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Alternative Process Photography: Beyond Digital and Film

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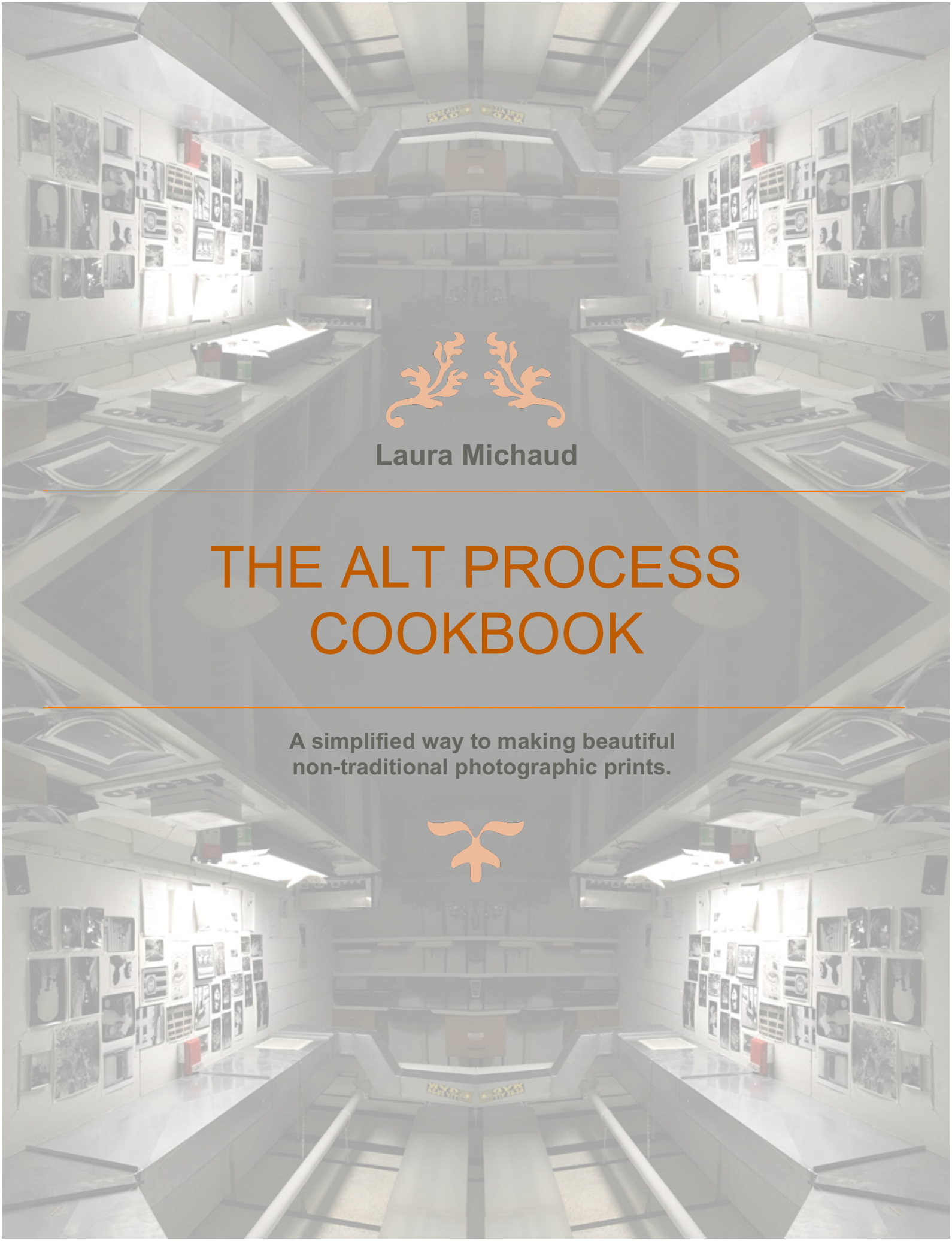
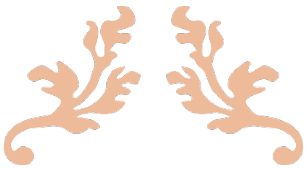


Laura Michaud

THE ALT PROCESS COOKBOOK

A simplified way to making beautiful non-traditional photographic prints.



THE ALT PROCESS COOKBOOK

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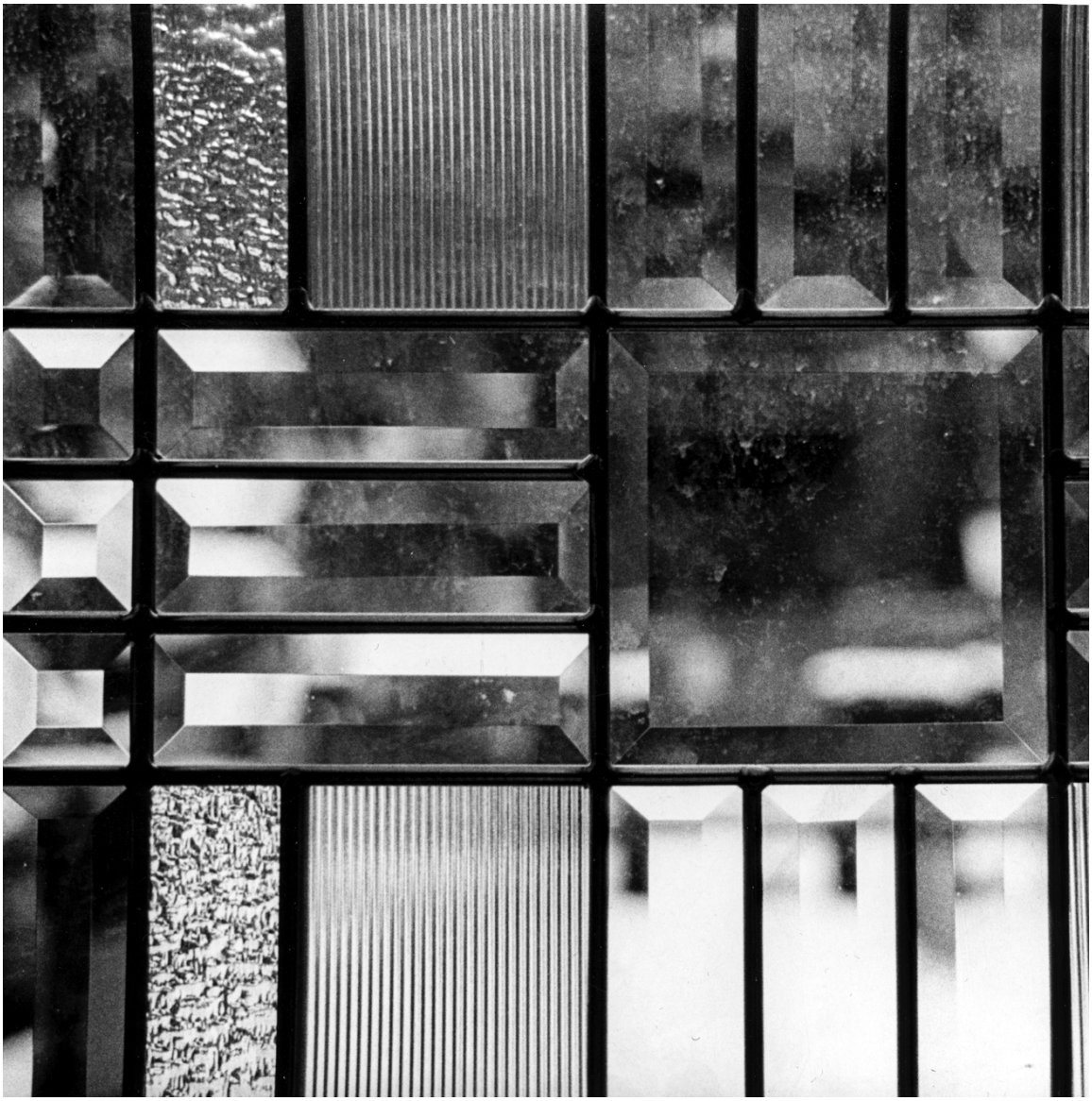
Silver Compound + Organic Material + Light = Photograph



Laura Michaud, *Winter Through my Window*, gelatin silver print, 2017

Photography (Latin: Light Drawing)

So, here you are, about to delve into a book about alternative processes, shortened to "alt processes," but the only camera you know is the one on your iPhone, or at *best* your DSLR (Digital Single Lens Reflex camera). Or maybe you are one of the few people who still uses film – that's great! You're already ahead of the game! Maybe you use manual settings. Maybe you use auto settings. Either way, you may wonder (or maybe you don't) how these cameras work and how photographs are made. Well, you've come to the right place. In this book, I will explain the basics of photography so that anyone with a passion for photography can understand and attempt these photographic processes.

The Camera

First things first, let's talk about the camera. Essentially, all it is is a box with a small hole in it. When you poke a hole in a dark room or box, the outside image will project (upside down) onto the opposite wall. This is called a *camera obscura* (Latin: "dark room"). This is not new technology. In 330 BC, Aristotle used a camera obscura to view a solar eclipse. From as early as the 15th century, many painters (including DaVinci) used camera obscuras as an aid when they painted – they would trace the projected image onto paper or canvas to create a realistic image. If you've ever used a pinhole camera, you will understand this concept. If you have not, here are some examples (**fig. 1, fig. 2)**:

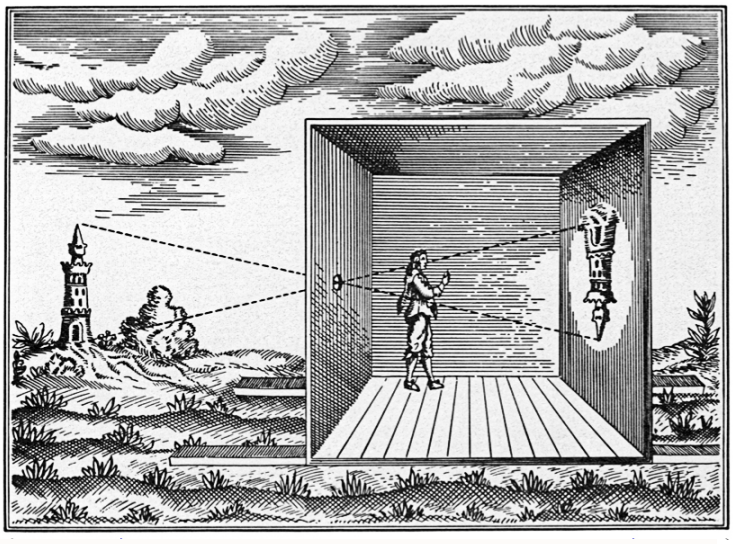


fig. 1 a 17th Century artist stands inside a camera obscura and observes the projected image

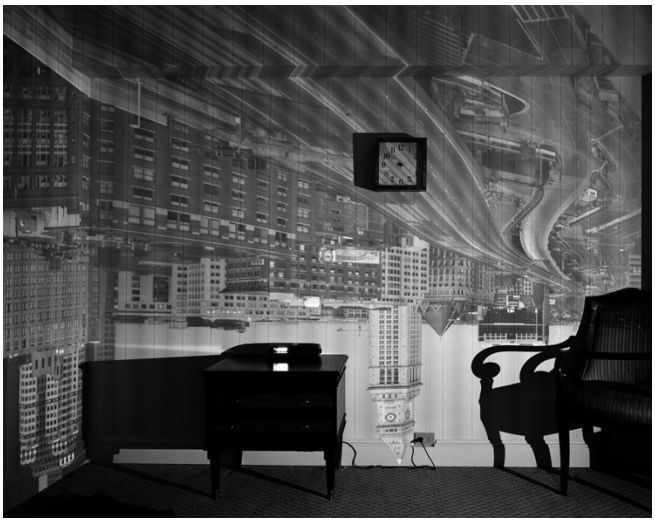


fig. 2 Abelardo Morell, *Image of Boston's Old Customs House in Hotel Room*, 1999. A photograph of a hotel room that was transformed into a camera obscura.

There are a few problems with a camera obscura, however. For starters, if the hole is too large, the image will be fuzzy. If the hole is too small, not enough light will be let in. With the aid of a convex lens, these problems are solved. A modern (D)SLR – (Digital) Single Lens Reflex – camera is just a camera obscura with a lens attached.

Since cameras are not actively involved in the alternative processes exemplified in this book, and for the sake of simplicity, I won't go in depth about how the lens and camera works, but I will briefly explain the process. Light enters the lens and hits a mirror inside the body of the camera, which reflects up into the viewfinder, so you see almost exactly what the lens sees. You then adjust focal length, shutter speed, and aperture (in addition to white balance, iso, and many other factors on digital cameras) until you get the proper exposure, as indicated by your light meter.

When the shutter is released, the mirror flips out of the way, revealing the film (or digital image sensor), and exposing it to light. The film (a thin plastic strip coated in gelatin & a silver halide) is light sensitive, and the image is imprinted on the film (as a negative). Once you've shot your entire roll of film, the film is processed in a series of chemicals that develops the image and fixes it from being light sensitive, the negatives are ready to be printed. Printing images is essentially the same process, just in reverse (putting the negative in an enlarger with a lens and *using a negative to make a positive image*, rather than *using a positive image to make a negative* as you would in a camera).

Does this make sense yet? No? Well, let's look at the history of photography to get a better grasp of the concept.

Making Images Permanent

Beginning at the turn of the 19th Century, many scientists and artists tried to come up with a way to permanently capture the image from the camera obscura, rather than having to paint or draw it. Finally, in 1826, Joseph Nicéphore Niépce came up with a solution and thus, the first photograph was created. To do this, he coated Bitumen of Judea on a small metal plate. Bitumen of Judea hardens in response to light, so when the metal plate coated in Bitumen of Judea was placed in a camera obscura, the highlights of the projected image hardened the chemical on the plate. Once the plate was properly exposed to light (after about 8 hours of exposure), he removed the plate from the camera obscura and washed it with lavender oil. After being washed in lavender oil, only the hardened parts remained, and the first photograph was created (**fig. 3**).

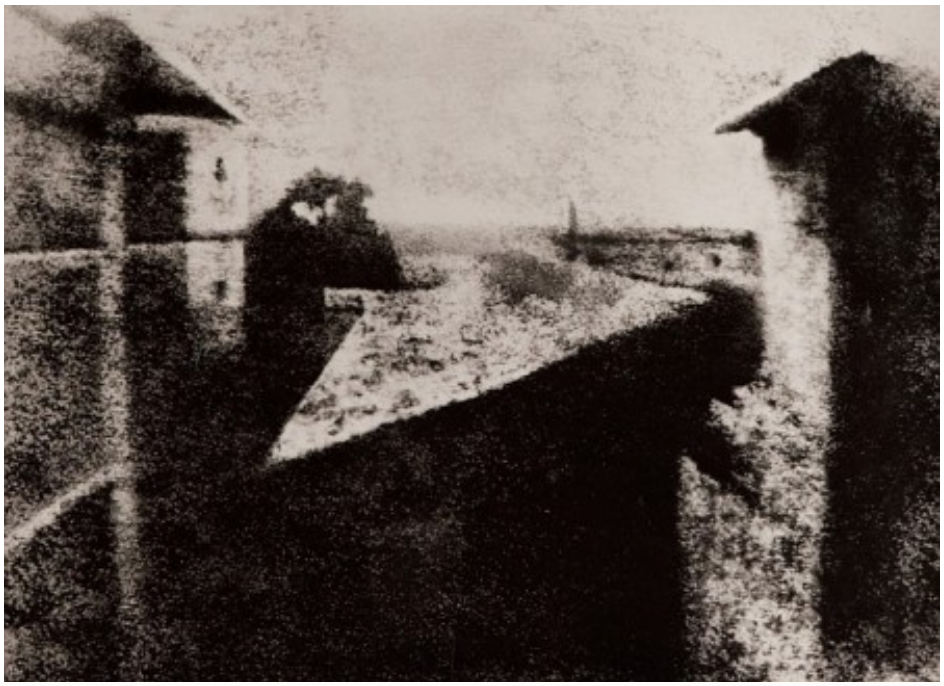


fig. 3 Joseph Nicéphore Niépce, *View from the Window at Le Gras*, ca. 1826

When Niépce died in 1833, his business partner, Daguerre, continued to experiment with silver halides to create a process using a more light-sensitive chemical. In 1837, he sensitized a silver plate with iodine vapor, exposed the plate to light, developed the plate in mercury vapor, and fixed the image from light sensitivity using hot salt water. This image process, called the Daguerreotype, proved to be much more effective than Niépce's process because it took much less time and yielded much clearer results. The Daguerreotype process was patented and became the first photographic process available to the public.

Throughout the years, many other scientists and artists created new photographic processes using different sets of chemicals. Some of these processes are:

- Calotype
- Biochromate Processesing
- Platinum/Palladium Processing
- **Ziatype**
- Carbon Printing
- **Albumen Printing**
- Iron-based processes (**Vandyke brownprints**, cyanotypes, kallitypes)
- Collodion Processing (wet & dry)
- Gelatin Silver Printing

Processes in bold will be discussed in this book. Some of these processes are produced in-camera, and some are produced by contact-printing a large format negative onto the chemically-treated surface. In this book, I will be highlighting the latter processes.

To do each of these processes, you will need a hinged-back contact-printing frame (**fig. 4, fig. 5**), or something similar, hot-press watercolor paper (explained specifically in each section) and a negative that is the size of the print you'll be creating. I will explain the negative process in the next section: Making the Negative.

fig. 4 A Vandyke brownprint being exposed to UV light in a contact-printing frame.

fig. 5 The back of a hinged-back contact-printing frame.

NOTE: An overview of the supplies is in the Resources & References section – if you are confused about any supplies or process setup, refer to this section!

Making the Negative

Turning 35mm & 120mm Negatives, Prints, & Digital Photos into Large Format Negatives

Laura Michaud, negative of *The Lines on the Light, The Light on the Lines*, gelatin silver print (reprinted onto Pictorico digital transparency film), 2017

Making the Negative

As you have just learned from the "Brief Overview of Photography" section, alt process photography uses large format negatives to contact-print images onto photographic paper (the negative must be the same size as the desired print size). But what if you don't have a large format camera? How will you create negatives that are an appropriate size for printing? It's quite simple, and there are a few ways to do this, either using digital transparency paper (Pictorico Ultra Premium OHP Transparency Film Paper) or litho film. First, you will need to find an image that you want to convert to a large format negative. This can be a small 35mm or 120mm negative, a physical photograph, or even a digital image (yes, it can be from your phone).

Using Silver Halide Negatives and/or Physical Prints

If you print your own gelatin silver prints, this will be quite simple. If you don't print your own negatives, and/or you have a hard copy of an image you want to convert into a negative, skip to step 3.

1. Find a negative that you want to use as a large format negative.
2. Make a print in the darkroom that is the size of your desired image (make it as close to perfect exposure as possible).
3. Once your print is dry, use a high-quality scanner to scan your image onto a computer. Make sure the image file size is 300dpi and an inch or two larger than the actual image, so it is very high quality.
4. Once your image is scanned, edit it using Lightroom, Photoshop, or any other photo editing software of your choosing, to make it absolutely perfect (or however you want it to look – that's completely up to you). The scanner will most likely muddle the shadows of the image.
5. Invert the image (i.e. turn the positive image back into a negative) (e.g. command+I in Photoshop).
6. Print the image at the correct size onto transparency paper (Pictorico).
7. Congrats, you now have a large format negative!

Using Digital Images

This is an even more simple process than the first.

1. Find a digital image you want to use as a large format negative.
2. Using Photoshop, Lightroom, or any other editing software, convert the image into black and white. Adjust colors and contrast as necessary to create a perfect image. If needed, crop it to make it the right size.
3. Invert the image (i.e. turn the positive image into a negative) (e.g. command+I in Photoshop).
4. Print the inverted image at the desired size onto transparency paper (Pictorico).
5. Congrats, you now have a large format negative!

NOTE ON BOTH PROCESSES: Some alt processes require negatives of different densities/contrasts, which we will get to later. Don't print your image until you know *exactly* what it should look like for the specific process you're doing.

If you HATE Digital and LOVE the Darkroom…Use Litho Film

There is another way to create negatives that cuts out scanners/computers/printers altogether, but it's a bit difficult. If you're a darkroom nut, however, and you're up for the challenge, using **litho film** is the way to go! If you already know how to use litho film, then this shouldn't be difficult.

1. Turn on the red light in the darkroom – litho film is *extremely* light sensitive, and the amber darkroom light will fog the film.
2. Enlarge your small negative onto litho film, just as you would if you were printing onto gelatin silver paper. Make sure it's the correct size for the desired final image.
3. Develop litho film emulsion side up in developer (diluted 1:3) with constant agitation for 2½ - 3 mins. If the image comes up too fast, reduce the exposure and try again. If the image isn't dense enough after 2½ mins, increase the exposure time.
4. Remove image from developer and put in stop bath for 30 seconds.
5. Remove from stop bath and place image in fixer for about 2-3 minutes.
6. Wash image & dry.
7. You now have a positive transparent image.
8. Contact-print the positive image onto another piece of litho film (this means more test strips!).
9. Once dry, you have a large format negative!

I know this process sounds simple, but litho film can be difficult to work with. If you're patient and want to learn how to use litho film, this is a great option, but the digital options are much faster and an easier way to control the look of the final image.

The Albumen Process (1847)

The Egg Whites and Salt Process

Laura Michaud, *Gridline Flatline*, albumen print, 2017

Albumen Prints

In 1833, around the same time when Daguerre was creating his Daguerreotype process, William Henry Fox Talbot, a scientist and photographer, wanted to create an image-making process using a camera lucida (Latin: "light room." Similar to a camera obscura). He experimented with silver salts and paper, and discovered that coating a piece of paper with salt water, blotting it dry, and coating it with silver nitrate would render the paper light sensitive. After the image had been exposed under UV light, the print was again washed in salt water and rendered light-safe. In 1839, it was discovered that washing the print in hypo fixed the image even more. This process is called the *Salt Print*. Although a successful photographic process, the images were quite dull and lifeless, so many artists began experimenting with other materials that would create a higher quality image.

In 1840, Talbot experimented with an albumen coating in conjunction with iodine fumes, silver nitrate, and later, potassium iodide, but was unsatisfied with the results. In 1847, one if Nicéphore Niépce's cousins, Claude Felix Abel Niépce de St. Victor, experimented with potassium iodide, starch, albumen, acetic acid, and silver nitrate. Once exposed to light, the print would have to be developed in a solution of gallic acid. This process was not ideal, however, because exposure took 15-20mins, and it was an extremely labor-intensive and dangerous process because of the gallic acid.

In 1849, Louis-Désirée Blanquart-Evrard used the information from Talbot's and Niépce's experiments and created the Albumen Process. His process had the option of being exposed while wet or dry, and when toned with gold toner, the overall tonal range was increased, creating stunning images. The color of the images ranges from aubergine, purple, red, brown, to black. The albumen coating also created a semi-gloss surface, which enhanced the overall appearance of the print. When exposed under collodion-coated glass-plate negatives (Frederick Scott Archer's 1851 negative-making process, the Wet Plate Collodion process), the *Albumen Process* was an extremely successful reproducible paper-based photographic process, and it was the dominant form of photographic print processes from 1855 until around 1900.

Notes on the Paper

Now, before we get started, let's talk about the paper you're going to use for these photographs. You will need a **100% cotton, unbuffered, hot-press smooth watercolor/etching paper**. Here are some examples, but there are many more options that can be used:

- *Arches Aquarelle*
- *Arches Cream*
- *Arches Platine*
- *Somerset Satin*
- *Strathmore*
- *Moulin du Verger*
- *Rives Velin*
- *Saunders Waterford*
- *Fabriano 5*
- *Fabriano Romano*
- *Fabriano 100%*
- *Buxton*
- *Two Rivers*
- *Whatman*
- *Saunders Waterford*
- *BFK Rives*
- *Cranes*
- *Bockingford*

These can be found at many art supply stores, and they can be purchased in small 8x10" or 11x17" sheets or large 22x30" sheets. If you buy the large sheets, it's easy to measure the desired paper size and cut/rip the paper to form sheets that are the correct size.

NOTE: Size your paper an inch larger than the desired image, so there will be a nice brown border around the image.

You can also experiment with other materials, like wood, hardboard, and stone, as albumen will adhere well to these surfaces.

Notes on the Negative

I have read a lot of things that suggest using a negative that is about 2 stops darker than desired. This, I have found, is false. A normal perfectly exposed negative works quite well. Experiment with different negatives to find the right density, but I recommend using a perfectly exposed negative first, and adjusting from there.

Making The Albumen Coating

You can buy pre-coated albumen paper from Bostick & Sullivan, but where's the fun in that? If you want this process to be one step easier, though, I do recommend it, and machine-coated albumen paper will give you consistent and stunning results. If you opt for this option, skip to "Sensitizing the Paper."

Ingredients/Supplies:

- salt
- 1 dozen eggs (or powdered egg white or powdered albumen)
- 1 gallon distilled water
- mixing bowl
- cheesecloth
- whisk
- graduated cylinder or measuring cup
- plastic container with a lid (for keeping the mixed albumen)

Directions:

1. Separate the whites from the yolk of one dozen eggs, making sure not to get any yolk or shell into the egg whites.
2. Put the yolks in a separate bowl and look up a recipe that uses egg yolks (i.e. pudding, custard, etc.).
3. Put 12 teaspoons (1tsp per egg) of 10% salt water solution into the bowl with the egg whites.
4. Gently whisk the egg white and saltwater solution to make the mixture less viscous, but don't whisk it too vigorously, or it will become foamy.
5. Put a cheesecloth over the top of a plastic container; secure it with a rubber band (trust me, the last thing you want is your cheesecloth falling into the mixture – what a mess!). Pour the mixed albumen solution onto the cheesecloth. This will strain out all excess foam and impurities in the solution. This will take some time, since the solution is so thick, so put it in the fridge for a while to let it strain and keep it fresh.
6. Once the albumen has been properly purified, it is ready for coating.

Coating The Paper

There are two ways to coat the paper; floating and roller-coating. I found that roller-coating is the easiest, but I will explain both processes here.

Supplies:

- 100% cotton hot-press smooth paper, properly sized
- freshly made Albumen Coating Solution
- blow dryer, towel, or screen, for drying
- (for roller-coating) small painters' tray
- (for roller-coating) small paint roller
- (for roller-coating) a smooth, clean surface large enough for your print (a clean counter or a piece of plexiglass works quite well)
- (for roller coating) painters' tape
- (for floating) plastic/glass tray/baking pan big enough to fit your properly sized paper

Directions for Roller Coating:

1. Pour freshly mixed **albumen solution** into clean painters' tray.
2. Tape properly-sized paper onto smooth, clean surface.
3. Saturate the roller with the albumen.
4. Roll the albumen onto the paper until it is completely saturated and has a glossy finish.
5. Let sit for a minute, then blow dry on low heat until it is *completely* dry.
6. Once dry, it's ready to be coated in silver nitrate.

Directions for Floating:

1. Pour freshly mixed **albumen solution** into clean tray.
2. Before placing the paper on the solution, mark the side of the paper you won't be coating (aka the back of the paper) so you know which side is which.
3. Place the paper on the albumen solution, making sure there are no air bubbles underneath the paper. Let it float on the albumen for 3min. (NOTE: you must stay with your print while it is in the albumen solution to make sure the paper is in constant contact with the albumen for the full 3 minutes; the paper will curl!)
4. When removing paper from the albumen, run the piece of paper along the edge of the tray to scrape off any excess albumen.
5. Dry your piece of coated albumen paper with a blow dryer on low heat until it is *completely* dry.
6. Once it's dry, it's ready to be coated in silver nitrate.

Sensitizing The Paper

As with the albumen coating, the paper can be floated in silver nitrate, but that is much more difficult and sloppy. I highly recommend roller-coating the silver nitrate onto the albumen-coated paper.

Supplies:

- darkroom or other well-ventilated room with an amber light (bathrooms are the easiest rooms to convert into a darkroom)
- coated and dried albumen paper
- 15% silver nitrate solution (you can buy this premade at Bostick & Sullivan, or you can make it yourself with powder silver nitrate and water)
- rubber gloves (SILVER NITRATE IS TOXIC AND WILL STAIN YOUR SKIN AND YOUR CLOTHES SO PLEASE BE CAREFUL!)
- clean, flat surface that can get stained (a piece of plexiglass or a hard-plastic placemat is perfect)
- painters' tape
- small painters' tray
- small paint rollers
- blow dryer

Directions:

1. IN THE DARKROOM (or in a well-ventilated room w/ a dim light), pour about 7mL **silver nitrate** in the painters' tray.
2. Tape your albumen-coated paper onto a clean, flat surface. This will be where you coat your paper with silver nitrate.
3. Saturate the paint roller in silver nitrate.
4. "Paint" the piece of albumen-coated paper with silver nitrate until it is completely covered and has a wet shine. Let sit for about 5min, or lightly blow dry on the "cool" setting (HEAT IS BAD!)
5. Once dry, it is ready to be exposed.

Exposing The Paper: Creating the Image

Supplies:

- hinged-back contact printing frame
- large format negative
- UV light (the sun, or a UV lightbox)

Directions:

1. Bring the hinged-back frame and the negative into the darkroom.
2. Place your negative face-down onto the glass of the contact frame. Place your dried, sensitized paper face-down on top of the negative. Close the contact frame backing.
3. Carry your framed negative-and-paper sandwich into the light, with the image pressed against your body (or covered with something), so the image doesn't get pre-exposed to light.
4. Set the contact-frame in UV light. This can be in a shady area or in direct sunlight, outside or through a window, or with a UV lightbox. In direct sunlight with a perfect negative, exposure could take as little as 3min. In the shade, however, exposure will be upwards of 20min.
5. After 3min, remove the image from the sunlight. Since this is a printing-out-process (POP), open one side of the hinge-backed frame to check on the image. A good print (at this point) should be over-exposed by 1-1.5 stops darker than the desired final image.
6. If it needs to be darker, leave it in the sun a bit longer. When the image is properly exposed, take it inside.

Processing The Print

Supplies:

- 2-3 plastic trays (specifically for photography or any plastic/glass tray/baking pan that will hold 1L water & is big enough for your print)
- (optional) gold toning kit (available at Bostick & Sullivan, B&H, etc.)
    - 0.2% gold chloride solution
    - 2% ammonium thiocyanate solution
- sodium thiosulfate hypo crystals
- tongs and/or rubber gloves

Preparation:

1. Fill a tray with running water.
2. (Optional) Fill a second tray with **gold toning solution**:
    a. 50mL 0.2% gold chloride
    b. 50mL 2% ammonium thiocyanate
    c. 1L water
3. Fill a third tray with hypo (4 teaspoons sodium thiosulfate + 1L water).

Processing:

1. Remove albumen print from contact frame. Place print in Tray #1 to wash off any excess silver nitrate – about 5min.
2. Using tongs (or a gloved hand), remove print from water and let the excess water drip off.
3. (OPTIONAL): Place the print in Tray #2. Leave in this toning solution from 5-15min. Move the image back to the running water for a few minutes, just to wash off excess toner.

4. Move image to Tray #3. Agitate continuously for 1-2min.
5. Move image back to running water bath. Leave in running water for at least 10min to ensure that all excess chemicals are removed from the paper.
6. Remove from water and lay on a screen to dry.

NOTE: The image will darken when it's dry, so don't be alarmed by the bleached look of the wet print.

Congratulations, you have an albumen print! If it didn't come out the way you wanted, don't be discouraged! Play around with the process to alter the appearance of your image. Changing the exposure time, changing the density of the negative, using gold toner, exposing the print in direct sunlight vs. overcast or shade, floating the image vs. roller coating, using stronger or weaker silver nitrate, or using different paper will greatly alter your image. Play around with it until you get the results you want. This process has a lot of steps, as you know, and any of them can be altered.

Vandyke Brownprints (1889)

Brown Silver Iron Prints

Laura Michaud, *Boston Distortion,* Vandyke brownprint (on Arches Aquarelle 140lb hot press paper), 2017

Vandyke Brownprints

In the late 1830s, Sir John Herschel, an astronomer, wanted to create a way to copy his notes. In 1841, he began experimenting with ferric ammonium citrate and potassium ferricyanide (iron salts) to create the Cyanotype, which is in the family of Argenotypes (silver iron prints). By 1842, Herschel perfected and published the Cyanotype process, and it became popular for the reproduction of architectural and engineering drawings (aka blueprints), and also for photograms (Anna Atkin's 1843 book *Photographs of British Algae – Cyanotype Impressions* used cyanotypes to create sun-print impressions of plants).

By the end of the century, more Argenotypes became popular, like Kallitypes and Vandyke brownprints. The Vandyke brownprint process is similar to that of Cyanotypes, but yields a different color (Cyanotypes are blue, Vandyke brownprints are brown). Kallitypes, on the other hand, are more similar to the Platinum/Palladium processes.

Vandyke brownprints attained their name because of the brown color of the prints. The brown color reminded many people of the brown color that Flemish Baroque artist Anthony van Dyck used in his paintings, so the name stuck.

NOTE: The Cyanotype (blueprint) process is very similar to the Vandyke brownprint process. Although they use different chemicals, it is the same basic process. If you know how to do one, you can easily do the other.

Notes on the Paper

Before you begin, here is a quick note about the paper. You will need a **100% cotton rag, unbuffered, archival quality, smooth hot-press watercolor paper with a minimum of 47lb rating**. Here are some examples (although there are many other options for Vandyke brownprinting):

- *Arches Aquarelle*
- *Lana Aquarelle*
- *Arches Cream*
- *Arches Platine*
- *Somerset Satin*
- *Strathmore*
- *Moulin du Verger*
- *Rives Velin*
- *Saunders Waterford*
- *Fabriano 5*
- *Fabriano Romano*
- *Fabriano 100%*
- *Buxton*
- *Two Rivers*
- *Whatman*
- *Saunders Waterford*
- *BFK Rives*
- *Bockingford*

These can be found at many art supply stores, and they can be purchased in small 8x10" or 11x17" sheets or large 22x30" sheets. If you buy the large sheets, it's easy to measure the desired paper size and cut/rip the paper to form sheets that are the correct size. Be careful with this though – fingerprints show up on the paper, so try to only touch the edges of the paper.

NOTE: Size Vandyke paper (as well as Cyanotype & Ziatype paper) to be 2-inches larger than the negative you're using. This will allow for a much more even coating, a nice border around the image, visible brushstrokes around the edge, and a small white border (see image on previous page).

You use many materials other than paper for Vandyke brownprints, too. Any kind of fabric or fibrous material will work.

Notes on the Negative

I have read a lot of things that suggest using a negative that is a bit less contrasty than the original image. I have found this to be false. A normal, perfectly exposed negative works quite well. Experiment with different negatives to find the right density, but I recommend using a perfectly exposed negative first, and adjusting from there.

To reiterate: **Vandyke prints are sensitive to UV light only! Coating may be done in any lighting situation, although prolonged exposure to fluorescent light will cause fogging.**

Making The Vandyke Solution

Vandyke Printing Solution can be bought at Bostick & Sullivan B&H, and many other photographic suppliers, but if you want to create your own solution, here are the instructions. If you opt for the premade solution, skip to "Coating the Paper."

Supplies:

- ferric ammonium citrate (green)
- silver nitrate powder
- tartaric acid powder
- 3 graduated cylinders or measuring cups
- 3 bowls
- stirring rod
- eye dropper
- jar or glass bottle, for storing Vandyke solution

Directions:

1. Mix 35mL distilled water with **10g ferric ammonium citrate**. Stir until dissolved (this will be Solution A).
2. Mix 35mL distilled water with **2g tartaric acid powder**. Stir until dissolved (this will be Solution B).
3. Mix 35mL distilled water with **4g silver nitrate**. Stir until dissolved (this will be Solution C).
4. Combine Solution A and Solution B. Mix thoroughly.
5. Gradually add, a few drops at a time, Solution C to the mixture, mixing constantly.
6. Once all three solutions are mixed, you have Vandyke Solution. Put it in a jar or glass bottle – it will last for months.

Coating The Paper

Supplies:

- paper for coating
- Vandyke solution
- soft-bristle brush (hake brush) or coating rod
- distilled water
- paper towel
- eye dropper
- small cup (a shot glass or a small container)

Directions:

1. Work on a flat surface that can get messy, or cover your work area with newspapers.
2. Mark the size of your desired image on your sized paper.
3. Tape your paper onto your work space (onto the newspaper).
4. Using a dropper, count the proper number of drops of Vandyke solution into a small cup/shot glass (20 drops was perfect for my 8x8 image size/paper, but it varies depending on the paper):

12 drops for 4x5" image	24 drops for 6x9" image
18 drops for 5x7" image	40 drops for 8x10" image

5. Wet your brush with distilled water and remove the excess water with a paper towel.
6. Pour the measured Vandyke solution onto the center of your paper. Spread the solution with the wet brush in a horizontal direction until the entire area is covered. Then switch to vertical strokes. Keep switching until the chemistry is evenly coated onto the paper.
7. Put your paper in a dark place and let dry for 1 hour, or blow dry on low heat.

Exposing Your Image

Supplies:

- large format negative
- coated Vandyke paper
- contact-printing frame
- UV light (the sun or a UV lightbox)

Directions:

1. Once your paper is dry, you are ready to expose.
2. Get your contact frame & negative. Place your negative face down onto the glass. Then place your paper on top of the negative, with the coated side touching the negative. Secure hinged back on frame.

3. Hold the contact frame with the image pressed against your body (or cover the image area with something dark) to prevent fogging of the image. Bring contact frame into UV light (shade or direct sunlight, outside or inside) and expose your image.
4. This is a printing-out-process (POP), so the image will darken noticeably after 3 minutes. At this point, take the frame out of the light. Open one side of the hinged-back frame and check if it is exposed enough – you want your image to be ½ as dark as the final desired tone, as washing, fixing, and drying your print will darken the image. Once it is at this point, remove it from the light. (In direct sunlight with a perfect negative, exposure could take as little as 3min. In the shade, however, exposure will be upwards of 20min).

Processing Your Print

Supplies:

- 3 plastic trays (specifically for photography or any plastic/glass tray/baking pan that will hold 1L water and big enough for your print)
- sodium thiosulfate hypo crystals
- running water
- tongs and/or rubber gloves
- towel or screen for drying print

Preparation:

1. Fill a tray with warm water.
2. Fill a second tray with 4 teaspoons Sodium Thiosulfate & 1 liter water (aka hypo).
3. Fill a third tray with running water.

Processing:

1. Place print in Tray #1 and agitate continuously for 3-5 mins.
2. Using tongs (or a gloved hand), remove print from water and let the excess water drip off. Place the print in Tray #2. Agitate continuously for 5 minutes. (NOTE: Over-fixing will bleach the image. Under-fixing will cause the image to remain light-sensitive). The image will be ¾ as dark as the final image.
3. Move the image to Tray #3. Make sure the running water is flowing evenly over the image. Leave in water for 30 minutes.
4. Remove image from water and either hang from a clothesline or place on a dry surface to dry.

Congratulations! You have a beautiful Vandyke Brownprint! If you are happy with the results, great! Keep going! If you're not, don't be discouraged. There are many things that can alter the appearance of your print, and experimentation is great. Try different papers, different brushes, different negatives (different densities), different amounts of light, using direct sunlight vs. shade or overcast, using artificial UV light, or toning the image with gold toner. This is an art form, and there is no right or wrong, so play around with it until you get the results you want!

The Ziatype (1995)

Humidified Lithium/Palladium Salt Prints

Laura Michaud, *Zig Zagged Horizon*, Ziatype (on Arches Aquarelle 140lb hot press paper), 2017

The Ziatype

Photographic experiments with platinum salts had begun as early as 1831 by Sir John Herschel. In 1872, William Willis, a British inventor, experimented with potassium chloroplatinite and ferric oxalate. When exposed to UV light, ferric oxalate is reduced to ferrous oxalate. By developing the sensitized and exposed plate in a heated potassium oxalate developer, the ferrous oxalate became soluble, and the platinum salt was reduced to platinum metal. In 1873, this Platinum Process was patented, but it wasn't very successful. By 1879, however, Willis improved the process and the first commercial platinum paper enterprise was created: The Plainotype Company. In 1892, Willis created a cold developing process, which immediately made the platinum process less difficult and more accessible. These prints are known as Platinum/Palladium prints, or Plainotypes.

In the 1880s, Captain Giuseppe Pizzighelli and Baron Arthur Von Hübl expanded upon and modified Willis' work. They created a sensitizer that included sodium (or ammonium) ferric oxalate rather than ferric oxalate. Humidifying the paper before exposure created a printing-out effect, and eliminated the need for a developer. In this process, the platinum salt in the sensitizer was reduced to metallic platinum during exposure, rather than during development. After exposure, the print is washed in water, then a solution of citric acid and water, and then water again. Pizzighelli commercially produced his Pizzitype printing papers, but because of several manufacturing problems and its short shelf life, the process became obsolete.

In the 1980s, Dick Sullivan (of Bostick & Sullivan) experimented with Pizzighelli and Willis' processes, and in 1995, came up with a process that combined the two. He confirmed that if a paper was coated in palladium salt & ammonium ferric oxalate, humidified, and exposed, the image would appear ("print-out") during exposure. While experimenting with humidity and double-palladium salts, he discovered that a printed-out image would appear when using lithium salt. This process, known as the Ziatype, is a bit easier than the traditional Platinum/Palladium process, as it allows for more control over and flexibility with the images, it's a printing-out process (like Albumen & Vandyke brownprints), and a wider variety of papers can be used.

Notes on the Paper

You will need a **100% cotton rag, unbuffered, archival quality hot press watercolor paper with a minimum of 47lb rating**. Here are some examples:

- *Arches Aquarelle*
- *Lana Aquarelle*
- *Arches Platine*
- *Somerset Satin*
- *Rives Velin*
- *Saunders Waterford*
- *Fabriano 5*
- *Fabriano Romano*
- *Fabriano 100%*
- *Buxton*
- *Two Rivers*
- *Whatman*
- *Saunders Waterford*
- *BFK Rives*
- *Bockingford*

These can be found at many art supply stores, and they can be purchased in small 8x10" or 11x17" sheets or large 22x30" sheets. If you buy the large sheets, it's easy to measure the desired paper size and cut/rip the paper to form sheets that are the correct size.

Another note: Size Ziatype paper (as well as any other brush-coating methods) to be 2-inches larger than the negative you're using. This will allow for a much more even coating, a nice border around the image, visible brushstrokes around the edge, and a small white border (see image on previous page).

Preparing Your Darkroom

Coating and processing Ziatypes must be done in a darkroom (or dimly-lit room) at about 50-65% humidity. This can be easily achieved whether you are using a conventional darkroom or in a dimly-lit bathroom (bathrooms are the easiest room to turn into a darkroom). In both situations, you need either a humidifier or a dehumidifier (depending on the time of year and your location) that has a humidity gauge. If you're using a bathroom, turning on the shower will increase the humidity quite rapidly.

Coating The Paper

Supplies:

- paper for coating
- Ziatype kit from Bostick & Sullivan:
    - Ferric ammonium oxalate solution
    - Lithium palladium solution
    - Ammonium dichromate solution (optional)
    - Sodium tungstate solution (optional)
    - 2-4 eyedroppers (one for each solution)
- coating rod or soft-bristle brush (hake brush)
- small bowl/cup/shot glass
- masking tape

Directions:

1. IN THE DARKROOM (or in a well-ventilated, dimly-lit room), cover your work area with newspapers, or work on a surface that can get messy.
2. Mark the size of your desired image on your sized paper.
3. Tape your paper onto your work space (onto the newspaper).
4. Using an eyedropper, count the proper number of drops of **ferric ammonium oxalate solution** (appx. 15 drops for an 8x10" image) into a small cup/shot glass:
5. (OPTIONAL) if you want a warm sepia tone, add 1-3 drops of **sodium tungstate solution**. Without this, you will have a neutral grey print.
6. Using another eyedropper, add an equal number of drops (appx. 15 drops for an 8x10" image) of **lithium palladium solution**.
7. Wet your brush with distilled water and remove the excess water with a paper towel.
8. Pour the solution onto the center of the paper. Spread the solution with a brush in a horizontal direction until the entire area is covered, then switch to vertical strokes. Keep switching until the chemistry is evenly coated onto the paper.

8. Let paper sit for 2-3min.
9. Blow dry paper on cool setting for appx. 1min until the paper is *completely* dry.

Exposing Your Image

Supplies:

- large format negative
- contact-printing frame
- UV light (the sun or a UV lightbox)

Directions:

1. Once your paper is dry, you are ready to expose.
2. Get your contact frame. Place your negative face down onto the glass. Then, place your paper on top of the negative, with the coated side touching the negative. Secure hinged back on frame.
3. Hold the contact frame with the image pressed against your body (or just cover the image with something dark) to prevent fogging of the image. Bring contact frame into UV light (shade or direct sunlight, outside or inside) and expose your image.
4. The image will darken noticeably after about 3 minutes, since it is a printing-out-process (POP). At this point, take the frame out of the light. Open one-half of the hinged back and check if the print is exposed enough – the image is done once it has achieved proper exposure. Unlike Vandyke brown and Albumen prints, the Ziatype doesn't change densities during processing or drying. The highlights will be yellow until the images is processed, though. (In direct sunlight with a perfect negative, exposure could take as little as 3min. In the shade, however, exposure will be upwards of 20min).
5. Once the image looks correct, remove it from UV light.

Processing The Print

Supplies:

- 2 trays (specifically for photography or any plastic/glass tray/baking pan that will hold 1L water and is big enough for your image)
- 1Tbs citric acid
- running water
- screen or towel for drying print

Preparation:

1. Fill a tray with running water.
2. Fill a second tray with 1L warm water + 1Tbs citric acid (a clearing agent).

Processing:

1. Remove Ziatype from contact frame. Place print in Tray #1 to wash off excess chemistry – about 4-5min.
2. Remove print from water and let the excess water drip off. Place the print in Tray #2. Leave in clearing agent for 5min. Agitate occasionally.
3. Remove print from clearing agent, letting excess liquid drip off print, and place in Tray #1 for 20min.
4. Remove from water and lay on a screen or towel to dry, or blow dry on a cool setting.

Congratulations! You now have a Ziatype! It may not look exactly how you want it to, but that's ok! There is a lot that can be altered in this process, including the amount of humidity, the amount of solution on the paper, the addition of sodium tungstate (to make the image warmer), exposing the print in shade or overcast vs. direct sunlight, different exposure times, using negatives of different densities, and the amount of time that the image is left in the water/citric acid solution. Play around with the process until you get the results you're looking for!

Conclusion

Congrats! You've made it to the end of the book, and hopefully created some successful images, learned about the history of photography, and have a greater understanding of photography as a science as well as an art.

As I've said after each section, if you're not happy with your initial results – or even if you are – experiment with these processes. Although these processes are scientific, photography is an art, and there is no one correct way to doing these processes. Look around online for other variations and make changes yourself – the worst thing that can happen is you ruin a print, and you can always make another one! There are many books, websites, and videos that will give other variations of these processes, and it won't hurt to check them out! Improvising can be used in these alt processes, so don't be afraid to experiment and try new things!

Take your time with each of the processes and explore all the possibilities that each process has to offer. They're all unique and have many variations, and they will be a lot of fun if you take your time with them, and don't get overwhelmed with the directions and supplies lists. As I've said, there are a lot of variations in these processes, and nothing is concrete. If you don't have access to all the supplies, don't be afraid to improvise!

Resources & References

All supplies mentioned in this book can be found at:

- B&H Photo & Video (https://www.bhphotovideo.com/)
- Bostick & Sullivan (https://www.bostick-sullivan.com/)
- Freestyle Photographic Supplies (http://www.freestylephoto.biz/)
- Photographer's Formulary (http://stores.photoformulary.com/alt-process/)
- Artcraft Chemicals (http://www.artcraftchemicals.com/products/)
- Jerry's Artarama (http://www.jerrysartarama.com/)
- Hunt's Photo & Video (http://www.huntsphotoandvideo.com/)
- The Home Depot (http://www.homedepot.com/)
- any other art supply store (for paper, brushes, etc.)
- any grocery store, CVS, Benny's, etc. (for basic supplies like cheesecloth, distilled water, trays, etc.)

Information from:

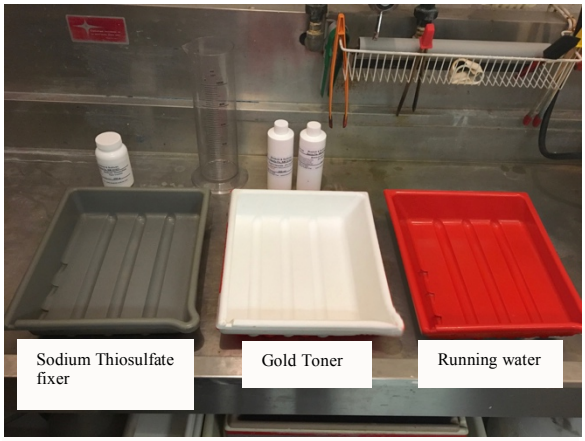
- Zoey Stites' ART 213 & 314 (Darkroom I & II) at the University of Rhode Island
- Ron Onorato's ART 365 (History of Photography) at the University of Rhode Island
- Jill Enfield's lecture at the University of Rhode Island, Kingston. 15 Feb. 2017.
- Bostick & Sullivan (https://www.bostick-sullivan.com/)
- AlternativeProcessPhotography.com (http://www.alternativephotography.com/)
- Hirsch, Robert. *Seizing the Light: A History of Photography.* New York: McGraw Hill, 2007. Print.
- James, Christopher. *The Book of Alternative Photographic Processes.* 2nd ed. Boston: Cengage Learning, 2007. Print.
- Webb, Randall, and Martin Reed. *Alternative Photographic Processes: A Working Guide for Image Makers*. Rochester, NY: Silver Pixel, 2000. Print.

Images from:

- (**fig.1**) Godward, Frederic. "If You're Making Camera Obscura, This Is What You Need to Know." *WideWalls.* (http://www.widewalls.ch/making-camera-obscura-history-vermeer/)
- (**fig.2**) "Camera Obscura." *Abelardo Morell.* (http://www.abelardomorell.net/project/camera-obscura/)
- (**fig.3**) Brown, Barbara. "The First Photograph." *[CoOL]*. Abbey Newsletter (http://cool.conservation-us.org/byorg/abbey/an/an26/an26-3/an26-307.html)

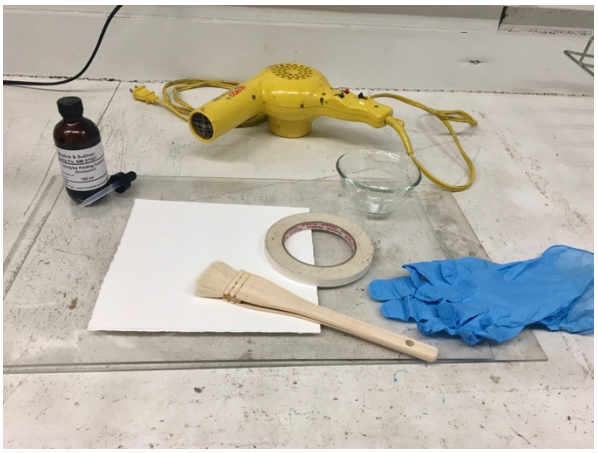
The Albumen Process Setup

The chemicals & supplies

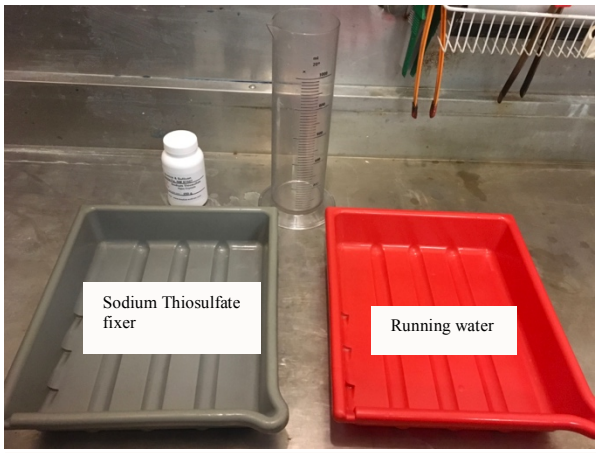


Processing the print

The Vandyke Brownprint Setup

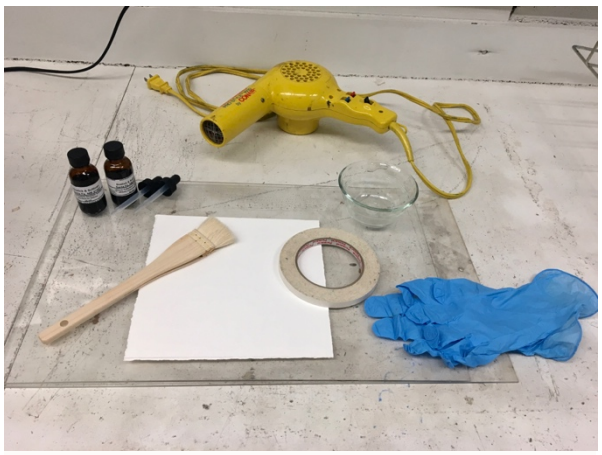


The chemicals & supplies

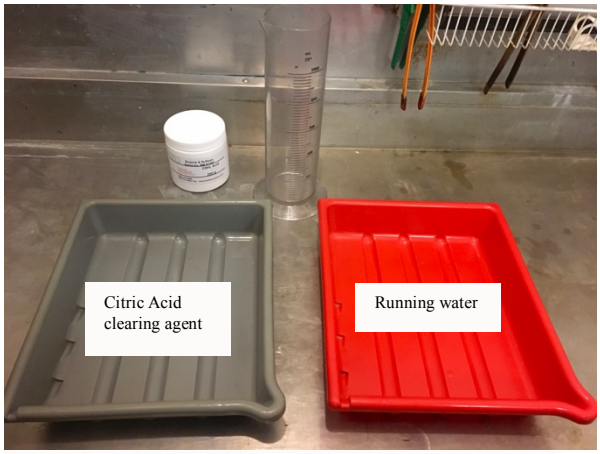


Processing the print

The Ziatype Setup



The chemicals & supplies



Processing the print