

Get Wet



Assignment 1

by
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The Image

Fluid flows generally contain a flow that can be watched and followed. For example, if an experiment consisted of water and oil, no matter how you mix it or make it flow you can always account for all the water and all the oil. Fire is fascinating because every flow is new and different. The fuel burns and the next second the flow consists of different molecules doing potentially different things. This is why I chose fire to photograph.

Have you ever been cooking on a grill and noticed the interest that lies in the fire beneath your food? It is mesmerizing to cook a steak and see how the fire changes as salt and other bits fall through the grating on to the flame. I intended to use the grill to show the effect that salt has on fire (it burns a bright yellow). I found that I was not familiar enough with my camera to try and drop salt into the grill and then be quick enough and steady enough to catch the fire before the salt burned completely. After about 50 pictures of pretty much nothing I decided that the fire alone was beautiful and interesting enough to photograph with out the salt. I chose my final image because it exhibits two different substances burning and it shows the flow out of the grill well.

Flow Apparatus

To create my flow, as said before, I used a gas grill. I initially assumed that the flow would be better when the grill was on high, but I found that it was a lot easier to capture the flame when the flow was at medium. In my image the flow is at medium and I am in a guarded area so there is little to no outside effects on the flame, such as wind. Below is a diagram of the set up that created my final image.

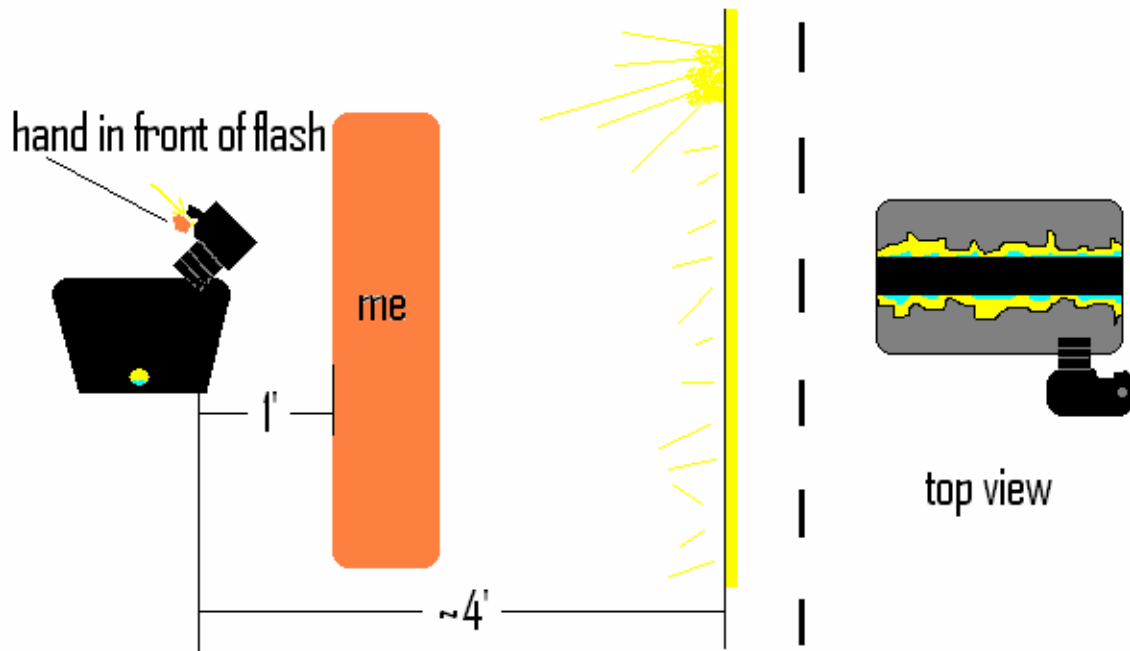


Figure 1: Set up of final image

Visualization Technique and Flow Description

The visualization technique is just gas burning. When looking at the diagram above it is important to notice the hand in front of the flash. When I took this picture I wasn't sure if I wanted the flash or not. I would leave the flash on and then take one with it and one with my hand in front of it. When I used the flash I couldn't see anything and with my hand in front of it I could. I assumed that this little bit of light didn't affect my picture at all. I found when I just turned off the flash that my pictures did not have enough light in them. So this light mixed with the lighting coming from inside my house through the sliding glass door provided me with enough light to get a bright picture.

The flow that is being shown is fire. "Fire is a chemical reaction system involving combustion (exothermic oxidation), the stability of which depends upon a balance between chemical reaction kinetics, which are non-linear with temperature and physical processes, . . . which are more closely linear with temperature"(Thorne). "My flame is both flaming combustion" and "smoldering surface oxidation" (Thorne). For visual learners, like myself, I found it very helpful when the difference in the parts of the flame were described with reference to a Bunsen burner. "A familiar example of each type is provided by the Bunsen burner. When the air supply is shut off, a yellow diffusion flame is seen; when air is admitted a blue premixed flame is seen. Heterogeneous combustion of, for example, carbon depends upon the migration of oxygen to the surface, mainly by molecular diffusion" (Thorne). Since my flame was exposed to oxygen this explains why there are different colors. The blue part is where the combustion is actually happening and the yellow/orange part is where soot and other materials are "smoldering" and burning off.

Photographic Technique

The field of view shown in the picture is approximately 3" X 2.25". If you look at each blue area you can get a feel for the size of the picture because most people know the size of the gas outlet holes in the grill and these represent how many holes are in the picture. The distance from the fire to my lens is around 5". This was about as close as I could get with out getting my camera to hot. I found that when I stood back and zoomed my camera had a hard time focusing though so I chose to be closer. My camera data is as follows: f-stop=f/4.2, max aperture=f/2.8, focal length=71.2 mm, shutter speed=1/8 and ISO speed ratings=100. The resolution on this photo is 300 in both the x and y directions. It was taken on a Nikon CoolPix5700. My final image was made more dramatic using the auto levels tool in Adobe Photoshop.

Revelations

This image reveals the way your gas grill cooks your food. I really enjoy how there is the solid that is burning in the bottom of the picture directly on the grill and I also enjoy how clear the outlets are and then how it all kind of blends once it is just the soot burning. My image is off center and there is a lot of black space, these are things I am not happy with.

However, I didn't want to crop it and lose some of the interesting parts about the big flame.

This assignment really helped me become more familiar with my camera and become much more comfortable taking pictures. It also showed me how long it takes to get an image you are happy with.

Original Image before photoshop



Works Cited

- 1.) Thorne, P F. "The Physics of Fire Extinguishment." Physics in Technology 16.6 (1985): 263-268