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AN EXPLORATION OF ALTERNATIVE PROCESSES IN PHOTOGRAPHY

Stephanie Spyker
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Stephanie Spyker
Honors Thesis
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Over this past summer and semester, I have been working with alternative processes in photography. I have been working in the darkroom for about five years now, but have only had experience with traditional silver gelatin printing. Traditional silver gelatin printing uses an already light sensitive paper, negatives straight from the camera, and traditional chemicals including developer, stop, and fixer. The three processes that I taught myself- ziatype, tintype, and gum bichromate- are very different from traditional printing. Throughout this paper I will take you through the steps of each process, and explain what the photos I made for this project are about.

Ziatype

The first alternative process I decided to try was ziatype. The ziatype process is actually very new still and is still being worked on. The process was created in the labs of Bostick & Sullivan, a photography supplier in New Mexico. The creators were looking for a better way to control color and contrast in a printing out method. "Printing out" mean that you can see the image appearing as it is being exposed to light. This is different from traditional darkroom because in a traditional setting, you expose the paper for a certain time and then put it in the chemicals, and then the photograph starts to appear. I was excited to be able to try the printing out process, because I thought it would be much easier to control.

Before going into the details of the process, I would like to take a moment to talk about the images I shot for this process. Each process has a different idea that all relate to an overall concept. My artwork largely deals with extra terrestrials and the idea of something beyond Earth, so for the ziatype process I focused on a very famous alien abduction and tried to tell parts of their story through the photographs. The story of Betty and Barney Hill took place in September of 1961, as they were heading back from vacation in Canada to their home in New Hampshire. It was getting later at night, and they were driving through the White Mountains when they started to observe bright lights. They pulled over to observe the lights,
and noticed that the lights seemed to be descending in their direction. The Hill's decided to get back in the car and keep driving, yet the objects persisted behind them. Once the object caught up with the Hills, it quickly descended in front of them, forcing them to stop the car. Barney got out of the car to better observe what he was seeing, and claimed to have seen 8-11 humanoid figures staring down back at him. After seeing this, Barney panicked and ran back to the car, trying to escape from the unknown creatures. Barney sped around the object and away as fast as he could, but that didn't stop the figures. The couple claimed to have then felt a tingling sensation, and then entered an altered state of consciousness. They both seemed to regain consciousness 35 miles down the road, and have no recollection of what happened in between. They eventually arrived home and noticed a couple odd things. Betty's dress was torn, Barney's nice shoes were scuffed, the strap on their binoculars had been broken, their watches never worked again, and there were odd circles on their trunk. Betty also insisted that their luggage stay by the back door, and not be brought inside the house.

Now that it is understood what these photographs are about, I can get into the technical process and the trials and errors I went through to get the final prints. Luckily I was awarded the Dashiell Tools and Materials Grant from the Myers School of Art here at Akron, so I was able to purchase everything I needed with this grant, as well as use the school darkroom. Before even setting up in the darkroom, I had to scan and edit the negatives and print them out on a special transparency film to the desired size of the print. For these photographs I decided to print them at 8"x10". Once I had the negatives printed out on bigger film, I was then ready to move to the darkroom. With me in the darkroom I had Rives BFK paper, the chemicals, a brush, the negative, and a contact-printing frame. First, I had to trace the corners of the negative onto the paper, that way I knew where to pour and brush the chemicals on. After setting the guidelines, it was time to mix the chemicals. Unlike silver gelatin printing where the developer can be used over and over, ziatype requires you to make a specific solution every time. The chemicals I was given were Ammonium Ferric Oxalate (afo), Lithium Palladium Chloride (LiPd), Sodium Tungstate (Tn), and Ammonium
Dichromate (ad). Each drop of chemical would change either the color or the contrast of the print. The solution I stuck with was 15 drops of afo, 15 drops of LiPd, and typically 1 drop of ad. By using an equal number of afo and LiPd, I was keeping the color on a normal grayscale, rather than making it warm or cool. Once I had all the drops mixed together, I poured the solution onto the paper, and brushed it evenly around the guidelines for where my image would be. The next step was to wait a couple minutes until the chemicals had dried. Once the paper was dry, I lined up the negative inside my margins and placed it in the contact print frame. The contact print frame is basically a picture frame with a piece that clamps onto the back to sandwich the paper and negative together. Once these were all together in the print frame, I was ready to expose the paper to light.

All of this had been done in the darkroom under a yellow safelight so far. For this process, I decided to use the sun as my light source rather than an exposure unit. I started with an eight-minute exposure in direct sunlight. Once the eight minutes were up, I took the contact print frame back into the darkroom and had to wash out the print. At this stage, the print had a yellow color from the chemicals, so that needed washed out along with stopping the print from exposing more when taken back out into the light. The first step in post exposure is to wash the print in running water for five minutes. This gets rid of the excess chemicals that are still lingering on the paper. Then, I had to put it in a bath of 1.5% citric acid, which I had mixed ahead of time, for 5 minutes. This was to get rid of the yellow tint that the print had. Once the print was in the citric acid for five minutes, I had to switch it over to another water bath for a minute, to get rid of all the citric acid. The next bath was 1.5% sodium sulfite, also for five minutes. This was to stop the chemicals on the paper from being light sensitive and fixing the print. Once out of this bath, the print then went into a final wash bath for 20 minutes, to fully ensure that all excess chemicals are out of the print. All in all, from mixing the chemicals, to exposure, and then washing out the print, one ziatype would take about an hour to do.

With the process now explained, I can now go into all the mistakes and problem solving I went through to end up with the final prints. The first
couple prints that I made were way too flat in my opinion, so before I even had a good print I had to go back and re-edit my negatives on the computer to add more contrast to them, since I was not able to achieve this with the chemicals I was using. Once I re-printed the negatives, I had much better luck with the contrast levels on the prints. Another problem I encountered was accidentally adding too much water while brushing on the chemicals. I pre-wetted the paper once, to open up the fibers of the paper, which resulted in the chemicals not sticking to the paper whatsoever. At times I also had too much water left in the brush, which weakened the chemicals and therefore the print. I also had trouble with figuring out a good exposure time. Every negative proved to need a different chemical formula and exposure time, so there were a lot of test prints before the final prints. Overall, I did enjoy getting to know this process and would love to work with it more in the future, now that I am starting to get the hang of it. I love the tones that you get from it and the brush strokes add in more of the artist's hand, which I like to see.

Tintype

The next process I ended up trying was tintype. Tintype is very different than anything I have done in photography before, mostly because you aren't even exposing an image on paper. For tintypes, you use metal plates to expose the image, in this case aluminum. I was very excited to learn this new process and to be able to put my photographs on aluminum. For this process I chose to shoot images of the night sky, mainly on clear nights where the stars are visible. Most UFO's or "other worldly things" are seen in low light conditions, whether it be the dead of night or dusk/dawn. I've always loved experimenting with taking long exposures at night, and felt like the content related to this theme of other beings being out there.

I started this process out just as I did with the ziatype, by editing the photographs and printing them on the desired negative size. I had ordered 4"x5" and 8"x10" aluminum plates, so I printed negatives out for both those sizes. The next step was to degrease the plate. To do so effectively, I
found that Ajax powder works best. I tried hand soap, special cleaning supplies, and even soy sauce (rumor from the internet), but nothing degreased the plate better than Ajax. The point of cleaning the plate very thoroughly is so that the emulsion doesn't bead off, but it sticks to the edges and holds an even coat. Once the plates were degreased, it was time to pour the emulsion on. At this point, you had to be in the darkroom, since the emulsion is light sensitive. The emulsion is pretty hard in the plastic container, so in order to coat the plate you have to heat up the emulsion by placing it in hot water. The emulsion then becomes a runny liquid and you can pour and spread the emulsion on. It is also a good idea to heat the plate up as well, that way warm emulsion isn't being spread onto a cold plate and setting up too quickly. After the emulsion is coated, it is imperative to wait until it has set up just the right amount, and then you are ready to expose the plate. I used an enlarger as a light source, and contact printed the negatives onto the tintype. Once you figure out the correct exposure time, the rest is pretty similar to normal silver gelatin printing. The tintype is ran through the developer with an added hardener, and then the stop, fix, and wash.

Tintype was by far the hardest process I attempted, and I still have a lot of learning to do. My first struggle was getting the plates to be degreased enough. I tried multiple different methods before running to the store and grabbing some Ajax as a last attempt. I got the best results with that, so I could finally start degreasing all the plates. I heated up the emulsion and coated the plates. I wasn't sure if I should keep a thick coating or let more drip off, so I coated them both ways to test the difference. The book I was using as a reference, The Book of Alternative Photographic Processes, told me I should wait at least 24 hours before I expose the plates. So, I kept them in a dark box for a little over 24 hours and then tested out an exposure. I tested from 30 seconds to a minute, exposing the plate at the various times to see which exposure looked best. I put the plate in the developer, and everything seemed well. I kept it in for the appropriate time, two minutes, and then put it through the stop bath. Once I got to the fixer, I noticed that the emulsion on the plate was starting to peel off the sides. Hoping the majority would stay, I continued the process into the final
wash, and by the time it had been in for a minute almost all the emulsion had washed off. I realized I forgot to put the hardener in the emulsion, so I added that and tried again. I waited another day to expose the plates because the hardener said to wait 24 hours before use. By the time it I was ready to expose the plates again, the plates had been left out too long and I could not get an exposure at all. So, I had to take all the emulsion off the plates and start over. The second time I made sure to add the hardener at least 24 hours ahead of time, and I exposed the plates the next day rather than a few days later. The plates still felt a little tacky in areas, so I was hesitant to expose them. But, once I figured out the correct exposure time it seemed like the only parts that would expose and not go black were the parts of the emulsion that were still tacky. Once I was able to see the image show up, I realized that I actually needed a negative on the transparency film rather than a positive. The book that I was referencing had specifically told me to print positives, so when I realized it was wrong I had to go and also reprint those negatives. I was able to reprint the negatives the same night, so the emulsion on the plates didn't sit too long this time that they were unprintable. I had a lot of trouble getting the correct exposure time with the correct negatives. It would seem like I had the correct exposure time at the beginning of development, but by the time I got to the fixer the image would start to turn black. I exposed all the plates I had ordered and was pleased with at least getting images on the plates the second time around.

I had let the plates sit in a dark drawer for a week or two before I took them out, just because I didn't want to scratch them all up. When I sat them out in light for several minutes, the emulsion started to peel off all on its own. The light made the emulsion very fragile and frail enough that it didn't stick to the plates anymore. I tried to save some of the plates by putting a clear varnish finish over them, which helped seal it for the most part. Some of the plates still bubbled and peeled a bit, but nothing like they did without the varnish. I had run out of emulsion from coating all the plates twice, so I was not able to recoat the plates and try a third time. I do plan on trying tintypes again in the future, and hopefully I can figure out what I was doing wrong.
Gum Bichromate

The third and final process I taught myself was gum bichromate, which is an alternative process that uses cyan, magenta, and yellow to create a color print rather than just black and white. I was really excited to attempt to make color images with chemicals. All the images I took for this process seem like everyday landscapes, but in fact they are locations where UFO sightings have taken place. I really enjoyed taking these photos so much that I continued exploring this idea and similar in my current photography class.

Gum bichromate was surprisingly the most simple process, although time consuming because of the layers. Including mixing the chemicals, exposing, washing, and waiting for the paper to dry, each print probably took about two hours. The first step in post-production was to size the paper before I began to print. Sizing the paper just means that you are stretching and toughening up the paper, that way you can print multiple layers without the paper disintegrating. This itself took about 6 hours, just because there are multiple steps and waiting for the paper to dry in between. Next, I again had to print out the negatives. I scanned and edited the film, and then separated the image into cyan, magenta, and yellow layers. I printed out each negative, making sure to label which negative is which color so the images would print correctly.

The only items you need are sized paper, pure watercolors, gum arabic, potassium dichromate, and water. The first step is to mix the gum arabic and potassium dichromate to an even ratio, so I would do 5 ml of each. Then, you add about an inch of watercolor and mix them all together. Just like the ziatype, you want to center the negative and give yourself parameters of where you need to brush the solution on. It's best to start with the lightest color, yellow, and work your way up to the darkest, cyan. After you brush the solution on and let it dry, you are ready to expose the negative. You line up the negative and put it in the contact print frame, and expose the image with either the sun or an exposure unit. Once the exposure is done, you take the print back into the darkroom and wash it out first for one minute in clean water, and then let it soak in a separate
bath of clean water for at least ten minutes. Once thoroughly washed, just let it dry and then move on to the next layer and repeat.

For the first test print I did, I exposed the print for 1, 2, and 3 minutes in the sun. The one-minute exposure looked the best on the test strip, the 2 and 3-minute exposures got too muddied and dark. I decided to use one minute as a base time and exposed all the yellow layers at the same time, so I wouldn't have to wait for them to dry before doing another color. I did three different exposure times for each image- 45 seconds, 1 minute, and 1 and a half minutes. I also used two different papers- 11"x14" paper that came in the gum printing kit as well as a 13"x19" watercolor paper. I continued this process with the magenta and cyan layers, making sure I lined up the negatives perfectly that way the colors blended together. Unfortunately, the larger watercolor paper did not want to hold the gum solution and would wash off after a minute of being in the water. But, the smaller 11x14 paper held the ink just fine. This process was the most fun for me and I would like to continue practicing and getting better results with it.

Overall, the experience of learning these new processes by myself was very challenging yet rewarding. I may not have gotten perfect results the first couple times around, but I definitely have a better grasp on what it takes to get successful prints. I hope to continue researching and learning more alternative photographic processes, to be more well rounded in my field of study.
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An Exploration of Alternative Processes in Photography

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I Want to Believe

It is hard to believe that life on Earth is the only life out there. All the photographs in this project relate back to this idea. While exploring this idea, I was also faced with the challenge of exploring alternative processes in photography. I experimented with ziatype, tintype, and gum bichromate. It is important to note that these processes are very different than traditional silver gelatin prints in that they aren't perfect, and each print is unique and different.

The ziatype images all relate to the famous abduction case of Betty and Barney Hill. The couple was driving home when they observed lights, which then started following them. The craft eventually caught up to the couple, and the next thing they knew they were 35 miles down the road and couldn't remember a thing. They had damages to their car, Barney's shoes were ruined, and Betty insisted their luggage stay by the back door.

The tintype images are all images of the night sky. I chose quiet images on clear nights because this is typically when most UFO's are sighted.

The gum bichromate images are all scenes where UFO's were reported. I travelled to each location with the written report in mind, and photographed each scene according to the location where the person said they saw the UFO.
These were the negatives used to produce images for the ziatype process.
Left: All examples of test prints made.

Right: All these test prints show incorrect exposure times, too light meaning not enough time and too dark meaning too much time.
Decent exposure, but brushed water on which ruined the top left corner.

Tried to pre-wet the paper, but resulted in the chemicals not sticking well.
Good exposure time, but did not coat the paper well enough.
The next six pictures are the final images I ended with for the ziatype process, which all relate to the abduction of Betty and Barney Hill.
Final installation for tintype including negatives, misprints, and finals.
Example of negatives used for printing.
Example of incorrect exposure time. Final image that had started to peel off.

Example of the emulsion half peeled off to reveal the plate. Final image.
Final image.

Final image, with the bottom starting to peel.
Final installation for gum bichromate.
Left: Test prints.

Right: Negatives and watercolors used for printing.
Two examples of the watercolor paper that did not hold the chemicals as well as I hoped it would.
Left: Top image was not registered perfectly and bottom image too light

Right: Top image too muddy and bottom image wrong exposure time.
Next page: All final images.