Sidhardh Burre

I was trying to communicate all that happened this year, 2020. Most of us will basically lose an entire year of our lives but that does not mean that *nothing* happened. So, I wanted a mode of capturing each of the events that happened this year as well as designing a UVA class ring. I guess in a way I was trying to associate the identity of the class of 2024 with the tragedies, events, and progress made this year.

I may be wrong, but that link, that association, although we may not actively acknowledge it now, will certainly be in the back of everyone's minds and especially the minds of the class of 2024, the class that was robbed of opportunities and a year of their lives. These events will go on to influence how we perceive the world and make decisions for the rest of our lives.

Initially I wanted to have a system of moving parts that would serve to do something unique. On social media I had seen a couple videos of coins being converted into moving sculptures and was inspired by them. But after seeing a behind the scenes video, I realized that my vision was not suited to the materials at hand. So, I settled on having intentional design idealized by unique geometry.

First things first, the ring part, the part in contact with one's finger is generated by pushing a cylinder through a sphere. This optimizes the ring for surface area over thickness. The method you proposed was to rotate an off-axis semicircle. What I discovered was that your method produced a ring that was too thick and unnatural. My method ensured a large surface area with plenty of space to work with. Additionally, I wanted some mathematical jokes in the design of the ring, so the height of the actual ring part is 5.4 mm (Figure 1 top left diagram, height measurement.) 54 is special for two reasons. Firstly, the sin of 54 is half the golden ratio but more importantly, 54 is equal to the number of colored squares on a Rubix cube. And I felt like that was a good allusion to include in the design, after all isn't our life, especially this year a puzzle? There are other "jokes" in the design I hope you take your time to find them professor.

The limitations of the printer were something I had to keep in mind when coming up with the vector designs for the text and the images. I wanted a virus image, a UVA rotunda image, and a UVA Cavalier “V” (as seen in Figure 1 and 2 top left diagrams). It was a challenge getting those drawings into CAD after reducing them and removing details that would mess up the print. I should have done something about the years on the sides (featured prominently on Figures 1 and 2 in the rightmost columns of diagrams), like with the "0" I should have included supports so the inside of the 0 would not produce a mess once printed.

In response to challenges with software/what I would change, the software honestly was not that hard to use. I had a little trouble embossing on a sphere but after a couple YouTube videos, I was able to figure it out. There are two things I would change. After submission, I saw a YouTube video where someone showed a way to "properly" emboss onto a sphere that followed the contour of the sphere which is something I would change if I could go back. Additionally, I am pretty sure the hollow parts of the embossed year values “2020” and “2024” crippled the ring's structural integrity. I could not address that problem because the only way for me to "emboss" was to push the text completely through the ring. If I followed the method in the video I watched, I would have been able to emboss to half-depth or however deep and preserved the structure of the ring. I already have revised it and made the changes that I was thinking of.

If I had more time, I would try raised text with durability and stuff, but this was a one of one, so I decided on embossed text.

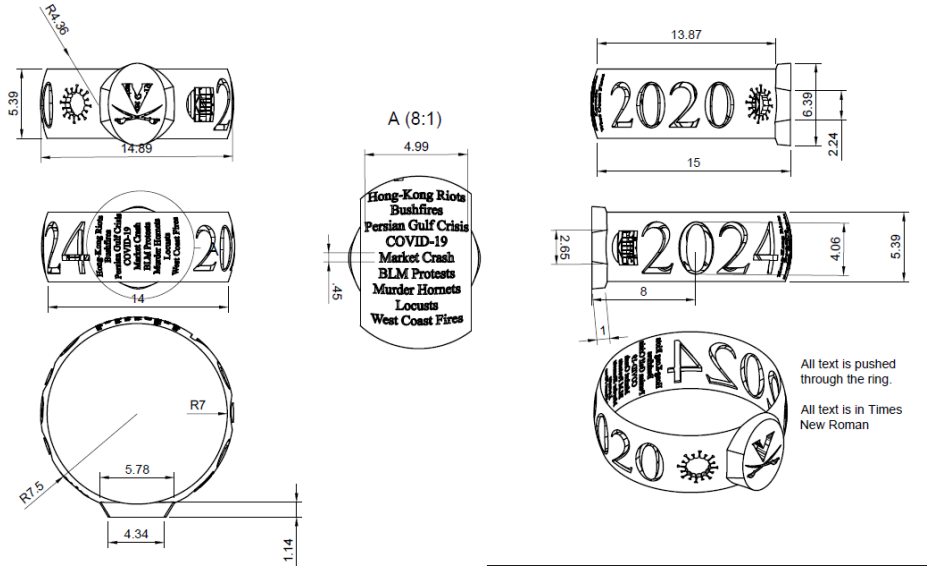

Figure 1. Drawing of initial ring design

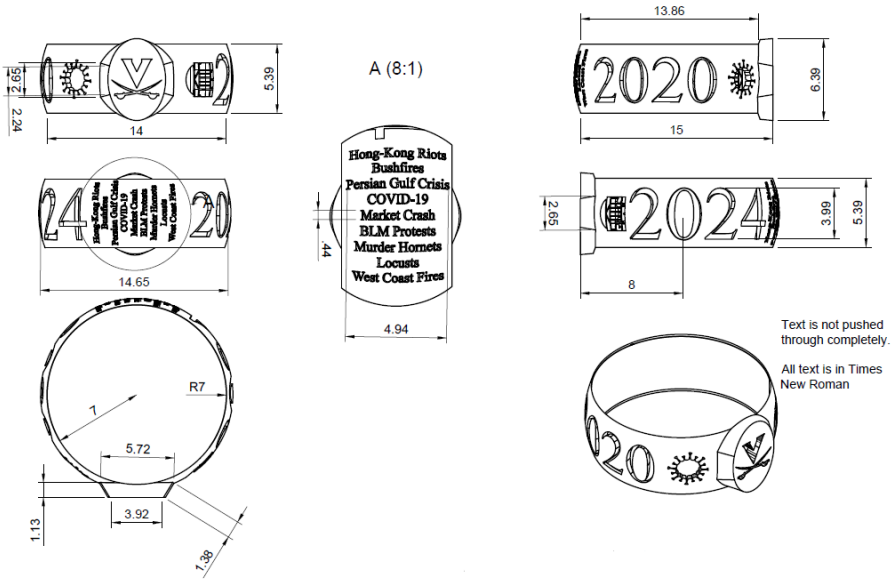

Figure 2. Edited drawing of ring design

After completing the edits that I wanted, I created Figure 2. As seen in the bottom right diagram in Figure 2, the inside of the ring is completely blank. This is because a thin layer is composing the innermost layer holding the parts of the years and letters on the back.

Thank you professor, you were an asset to my first semester at UVA and although I may not be joining you in the ChemE department, I will keep your outlook and advice in mind as I go forward.