Jayson DeBellis
Flow Viz. – spring 2009
Visualization Report #3
Submitted: 3.18.2009

This was my third project, and I really wanted to explore a few of the ideas that I had thought of before I took the class. I experimented with two mediums: changing flame colors with different minerals, and corn starch/water interactions. I ultimately decided to focus on the latter because my digital camera was not fast enough to catch the image well and my 35mm scanner is still not working. I first tried to recreate a flow I saw where a paste of cornstarch and water are mixed together and placed on top of a subwoofer. It turns out my subwoofer is not powerful enough, so I settled on the flows of the paste at an angle over more cornstarch.

The flow apparatus was fairly simple; I used a plate and then dusted it with cornstarch. I took a piece of beveled glass and placed it at about a 60-degree angle to the plate. On it I placed a paste that was about 40% cornstarch and 60% water, spiked with paprika for contrast. Despite being like putty in my hand, the mixture quickly turned into a puddle consistency on the glass. I then inclined it but the cornstarch mixture would not move for about twenty seconds, at which point it began to lazily slide up and over the side of the glass, which took another fifteen seconds or so. At this point I was not expecting anything interesting to happen, however when the cornstarch liquid came into contact it would immediately stop the flow at this point (the mixture hardened up), but the flow would continue immediately above, creating a cascading effect. After the photo was taken, the flow continued to move until it had folded over on itself and solidified completely.

As I mentioned before the main visualization technique I used was the addition of paprika to the cornstarch/water mixture. I used paprika over traditional dye because I wanted to add texture to the mixture in addition to some color, and I guessed that it would keep some of its grainy property. I made sure to use a dark colored plate to contrast with the powdered cornstarch, and the mixture stood out against the glass it was resting on. I used a combination of artificial and natural light, although the latter didn't end up showing up much in the final image since the lamp was so close to the setup. The bulb was a 120W-diffused photoflood in an aluminum reflector aiming down at about a 45-degree angle.

The field of view of the picture is about a foot and a half wide, with the camera about the same distance away from the setup. I was using a Sony DSC-T1, which has an ISO of 100. The shutter speed was set to 1/80 and the aperture was at f//3.5. The original image is 2.1MB and has a resolution of

2592x1944px. The final image is 3.5MB and has a resolution of 2406x1881px. Both are in .jpg format. In Photoshop I first cropped the image slightly, and then mostly just adjusted the shadow and midtone color balance, removing yellow and adding blue, and I added a little bit of contrast with an RGB curve adjustment.

This image reveals the non-Newtonian properties that a cornstarch/water mixture has. The flow is both solid and liquid at the same time, and the flow is very distinct. I would be curious to see the flow properties of similar liquids. I would like to improve the flow apparatus if I was to recreate this experiment, and I want to successfully capture the cornstarch/water mixture over a speaker experiment.