David Oakley
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Get Wet Image Report

I set out to make either an image or video that captured movement (of bubbles/particles) in a fluid similar to the way a star swirl captures the movement of the earth (at least somewhat similar). If that plan failed I hoped to get some nice images of food coloring suspended in oil. Unfortunately, I didn't keep the food coloring suspended very long and after a few images with only green color drops added, all of the coloring broke the tension between oil/soda water and dispersed. So now I had a dark green fluid with a lighter green color at the surface (oil). I filmed (video), of the fluid's reaction to more soda water. The movement of the bubbles was very interesting in this video but the plane of focus from my camera was at an angle causing the bubbles to go in and out of focus. Nonetheless I slowed the video down in final cut and found it quite amusing. After these "false starts", I decided to focus on just doing long exposures that showed some kind of motion.

To create the flow in my image I stirred the fluid clockwise with a pencil. Just as the self release timer was about to engage the shutter I stopped stirring. In the image you can see the flow begin to lose direction and speed, as some of the particles start to trail off towards the edge of the glass. The flow closer to the vortex remains mostly laminar whereas the flow towards the outside of the glass is more turbulent. The streaks from motion blur are most distinct at the outside edge of the vortex. This is because, the bubbles are more spaced out here and because they are not moving as fast. In the center of the vortex the bubbles make a full rotation and are moving too quickly to be clearly captured. However, at the outside of the vortex we can see the entire paths of the bubbles and can therefore deduce their speed and direction clearly.

To create my fluid I mixed soda water (1.5 cups) with hydrogen peroxide (1/4 cup), and vegetable oil (1/4 cup), layered them in order in a wine glass and added green coloring. To make my fluid slightly more viscous, volatile, I added hydrogen peroxide (Before doing this I made sure hydrogen peroxide was safe environmentally and practically for the experiment. I was not aware of all of the positive uses for hydrogen peroxide, and its environmental friendliness, previously). As for lighting, I tried to eliminate as much light as I could from my room (which was still fairly bright). I tried using a headlamp for a light source as well as a cell phone and a lamp. I found the lights were very distracting in these images. I chose instead to use natural light and remove the sheet hoods. This light was coming from two windows both at a 45 degree angle to the subject and both about 10 feet away.

After adjusting lighting levels I took several long (20-30 second) exposures of the natural paths the bubbles took in the fluid. I also took several shorter (1-5 second) exposures and stirred the fluid in a continuous direction creating a vortex. My final image used this method. I placed the camera about one foot above the wine glass, on a tripod, facing directly downward. In order to compensate for long exposures I dropped the ISO as low as I could and used a smaller aperture (f8-f13). My final image of the vortex in a slightly long exposure was edited slightly in

photoshop, increasing contrast and brightness while eliminating as much unnecessary noise as possible. The original picture pixel dimension was 184 × 3456. I used a Canon 7d to make this image. Unfortunately it is a jpeg because I forgot to switch over to raw after doing several time lapses with the camera. The lens I used is a Canon USM II 16-35mm lens (with 7d 2/3 frame sensor it is more like 20-45mm). The lens is nice but a macro lens would have been preferable.

Overall I am mostly pleased with the image. I probably liked the video I shot more but it was too shaky to use. I did achieve my intent to capture movement which I was happy about, and in some sense it is reminiscent of a star swirl. I like that the image is very dark and it is hard to tell what exactly is happening in it. I wish the flow stood out more and the edges of the glass less but I do think that the bubbles at the edge of the glass are interesting to look at as well. I think this idea could be better explored possibly in a larger container like a fish tank or something. More color could have also enhanced the effectiveness of the image. I also think that some of my flows that did not involve a vortex were more interesting but the images themselves weren't quite as interesting (composition, lighting). If I could do it over again I might have not done the vortex even though it does make the flow more accessible.