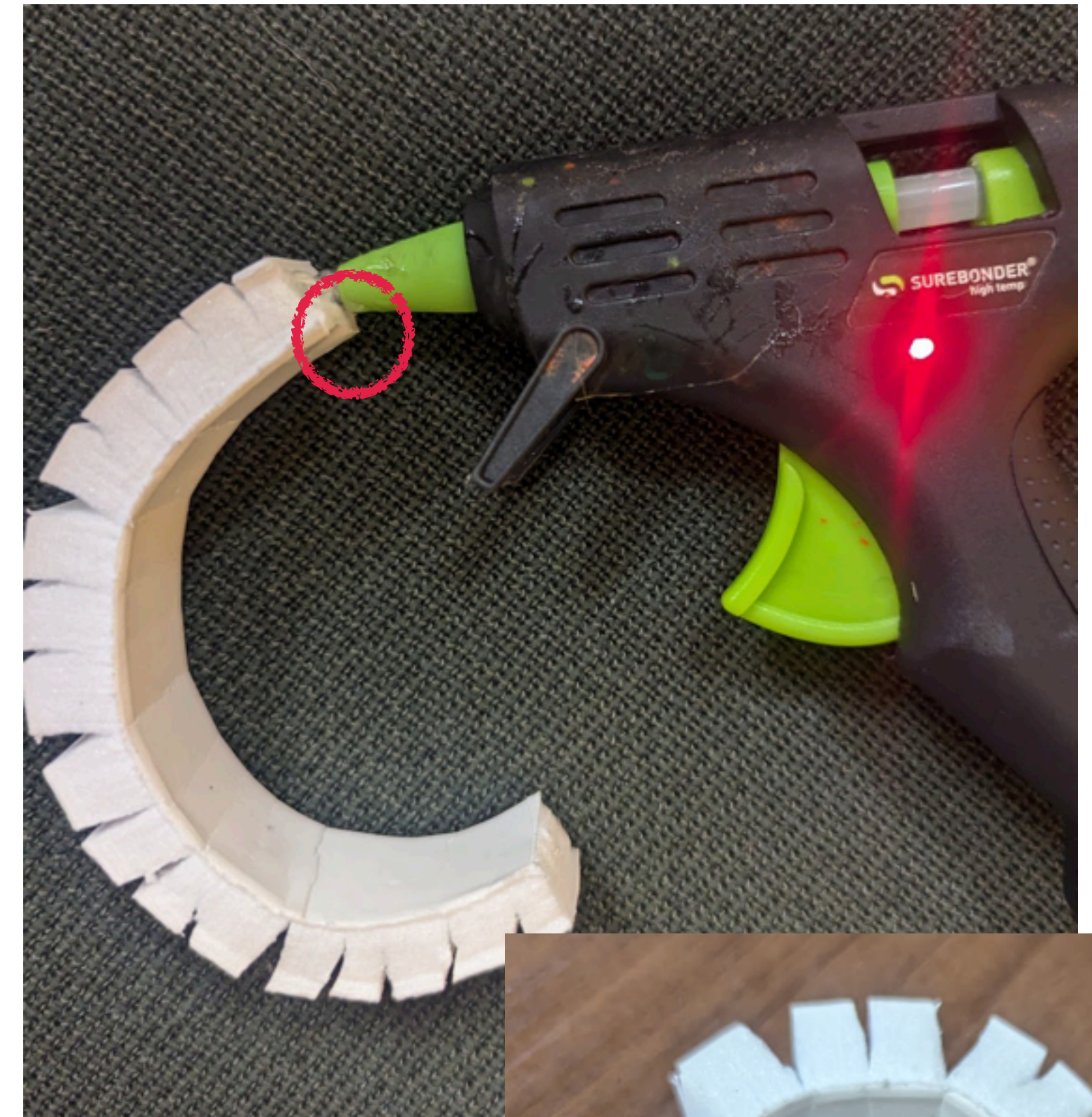


1. Cut evenly spaced strips, only through the top 2 layers (recommend 2 cuts)



2. Gently use your fingers to bend the foam, make sure each slit has the same amount of bendiness

3. Glue at the inner diameter to form a ring

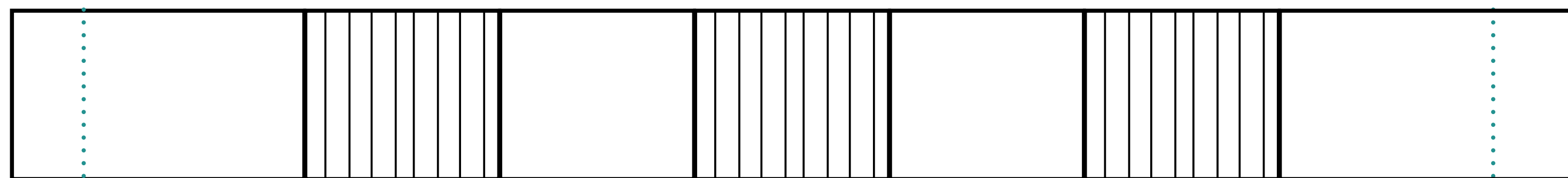


Hold it in place for 3 seconds!



Box with radial + lap joints

1. To make a box with 1 inch sides, cut an 8 inch strip of foam (why?)



lap strip strip strip lap

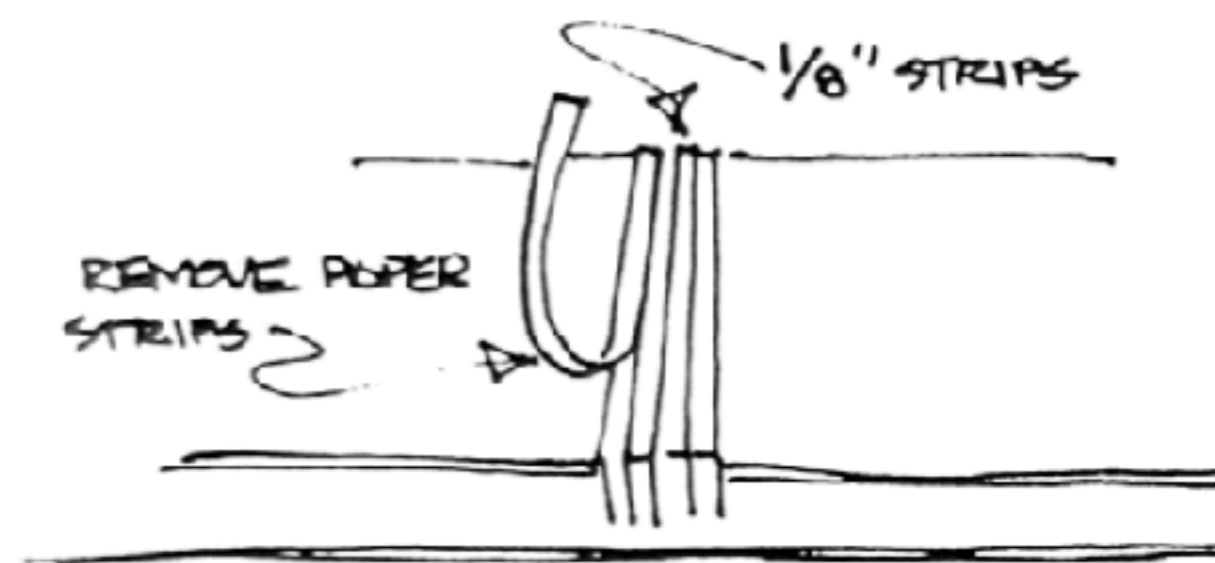
Because the foam is 0.5 inches thick, we need a 1 inch tolerance for folded joints (2 x 0.5 inch sides)

We need an extra 0.5 inches in the beginning & end to make the final lap joint

2. Count 1.5 inches, make small cuts for 1 inch going halfway through the foam, and strip away the top paper, every other inch

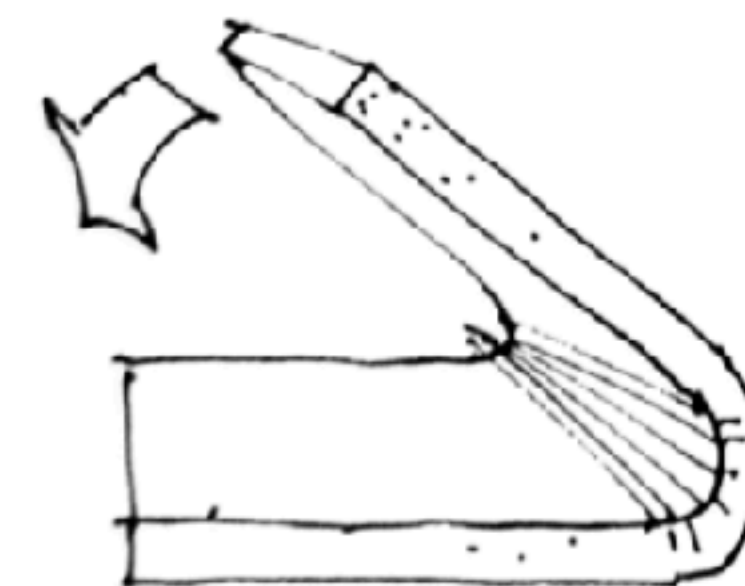
▶ JOINTS: LARGER RADIUS

1 CUT 1/8 INCH STRIPS THROUGH FIRST LAYER OF PAPER AND ABOUT 1/2 WAY THROUGH FOAM.



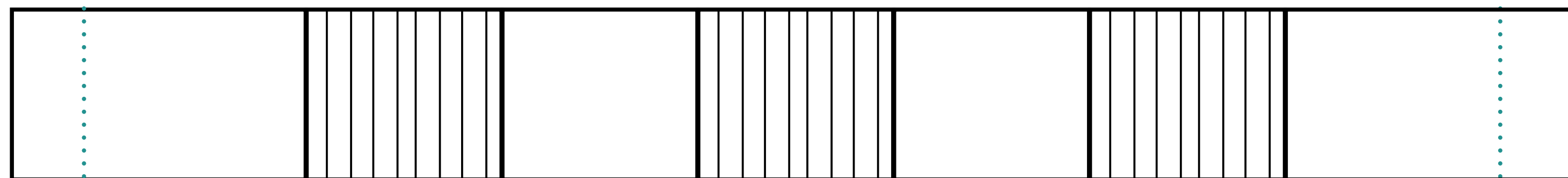
2 STRIP OFF THE 1/8" STRIPS OF PAPER, STRIP BY STRIP. THIS IS HARDER THAN IT SOUNDS BECAUSE THE PAPER TENDS TO PE-LAMINATE AS IS STRIPED OFF. DO THE BEST YOU CAN WITHOUT DAMAGING FOAM.

3 BEND THE SHEET GOING PAST THE INTENDED ANGLE OF THE FINAL JOINT. (THIS RELIEVES STRESS ON THE JOINT)



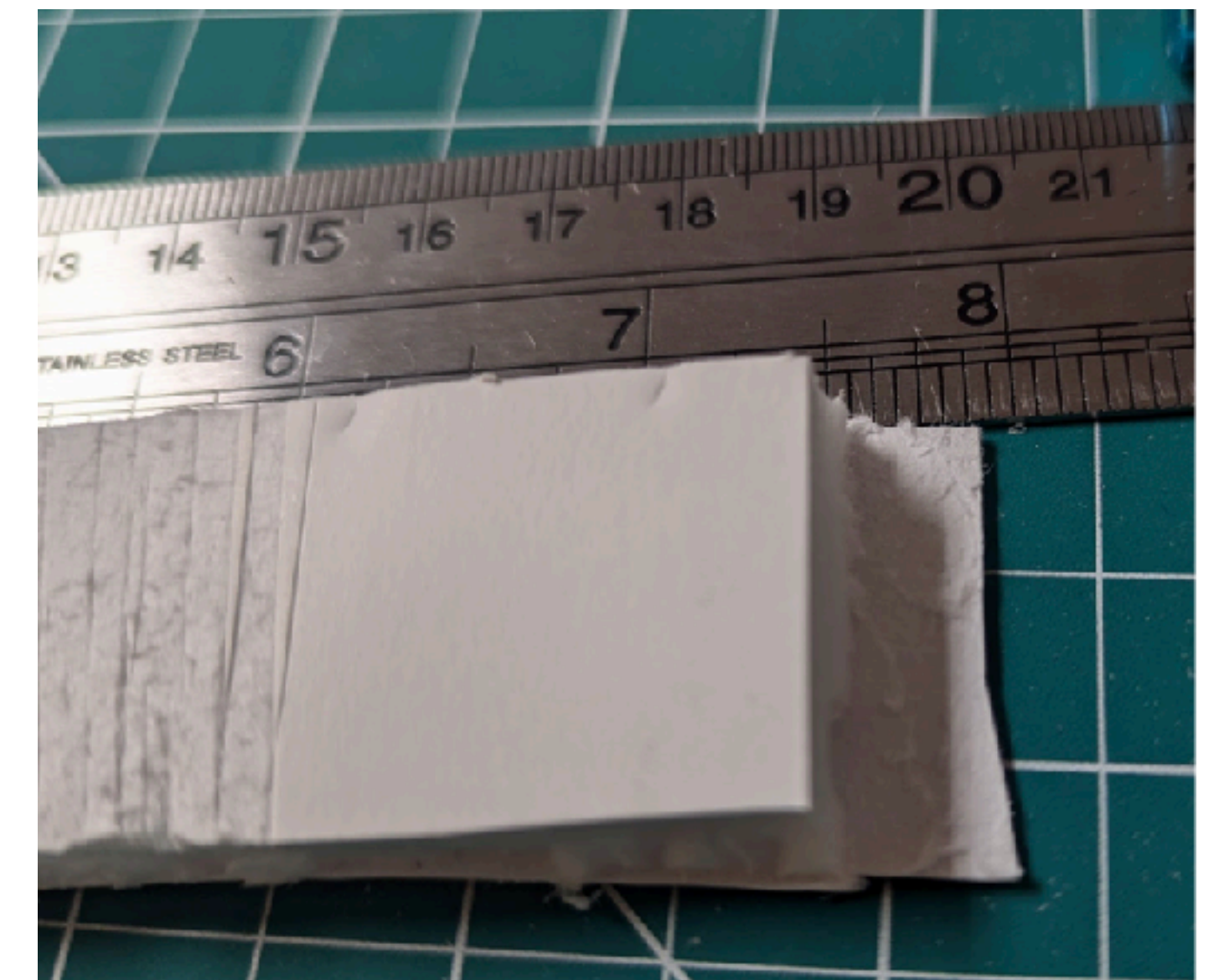
Box with radial + lap joints

2. Count 1.5 inches, make small cuts for 1 inch going halfway through the foam, and strip away the top paper, every other inch



lap strip strip strip lap

3. Cut the final 1/2 inch to the bottom paper for the lap joint



Box with radial + lap joints

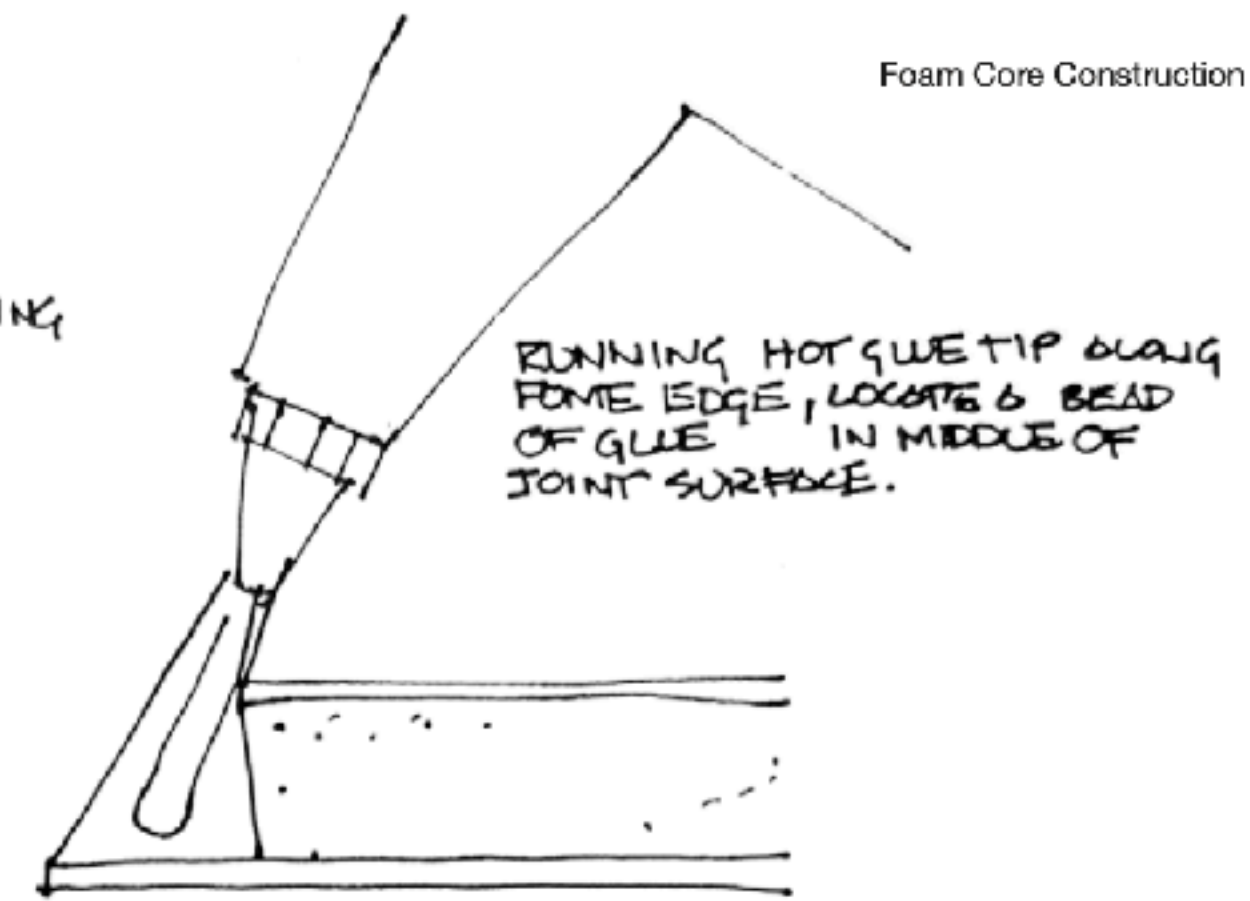
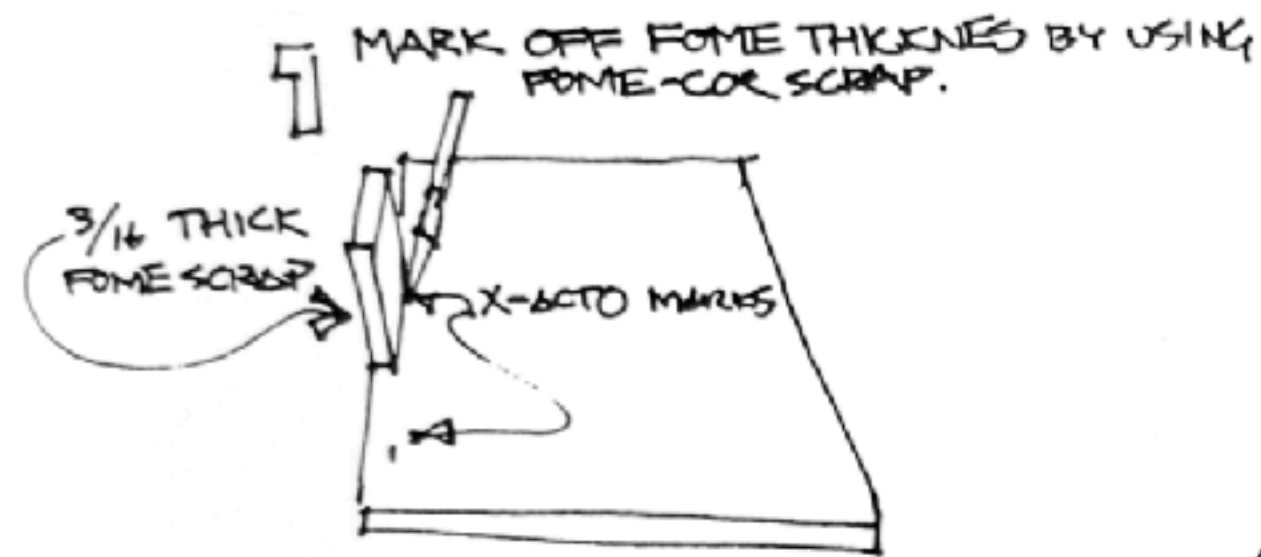
4. Bend the radial joints with your fingers, and hot glue the lap joint



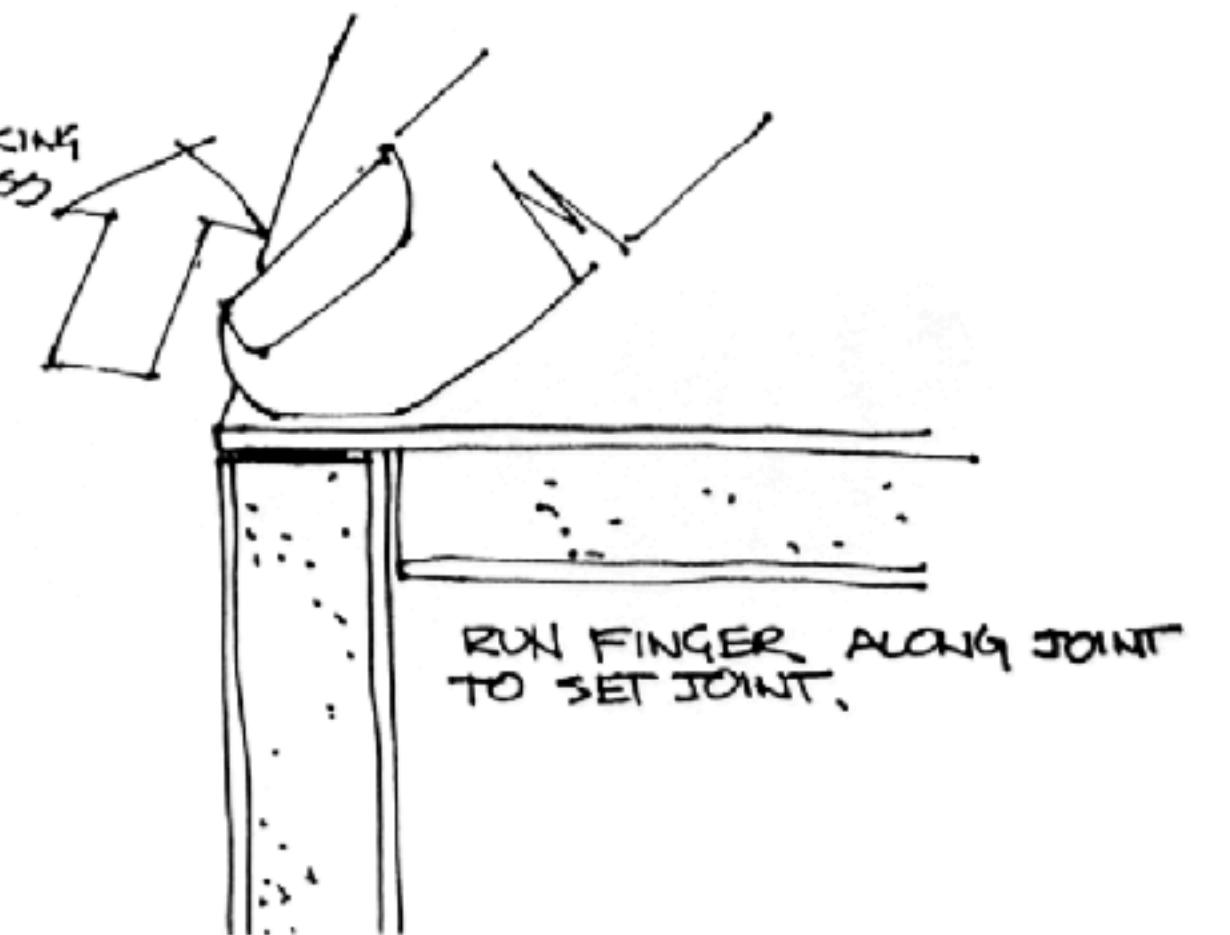
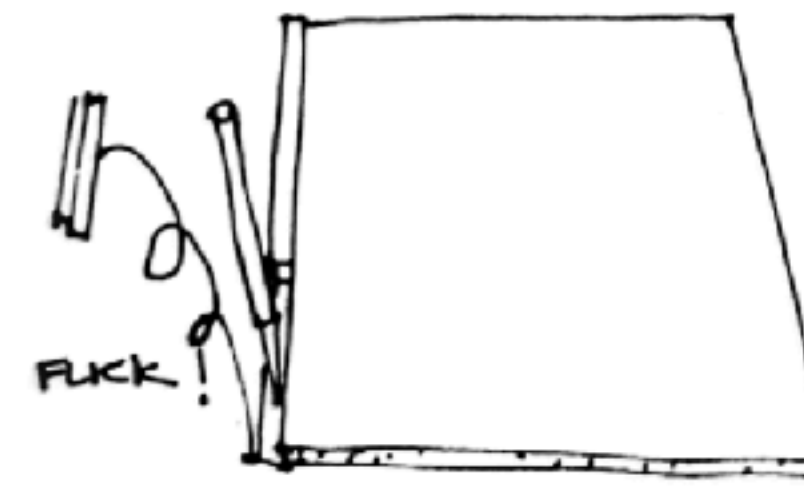
5. Done!



JOINTS: LAP JOINT



2 FLICK OFF 3/16" PIECE OF FOAM AND PAPER. A QUICK FLICKING ACTION SHOULD ONLY REMOVE EXCESS FOAM AND LEAVE PAPER IN TACK. IF FOAM REMAINS, CLEAN OFF.



Design activity:

**Hyper personalized
phone stand**

Design for one

- Most times, we conduct user research and needfinding (e.g., interviews, observations) to figure out who our target user group is...
- Not today. Pick a member of your team to design a hyper personalized phone stand for. (Rock paper scissors loser, volunteer, youngest...)
- The phone stand should only include elements that make sense to them and their phone. Hobbies? Favorite color? Specific contexts of use?
- Lastly, the stand has to be able to functionally hold up the weight of their phone!
- First, no cutting foamboard. Interview your teammate for ideas, gather materials, sketch and envision your object (3 min).
- @ 12:07: rapid 60 second presentations from each team. Present your object as a story in narrative form.

Personal Making Assignment 2: Analog Making – Sensory Cardboard



Work from Spring 2024, where "revolting" was one of the prompts

Working only with **cardboard, foamboard, and paper** as the main materials for physical formgiving, express each of the three concepts below:

- 1 Squishy
- 2 Animated
- 3 Light

You may also use color, glue, and tape in assembling your final artifact. You may use paint or markers or other found materials as surface decorations for your object, but **the concepts should be expressed through the cardboard based forms, not the surface ornamentations**. You may choose to make 3 separate artifacts (recommended) or one big artifact that captures all 3 concepts.



Class 4 recap

- TODOs:
 - By **next Wednesday's** class:
 - 2 reading responses, seminars
 - By **next Monday's** class:
 - PM2: Sensory cardboard
 - By **next next Wednesday's** class:
 - Do the HMC Makerspace general and 3D printing/
laser cutter training (make.hmc.edu)