Soil; types and tones

An early investigation

Findings

Institute for
Post-Anthropocentric
Ecology

IFPAE

The Institute for Post-Anthropocentric Ecology is an art-research group focused on the investigation, examination, and experimentation of frameworks, idealogies, and relationships, towards and with life and habitat.

This pamphlet was published as part of the “Alternative Photography Series”, which is an exploration of alternative, experimental, and sustainable, photographic darkroom, printing, development, and image capture practices.

As always, the IFPAE is a collaborative organization. If you have any comments, questions, or ideas, don’t hesitate to, reach out!

Intro-duction

This experiment was published as a means of exploring methods of printing and toning using soil, based on the principles of salt prints, soil chromatography, and anthotypes.

The hope was to build off of the salt print process to combine the two, investigating the ideas of non-site and abstraction present in contemporary photography, while building a familial relationship between the soil type and the anthotype.

These tests were heavily informed by Eleanor (Ellie) D. Young's work with salt prints, as well as Dr. Kristoff Vrancken's theories of anthotypes, abstraction, and place.

Cont-ents

Salt Prints

Salt prints are today considered an alternative photographic process, but they are on of the original printing methods.

First, a paper is salted by coating with a 2% NaCl (salt) solution. In this case, 20g of NaCl was added to 1l of water collected from Bear Creek (39°40’1”N 105°5’7”W). Salt-water from significant sites has also been known to be effective, or, for purists, NaCL and distilled H2O.

After being allowed to dry, the paper is ready for sensitization. A solution of AgNO3 (silver nitrate) is applied. For this investigation, two strengths were used, 0.5%, which is the strength for standard soil chromatography, and 12%, which is the strength for standard salt printing. Both solutions were applied with a glass rod.

Again, water from Bear Creek was used for the solutions. This step should be done in a dark space, ideally with safelights.

After sensitization (and drying again), prints are ready for exposure. A direct-contact method was used, wherein a negative (or digital negative) is placed directly on the sensitized paper, and then exposed.

The print is then ready to be washed, for 2 minutes in a 5% NaCl solution, and fixed for 5 minutes, in a 10% Sodium Thiosulfate solution. It is now ready to be rinsed, in only water, for 5-10 minutes.

Regarding exposure: A Mercury Exposure Unit (MEU) was used for these tests, but is ultimately unnecessary and may contribute to user overdevelopment. Sunlight is ideal.

Soil Chromatography

Soil Chromatography is a method of qualitative soil analysis, which allows for a home-gardener, or peasant-farmer, the ability to test their soil cheaply and easily, reducing reliance on corporate testing labs.

A soil sample is collected, and then 5g are mixed with 5g of NaOH (sodium hydroxide) and 100ml of H2O. The NaOH breaks down organic material (gets warm!), and allows for filtration by capillary action. As with the salt printing formulas, water from Bear Creek was used for all soil chromatography formulas. After about 6 hours, the soil solution is broken down enough for filtration.

The AgNO3 solution should also be mixed, using 0.5g AgNO3 to 100ml H2O, again, from Bear Creek.

The filter paper must also be prepared, by poking a hole in the middle of the paper, and by making a mark at 1 1/2” and 2” away, at right angles, from the hole. Extra paper should be torn into strips, and rolled, to create wicks.

3-5ml of AgNO3 solution should be placed in a petri dish, the wick stuck through the filter, and allowed to absorb until the 1 1/2” mark. Again, this step should be done in low light conditions.

Once done, the wick should be remade, and the process repeated with the soil solution, until the 2” mark, at which point it can be dried and exposed in indirect sunlight until vibrant.

Materials

15cm square filter paper

15cm square digital negatives

Sodium Thiosulfate

$AgNO_3$

NaCL

NaOH

Soil (39°40’1”N 105°5’7”W)

Water (39°40’1”N 105°5’7”W)

Formulas

2% NaCL Coat

12% $AgNO_3$ Developer

0.5% $AgNO_3$ Developer

5% NaCL Wash

10% Sodium Thiosulfate Fix

5% NaOH:5g Soil Prep

Equip-ment

Mercury Exposure Unit

Amber Jars, 4

Beakers, 2

Scale

Droppers

Masking Tape

Petri Dishes

Drying Rack

Graduated Cylinders (50-500ml)

Measuring Cups (500ml-1000ml)

Glass Stir Rod

Plexiglass

Trays

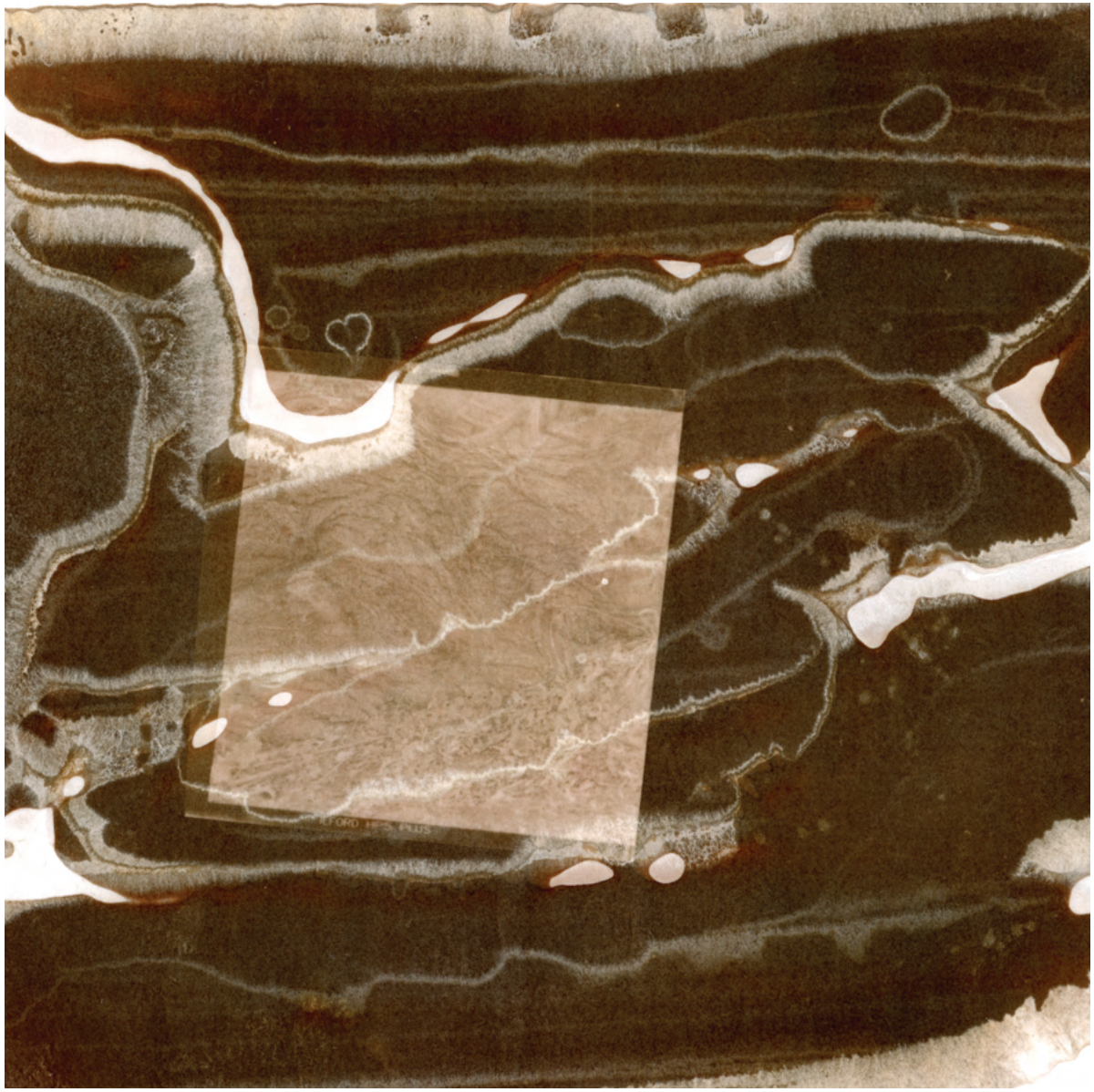
Test Prints

Test prints were deemed necessary for this project, and acted as a tool for familiarization with the salt printing process, as well as the exposure times required.

Three test prints are reproduced (read, scanned and printed) here. One print is a combination soil chromatograph/salt print that acted as a proof of concept, and the other two demonstrate differences in exposure times.

10 min-utes

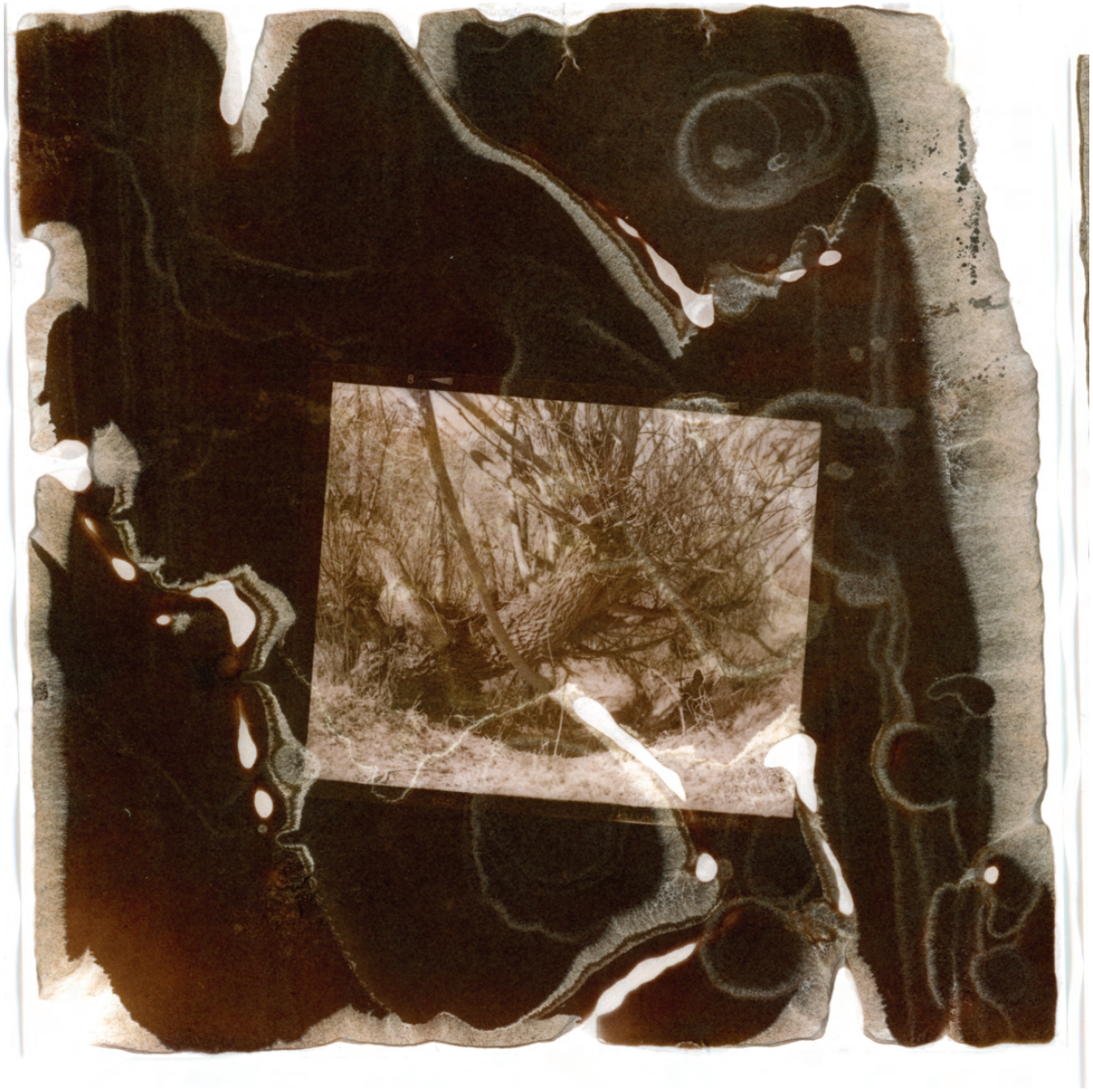
This test print was printed with a direct-contact method, where the negatives were placed in direct contact with the filter paper. Capillary action was used to imbue the bottom of the filter paper with soil; however, the soil/NaOH solution removed portions of the film emulsion!



15 min-utes

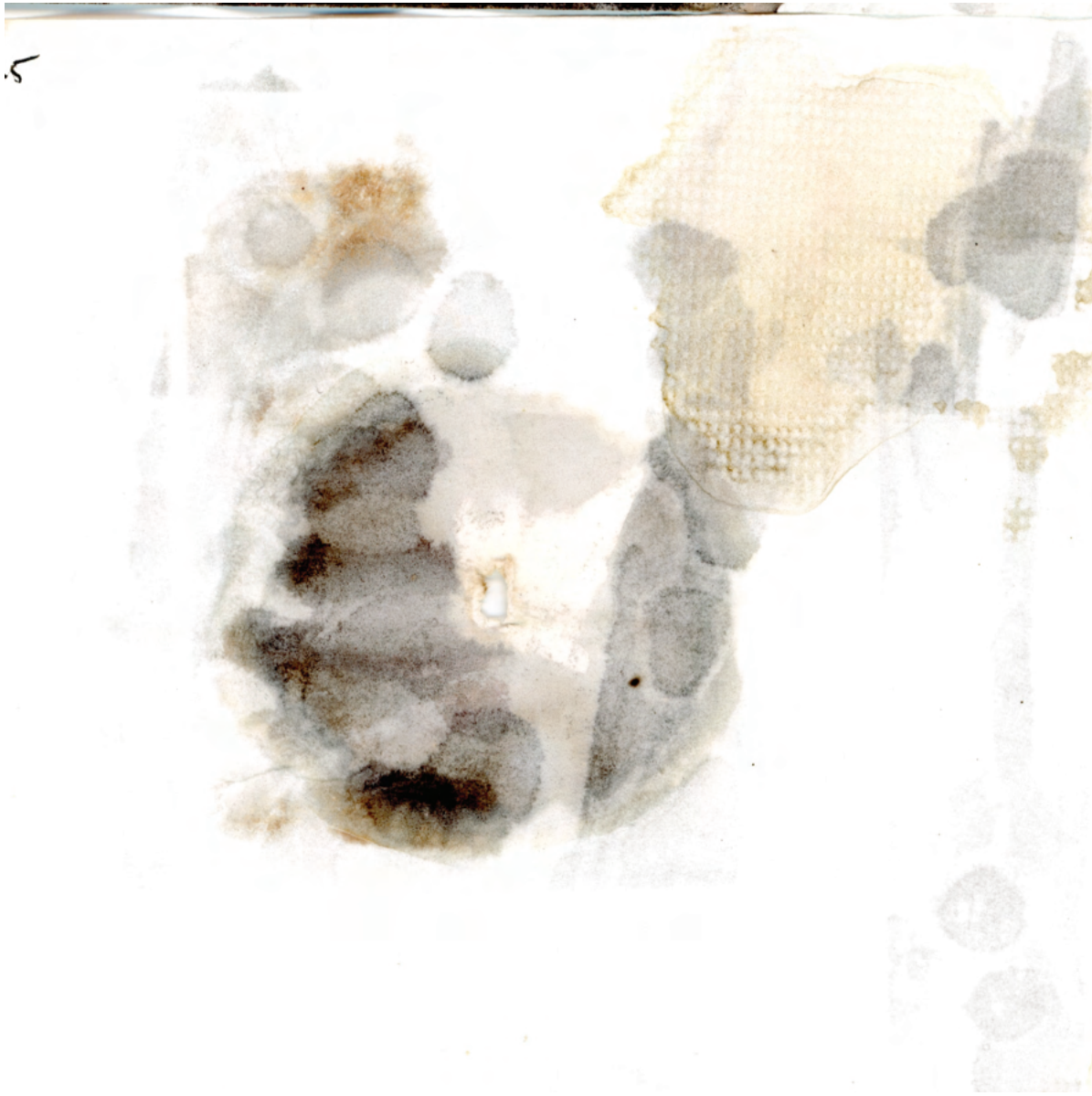
This is an example of a pure salt print, also using a di-rect-contact printing method. Note the inconsis-tancies in both NaCL and AgNO3 application! More on that later.

25 min-utes



The 15 minute print didn’t result in an acceptable level of detail or contrast; 25 minutes solved that issue.

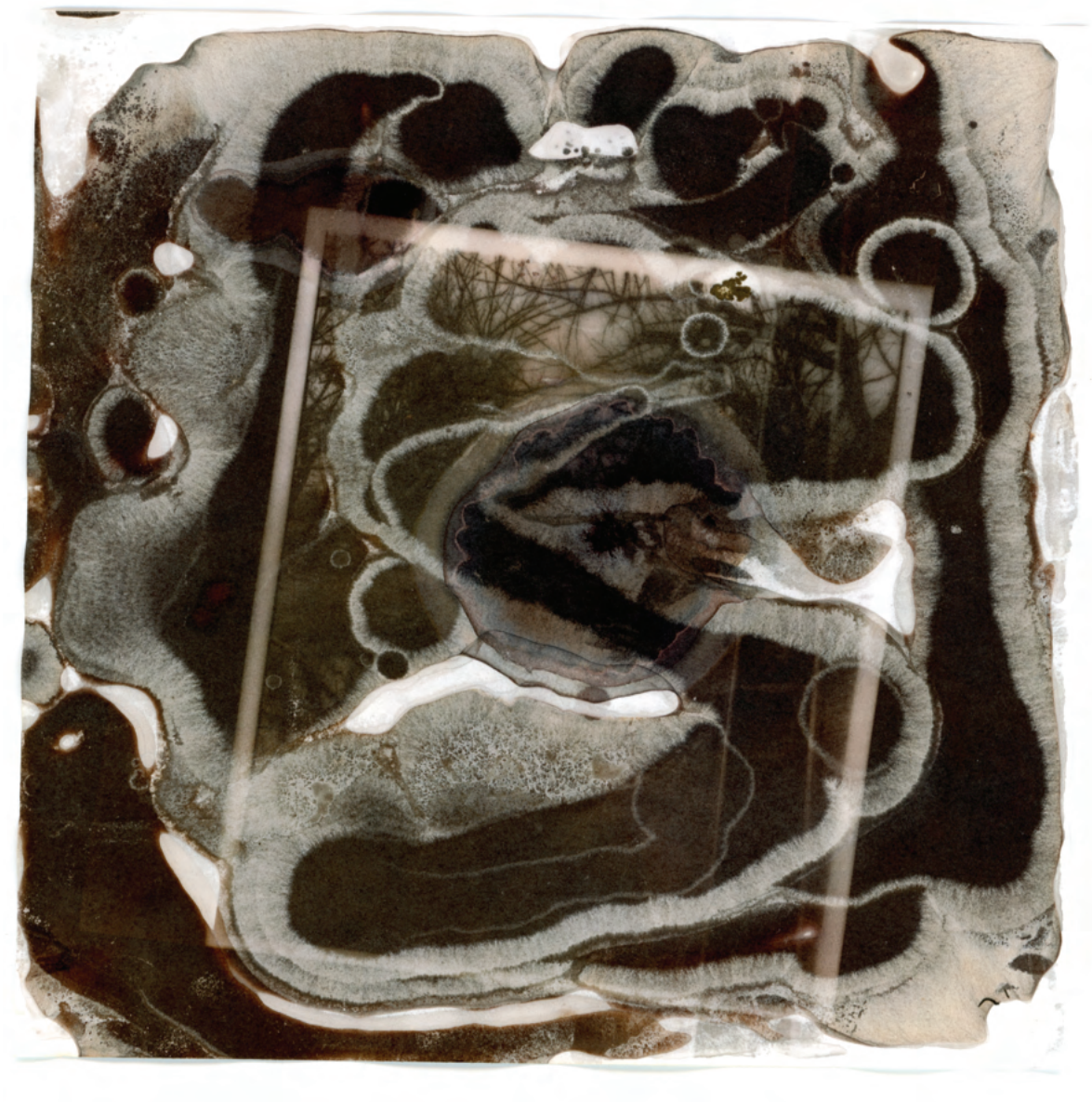
0.5% AgNO3, Wick, 25 Minutes



This is the first of the 0.5% AgNO3 prints, using the standard wick method for chromatography. This print used a digital negative, and lacks any real evidence of printing, but does show development around the chromatographic circle.

0.5% AgNO3, Cap, 25 Minutes

This is a 0.5% AgNO3 prints, using the capillary method for chromatography. This print used a digital negative, as before, and only exhibits development where the soil solution came into contact with the AgNO3.



12% AgNO3, Wick, 25 Minutes

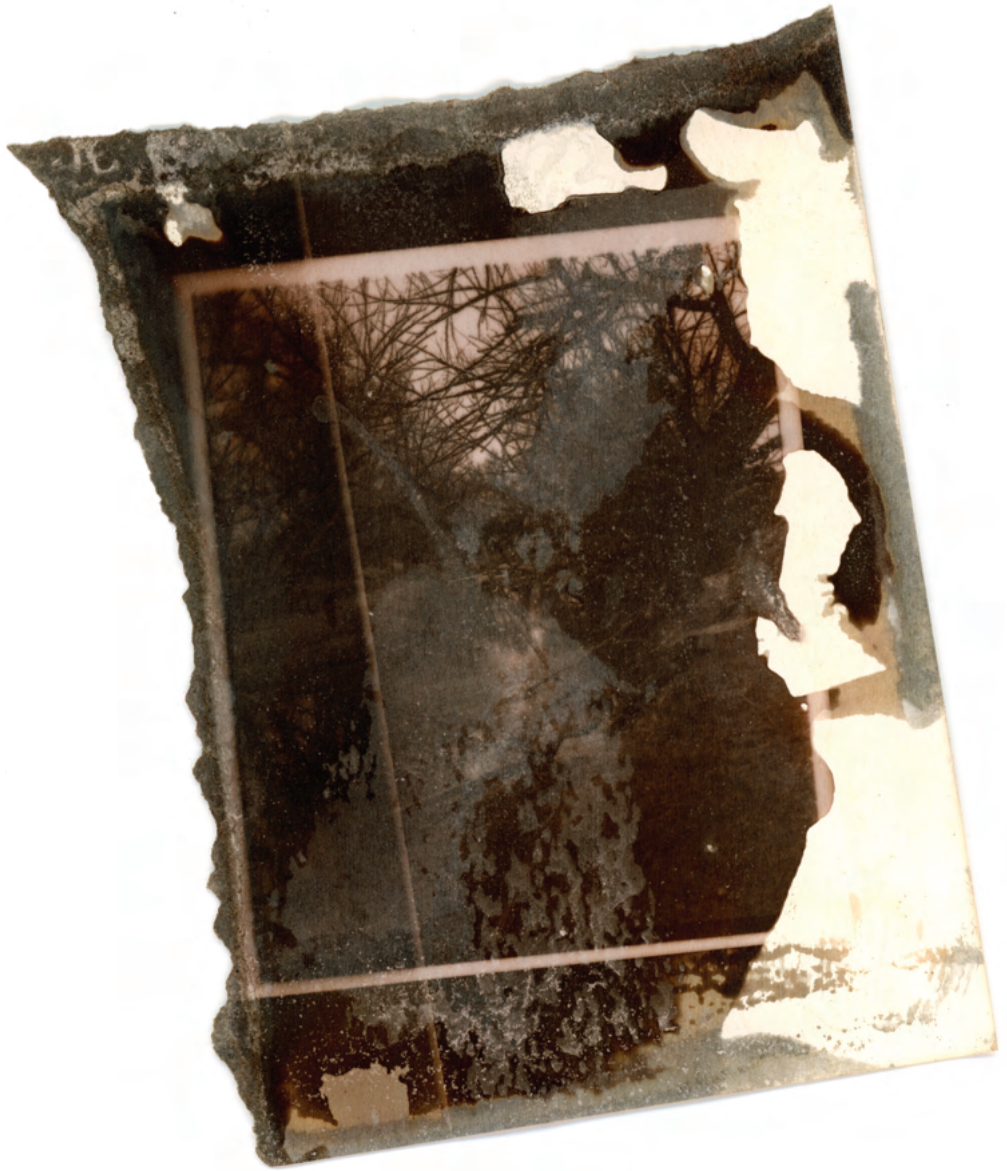
Progress! Again, this print used the standard wick method, but with a much higher AgNO3 solution. This print is overdeveloped, but both the soil chromato-graph and the contact print are visibile.

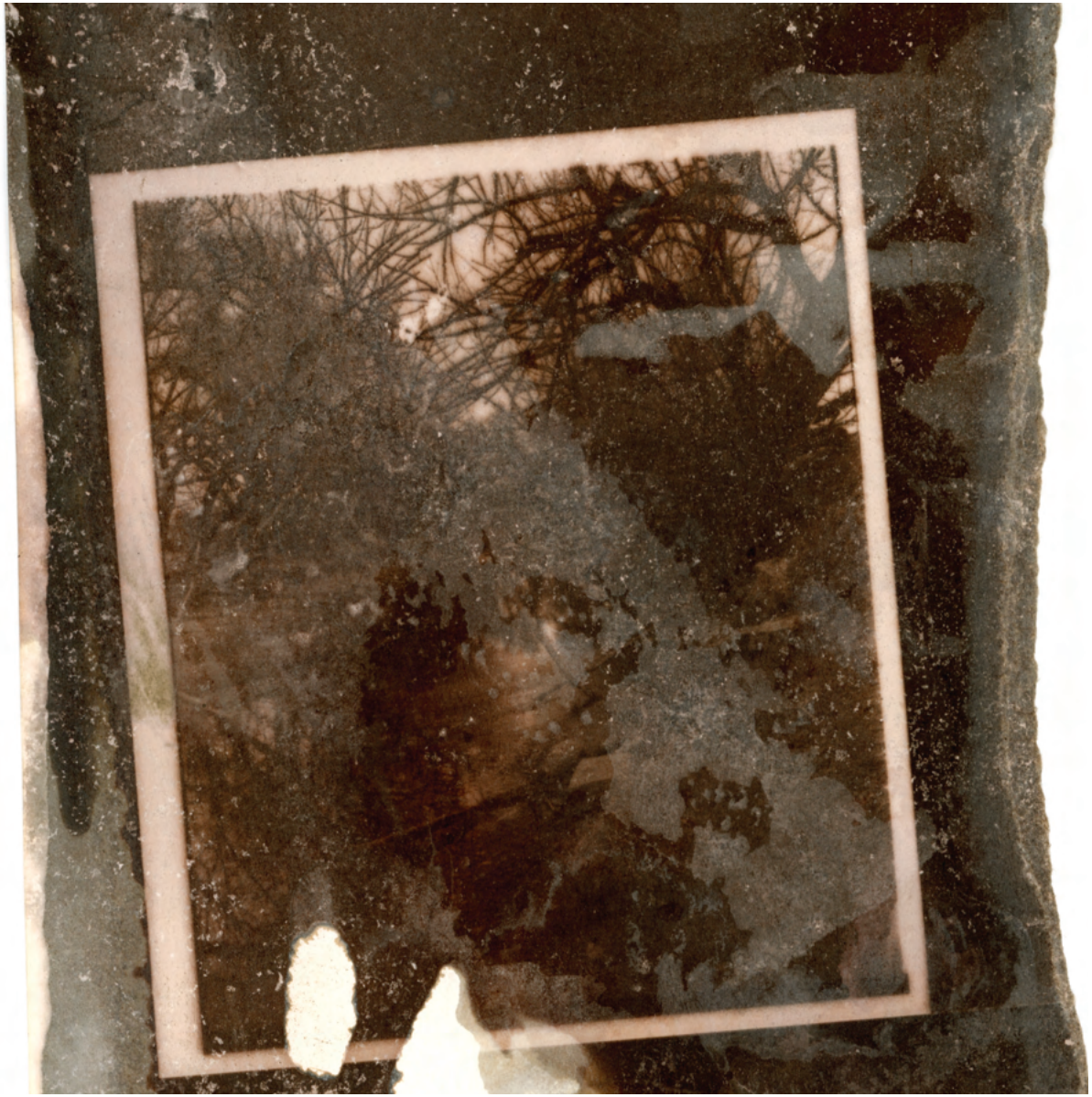
12% AgNO3, Cap, 20 Minutes

This was a particularly pleasing results, being reminescent of soil stratification, however difficulties soon presented themselves, and the print was still overdeveloped.

12% $AgNO_3$, Tone, 20 Minutes

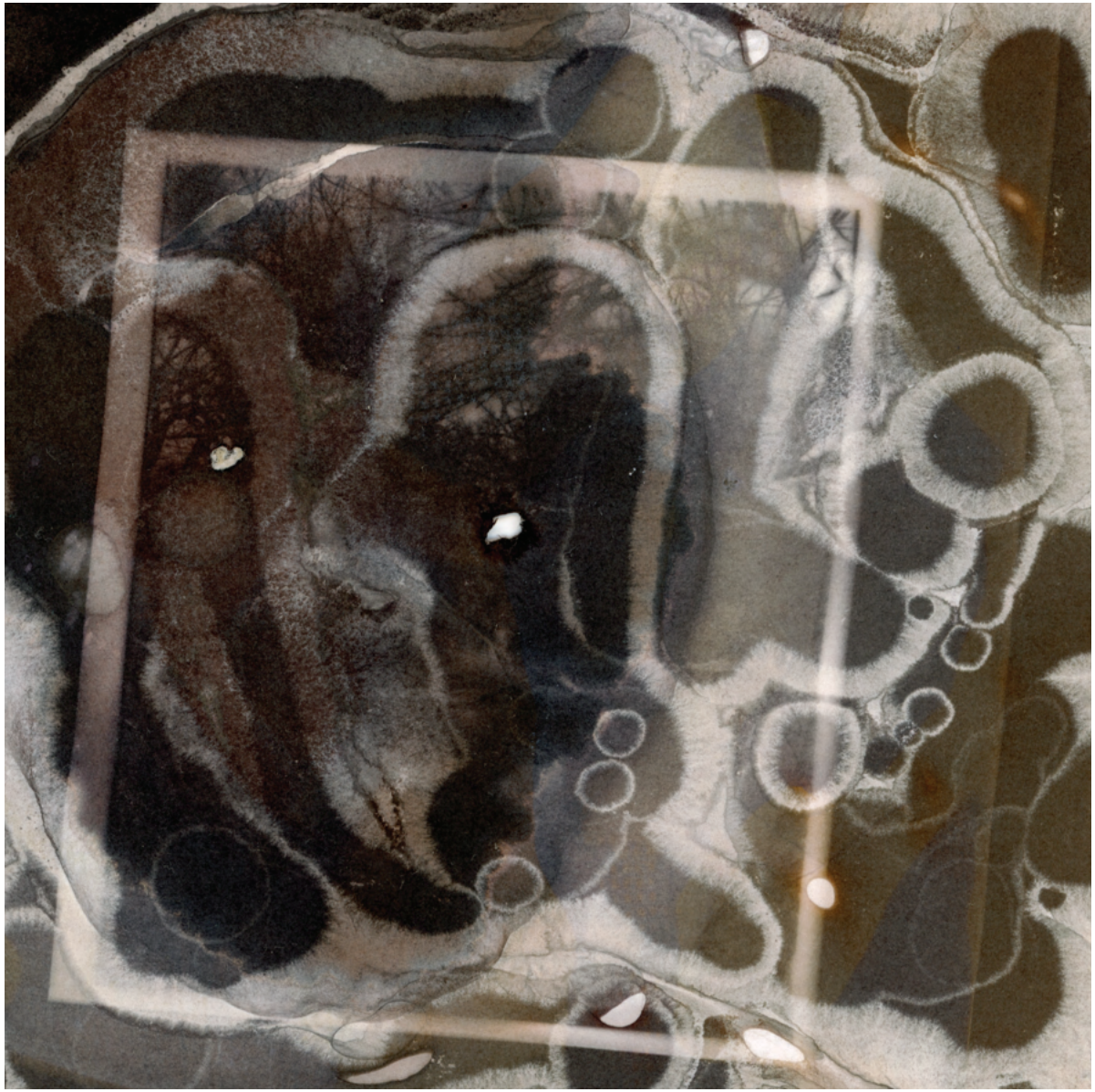
For this example, a salt print was exposed, washed, and then toned in the soil/NaOH solution before being fixed. Again, it seems as if the soil is acting as an accelerant for the development process. Noteably, watercolor paper was used.





12% AgNO3, Tone, 15 Minutes

Responding to the questions of development acceleration, this print was exposed at the minimum time of the test prints, washed, fixed, and then toned with the soil/NaOH solution. Again, watercolor paper was used as the base.



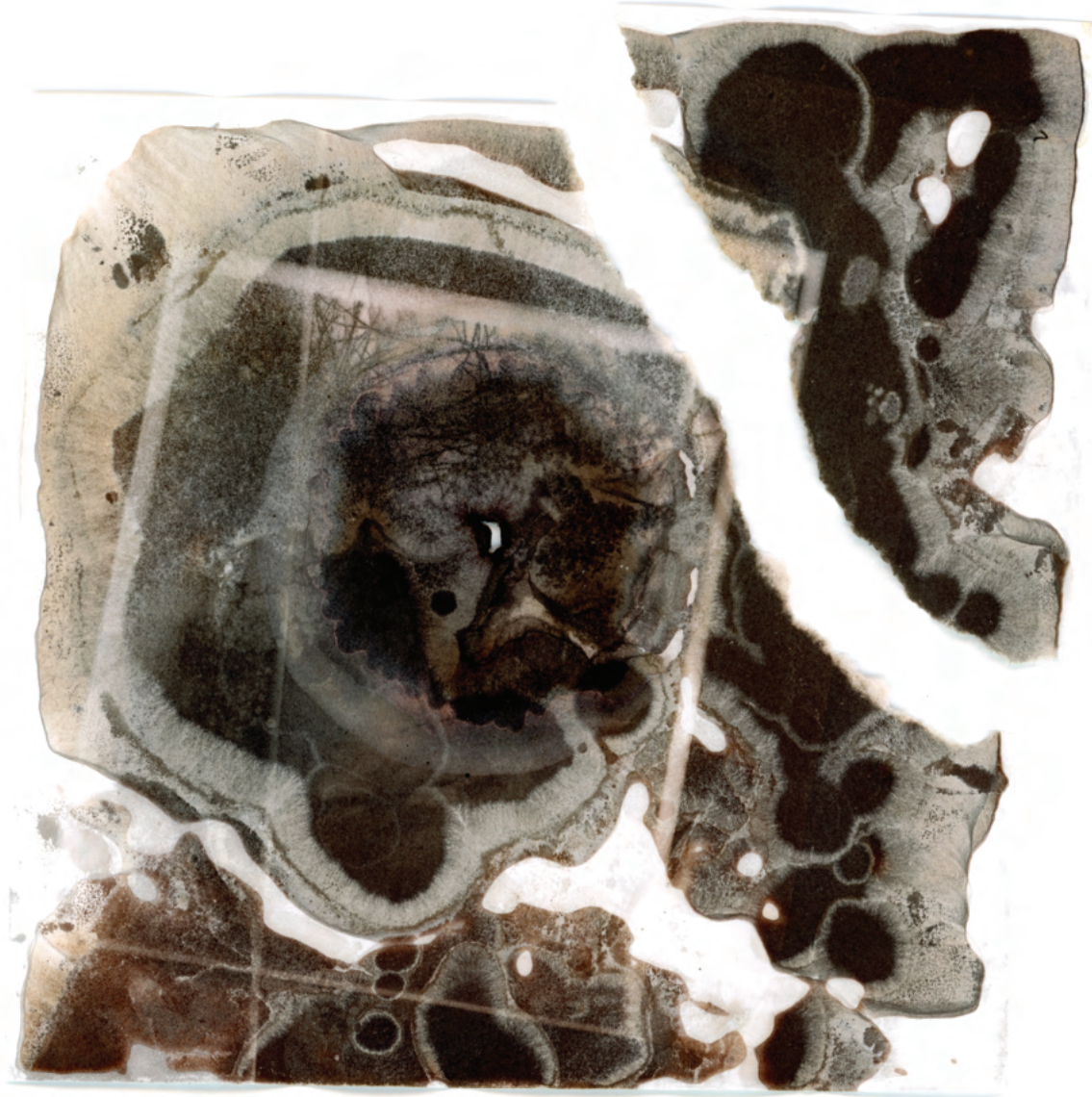
Chall-enges

Uneven coating and inconsistent development times plagued this investigation.

Due to the capillary action of the filter paper (a desireable quality for chromatography), a visibly even coating of NaCL and AgNO3 was not enough to ensure an even print.

Looks neat though!

Fragile!



The filter paper needed to be washed, fixed, and rinsed with extreme care. Allowing any portion of the paper to touch itself, or it's neighbor, resulted in tears (and tears).

Discussion

While the IFPAE is hesitant to call this investigation probable, there is no hesitation in stating that it is promising. It should be recognized, however, that salt prints are an art form all their own, and combining them with the fragile filter papers and inconsistencies of the soil/NaOH solution, result in a process that is difficult to nail down at best, and certainly requires further research.

Two processes have evolved here, soil-types, or the combination salt print/soil chromatograph, and soil-toned salt prints, or soil-tones. Each are worthy of more exploration in their own rights.

That said, there exists possibilites for meaning to be attributed, as well as engagement with a place in a way that is less abstracted than contemporary landscape photography.

A basic familiarity with each darkroom and lab techniques has been assumed, but as this investigation is still in it's infancy, overly prescriptive procedures are unfit.

Rather, loose guidelines are provided, and further experimentation is highly encouraged.

This literature exists primarily as proof of concept, and to aide later researchers by detailing lessons learned.

Soil-types

1	Salt paper
2	Dry
3	Sensitize
4	Dry
5	Soil Chromatography
6	Print Exposed
7	2 Minute Wash
8	5 Minute Fix
9	5-10 Minute Rinse
10	Dry

Soil-tones

1	Salt paper
2	Dry
3	Sensitize
4	Dry
5	Print Exposed
6	2 Minute Wash
7	Soil Chromatography
8	5 Minute Fix
9	5-10 Minute Rinse
10	Dry

Questions?

Reach out!

Like this pamphlet?
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Knowledge is for all.

For salt prints: The Salt Print, Ellie Young
For soil chromatography: Chromatography Applied to Soil Testing, E. Pfieffer

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