

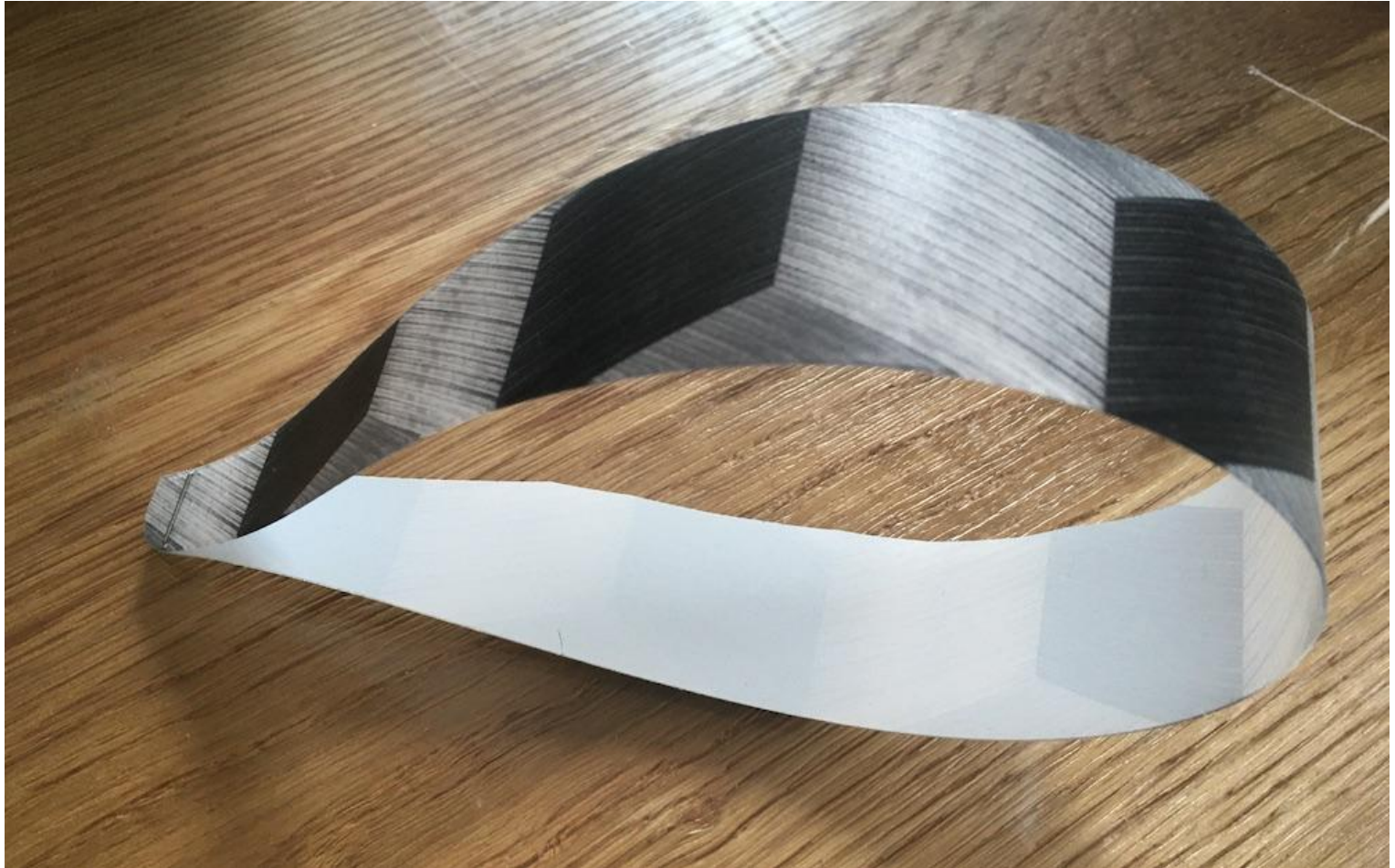
# Satin liner for bandana style face masks (with cup effect to increase surface area for air-filtering)

- Using cloth masks does not reduce the supply of surgical masks for medical professionals
- Cloth masks are **not at all as good as** surgical, N95, or FFP1/2/3 masks for filtering anything out of the air the wearer would breathe in.
- Satin has “low porosity” which may be good for filtering.
- In the end this experiment was a failure, but I am documenting it anyway in case someone can fix the issues and make it workable
- The liner takes 45 mins to make for a pre-existing cloth mask
- Some satin, a 400 thread-count pillowcase scissors, chalk, plastic placemat, sewing machine.

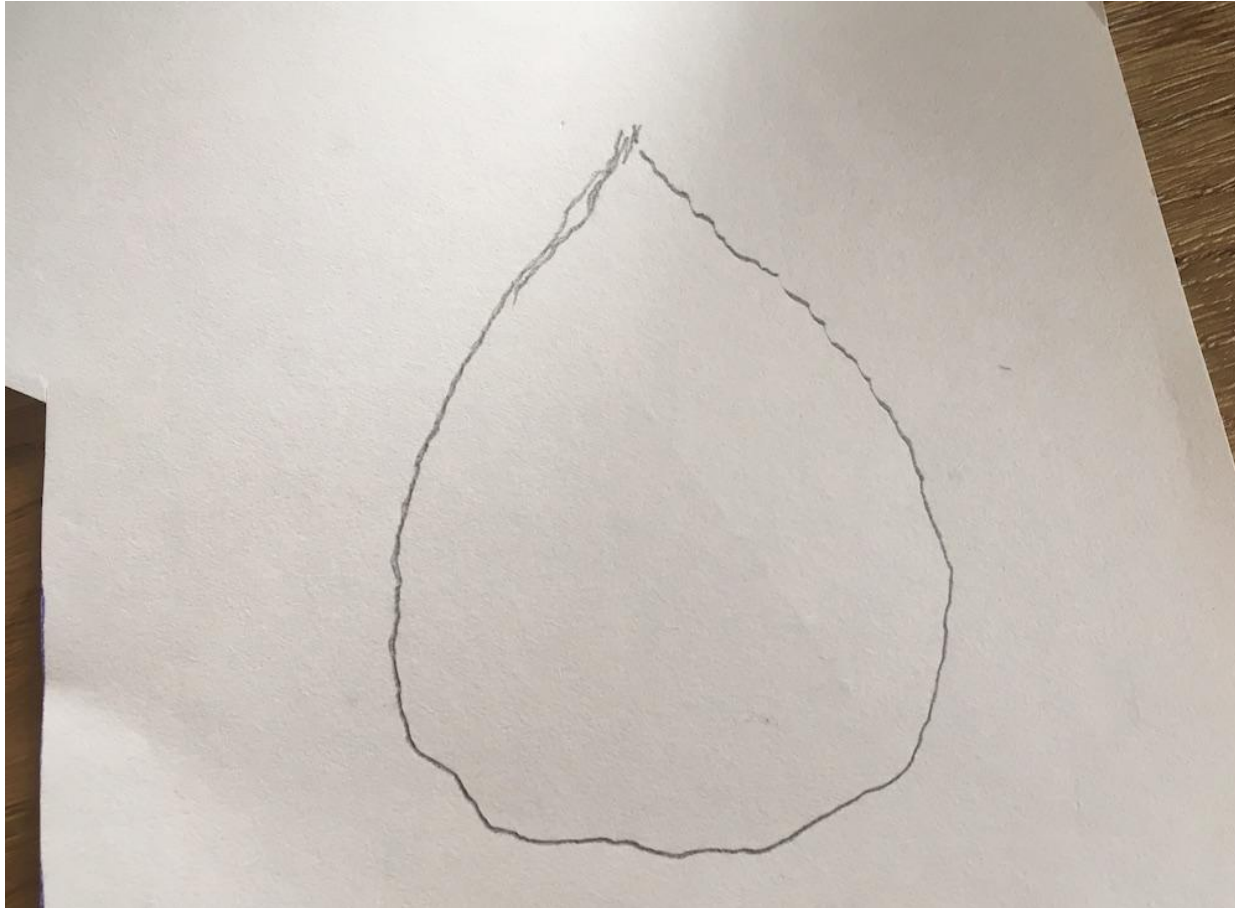
Cut a one inch strip of a placemat, and staple the ends together (super glue might be better)



Where the two ends come together, taper it to be narrower there (this will go over your nose)



Place in on some paper, squash it a little top to bottom, and draw  $\frac{1}{3}$  inch (1cm) inside this guard/collar





Note that the guard collar wants to have a slightly different shape to the one you want to draw



Cut out the paper template

Cut ten inches (25cm) off the end of the pillowcase



Chalk markings shown





Satin pinned to pillow case, which looks like a different color than the previous pic. Perhaps the camera flash makes a difference.





That line followed on the sewing machine - through the pillow case and the satin (viewed from the satin side here)



And the pillow case side showing the sewing track



Collar in place between the two layers, one more line sewn outside the collar/guard, and the top the fabric cut away around the nose section so the wearer can see past the facemask



Satin side show (the inside of the facemask)



## Outside of the facemask (pillow case)





# Construction & Breathability

Firstly this was really difficult to sew through my cheap Amazon-special sewing machine. The collar got in the way of the “foot” going up and down. And the sewing machine struggles to advance the fabric while piercing the two layers with its little needle.

More importantly, **the fit isn't good**. The collar should have been wider than one inch, as the fabric still touches your lips as you breathe in. The whole point of these mask constructions is that the fabric doesn't touch your lips as you breathe in.

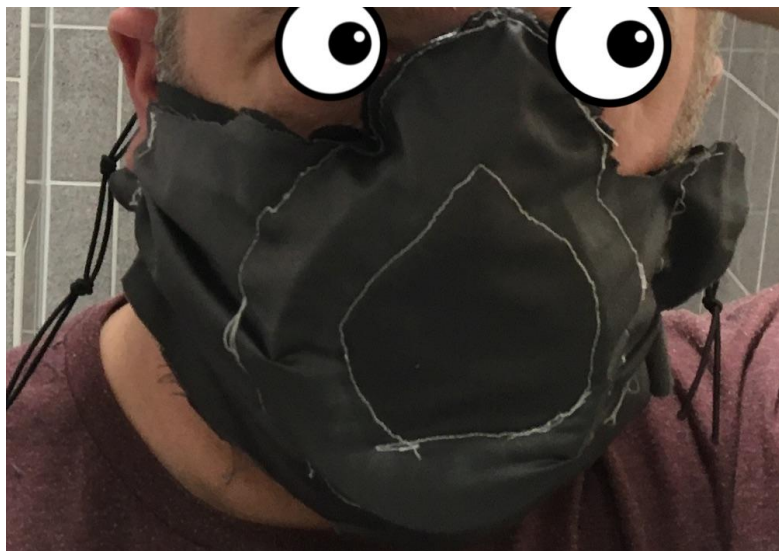
This collar having a crude cup doesn't have a big enough surface area of fabric to breathe through. Maybe if the outer fabric were less than 400 thread count, it would be easier. That would mean mean that the bulk of the filtering would be done by the satin later, but it still might not be breathable enough.

# Holding the mask on?

For now, holding the mask on involved gripping the slack material behind my head. Clearly that's impractical. If it could be tied off somehow behind my head. That might work initially, but I fear it would keep slipping down.

## One more experiment ...

I cut off the band that goes all around the your head, and now have elastic ear loops



With this modification, it stays on just fine.

However there's some air leak at the top of the mask where it sits on your nose. The leak goes away if you press it in with your finger, but that's not very practical.

To fix this leak, more experimentation with the tapered end of the collar is required, but that's for others to try, I think.