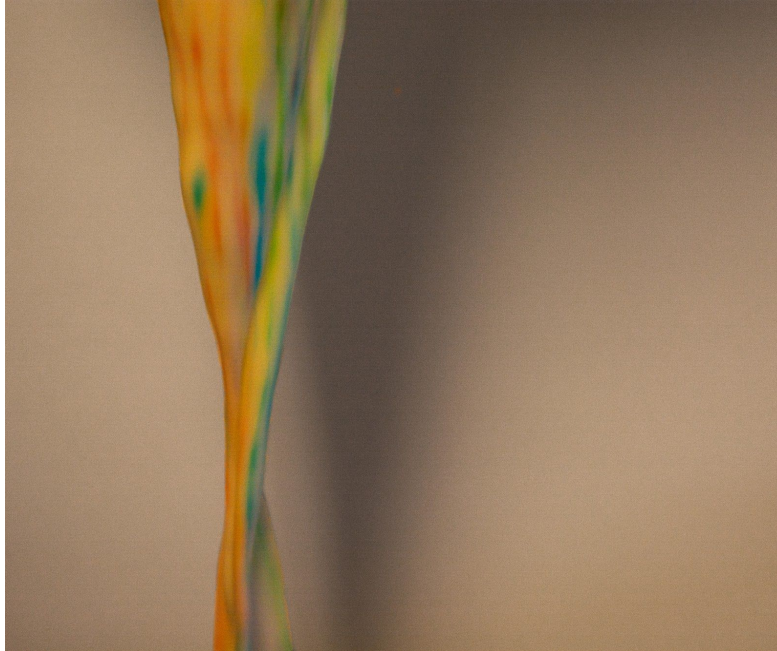




Team First

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Intent

This is my Team First image. Much like the Get Wet project, we were granted the freedom to explore any flow-related topic and capture that phenomenon in any creative manner. An important part of creative freedom is that the initial idea is subject to evolving into another idea. For example, my initial intent with this photo was to image the relationship between watercolor paint and almond milk. I was primarily going for the aesthetic aspect, which would be the colored paint against the whiteness of the milk as witnessed below.



Figure 2. Original Intent

While pouring out the milk into the sink after the image above was captured, I noticed the subtle effect of the color blending with the milk. I loved the simplicity of the streaking colors. I proceeded to replicate the original setup with the milk and watercolor, but this time I aimed the camera at the sink. I poured out the concoction and took images of the rainbow flow. The streaks of each color demonstrate the movement of the pouring milk.

Flow Apparatus

In order to produce this flow, a few things had to happen first. A dinner plate 12 inches in diameter has a saucer-shaped center that is six inches in diameter. The

saucer-like middle was filled with almond milk and, as mentioned earlier, watercolor was then splattered into it. I slowly tilted the plate and the flow resulted from that motion. The top of this flow began much wider than it was deep, given that the plate is a surface with miniscule curvature.

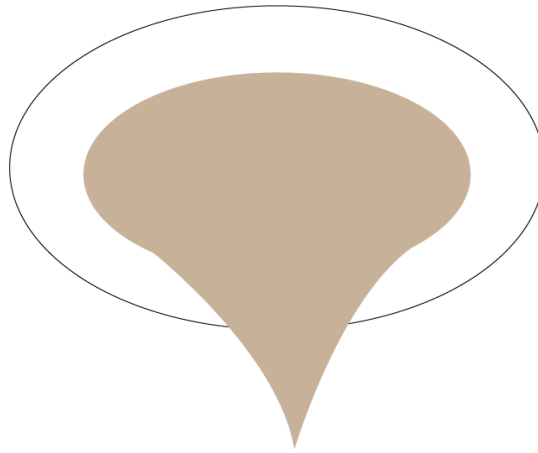


Figure 3. Liquid pouring off a flatter surface (highly simplified).

The plate was the single obstacle that the liquid interacted with. The main force acting on the pouring liquid is gravity. Gravity explains why the flow falls downward towards the sink and is the ultimate driving factor in the motion. The vorticity of the pour can be seen from the gradual rotation of the sides of the milk rotating around the center of the flow. Near the The top of the flow is approximately 1 inch in width and the most narrow part is approximately a quarter of an inch.

Visualization Technique

To achieve the setup for this image, I took my 12" diameter dinner plate and refrigerated organic Sprouts brand unsweetened almond milk and added a cup and a quarter of the milk to the plate, which had a saucer-like center that acted as a shallow bowl. The watercolors I used were Crayola™ brand and I added, very roughly, 4 parts water to one part paint, or until the color was just runny enough to splatter. I used the red, yellow, green, blue, and violet colors and splattered them in the fashion that you see in figure 2. The water used to mix into the watercolors was room temp.

The lighting I used to capture this image was the kitchen light that is on the ceiling. It is a long, approximately 4' x 1' fluorescent beam that is diffused by a cover. The location of my pour was slightly offset of being directly under the light and the front surface of the milk was facing the light. There is also minimal light coming from the open window that faced the cloud-diffused sunlight.

Photographic Technique

The first thing I did to setup my photographic space was to clear the sink of any dishes or distracting elements. I taped a 11 x 11 piece of off-white paper to my dish soap bottle to act as a solid background. The camera was set up about 15 inches from the subject and was zoomed in. The milk was poured two inches from the background to add a shadow. The specific camera settings are as follows:

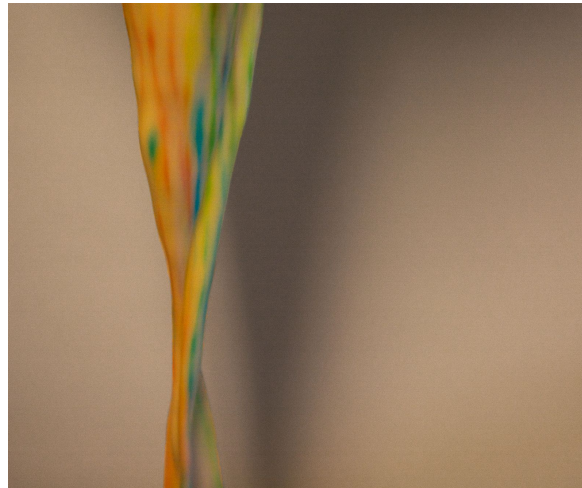
- Taken on a Nikon™ D5200 DSLR
- Shutter speed was 1/320. It was fast to decrease motion blur.
- Aperture was f/8.
- ISO was 200. I was careful to not set it too high to minimize noise.
- Focal length was 55mm.
- Raw image was 6000 x 4000.

In Adobe Photoshop, I slightly cropped the image, dramatically increased the brightness, and slightly increased the contrast. I masked only the flow, decreased the saturation on the background, and increased the saturation on the flow so it could really stand out. The original image is below and, although it looks like a black square, I assure you that it is the unedited version of my flow image.



Figure 4 (above): Original image.

Figure 5 (below): Edited image.



Reflection

I was pleasantly surprised by how this image came out. Many images of fluid flows are dramatic and their beauty has a lot of immediate power, which can be mesmerizing. The image I took for this project appealed rather to the subtle beauty that can be found in a flow. The colors seem to breathe life. The physics are shown to the extent that someone looking at the image can understand what is happening. Something I would like to adjust about this image if I was to replicate it is the framing. Seeing the brim of the plate would help tell the story of the flow without me explicitly saying what it is.