

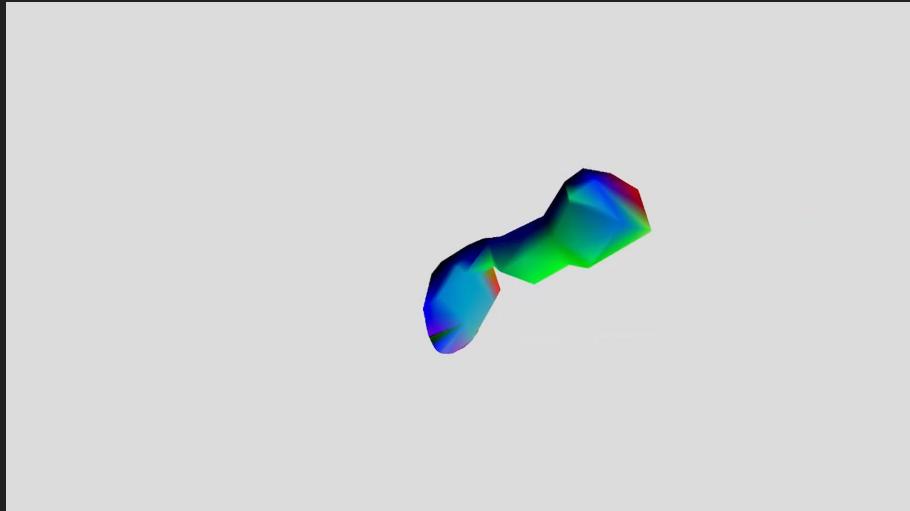


*Bad Arm*, Leanna Barwick, 2020

# *Bad Arm Summary*

*Bad Arm* is the story of a disembodied non-normative body part. There is a short written component and a digital component. A visitor to the interactive space is met with the sound of a baby crying and a digital arm. When the arm is clicked on the audio story changes.

*Bad Arm* is a browser based digital artwork, coded using [p5.js](#), that incorporates audio and user interaction with a 3D object. The manipulatable object is a digital model of a physical casting, made from a mould of the artist's left arm, that has been digitized using photogrammetry software.



[Link to digital interaction:](https://editor.p5js.org/LB/full/PG086HR)  
<https://editor.p5js.org/LB/full/PG086HR>

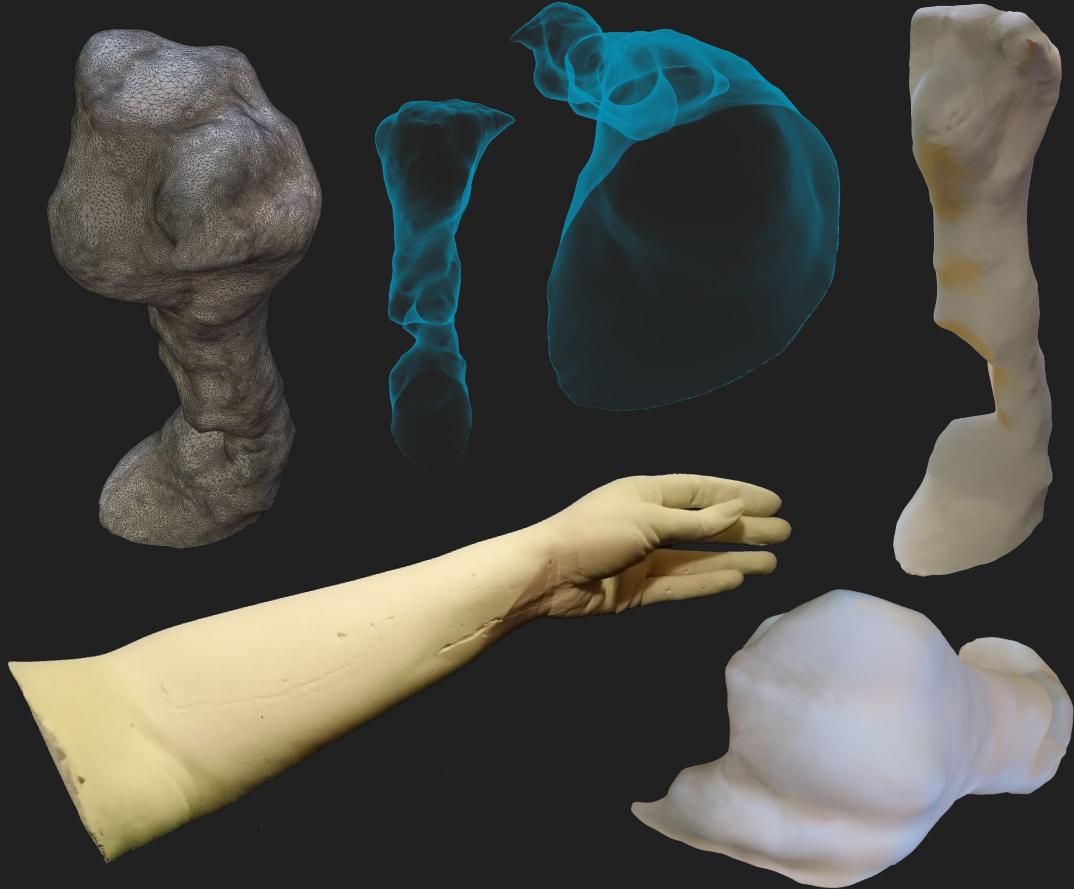
L

[Link to code:](https://editor.p5js.org/LB/full/PG086HRL)  
<https://editor.p5js.org/LB/full/PG086HRL>

[Video of interaction:](https://vimeo.com/391043102)  
<https://vimeo.com/391043102>

# *Bad Arm*

From the start I was bad. Or so I was told. It's all the little ways. Even those who believed in me called me bad. It's as if I was just naturally born that way and that was just my cross to bear. It didn't matter what I did, 'bad Arm' was the mould I was cast in, it was the role I was born to play. Infancy was difficult. I was stretched so much to exercise and stimulate my lazy muscles that the body cried and cried and the mind, it just got the fuck out.



Various display outputs of the cast arm model from different perspectives. Clockwise from top left: textured with wire frame, x-ray (x2), textured, solid, still image.

# Process Images - Physical Fabrication: Mouldmaking Studio



Attempt #2



I made an alginate mould of my left arm and used hydrocal plaster to cast a physical model of it.

I learned that alginate is mixed by adding water to the dry powder, whereas plaster is mixed by adding dry powder to water. Otherwise big clumps will form.



**FAIL**

Attempt #1

I also learned that agitating alginate with mechanical mixers can increase the setting time (normally approx 8-10 min) by as much as 5 min.



Process Images -  
Physical Fabrication:  
Revealing the cast arm  
from the mould

# Process Images -

## Physical Fabrication:

### Fixing Broken Casting

[cccrow.com/how-2/fix.html](http://cccrow.com/how-2/fix.html)



#### HOW TO WORK WITH HYDROCAL AND OTHER MODELING TIPS -

##### FIXING BROKEN CASTINGS

Hydrocal is great stuff. Its one weak spot is if you drop it- it will break. Fortunately, it is possible to fix broken pieces, often without it even being noticed. At least you can give it a try.

More than one of my original pilot models have been picked up and dropped by careless people who ignore the polite signs on my vendor table: PLEASE DO NOT HANDLE THE MODELS. That's all right, I'll fix it. (geer!)

If it is a simple break maybe we can get it back together.

First, blow off any small chips or dirt that may interfere with rejoining. Then check to see if the parts will go back together. Work on a firm flat surface.

Okay, if it looks like it might work let's give it a try.



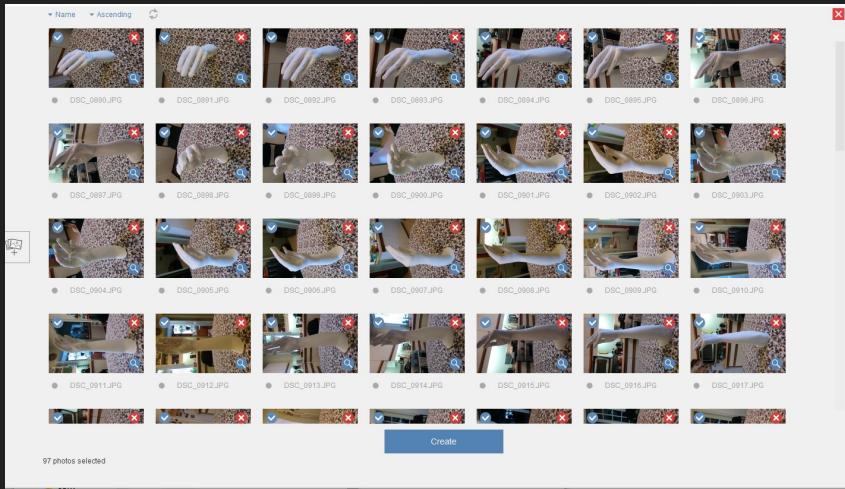
For gluing Hydrocal I recommend and always use Elmer's Carpenter's Wood Glue, the yellow stuff.

It gives a good quick bond. We only need a little. The trick is to have a good tight joint. Nice and square where two walls come together. Or just free of obstacles as in a break.

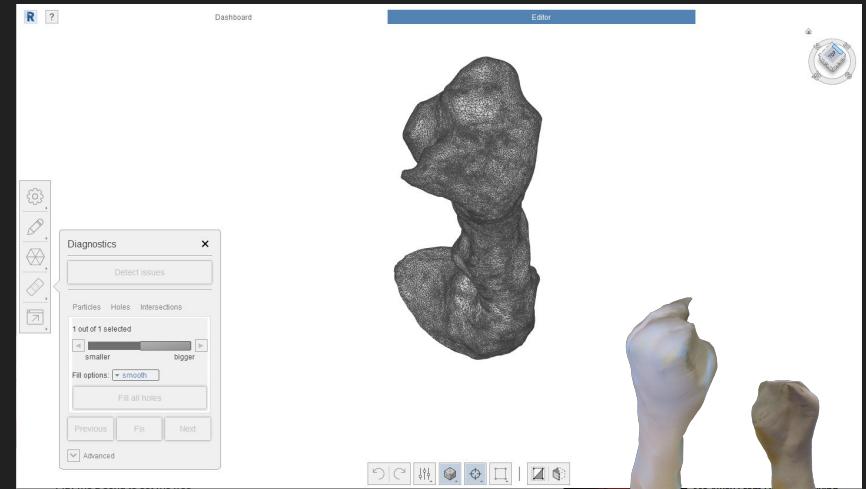
Apply a small bead of glue along one side of the joint. Then quickly push the two sides together. Apply firm pressure. In just a moment the glue will begin to firm up as the moisture is absorbed into the plaster. For that reason we must work



Importing jpg images of casting into Autodesk ReCap Photo



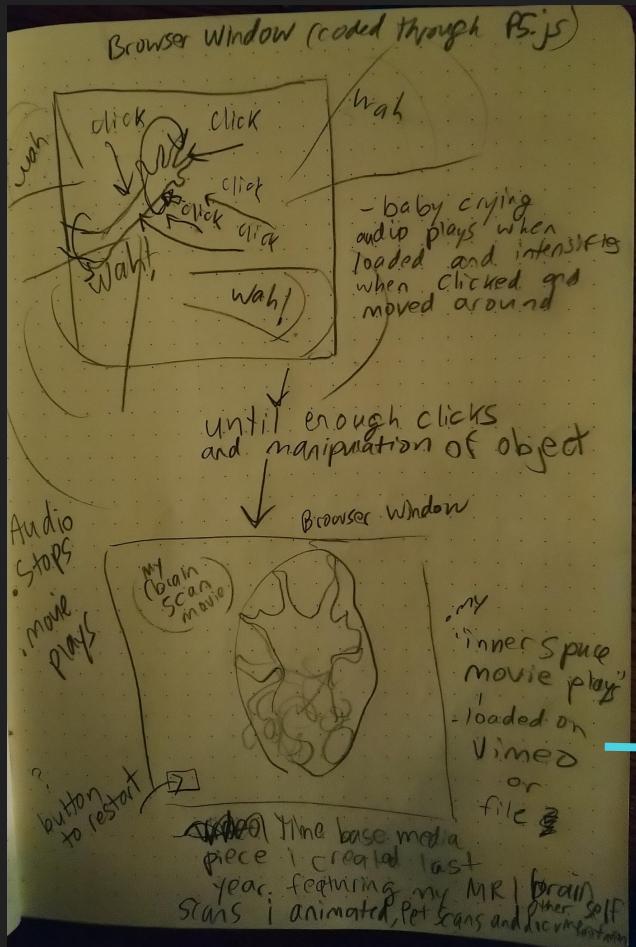
Cleaning up the 3d model of the casting and exporting it as an obj file and png



## Process Images - Digital Fabrication: Photogrammetry

The end results of a few different photo sessions to create the model, produced equally non-naturalised visualizations of the arm, but I appreciated the blob and thought it worked with the 'bad arm' (mutant, blob, unhuman, demonized) narrative.

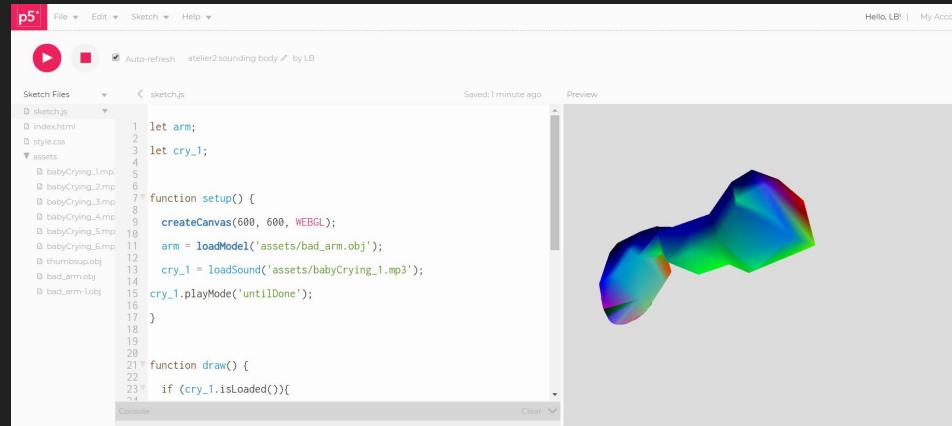
## Process Images - Digital Interaction: Initial Conceptualizing, Sketches



Inner Space Mirror Test, Leanna Barwick, 2019  
<https://vimeo.com/317439202>

# Process Images Audio & Interaction: P5.js

P5.js has a maximum file upload size of 5mb. I had to experiment with the decimation percentage when exporting the model from ReCap Photo, to get something small enough, which then resulted in a low-poly aesthetic in the 3d model of the cast.



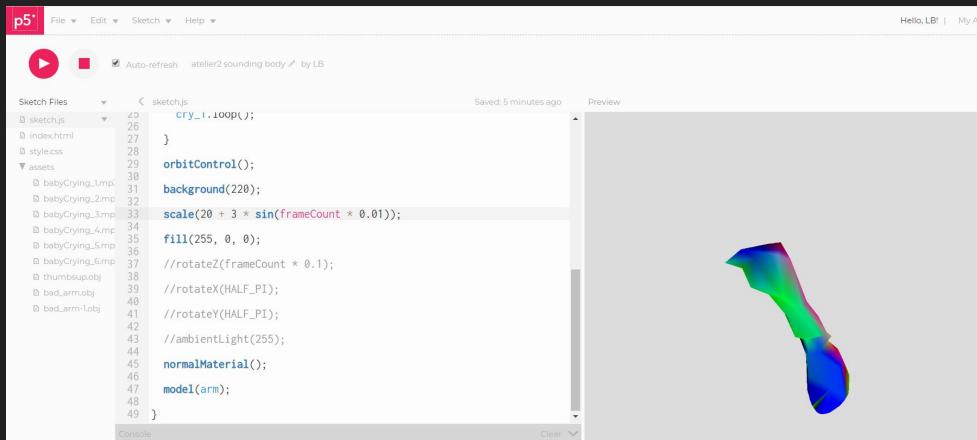
The screenshot shows the p5.js IDE interface. On the left, the 'Sketch Files' sidebar lists 'sketch.js', 'index.html', 'style.css', and 'assets' containing files like 'babyCrying\_1.mp3', 'bad\_arm.obj', and 'bad\_arm\_low.obj'. The main workspace displays a 3D model of a baby's arm, colored with a gradient from blue to red. The code editor at the bottom contains the following sketch.js code:

```
let arm;
let cry_1;

function setup() {
  createCanvas(600, 600, WEBGL);
  arm = loadModel('assets/bad_arm.obj');
  cry_1 = loadSound('assets/babyCrying_1.mp3');
}

function draw() {
  if (cry_1.isLoaded()){
    cry_1.playMode('untilDone');
  }
}
```

I learned that: preLoad audio and WEBGL don't work together. Audio must be loaded in the setup and executed in the draw loop. The isLoaded() function is used to check to see if the audio file is available before the call loop of the audio file.



The screenshot shows the p5.js IDE interface. On the left, the 'Sketch Files' sidebar lists 'sketch.js', 'index.html', 'style.css', and 'assets' containing files like 'babyCrying\_1.mp3', 'bad\_arm.obj', and 'bad\_arm\_low.obj'. The main workspace displays a 3D model of a baby's arm, colored with a gradient from blue to red. The code editor at the bottom contains the following sketch.js code:

```
let cry_1;
let orbitControl();

background(220);

scale(20 + 3 * sin(frameCount * 0.01));

fill(255, 0, 0);

//rotateZ(frameCount * 0.1);

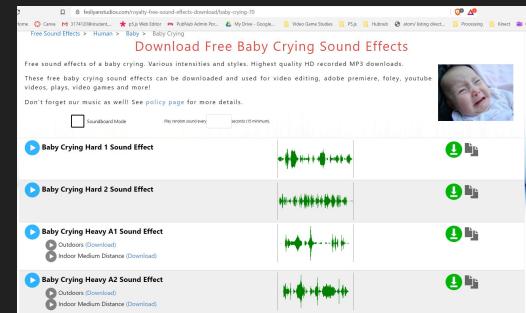
//rotateX(HALF_PI);

//ambientLight(255);

normalMaterial();

model(arm);

}
```



Found free sound effects online:  
<https://www.fesliyanstudios.com/royalty-free-sound-effects-download/baby-crying-70>