Modeling Crash Course

“I love not knowing what I’m doing.”
- 2021 capstone alum Jake Johnston

Assignment 2: Model a head

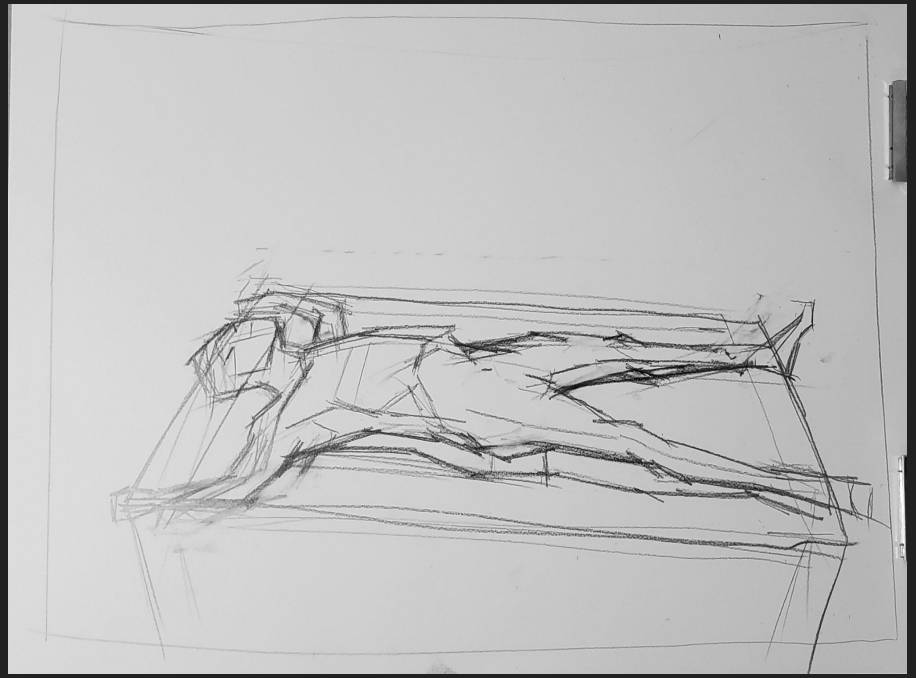
- You’re gonna 3D model a head!
- We have provided reference
- But you can also use your own reference!
  - Do your head!
  - Or your roommates head!

  And then 3D print it and prank your friends with it.

- This is a hard assignment
- Don’t worry if you feel like you have no idea what you’re doing! Help each other and ask your TAs.
- It’s like solving a puzzle

Artistic Concept: Gesture

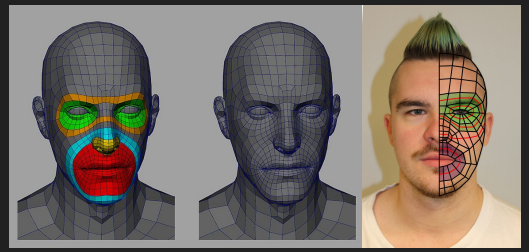
- At a quick glance, your model should:
  - Look like what it's supposed to be
  - Have all key details represented
  - Look balanced, or intentionally not-- Be **well-designed**
  - Be visually satisfying.**fung shui**
- In modeling, you want to start with as few edge loops as possible. This is your quick sketch.



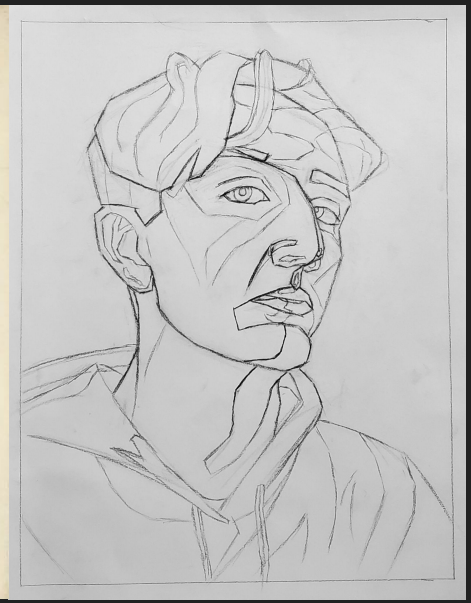
whaddup fellow art majors

Artistic Concept: Form

- The shapes, ridges and curvature that define your form
- Imagine drawing it wireframe. What lines are critical to define the shape?
- What are the key features of your model
  - Ex: Head - eyes, nose, mouth, ears



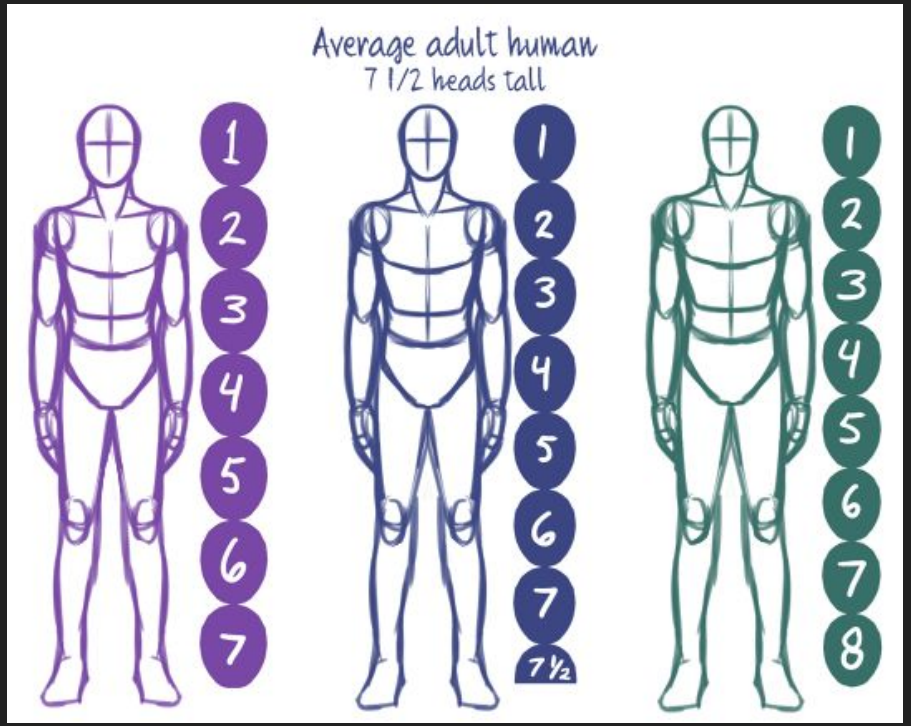
Picasso, 1908



Not Picasso, 2021

Artistic Concept: Proportion

- Make sure what you're working on is proportional to your concept art or reference.
- Check this frequently



What is topology

The study of top, lol

Topology is the flow and arrangement of 3D components (polygons/faces, vertices and edges) in a 3D model.

Articulation is important, not just aesthetic resemblance

- I.e. Being well-constructed is just as important as its final appearance.

Work Smarter, Not Harder

Anything you build in Maya can easily be:

- Mirrored
- Duplicated
- Broken apart and reattached

For example, in this assignment we will only model half the head to start, then just mirror it across to get the other half.

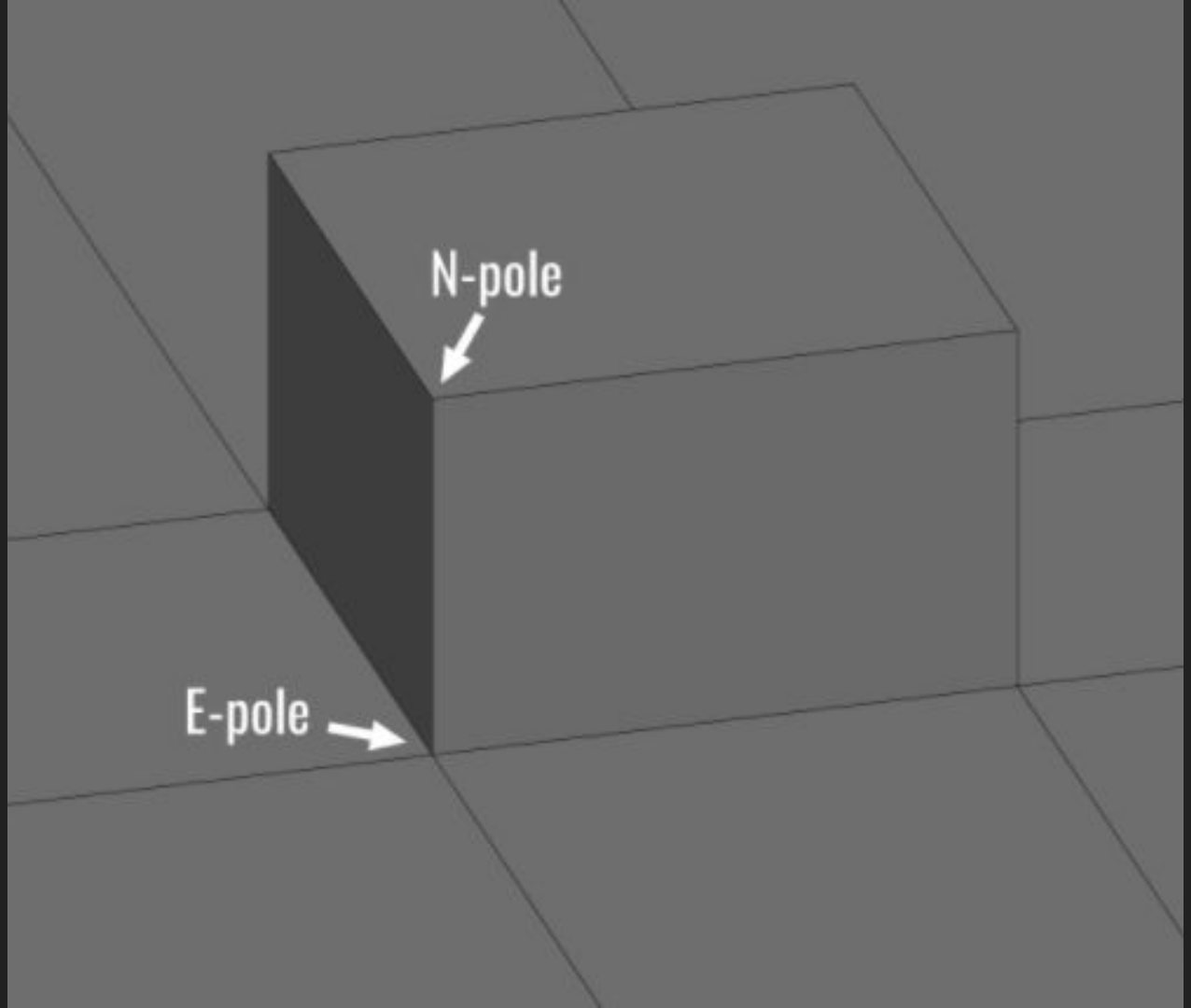
If you’re doing something extremely repetitive, see if anyone knows a quicker way to do it.

What the frig are poles

Poles are points on your mesh that are the intersection of more or less than 4 edges (!= 4). They guide the flow of your edge loops, which is good. They also ruin the smoothness of your mesh (when you put it into smooth mode), which is bad.

- **E-Poles** are poles with 5 edges
- **N-Poles** are poles with 3 edges
- Poles with < 3 or > 5 edges should be avoided at all costs. They are

TL;DR - If a pole is undesirably affecting the smoothness of your mesh, move or get rid of it. Put them in areas of your mesh that deform the least.

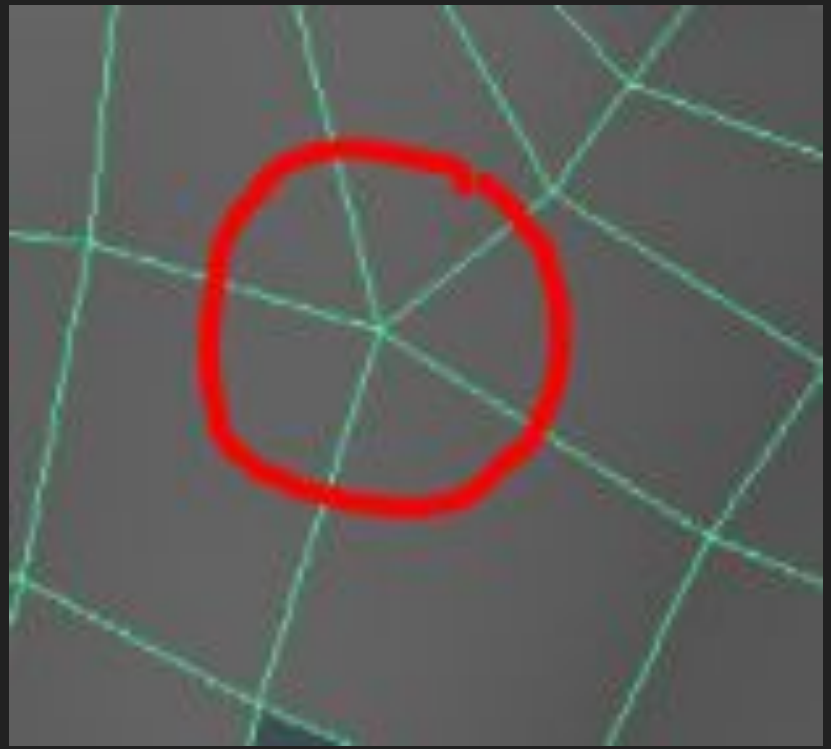

N-pole
E-pole

Most of the poles we'll see in this assignment look like this starfish lookin thing.

You should not see more than **14** of these in the eyes, nose and mouth area of the face.

5 around each eye

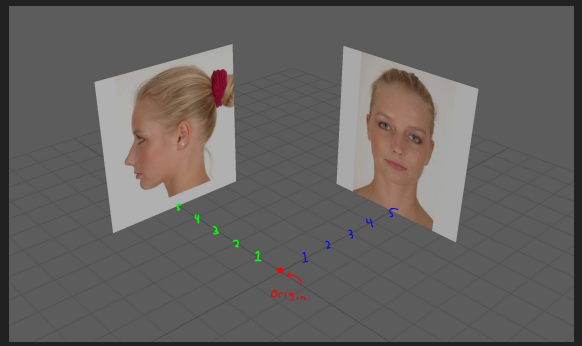
4 around the mouth (2 per side)



FOLLOW THE TUTORIAL ON HOW TO SET UP YOUR REFERENCE IMAGES PLEASE THANKS

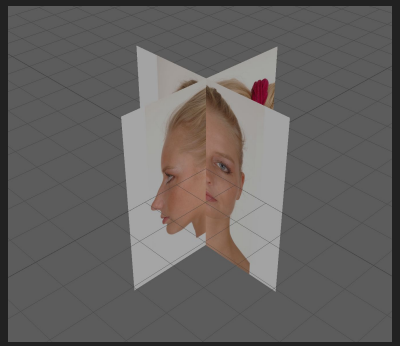
Located here

Should look like this:

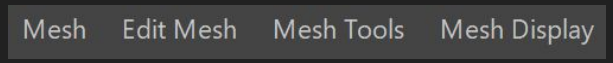


- Offset from origin
- Raised so the base of each intersects with the origin plane

I don’t want to see any of this:



Evan’s frequently used tools

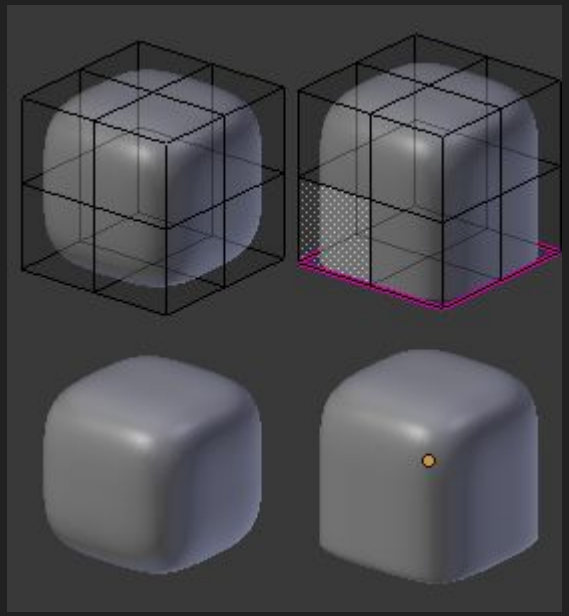
- **Right-click marking menu ->** hold right-click in the viewport
- **Shift + Right-click marking menu ->** hold shift and right-click in the viewport with a face, edge, vertex, or object selected
- **God menus at the top ->** 

- **Modeling Toolkit** -> Windows -> Modeling Editors -> Modeling Toolkit
- Multi-cut
- Bridge
- Extrude
- Quad Draw
- Target Weld
- Soft Select
- Mirror OR Move the pivot point to the plane of symmetry-> duplicate-> scale = -1
- Sculpting tools
  - RELAX TOOL ❤❤❤❤❤❤❤
- There’s a lot of different ways to do the same thing… a lot of these overlap. Experiment and find out which menus and tools you prefer

Additional Reference beyond this point !

What are the components of good topology?

- Topology should follow the primary contours of your model
- More vertices in areas that need more detail and less in areas that don’t
- Planning!
  - Have adequate references to visualize the model before you start
  - Where will you loop edges?
  - Where will the mesh need to deform during animation? Add more edge loops in those areas.
- Change your camera angle regularly to ensure your model looks good from all sides
- Practice. You have to develop your eye for what looks good and flows well.



Modeling conventions for the capstone

- **Label all objects in the outliner** as soon as you make them! Make sure that all object names are lowercase, with no spaces (use “_” instead)
  - Or else you will face the wrath problems down the pipeline...
- ALWAYS try to make **quads**. Almost never **tris** or **n-gons**. This is convention in most models for film.
  - some video game studios use tris, but even those usually want to see that you are capable of using quads.
- Delete your history every so often, or else Maya will begin to lag. And make sure that it’s deleted when you finish/make revisions!
- Save iterations! Use the “Save It” button in the production shelf and make clear version notes. You’ll thank yourself later...

In Conclusion

You will ascend to 3D-modeling godhood with practice.

The more you practice, the more you'll understand when to use each tool and what good topology looks like. The best way I learn tools is when I run into a situation where I need them, and then I learn that's exactly what the tool does.

If you find yourself doing something extremely repetitive or something that seems like it should be done more precisely, see if there's a tool for it or a creative way to use the tools you already know. Ask the Discord! There are no stupid questions.

You're not gonna master this overnight and that's okay, don't feel like you need to catch up cuz that's a gross feeling. This assignment and production will be your practice and it's gonna be great.