

## Understanding Global vs Local coordinates

- Drone flying analogy
- Compass analogy
- Look at the default cubes location, rotation, and scale values in the sidebar “Item” tab while in Object Mode.

## Understanding object stretching

- [This video explains it slowly and clearly](#)
- Apply Scale transformations prior to sculpting

## Many ways to enter into sculpt mode

1. Open a new file. Select the cube. Click the object mode dropdown and select sculpt mode
2. Open a new file. Select the cube. Click the “Sculpting” viewport tab in the top bar.
3. File → new → sculpting (creates a minimal setup for sculpting on a sphere)

## Many ways of obtaining a subdivided object to sculpt with

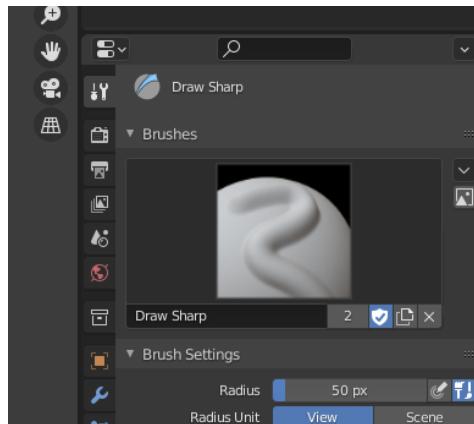
1. Click the default cube. While in Object Mode, apply a subdivision subsurface modifier with 2 or 3 levels, **apply** the modifier to the mesh.
2. Click the default cube and delete it. Instead, add a UV Sphere and increase the number of segments and rings in the Last Action Panel. Also works with Ico Sphere
3. Dynamic Topology (will be covered in section below)

Create a new project: File → New → Sculpting

Play and explore solo for 5 minutes. Make a mess. Click anything, try anything you desire.

Drag the toolbar edge to adjust its width and size

In the properties tab on the right, click the tool icon to see the current brush's settings



Create a new project: File → New → Sculpting

With the draw brush selected, increase the Radius of the brush by using the slider. Try drawing with it.

Increase the Strength of the brush by using the slider. Try drawing with it.

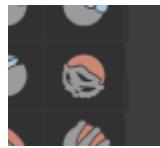
Toggle the Direction (plus and minus sign) and try drawing with each.



Place your left hand at the left edge of your keyboard when sculpting.

Hold the CTRL key to toggle the direction while sculpting. Try building up the mesh and then pushing it back down using the CTRL key method.

Click the Smooth brush and try drawing with it. Notice how it relaxes the polygons and softens their appearance.

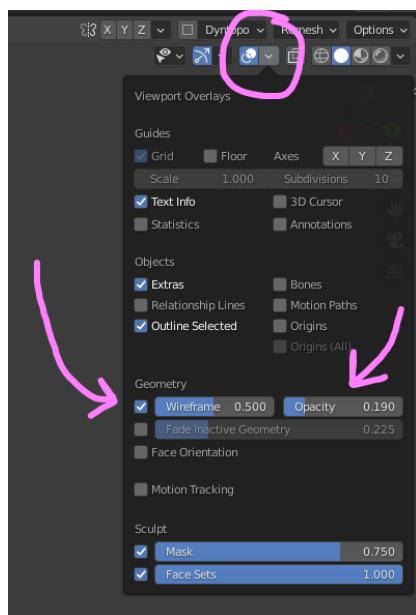


Now return to the Draw brush and draw on your mesh some. Hold down the SHIFT key and draw to enable the Smooth brush. When you let go of the SHIFT key, the brush returns to the Draw brush.

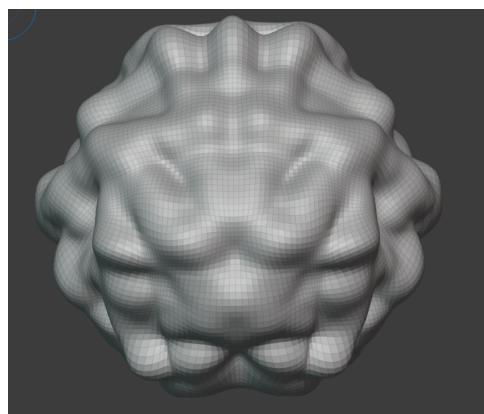
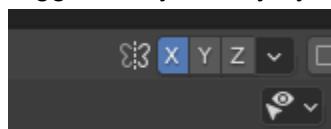
Press the “F” key on your keyboard and then drag your mouse to alter the Radius of your brush. Click the mouse to confirm.

Press the “SHIFT + F” key on the keyboard and then drag your mouse to alter the Strength of your brush. Click to confirm.

Turn on the Mesh Display by clicking the Overlays icon and checkmark the box that says Wireframe. Set the Opacity value to a small value so that it does not interfere with the sculpting. Also turn on Statistics to watch the polygon count.



Toggle on Symmetry by clicking the icon in the top bar. Try drawing with Symmetry enabled.



Hold SHIFT and draw to smooth out some of the changes that you have made to your mesh.

Remove Symmetry

Let's look at a few of the brushes:

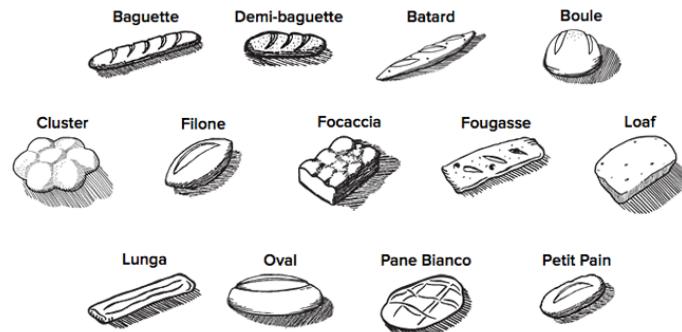
Grab Brush

Draw Brush

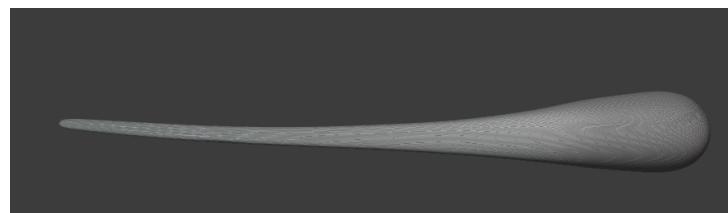
Crease Brush

Blob Brush

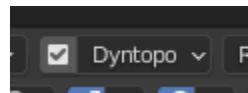
Let's try making some bread shapes using the brushes



Mesh Resolution Problems - Example: stretch out your sphere as far as you can using multiple clicks and drags. Stretch it until the geometry looks faceted.



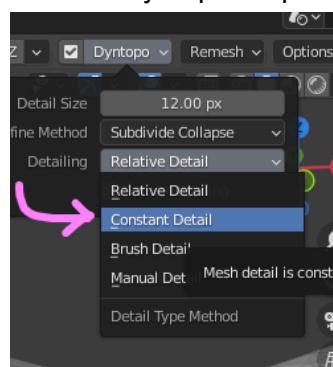
This problem is solved by using Dynamic Topology (Dyntopo). **Computer Crash Warning!** Save Your Work before using Dyntopo.



Turn on Dyntopo by checking the box in the header. Now switch to the Draw Brush and set the radius to a normal drawing size. Begin drawing on the stretched out polygons of your mesh. The mesh automatically and dynamically becomes retopologized as you draw.

Zoom in and draw. The topology created is finer. Zoom out and draw. The topology created is courser.

Click the dyntopo dropdown and set the detailing to Constant. Now it is consistent regardless of zoom level.



**Warning** Setting the detail size to a value too high or too low can be too much for your computer to handle and the software will crash. Keep an eye on polygon counts.

Start a new Scene: File → New → General

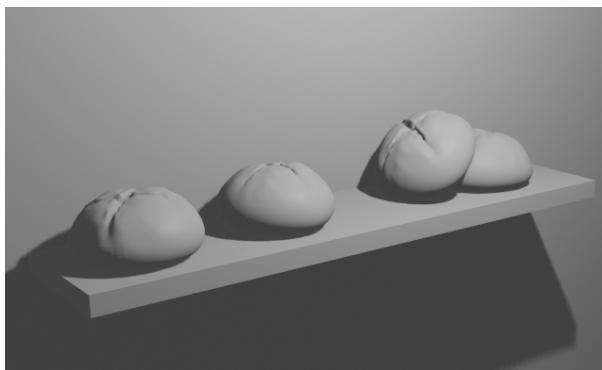
Add a subdivision modifier to your cube and apply it.

Let's return to bread-making. Pick a loaf and sculpt a bread with Dynamic Topology turned on. How is the experience different?

Take some time to sculpt your bread

Tab into Object Mode and create a shelf for your bread using a cube.

Duplicate the bread multiple times and arrange the loaves on the shelf. View them in different shading modes.



HomeWork:

Create a full shelf of various breads. Keep the polygon count relatively low on each sculpted bread (this will prevent your scene from getting too heavy). Arrange your breads onto shelves in your scene. Remember to save your scene periodically. Have fun with the project. Here are some inspirational photos. Kudos for a cylinder of baguettes.

