


Spring 2020

The Photogram Now and Then: An Investigation of Contemporary Photogram Practice

Susan Melissa Andreas
Bard College

Follow this and additional works at: https://digitalcommons.bard.edu/senproj_s2020

 Part of the [Contemporary Art Commons](#), [Modern Art and Architecture Commons](#), and the [Photography Commons](#)



This work is licensed under a [Creative Commons Attribution-NonCommercial-No Derivative Works 4.0 License](#).

Recommended Citation

Andreas, Susan Melissa, "The Photogram Now and Then: An Investigation of Contemporary Photogram Practice" (2020). *Senior Projects Spring 2020*. 159.
https://digitalcommons.bard.edu/senproj_s2020/159

This Open Access work is protected by copyright and/or related rights. It has been provided to you by Bard College's Stevenson Library with permission from the rights-holder(s). You are free to use this work in any way that is permitted by the copyright and related rights. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself. For more information, please contact digitalcommons@bard.edu.

The Photogram Now and Then: An Investigation of Contemporary Photogram Practice

Senior Project Submitted to
The Division of the Arts
of Bard College

by
Susan Andreas

Annandale-on-Hudson, New York
May 2020

Acknowledgements

I would like to thank:

Laurie Dahlberg, for supporting me throughout the year. Without your guidance, this project would not have been possible.

Jane Smith, for preparing me for this process. I appreciate everything you have taught me.

My parents, for all of the love and support. Thank you for always believing in me.

My siblings, Liz, Mel, and Scott, for always being there for me.

My teammates past and present, for being my second family.

Abigail Stanley, for all of the art history jokes.

Ava Wagner, Tori Bowen, and Jess Rylander for being amazing friends. I cannot wait to see what you do next.

Katherine Ritter, for the endless laughs and car rides.

Caleigh DeCaprio and Rachel Mordecai, for an amazing four years. You are the best roommates and friends I could have ever asked for. Thanks for keeping me sane and distracting me when I did not know I needed it.

Table of Contents

Chapter 1

Photograms Before the Twenty-First Century.....3

 Figures.....13

Chapter 2

Images Made Outside of Human Control.....16

 Figures.....26

Chapter 3

Expanding What Photograms Can Be.....31

 Figures.....51

Conclusion

What Is Next?.....58

 Figures.....69

Bibliography.....73

Chapter 1: Photograms Before the Twenty-First Century

In my junior year, I took Introduction to Digital Photography with Tanya Marcuse, an Artist in Residence at Bard College, in which she would show us countless photographs ranging from the nineteenth century to the present. Not all of the images were digital. In one class, Tanya presented a black and white photograph of a splash of water. The splash looked unfamiliar. The photograph's composition lured me in with its jarring contrast between highly descriptive forms and obscure ones. The central splash consists of white lines shooting straight up while others angle off to the right, suggesting a forceful motion that the photograph could not fully contain. The water is projecting out towards the viewer; however, there is a sense that the water is being compressed. This phenomenon is visible to the left and at the top of the splash where there are blurry, almost informationless white patches. To me, it looked as if the water had hit the lens, thereby obstructing the camera's vision. Whereas the splash is relatively ambiguous, the water surrounding it is exceptionally descriptive. The light gray water below the splash looks like silk; tiny, delicate folds radiate out from the spot of motion. I could not tell how this image was made. What camera, what lens, and what technique enabled one photograph to simultaneously present descriptive three-dimensional forms and flat abstract ones? Tanya revealed that this image titled *Now!* (1988) by Adam Fuss was not a photograph, but a photogram, an image made without a camera (fig. 1.1).

I had learned about photograms in history of photography classes, but I was unaware that this process, first invented in the nineteenth century, was still being used by artists today. To make a photogram, you take an object, place it atop light-sensitive material like photo paper, expose the composition to light, and then the paper is developed to reveal the image. In 1835,

William Henry Fox Talbot, an English scientist and inventor, laid lace directly on light-sensitive paper, creating the first photogram or what he called a photogenic drawing (fig. 1.2).¹ According to his notes on photogenic drawings, the traditional process included three steps: creating light-sensitive paper, physically placing flat objects onto the paper, and letting sunlight record the object's silhouette.² Talbot is considered the inventor of the photogram because although he was not the only one making photograms, he was the first to fix them.

In the nineteenth century, there was a great interest in natural science and this dictated how early photography would be used and perceived. Photography was viewed as a tool only capable of recording the truth of the natural world because photographs were made from light; Talbot shared this common belief.³ *Wrack* (1839) by Talbot is a photogenic drawing of seaweed which demonstrates how most photogenic drawings were used to record natural, often, botanical forms (fig. 1.3). When light interacts with the chemicals in photo paper, a recording of an object is left, one that consists of an extreme contrast between dark and light tones. In *Wrack*, the seaweed guards the paper below it against exposure to light. The shielded part of the paper remains its original off-white color, which effectively is the negative shadow of the seaweed (fig. 1.3). The seaweed's outline is formed from the unblocked areas of the paper which were exposed to the sun.⁴ Being exposed, these parts of the paper turned a dark purple-brown color, as the silver salt compounds in the paper darkened on exposure to light. The tonal polarity is one reason

¹Thomas Wedgwood was experimenting or made photogenic drawings in the 1790s, therefore before Talbot, yet Wedgwood could not make the images permanent and Talbot eventually figured out how to do so.; William Henry Fox Talbot, *Lace*, 1845, photogenic drawing; salted paper print from paper negative, Metropolitan Museum of Art, New York, accessed February 13, 2020, <https://www.metmuseum.org/art/collection/search/289186>.

²William Henry Fox Talbot, "Some Account of the Art of Photogenic Drawing, 1839," in *Photography in Print: Writings from 1816 to the Present*, ed. Vicki Goldberg (Albuquerque: University of New Mexico Press, 1981), 37.

³Ibid, 39.

⁴Beaumont Newhall, *The History of Photography: From 1839 to the Present*, completely revised and enlarged ed. (New York: Museum of Modern Art, 2012), 20-23.

why photograms were highly valued by scientists. The identifiable form of the seaweed that the photogram process produces was admired as being more detailed and trustworthy than a drawing.

Photogenic drawings were viewed as exact and precise replicas of objects because of their indexical nature. By indexical, I am referring to the one-to-one relationship between the photogram image and the real object used. The image and the actual seaweed in *Wrack* had an indexical relationship, as nothing intervenes between the contact of the seaweed and the paper. As a result, the subjects of photograms were often mistaken to be the objects themselves, not just representations. Talbot's notes recorded this phenomenon when his photogram of lace was mistaken for actual lace (fig. 1.2).⁵ This veracity made them perfect for botanists. Anna Atkins, a nineteenth-century botanist, used the process to catalog light traces of plant specimens. An example is her image *Sargassum bacciferum* (ca. 1853) which is a type of brown algae (fig. 1.4).⁶ In her photogram, you can see the thin stem and the delicate, wider blades branching off of it. You can even see circular forms (round "bladders") hanging from the leaves. The detail of the minute parts of the algae highlights the precision by which the technique records flat objects and thereby why early photograms were used as a type of scientific illustration.

Light, chemicals, and light-sensitive material are the fundamental materials of the traditional photogram process; for some, the objects used to make the photogram are also established as an essential material.⁷ Twentieth-century artists adopted a new material: the

⁵Talbot, "Some Account," 39.

⁶A cyanotype is a camera-less image that has a cyan-blue color which results from the use of two chemicals: ferric ammonium citrate and potassium ferricyanide.; J. P. Ward, Mary Warner Marien, and Gerald W. R. Ward, "Photography," in *Grove Art Online*, last modified January 10, 2019, <https://doi-org.ezprox.bard.edu/10.1093/gao/9781884446054.article.T067117>.

⁷Photographic paper is not the only material that can be used to make photograms; any support that is able to be coated with light-sensitive emulsion can be used.

operations of chance that can create unforeseen outcomes, which will be investigated in the next chapter. However, chance was not a concern for the first generation of photogrammers in the nineteenth century. Chance did not enter the early photogram process because flat objects yielded direct silhouettes. In addition to the flatness of the object, the maker's desire for accurate renderings of natural objects points to the conservative way by which nineteenth-century photogram practice was approached. There was no room for the unpredictable because that would interfere with the scientific employment and factual nature of photograms.

However, though chance was not considered in early photogram practice, it became the method's key principle to modernists such as Man Ray, the American artist who rediscovered the process in the early twentieth century. He evidently stumbled upon the photogram by accident.⁸ It is believed that he had no knowledge of nineteenth-century photogenic drawings and discovered the process in 1921 when he had left objects on unexposed photo paper, turned the lights on, and saw that an image had formed.⁹ The objects left behind bright silhouettes surrounded by darkened parts of the photo paper. He termed the resulting images "rayographs."¹⁰ He saw the process as the ideal tool to combat modern technology because in it technology, namely the camera, is tossed aside. Moreover, it was a new means of expression that yielded a unique result for every image, producing imagery that departed from the identical reproducibility that the camera traditionally offered. Many modernists like Man Ray rejected, if not detested, modern technology for creating a culture that quickly adopted and then relied on new technology

⁸Man Ray's real name is Emmanuel Radnitzky.

⁹Lyle Rexer, *Photography's Antiquarian Avant-garde: The New Wave in Old Processes* (New York: Harry N. Abrams, 2002), 130.

¹⁰The term rayograph comes from merging his name "Ray" with "graph" which is Greek for "that which is written", neatly summing up the process."; Rayograph," in *Art Terms* (Museum of Modern Art), accessed November 4, 2019, <https://www.moma.org/collection/terms/176>.

without knowing the true effects the machines would have on humanity. World War I, with its new, mechanized technologies of war had stripped away the illusions that technological machines would liberate humanity. In the interwar period, therefore, the camera-less technique of the photogram became particularly appealing because more organic, unique, and spontaneous images could be created.

Imagine you are in a darkroom making a photogram out of three-dimensional objects and objects with varying transparency, as Man Ray would have worked.¹¹ In front of you, is a light-sensitive piece of paper and three objects: a clear drinking glass, a slinky, and a leaf. You can decide where to place the objects on the paper, how close together they are, and if they are fully on the paper, yet how much power over the final image do you truly have if you are making the composition in the dark? Like Man Ray, you cannot know how the light will flatten out the dimensionality of the slinky or how it will go about recording a transparent and three-dimensional glass cup. What can be known is how the light will trace the leaf. Like Talbot, we can expect a rather clean outline of the leaf because light does not have to transform it into a one-dimensional shape, as it is already flat. In the photogram process, we cannot control how light distorts three-dimensional objects or how it records the thickness of them.

Whereas nineteenth-century photograms visually present the photogram's link to reality, modernist photograms look alien and otherworldly. In fact, Man Ray's approach explicitly invited chance to act as a material force in photograms. The difference between the first generation of photogrammers' methods and Man Ray's method lies in his choice to use three-dimensional objects. When flat objects were used, the light did not have to deal with

¹¹Man Ray often used mechanical parts in his photograms as well as everyday, ordinary objects such as combs, keys, cut paper, candles, jewelry, scissors, gauze, and occasionally human body parts, specifically hands.

recording depth or volume, as only the objects' outlines would be rendered by light on the paper. However, placing a three-dimensional object on a sheet of photographic paper and shining a light upon it will inevitably create complex shadows that are unpredictable. Although Man Ray had control over the objects he used and their arrangement on the paper, he had no power over the serendipitous relationship between light, the forms, and the paper that the process instigated.

In the twentieth century, chance was being employed by artists in all fields, not just photography. Artists working in the postwar period such as John Cage, an American composer, and Merce Cunningham, an American dancer, were like modernist photogrammers in giving up their autonomy and embracing the incalculable. The methods of each artist varied, yet most of their actions seemed to be motivated by a desire to eliminate the artist's intent. By ridding the artistic process of conscious intention, the artists were looking to break away from rigid, traditional conventions and practices in their respective mediums.¹² Chance gave these artists the ability to step back and approach their work with a fresh and open mind.

Unlike their predecessors, perhaps twentieth-century artists looked to an external force to help them discover their medium's ignored or underlying capabilities. To "reinvent" art, artists like Man Ray, Cage, and Cunningham established a method of artmaking that involved no deliberate plan or desired result, as they were letting inadvertent elements, rather than their preconceived objectives, form their work. This frees the medium from its restrictive past and opens it up to be read in ways that would have contemporary relevance. The unfiltered automatism lets the medium dictate the form it may take, which opens new possibilities for using the medium and characteristics of it that artists may not have been able to discover.

¹²Mark Franko, "Expressivism and Chance Procedure: The Future of an Emotion," *RES: Anthropology and Aesthetics*, no. 21 (Spring 1992): 145, <https://www.jstor.org/stable/20166846>; Konrad Boehmer and Ian Pepper, "Chance as Ideology," *October* 82 (Fall 1997): 62-64, <https://doi.org/10.2307/778999>.

While early photogrammers were interested in creating images that could be consulted as factual records, Man Ray used rayographs to overturn reality and embrace mystery. Rayographs functioned as a radical, experimental technique for dadaists and surrealists of the twentieth-century avant-garde movement, but the way various artists understood chance's function in the photogram process differed slightly. Dada was a modern anti-art movement with international chapters that grew out of dismay, anxiety, and anger aroused by the events of WWI. Dada specifically blamed modern technological culture for bringing out the hidden brutality of humanity with weapon technologies that resulted in ways of killing not yet seen. In *Dada Manifesto*, Tristan Tzara, a Romanian founder of Dada, writes "I am against systems, the most acceptable system is the one of not having any system, on principle."¹³ His words outline the anti-logic and anti-order views of Dada, which highlight how suited the photogram was for the Dada, because it functioned autonomously, rejecting all established conventions and common sense. If photography had been understood as a technological evolution that was bound to the goal of producing perfect copies of reality, photograms seemed to reject this assumption.

Dadaists understood rayographs as a medium that "evade[d] an essential restriction of analog photography: the limits of physical reality itself," making it the perfect tool to subvert, undermine, and dismiss reality.¹⁴ Man Ray's untitled 1922 rayograph speaks to how the photogram process was utilized for its ability to flout reality and undermine logical and artistic conventions as well as present unexpected ludic, nonsensical transformations of everyday objects (fig. 1.5). This is evident in how the forms were made with physical objects, yet because he uses

¹³Tristan Tzara, "Dada Manifesto," in *Manifesto: A Century of Isms*, ed. Mary Ann Caws (Lincoln: University of Nebraska Press, 2001), 298-299.

¹⁴Susan Laxton, "'Flou': Rayographs and the Dada Automatic," *October* 127 (Winter 2009): 28, <https://www-jstor-org.ezprox.bard.edu/stable/40368552>.

three-dimensional objects, the process created unexpected images that are sometimes distant from their source in reality. There is a coil that starts at the bottom left corner of the frame and spans diagonally almost fully to the upper right corner before it droops down into a circular form. Surrounding the coil are three silhouettes reminiscent of clouds. By using dimensional objects, Man Ray is allowing the unpredictable encounter between light, solid and transparent materials, and shadows to trouble what we know to be the shapes, materials, and essences of the objects used (a chalice, cotton, a metal coil).

In Man Ray's 1922 rayograph, what is accepted as a mechanical coil is reconstructed by the fortuitous interaction between light, form, and shadow into a pinwheel amongst clouds. This transformation exemplifies how dadaists and surrealists lauded chance for its ability to operate apart from human consciousness by presenting an idyllic scene reminiscent of a dream. The surrealists specifically appreciated chance for its ability to free the subconscious, the home of repressed and hidden thoughts and desires.¹⁵ Surrealism grew out of Dada, and surrealist artists shared dadaists' hatred of modern technology and anger towards WWI.¹⁶ One of the founders of Surrealism, André Breton, defined the movement in the surrealist manifesto as

psychic automatism in its pure state, by which one proposes to express—verbally, by means of the written word, or in any other manner—the actual functioning of thought...in the absence of any control by reason, exempt from any aesthetic or moral concern.¹⁷

¹⁵Susan Laxton, *Surrealism at Play* (Durham: Duke University Press, 2019), 36.

¹⁶There is no firm boundary between dadaism and surrealism. The Dada movement formed in 1916, and Surrealism began forming in 1917. Although it was a complex international movement, surrealism formed in part as a splinter group, led by Andre Breton, that broke from the Parisian Dada group. Both dadaists and surrealists were making work in response to the atrocities of WWI. Dadaists were anti-art, surrealists were not. Surrealists were heavily influenced by Sigmund Freud and his ideas about the subconscious while dadaist art was created out of an anti-theory and anti-logic belief system.

¹⁷Susan Laxton, "Automatism," in *Grove Art Online*, last modified August 12, 2019, <https://doi.org/10.1093/gao/9781884446054.article.T005221>.

Breton's definition of surrealism points to how the surrealists favored the irrational mind over the rational and used different techniques to suppress conscious intention. "Automatism" refers to involuntary actions performed without conscious thought; automatic writing and drawing were two surrealist techniques that, like the photogram, functioned outside of human control.¹⁸ The goal with automatic writing, for example, is that the writer is freed from the constraints of grammar and syntax. Because the writer is not consciously worrying about rules, he or she is then left to write down what flows effortlessly from the subconscious onto the paper. Surrealists utilized the photogram process as an automatic process with the hope that without conscious mediation, the image could then be read without any predetermined ideas.

Ultimately, surrealist artists would put the process in motion but did not fully create its meaning, adopting the technique for its ability to give form to "things that consciousness cannot formulate, or that consciousness willfully forgets and distorts in order to compose itself for the world."¹⁹ In other words, surrealists valued rayographs for their automatism. Man Ray's rayograph, for example, creates an unearthly scene of a pinwheel that is large and tall enough to be among clouds. Because rayographs are created through chance operations, the artist can read the image like a Rorschach test. This meant surrealists were left only with the ability to read what the work showed them, not what they forced on the work in the process of creating it.

Surrealist and dadaist photograms are explicitly made with operations of chance. In the next chapter, I will investigate the work of some contemporary artists who take the workings of

¹⁸"Tapping the Subconscious: Automatism and Dreams," in *MOMA Learning* (Museum of Modern Art, 2006), accessed November 21, 2019, https://www.moma.org/learn/moma_learning/themes/surrealism/tapping-the-subconscious-automatism-and-dreams/; Automatic processes were "theoretically" outside the maker's control, they are not as independent from the maker's control as the chance operations of the photogram.

¹⁹Laxton, *Surrealism at Play*, 70.

chance in new directions. A key difference between the modernists' and contemporary artists' use of chance in the photogram practice is the psychological power chance operations held for early twentieth-century photogrammers. They deliberately gave up their artistic license to allow the subconscious to act as the primary maker of meaning. Contemporary photogrammers, on the other hand, do not appear to be concerned with the psychological potentials of automatism in the photogram process. In fact, the contemporary photogrammer's use of chance seems to be a means to revitalize photography. Some artists adopt the photogram process to rethink photography's traditional powers of representation in which nature is the passive object, and not the active subject, while others are interested in pushing the boundaries of what the fundamental materials of photograms are capable of producing and or to subvert the traditional expectations of photographs.

Chapter 1: Figures



Figure 1.1. *Now!*. Adam Fuss. 1988. Gelatin silver print. 66 3/4 × 51 inches.

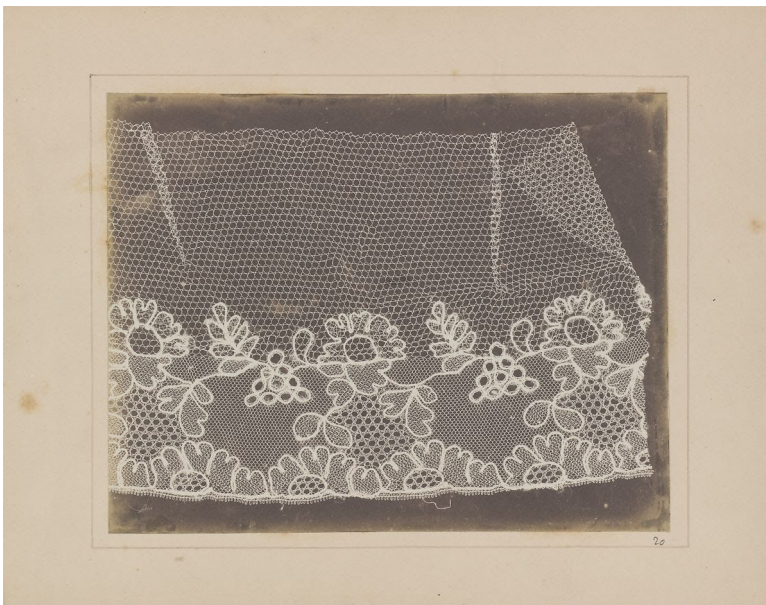


Figure 1.2. *Lace*. William Henry Fox Talbot. 1845. Salted paper print from paper negative. Unknown dimensions.

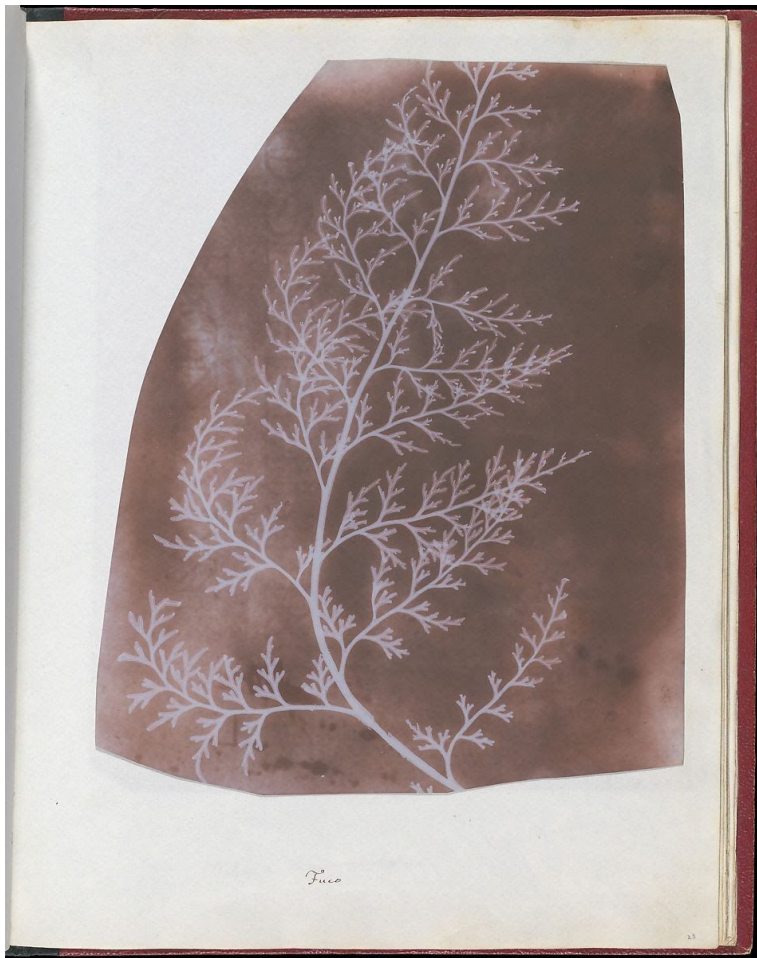


Figure 1.3. *Wrack*. William Henry Fox Talbot. 1839. Salted paper print. $8 \frac{11}{16} \times 6 \frac{7}{8}$ inches, irregularly trimmed.

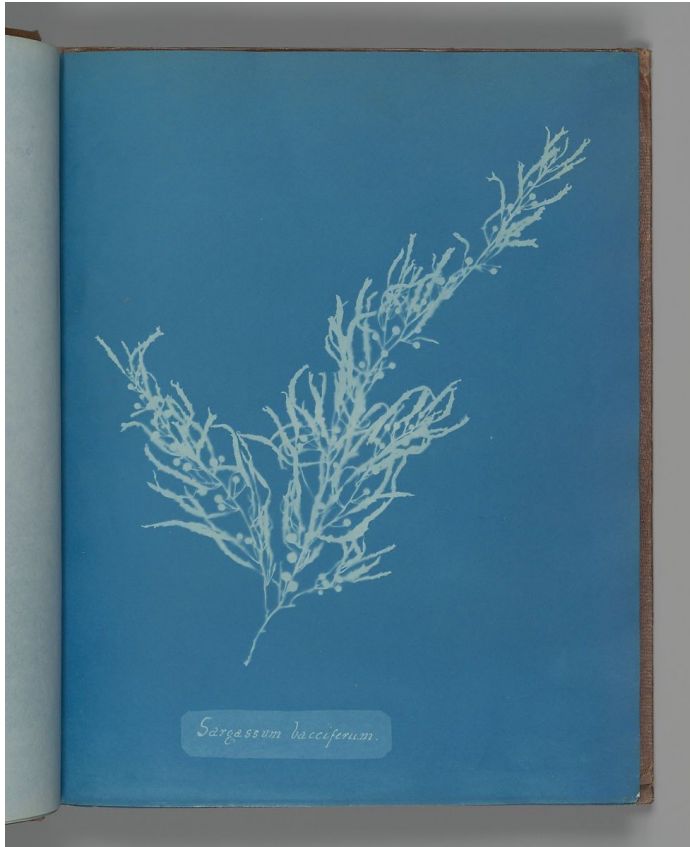


Figure 1.4. *Sargassum bacciferum*. Anna Atkins. ca. 1853. Cyanotype. $9 \frac{15}{16} \times 7 \frac{7}{8}$ inches.



Figure 1.5. *Untitled Rayograph*. Man Ray. 1922. Gelatin silver print. $8 \frac{9}{16} \times 6 \frac{11}{16}$ inches.

Chapter 2: Images Made Outside of Human Control

Chance also plays an important role in the work of some contemporary artists using the photogram but it often works through something other than the shadows cast by chosen objects. Susan Derges, a British photographer, has concentrated on camera-less photographic processes since the 1990s. She began making photograms outside rather than in a darkroom in 1998 with her series *River Taw*. Working outdoors at night, she uses large pieces of photo paper that she brings into contact with natural elements like water, air currents, and moonlight. The exposure takes place through a combination of moonlight and a handheld flashlight. As Derges notes in a lecture she gave at the International Center of Photography, advantageous elements could enter her work because she had gone outside to make images of nature instead of taking nature into her studio, a human-controlled space. She states:

once I made the decision to experiment with working out in the landscape it was very very clear that you could look at things in their true state rather than bring them into a state that somehow kind of changed them or altered them.²⁰

Derges is describing how her process of working outside enables her to not intervene in and interrupt the recording of natural phenomena. This is important because Derges' photograms at their core are about natural processes and so being able to document them as they naturally exist in nature, underscores the purpose of her photograms. Derges has stated that when she worked in a darkroom, she felt that she had to strip nature from its true state and reconstruct it, which eliminated the possibility of unique and spontaneous events to occur. Working outside lets Derges give her artistic power over to the unknown and invisible forces at work.

²⁰Susan Derges, "Susan Derges," lecture presented at International Center of Photography, New York, March 14, 2012, International Center of Photography, last modified March 14, 2012, accessed October 14, 2019, <https://www.icp.org/browse/archive/media/susan-derges>.

Derges thinks of her work as allowing nature to make pictures of itself. This does not mean that Derges' presence is absent. Her mind and hands have conceived and carried out the process, but they are not the only elements at work, or even the principle elements at work. She decides the moment of exposure and either holds the paper in the body of water like in *River Taw* or lays it down on the beach, waiting for large waves to crash on the paper as in *Shorelines*.²¹ In *Shorelines*, Derges also works at night.²² Immediately, her process is marked by the unexpected. As she prepares the paper outside, it is slowly exposed to ambient light and therefore an image is being formed, an image that Derges cannot prevent from happening.

Derges is therefore a bystander and witness to nature taking images of its most delicate, minute phenomena. By letting active, natural processes, rather than static objects (like Talbot's use of leaves) reproduce themselves with the photogram process, Derges is reevaluating the traditional dynamic between nature and photography. Talbot's publication was titled *The Pencil of Nature* which is important concerning Derges' images because his title implies nature is drawing itself; I believe Derges takes this concept further, giving nature more power in the picture-making process. In Talbot's photogenic drawings, he selected the natural objects that would be recorded, while Derges steps back and relinquishes control as nature actively records itself. In other words, in Derges' photograms, nature is an active participant and subject, it is not manipulated and placed atop the paper by Derges in the way Talbot's subjects were. Therefore, Derges' process changes how nature is typically recorded with the photogram process and photography in general. Although in the nineteenth century, it was believed that light and

²¹Ibid.; The images used for Susan Derges in this chapter are sourced from different websites and not all titles and dimensions of images were available. For the images from Derges' website, I numbered them based on the permanent order on her website (e.g. *Shoreline*, 9 was the ninth image in the sequence for that series).

²²Ibid.

therefore nature was the creator of photographs, Talbot and Atkins controlled what parts of nature their photograms showed and how the objects were presented. In Derges' photograms, human action does not dominate natural processes nor do they decide how nature will be presented. In a way, Derges makes nature the commanding actor of her images. She steps back and watches the uncontrollable and independent forces of the environment mark the passive photo paper. Given her long exposures of up to three minutes, Derges is also allowing any movement to impact the paper.²³

In *Full Moon Shoreline, 2003*, the intricate kaleidoscopic patterns and the crystal-like appearance of the water and the denser ends of the waves were not Derges' intention (fig. 2.1). She could not force the wave to crash in a specific way, control the amount of sand and organisms the wave dragged onto the paper, or facilitate the interaction between the full moon and the paper. The top half of the photogram seems to exist in a higher plane than the bottom section. The bottom half appears to have been formed by the initial movement of the wave over the paper, evident in the flatter, calmer, and silkier appearance of the water. The upper half, on the other hand, seems to be the result of the wave crashing onto the paper and almost being curled back into the water as it begins to overlap on the lower half of the print. This is in part due to when Derges' flashed the light, but even upon exposure, she could not say for certain how such a large body of water would be recorded on the roughly ten feet by three feet of paper that she laid on the shoreline.²⁴ A similar composition is present in *Shoreline, 9* (fig. 2.2). It appears to have been formulated by Derges turning on the flashlight at the second when the wave

²³Ibid.

²⁴Ibid.

aggressively crashed on the top part of the paper. Because of the long exposure, the paper was able to capture a second action of the wave as it calmly rolled over the bottom half of the paper.

Derges' photograms are meant to reveal phenomena that the eye cannot see or as she describes them, as a way of "making the invisible visible."²⁵ Her process is about what we cannot regulate. Derges cannot control the effect that the phase of the moon will have on the strength, height, and speed of the waves nor can she oversee the exact number of grains of sand that will adorn the paper. What Derges can foresee are broad details: she knows that if it is a stormy day, the print will appear dark and there will be more sand as the water will have been churned up by the weather. Conversely, if it is a clear day, the result will be lighter and show less sand.²⁶

Shoreline, 9 is an example of a photogram made on a stormy night, *Full Moon Shoreline, 2003* on a calm day with a full moon. The weak light of the moon, the cloudiness and dark appearance of the water, and a large number of black specks speak to the fact that *Shoreline, 9* was made on a stormy day. We know the moonlight was weak because when the moon is full like in *Full Moon Shoreline, 2003* the water is blue and has a more clear, translucent look. *Shoreline, 17* and *Shoreline, 19* are images where because the sky is clear, the moonlight strong (as it is not drowned out by the grayness of the sky), and the water calm, the reflection of the clouds can be captured by the paper, not interrupted by aggressive waves (fig. 2.3; 2.4). If for Man Ray, chance was a function of the subconscious, for Derges, it is linked to giving up her artistic license and handing it over to natural forces out of her control. Her use of chance in the photogram process can also be interpreted as a way of reversing the standard, passive role of nature in photography. In these works, nature is the principal actor and Derges and her process play supporting roles.

²⁵Ibid.

²⁶Ibid.

One of the first encounters I had with Derges' work was in *Photography's Antiquarian Avant-garde: The New Wave in Old Processes* (2002) by Lyle Rexer. Rexer describes Derges' exploration of nature with the photogram in terms of chance and romanticism. Romanticism was an art movement in the eighteenth and nineteenth century that favored emotion, imagination, and subjectivity.²⁷ I disagree with his categorization of Derges' photograms as romantic and symbolic because they present the viewer with images of natural processes that exist, not with ones from our imagination. In other words, her photograms depict nature as it simply is. They do not suggest that the bodies of water pictured are about anything more than nature's relationship to photography and humans. Rexer further argues that chance can arise in her work because "the photogram offers a means of both direct participation in natural processes and symbolic discourse about nature."²⁸ However, I argue that chance operates independently from Derges and even that she deliberately avoids directly participating in natural processes to facilitate unexpected results. Unforeseen interactions rely on Derges not altering nature, which is supported by her quote I cited earlier where she states that she favors working out in nature for the exact reason that it lets her "look at things in their true state rather than bring[ing] them into a state that somehow kind of changed them or altered them."²⁹ Although chance may be able to exist as a product of human intervention in nature, that is not the case in Derges' photograms.

Mariah Robertson, a contemporary American photographer, works in her darkroom, not outdoors like Derges, yet her images are like Derges' in that they are formed by unpredictable and unexpected interactions. Her use of chance in the photogram practice results in a

²⁷William Vaughan, "Romanticism," in *Grove Art Online*, last modified 2003, <https://doi-org.ezprox.bard.edu/10.1093/gao/9781884446054.article.T073207>.

²⁸Rexer, *Photography's Antiquarian*, 130.

²⁹Derges, "Susan Derges," lecture, International Center of Photography.

revitalization and reworking of what photography's materials are capable of producing.

Robertson began her exploration of photography with no formal photography education or training. She studied sculpture in graduate school at Yale University, but practiced and taught herself photography privately.³⁰ She originally taught herself photography to document her performance art, which was her primary interest prior to graduate school.³¹ This means that upon beginning her camera-less work she had little knowledge of photography's conventions, the chemicals she uses, and her camera-less process. She learned by working. She did not care to adhere to or even pay attention to photography's historical traditions and rules. Her independent exploration of photography is defined by her desire to defy all rules that were brought to her attention, namely about how a good photograph should be made, what it should and should not include, and what it should look like.

Robertson starts her process by cutting light-sensitive metallic paper in the dark or leaving it as one giant roll.³² This first step in her process outlines the uncalculated nature of her work. She cuts blindly and intuitively, she cannot see how straight her edges are, what part of the paper she is cutting, or what shape the paper will be. The unique shape and size of her prints are evident in the stark difference between *399* (2017) and *365* (2017) (fig. 2.5; 2.6). The left side of *399* has subtly jagged edges and the right side has a giant curved indent that culminates in a sharp point. *365* looks like a bulbous crescent moon. Her photograms are not the traditional rectangular shape photographs and photograms are typically presented as. The irregular shape of

³⁰Mariah Robertson, "Visiting Artist and Scholars Lecture: Mariah Robertson," lecture presented at Visiting Artist and Scholars Lecture, San Francisco Art Institute, San Francisco, February 24, 2015, Vimeo, last modified 2015, accessed November 7, 2019, <https://vimeo.com/121646722>.

³¹Rachel Small, "Mariah Robertson's Unplanning," *Interview*, October 30, 2013, accessed May 2, 2020, <https://www.interviewmagazine.com/art/mariah-robertson-american-contemporary>.

³²Robertson, "Visiting Artist," lecture, Vimeo.; Robertson has to manually cut the metallic paper she uses because it stopped being sold in standard size sheet paper.

her photograms underscores the way her use of the photogram subverts traditional photographic conventions and even presents new ones.

As in all photograms, light is key in Robertson's work. The light-sensitive paper gets exposed in two ways: throughout the whole process as she sometimes works with the lights on or she exposes the paper to light from an enlarger and then proceeds to work in the dark.³³ It is hard to tell which of Robertson's images are made by exposing the paper to light throughout her chemical application step or if she exposed the paper to light from an enlarger and then completed her process in the dark. When the lights are on in her darkroom, Robertson does not have more control over the process than when the lights are off. Robertson cannot know exactly how the paper will react to being exposed to light while simultaneously being manipulated with various chemicals. The same is true for when the paper is first exposed to light, and then in darkness its surface is abraded by chemicals. The next step in Robertson's process consists of what she classifies as scientific experimentation. Robertson works with physical objects and photographic enlargers, similar to Man Ray's process, to make some of her photograms but I am going to focus on the photograms that are made from, as she describes them, "a series of chemical reactions on [] flat piece[s] of paper," such as numbers *108* (2012), *365*, and *399* (fig. 2.7; 2.6; 2.5).³⁴

When starting a piece, she goes into her darkroom with a plan of how she will combine the chemicals (the fixer, bleach, and developer), in what quantity, and at what temperature.³⁵

³³Leah Ollman, "Critic's Choice: Mariah Robertson's Vigorous Tussle with Photography," *Los Angeles Times* (El Segundo, CA), March 12, 2015, Entertainment & Arts, accessed April 26, 2020, <https://www.latimes.com/entertainment/arts/la-et-cm-mariah-robertsons-vigorous-tussle-with-photography-20150309-story.html>.

³⁴Wesley Miller et al., "Mariah Robertson's Chemical Reactions," video, 09:21, Art21, October 17, 2014, accessed November 7, 2019, <https://art21.org/watch/new-york-close-up/mariah-robertsons-chemical-reactions/>.

³⁵Ibid.

However, her plan does not and cannot account for the exact colors and forms that will come out of her experimentation. Because she has worked in this way for a long time, Robertson knows that certain temperatures and specific interactions of the chemicals can alter the color that ends up on the print:

there started to be green when the developer was colder. When the fixer and developer mix there would be some yellow and orange. Sometimes there are areas where I don't know what's happening and it makes this lavender-hippie-rainbow-unicorn color. It's a fleeting mystery.³⁶

In *108*, then we can recognize that the green color present is the result of the developer being cold, either by chance or by Robertson's choice. This is not to say Robertson has full control. She cannot control the intensity or hue of the colors. The spontaneous formation of the image shows the great difference between the darker, more natural-looking green color near the left and right edges in *108* and the almost turquoise, electric green present throughout *135* (2016) (fig. 2.8). Her statement about the colors that come out of her random combinations of fixer, water, and developer explains how despite working in this manner for years, there are still colors that arise on the final prints that she cannot replicate even if she mimicked her technique on a different piece of metallic paper. What Robertson's type of material-focused investigation alludes to is that photography's materials are capable of producing more than perfectly calculated technical prints.

In addition to the colors that emerge from uncontrolled chemical reactions, the forms present in Robertson's photograms are also to some degree the product of chance. I believe the majority of the forms are composed by the unique combination of the shape of the paper, the density of the liquids added to the paper, the application of the liquids and chemicals, and the

³⁶Ibid.

way Robertson holds the paper (and or if she moves it during development). In 399, the bright blue-colored form in the upper right corner takes on a form reminiscent of tree roots. It may have been created by Robertson adding chemicals to the paper as it was hung up, letting the mixture flow downwards on the paper. The way the blue chunk of color almost curves with the paper suggests that the paper may not have been hung up straight or remained in one position when she added chemicals. If Robertson is working in the dark, she cannot know how her creations will look until the process is over.

In the twenty-first century, adopting chance processes is a form of rebellion and liberation from artistic conventions. In the photogram process, the photogrammers are freed from expectations of how they should make images because photograms are in many ways self-determining. Photograms are nothing like camera-made photographs. Photographs are the products of the photographer's conscious choices while shooting or afterward when manipulating images in the darkroom or with digital editing software. In other words, the photogram as Robertson and Derges use it, is not controlled by technology, conscious intention, or the rules that govern digital and analogue photography. These two photographers both unearth new ways of interacting with and understanding photography. Moreover, some contemporary photogrammers are not only giving their artistic will over to invisible, autonomous forces but also in some cases actively rebelling against digital photography by reinventing the purpose of photograms.

At a lecture at the San Francisco Art Institute in 2009, Robertson explained how she noticed photographers were focusing more on photography's materials. She presumed that this rise was a result of how digital photography now allows artists to edit images to perfection. To

Robertson, the control photographers have when working digitally suggests that traditional photography and early photographic processes no longer need to record the world.³⁷ I believe Robertson is trying to redefine the photogram as an image with unique and ever-changing qualities that derive from the specific artist's approach to the materials and process for each photogram.

However, chance is not a factor or even a vital element in all photogram processes. Derges is concerned with chance in terms of its ability to let natural processes become the creator of the photogram. Robertson's experimental photogram process serves as an exploration of the fundamental materials of photography. She is reducing photography to the bare minimum, working with only light, light-sensitive paper, and chemicals involved in developing and fixing photographs. The object in her work is the material itself, not natural or physical objects. By limiting herself to only making images from photography's materials, Robertson's approach, although it contains an irrefutable relationship to chance, is heavily focused on formalism and materialism. By materialism, I am referring to an art practice that investigates the physicality and essence of a medium's materials while using only the intrinsic materials of said medium. Formalism, on the other hand, does involve the materiality of a medium yet also deals with forms of line, shape, texture, color, and so on, that the materials produce. Robertson is not the only contemporary photogrammer experimenting with the underlying qualities of photography. In the next chapter, I will discuss two artists whose formal explorations are made possible by stripping photography down to its bare elements in their photogram practices.

³⁷Robertson, "Visiting Artist," lecture, Vimeo.

Chapter 2: Figures

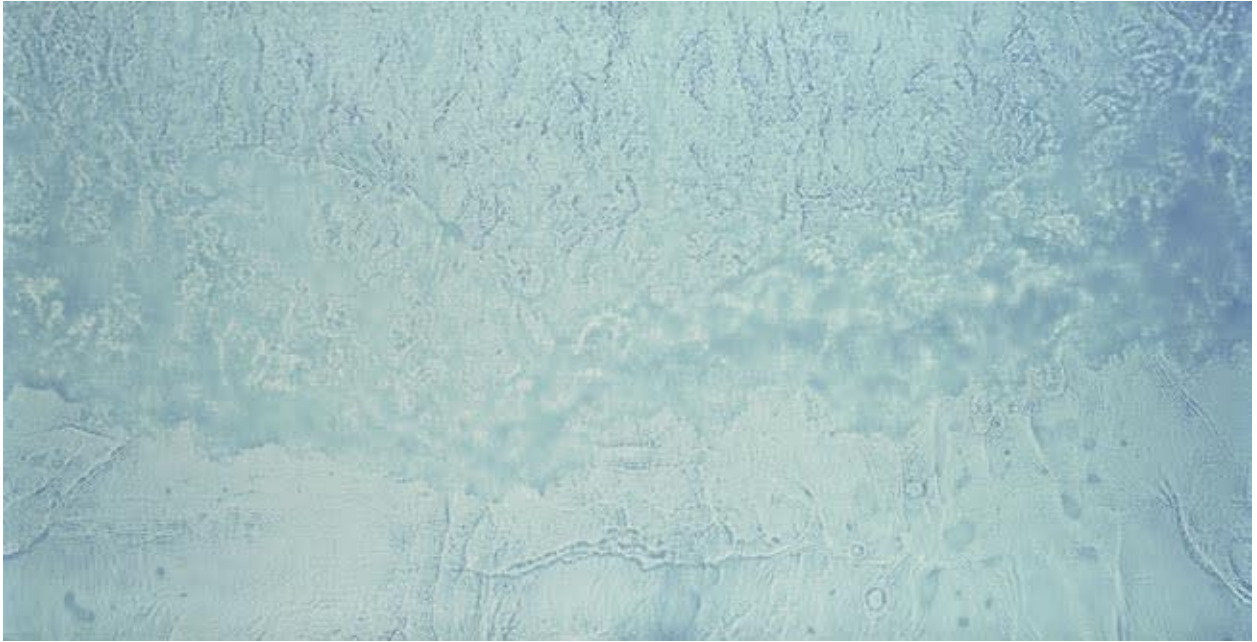


Figure 2.1. *Full Moon Shoreline, 2003.* Susan Derges. 2003. Unique photogram on Cibachrome. Roughly 40 × 80 inches.

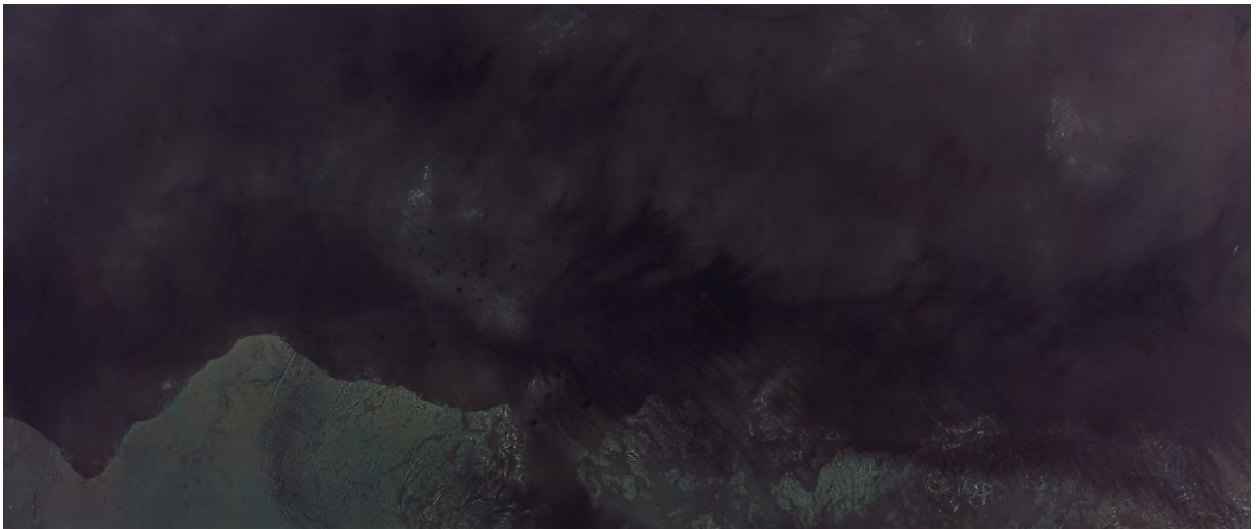


Figure 2.2. *Shoreline, 9.* Susan Derges. Unknown date. Unique photogram on Cibachrome. Unknown dimensions.



Figure 2.3. *Shoreline, 17*. Susan Derges. Unknown date. Unique photogram on Cibachrome. Unknown dimensions.

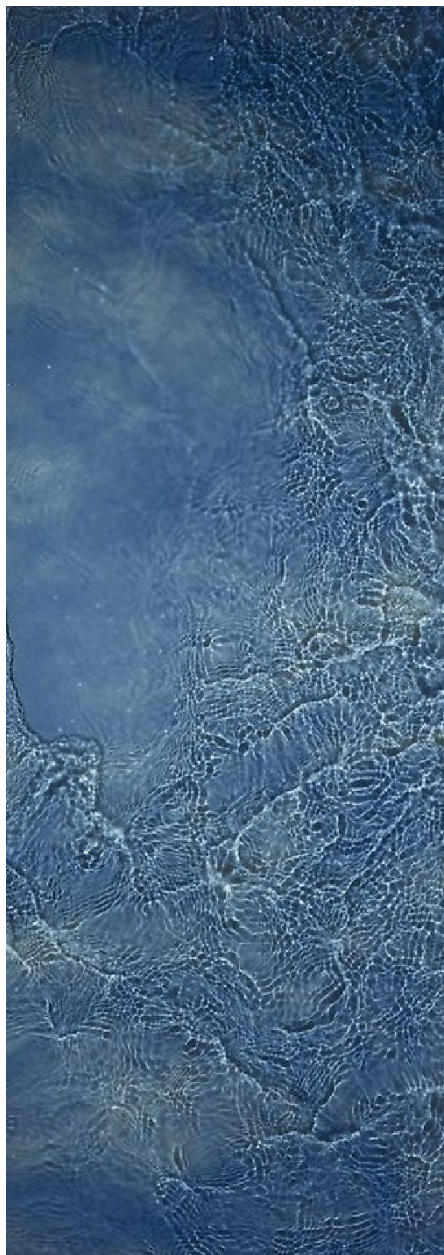


Figure 2.4. *Shoreline, 19*. Susan Derges. Unknown date. Unique photogram on Cibachrome. Unknown dimensions.



Figure 2.5. 399. Mariah Robertson. 2017. Chemical treatment on RA-4 paper. 33 1/2 × 23 inches.



Figure 2.6. 365. Mariah Robertson. 2017. Chemical treatment on RA-4 paper. 31 × 27 1/2 inches.



Figure 2.7. *108*. Mariah Robertson. 2012. Chemical treatment on RA-4 paper. 73 1/2 × 66 1/2 inches.



Figure 2.8. *135*. Mariah Robertson. 2016. Unique chemical treatment on RA-4 paper. 92 × 50 inches.

Chapter 3: Expanding What Photograms Can Be

Photograms have been used to expand the formal potential of photography prior to the twenty-first century. László Moholy-Nagy, a Hungarian painter and photographer, worked in his darkroom with light, photographic paper, and objects. He was not interested in content or symbolic meaning like Man Ray, the surrealists, and the dadaists were. Moholy-Nagy had an experimental approach to the photogram. With the photogram, light could be manipulated directly, in a way that one could not do with a camera.³⁸ Believing that the photogram could uniquely reveal formal properties and the powers of light itself, Moholy-Nagy wrote in 1930:

But as in painting so in photography we have to learn to see, not the “picture”, not the narrow rendering of nature, but an ideal instrument of visual expression. If we can see in the genuine elements of photography the self-sufficient vehicle for direct, visual impact based upon the properties of the light sensitive emulsion, then we can be nearer to “art” in the field of photography too.³⁹

What Moholy-Nagy was saying was that to fully utilize photography to its best ability, artists needed to recognize and learn the power of the photographic materials themselves. In painting, brushstrokes and the type of paint used, whether it be oil or watercolor, are intertwined with the content in creating the meaning of a work. The materials are also seen as containing their own expressive qualities, just as thick, roughly applied brushstrokes can create a sense of dynamism and chaos.

At the time of Moholy-Nagy’s experimentations, photography was usually recognized for its mechanical ability to record the world in front of us. This traditional understanding of photography did not particularly emphasize the way light could enhance the aesthetics or formal

³⁸Light rays are directed by the lens of a camera to one point where the image is formed (a sensor if it is a digital camera or film for analog cameras).; Todd Vorenkamp, "How Your Digital Camera Works," B&H, last modified 2016, accessed March 21, 2020,

<https://www.bhphotovideo.com/explora/photography/tips-and-solutions/how-your-digital-camera-works>.

³⁹László Moholy-Nagy, *Vision in Motion*, 4th ed. (Chicago: Paul Theobald and Company, 1947), 178.

appearance of photographs. Moholy-Nagy recognized in his practice that light can itself create abstract formal compositions. Here, I am using the term “abstract” in the sense of “non-representational works of art that do not depict scenes of objects or objects in the world or have discernable subject matter.”⁴⁰ As Moholy-Nagy used them, photograms existed purely as formal configurations of light or rather of forms that are made from varying tones and gradations of light. In fact, he believed that photograms did much more than merely record the world; they were unquestionably artworks in their own right.⁴¹ We can see by this comment that he is harboring a bias against straight photography, implying that straight photography is purely mechanical. With photograms, Moholy-Nagy believed one could create art in a way that straight photography did not, because photograms privilege a hand-making strategy which likens photography to traditional art media such as painting, drawing, and sculpture.⁴² In the photogram process, photograms are made by someone combining and manipulating light, photo paper, and objects, not by light that is directed and controlled through a camera. Moholy-Nagy’s photogram experiments were in line with his philosophy that photography, like all art media, was capable of producing art from a physical process that consisted of set materials.

Early twentieth-century Modernism---across all media---tended to seek aesthetic value increasingly in art’s formal language. Furthermore, modern artists were engaged in the practice of attempting to distill and clarify the intrinsic qualities and properties of each specific medium. Modernists such as Pablo Picasso and Henri Matisse were ignoring historic art conventions as

⁴⁰*Art Terms* (Museum of Modern Art), s.v. “Abstract art,” by Museum of Modern Art, accessed March 13, 2020, <https://www.moma.org/collection/terms/3>.

⁴¹Department of Photographs, “Photography at the Bauhaus,” in *Heilbrunn Timeline of Art History* (Metropolitan Museum of Art, 2000-), last modified October 2004, accessed March 13, 2020, https://www.metmuseum.org/toah/hd/phbh/hd_phbh.htm.

⁴²Emma Stein, “László Moholy-Nagy and Chicago’s War Industry: Photographic Pedagogy at the New Bauhaus,” *History of Photography* 38, no. 4 (November 2014): 403, <https://doi.org/10.1080/03087298.2014.949487>.

well as turning away from realism, symbolism, and narrative-based artworks in favor of formalist experimentation.⁴³ This was territory that photography was seen incapable of entering, as photographs were assumed to be intrinsically bound to the real. *Fotogramm* (1925) by Moholy-Nagy in some way demonstrates the traditional application of photography as simply a tool to reproduce physical objects (fig. 3.1). He uses objects to make his photograms, and yet in his process, the way light interacts with the objects strips them of their detail, leaving behind abstract luminous forms (fig. 3.1). The 1925 photogram contains one large spiral shape, three flat circles, and two ovular forms. The circles and ovals cascade down from the spiral in the upper left section of the image. All of the forms are characterized by an eye-stopping brightness. The informationless black space that surrounds the radiant forms amplifies their presence. The brightness pops out at the viewer and causes the circles, ovals, and parts of the spiral to appear to oscillate between three-dimensional and two-dimensional space. The viewer is presented with an image that looks as if it has no context in reality: it is abstract.

Moholy-Nagy made his 1925 photogram using a similar method that Talbot used to create *Wrack* (fig. 3.2). Both photogrammers placed an object or objects onto light-sensitive paper and exposed the composition to light. The difference, which results in abstract formal photographs in the case of Moholy-Nagy's images, is the type of light used and how the two photographers exploited light. Talbot used sunlight, which he could not control. Moholy-Nagy, on the other hand, used an enlarger, an artificial light source, in a darkroom. For this reason, Moholy-Nagy could direct the light how he wanted onto the light-sensitive paper. He also controlled how long the paper was exposed to light.

⁴³*Art Terms* (Tate), s.v. "Modernism," accessed March 21, 2020, <https://www.tate.org.uk/art/art-terms/m/modernism>.

At the time of Moholy-Nagy's experiments, photography was typically denied recognition as an art medium. Photographs were not seen as products of artistic genius in the same way that paintings, drawings, and sculptures, which are all made by hand, were. Photographs were understood as mechanical reproductions of reality and therefore they were not imbued with the imagination or intervention on the part of the artist, making them incapable of being classified as art. Moholy-Nagy overturns this mechanical view of photography through his investigations of light with the photogram. He considered the photogram process the best way to work directly with light. Moholy-Nagy also became interested in photography because of photography's relative infancy, writing that "photography is a new medium of expression. Since its working rules have not yet been frozen into unalterable dogmas, it has experimental potentialities."⁴⁴ While others may have accepted the singular understanding of photography at face value, Moholy-Nagy saw beyond that and focused on photography's newness as an opportunity to reveal its intrinsic qualities and unexplored potentials.

Inherent in the twentieth and twenty-first-century experimental approaches to the photogram process is an underlying desire to work around the traditional perception of photography. Moholy-Nagy, specifically viewed the photogram as a means to reject photography's identity as a tool that reproduces the world and to directly explore its unique qualities,

But it is the point where we must start in order to master the properties intrinsic to photography; where we begin to deal more with the direct impact of photographic values than with the reproductive, illusionistic function of portrayal.⁴⁵

⁴⁴Moholy-Nagy, "Photography," 177.

⁴⁵Ibid, 178-185.

Today, several contemporary photogrammers are working in the path established by Moholy-Nagy in that they embrace a formalist photographic practice, although they are not all trying to dispel the same conservative beliefs about photography's artistic potential. One could argue that Moholy-Nagy's use of the photogram proved photography's ability to produce art in the sense that it adhered to the criteria of art at the time, involving the artist's mind and hand. Contemporary photogrammers do not have to concern themselves with the medium's status as art. Instead, they are exploring the irreducible material basis of photography to test the limits of a photograph. For some, this results in presenting colors that photography's materials have not been known to produce. Photogrammers are also blurring the boundary of what photographs are expected to be, specifically confusing the notion that photographs are or must be rendered as flat, two-dimensional objects. In addition to working with the core materials of photography (light, photographic chemicals, and light-sensitive material) some contemporary photogrammers also join the photogram to other, non-photographic means, for example, sculpture, drawing, and painting, to operate against the grain of traditional photography.

The German photographer Marco Breuer treats his photographs as sculptural objects and even paintings or drawings, not unlike Mariah Robertson. Breuer and Robertson both blur the boundary between photography, sculpture, drawing, and painting. Robertson paints with chemicals on the surface of metallic photo paper. Even though Robertson does not control the colors that appear or how the forms look, the act of physically altering the already exposed and processed photographs hints at a desire to expand what colors photographs should display and how photographs are treated. Breuer works similarly. When Breuer started working with chromogenic paper in 2001, he, as Robertson does with metallic paper, was able to physically

mark the surface of the paper after exposing and processing the paper.⁴⁶ For both artists, working with already exposed and processed paper resulted in the revealing of colors that were not expected to appear on the photographic surface. The colors are anti-naturalistic yet they must be latent within the paper's emulsion because Breuer is not altering the paper's chemical makeup. Instead, he is setting chemical reactions in motion that dredge up unnatural and electric bright blues and greens not typically associated with photography's formal language.

Breuer probes the photographic surface in many ways to reveal hidden colors under layers of the emulsion. Being able to scratch or burn the paper's surface after exposing and processing it widened the number of colors he could bring out of the paper's surface.⁴⁷ He was limited in how he could interact with the gelatin silver paper because he had to perform his manipulations to the paper before it was exposed and processed.⁴⁸ This means that at first, he was limited in this way, until he discovered that with chromogenic paper he could alter the colors after exposing and processing. Chromogenic paper has three gelatin layers, each made up of silver halides. The layers of halides are sensitive to different colors of light (one layer to red, another to green, and one to blue). The chemicals used to develop the paper are sensitive to light, water, and heat, all of which can destroy the integrity of the photograph's surface.⁴⁹ Breuer intentionally applies these destructive elements directly to the surface of prints hoping to break down and alter the chemical makeup of the gelatin layers, forcing atypical colors to appear on the surfaces of the prints.

⁴⁶Virginia A. Heckert, Marc Harnly, and Sarah Freeman, *Light, Paper, Process: Reinventing Photography* (Los Angeles: J. Paul Getty Museum, 2015), 41.

⁴⁷Ibid, 42.

⁴⁸Ibid.

⁴⁹*Art Terms* (Tate), s.v. "C-print," by Tate, accessed March 13, 2020, <https://www.tate.org.uk/art/art-terms/c/c-print>.

The unnatural electric blue color that takes over most of *Untitled (C-1189)* (2012) is the product of burning the photo paper's emulsion layers (fig. 3.3). *Untitled (C-1657)* (2014) was also made by burning chromogenic paper (and scratching and folding it); the result is a formal photogram displaying garish yellow, red, and orange horizontal and vertical rectangular patches (fig. 3.4). It makes sense that Breuer's unconventional picture-making techniques bring new colors to the surface of photographs not only because his experiments go against traditional photogram practice but also because the chemicals used to process chromogenic paper are highly sensitive to heat. Through deliberately performing destructive acts to photography's materials, Breuer is able to develop a contemporary formal language for photography with photograms that visually contradict photographic expectations. Prior to Breuer's caustic and abrasive experiments with his photograms, the bright blue color, the blazing slashes of orange, and the deep maroon in *Untitled (C-1189)* and the jarring warm tones visible in *Untitled (C-1657)* were colors analog photography simply did manifest. Chromogenic paper typically sports colors that exist in nature, because photographs reproduce what we see in the world. Breuer uproots this perception of photography when he manipulates photographic materials and presents colors that photo paper contains, yet which have not been visualized.

Untitled (C-1189) and *Untitled (C-1657)* show us three major ways Breuer interacts with the materiality of photo paper during his process: burning, scratching, and folding. We know loosely how his photograms are made because in title information he includes basic actions taken on the prints. For example, *Untitled (C-1189)* is described as "chromogenic paper, burned" and *Untitled (C-1657)*, "chromogenic paper, folded/burned/scraped."⁵⁰ His approaches defy the idea

⁵⁰Marco Breuer, *Untitled (C-1657)*, 2014, chromogenic paper, folded/burned/scraped, Yossi Milo Gallery, New York, accessed March 15, 2020, <https://www.artsy.net/artwork/marco-breuer-untitled-c-1657>.; Marco Breuer,

that photographs are delicate items that must be treated with the utmost care. Breuer appears to not only ignore the traditional do's and don'ts associated with photographic care, but he also uses those conventions to intentionally complicate the boundary of photography. Specifically, his work expands the ideas about what photographers can do to the surfaces of photographs and how photographs can look. Whereas photography traditionally works to create depth through imitation of the eye's perception of space and the illusion of depth, Breuer's photographic practice rejects this idea of depth. His images introduce a new form of depth in photography, one that comes from cutting and marking the surface of a photograph. In a way, Breuer demonstrates that photography does not have to be flat and show depth through illusion. The surface of photo paper holds the ability to produce a sense of physical depth instead of the illusion of receding space.

Spin and *Pan* are two series by Breuer that highlight how he introduces a new definition of depth in photography through employing abrasive techniques to the surface of photo paper. To make the *Spin* photograms, Breuer placed chromogenic paper on a record player and cut into the layers of the paper while it was spinning.⁵¹ The *Pan* photograms were made by pulling a razor blade across the surface of an exposed sheet of chromogenic paper.⁵² *Pan (C-397) (2003)* exemplifies how Breuer's photograms complicate the expectations in photography that photographs are flat and present illusions of depth (fig. 3.5). Here, depth is not illusory, it is real and tangible. Some of the debris, created by scraping the emulsion layers down, seems to not

Untitled (C-1189), 2012, chromogenic paper, burned, Yossi Milo, New York, accessed March 13, 2020, <http://photographmag.com/news/marco-breuer-wins-larry-sultan-award/>.

⁵¹Marco Breuer, "Marco Breuer Lecture | Larry Sultan Photography Award," lecture presented at California College of the Arts, Timken Lecture Hall, San Francisco, CA, April 21, 2016, YouTube, last modified November 29, 2016, accessed April 9, 2020, https://www.youtube.com/watch?v=ufojR_h_qVY.

⁵²Heckert, Harnly, and Freeman, *Light, Paper*, 41.

have fully separated from the paper, giving the paper's surface depth and three-dimensionality. We can see the little pieces of photo paper detached from, and almost popping off of, the surface. The slightly protruding tiny scraps of paper on the surface reject that depth in photography is and can only be the product of illusion. The same effect is true in *Spin (C-824)* (2008) (fig. 3.6).

Spin (C-824) rejects how depth is typically rendered in straight photography, yet it does not create depth in the same way as *Pan (C-397)*. Instead, if you look closely, you can see that the paper has small holes pierced through it (fig. 3.7). The perforations are not perfectly clean, round holes. They exhibit burring, the jagged, rough edges that show various layers of the surface of the photo paper and create a three-dimensionality to the chromogenic paper's surface, which is traditionally expected to be free of dust and debris. The presence of tiny holes speaks to Breuer's willingness to disrupt conventions of photography, including the treatment of the paper itself. In turn, he demonstrates that photographs can be more than flat conveyors of illusionary space.

In *Spin (C-824)*, Breuer cuts into the gelatin layers of the chromogenic paper with different applications of pressure, creating depth. In the center, there is an extremely black circle. Concentric circles, all earth tones, some green, yellow, orange, white, radiate out from the central, largest black circle. The circles get larger the farther from the center they are, creating a manmade illusion of depth instead of the mechanical one produced by the camera's optics. It looks as if the circles do not flawlessly radiate from the center. In some parts of the photogram, there appear to be circles that are raised from the surface of the paper, which may be the result of the colors Breuer digs out of the paper. Optical science shows that our eyes perceive some colors

as advancing and others as receding. Cool colors recede, warm colors advance.⁵³ Color theory explains why in *Spin (C-824)* the warm-colored yellow and orange circles jump off the page while the cool green and blue colors appear to sit back in contrast to the dark black background. On the other hand, the oscillation between cleanly receding concentric circles and occasionally projecting circles may not be an illusion created by colors and the cone-like structure of the forms. Breuer created this photogram by pressing a stylus into an already exposed and processed chromogenic paper as it was spinning on a record player at seventy-eight RPM.⁵⁴ I believe this experiment resulted in actual three-dimensionality on the surface of the two-dimensional chromogenic paper because the harder Breuer pressed, the deeper the paper's surface would be incised. This laborious method, which creates subtle dimensionality by minutely carving the surface of paper exemplifies how Breuer blurs boundaries between photography, drawing, and sculpture.

The way Breuer unearths color in his photograms also speaks to how his photograms circumvent the conventions of photography. With analog color photography, color, without a negative, is created by simultaneously flashing chromogenic paper in a darkroom with a combination of yellow, cyan, and magenta lights from one enlarger. The goal is to achieve the perfect combination of these three colors to have the print look like the natural colors of the photographed objects and to avoid color casts.⁵⁵ This is not how Breuer thinks about color in his photograms. Breuer often chooses to work with chromogenic paper that is exposed to the three

⁵³Jonathan Schwabish, "Color," in *Better Presentations: A Guide for Scholars, Researchers, and Wonks* (New York: Columbia University Press, 2017), 36, <https://www-jstor-org.ezprox.bard.edu/stable/10.7312/schw17520.6>.

⁵⁴Breuer, "Marco Breuer," lecture, YouTube.

⁵⁵Henry Horenstein defines color casts as when the color of an image as a whole is not neutral and it becomes either too warm, cool, or looks like a specific color.; Henry Horenstein and Russell Hart, *Color Photography: A Working Manual* (Boston: Little, Brown, 1998), 25.

colors so that it ends up black. Unlike the formation of colors in the actual spectrum--in which black is not a true color, since it is formed by the absence of colored light, in color photography, black is actually produced by activating all the colors in the emulsion layers.⁵⁶ Breuer releases colors from their layers through various acts like cutting, scraping, or burning the photo paper. In *Spin (C-824)*, the earth tones were embedded and hidden to the eye in the gelatin layers of the paper. Breuer had to unconventionally attack the delicate surface of the paper. He broke open and cut into the layers of the paper to make the yellow, green, and orange hues become visible to us. Breuer has also unearthed an electric blue color that dominates the surface of the paper in *Untitled (C-1189)* (fig. 3.3). This piece of chromogenic paper was burned and that atypical element Breuer applied to the paper's surface unveiled a color he could not have expected, nor is it a color chromogenic paper is expected to show.

Whereas Moholy-Nagy recognized in the twentieth century that photography was not being considered and explored holistically, Walead Beshty, an American photographer, came to the same conclusion in the twenty-first century. For Moholy-Nagy, this meant forcing people to "see in the genuine elements of photography the self-sufficient vehicle for direct, visual impact" so that photography's artistic nature could be exercised.⁵⁷ Beshty occupies a similar stance, however, it is in reference to the contemporary understanding of photography. Beshty wants to dismiss what he views as the accepted narrow understanding of photographs as camera-produced straight, pictorial images:

One could say that a photograph is something that you make with a lens, and it produces a likeness, an image. But there is no space in this idea; you can fiddle with it, misuse it,

⁵⁶Breuer, "Marco Breuer," lecture, YouTube.

⁵⁷Moholy-Nagy, *Vision in Motion*, 178.

but usually, such manipulations are excused as experiments, which in the end are overshadowed by the proper, conventional applications.⁵⁸

Instead, he seems to be pointing to two issues he sees with contemporary photography. First, maintaining such a singular view of photography limits its potential, but more importantly, by dismissing non-straight photographs as experimental, we are ignoring a viable branch of photographic production. Also, these discrepancies led Beshty to pursue a materialistic and formalist photographic process. Beshty hopes to do two things: validate photographs that are not made with a camera and produce images that do not necessarily exist in terms of the conventional idea of what a photograph should look like, how it should be approached, and discussed. His photograms force viewers to analyze the photographic materials like paper type and the surface of the photograph.⁵⁹

Beshty started making materialist photograms because he considers there to be a gap in photography's history and the photogram process, "a closed procedure". By closed procedure, Beshty means photograms are a part of photography's history that seems tied down because of conventions. Consequently, through exploring photograms, he realizes he could widen the expectations of what a photograph is or should be.⁶⁰ He shares Moholy-Nagy's view that during the avant-garde movements in the twentieth century, painters were involved in exhaustively exploring qualities of their materials and mediums, while photography was stuck in a symbolic

⁵⁸Aram Moshayedi, "After Materiality and Style," *Art in America*, April 2009, 136, <http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=504268839&site=ehost-live>.

⁵⁹Walead Beshty, "Artist Talk: Walead Beshty," lecture presented at Peter B. Lewis Theater, Guggenheim Museum, New York City, May 26, 2010, YouTube, last modified November 8, 2010, accessed April 4, 2020, <https://www.youtube.com/watch?v=k1aihTTaJuE>.

⁶⁰Walead Beshty and Marikka Trotter, "Walead Beshty: Artist and Writer," lecture presented at Southern California Institute of Architecture, Los Angeles, September 26, 2019, YouTube, last modified November 4, 2019, accessed April 29, 2020, <https://www.youtube.com/watch?v=1sCWDvoMIMU>.

and narrative-based approach.⁶¹ Certainly, it is the case that Moholy-Nagy was experimenting with photography's materials, but his photograms contained references to real objects. For example, the abstracted, silhouetted forms in *Fotogramm* (1926) can still be identified as a human hand and a spatula (fig. 3.8). Moholy-Nagy's work is concerned with the medium's material properties, but Beshty and Breuer take it one step further as they are both explicitly working to eliminate any referents beyond form and color themselves.

Beshty is taking Moholy-Nagy's reductionist photogram practice further, ridding his work of nameable objects. This pursuit began after Daniel Hug, Moholy-Nagy's grandson, and Beshty constructed a fallacious memory, including a title and materials used, about crumpled paper photograms they believed Moholy-Nagy made.⁶² Beshty knew Hug because Hug owned a gallery in Los Angeles near Beshty's studio.⁶³ For some reason, Hug and Beshty thought that Moholy-Nagy had made crumpled paper photograms because they fit with his overall photogram practice, specifically working with the expressive and transformative powers of light. After discovering that these photograms never existed, Beshty decided to make these ultimate materialist photographs himself. To Beshty, the gap in photography's history they discovered

seemed like an invitation to, well, what would that really look like? So in some sense, it seemed like a missing link or another possibility outside of the pictorial trajectory of photographs that should've been exploited but didn't for some reason.⁶⁴

This conversation led Beshty to make his first black and white photogram series, *Pictures Made by My Hand with the Assistance of Light*, starting in 2006 (will be referred to going forward as

⁶¹Ibid.

⁶²Ibid.

⁶³Carol S. Eliel, "Painting Photography Film for a New Century, or Just What Is It That Makes Moholy Today So Compelling, So Appealing," in *Moholy-Nagy: Future Present*, by Matthew S. Witkovsky, et al. (Chicago: Art Institute of Chicago, 2016), 294.

⁶⁴Beshty, "Artist Talk," lecture, YouTube.

“*Pictures Made by My Hand*”).⁶⁵ After Beshty completed this series, Hug came to Beshty almost two years later to tell him that they were originally correct; Moholy-Nagy had made crumpled paper photograms. Moholy-Nagy made his photograms by crushing wet photo paper, Beshty, on the other hand, did not use wet photo paper.⁶⁶ To make these photograms, he starts by measuring the photo paper to his arm span and then cuts it, highlighting how his work, like Breuer’s, treats photographs unconventionally and in a similar laborious process, reminiscent of how sculptures are made.⁶⁷ The next steps involve crumpling the photo paper and exposing it to light.⁶⁸ The result is a photograph in which the forms present are created by the paper casting shadows onto itself. Beshty views the paper as its own negative since it gives form to the shapes present.⁶⁹ This is supported by the fact that the crumpled lines reflect the forms, which is evident in *Picture Made by My Hand* (2011) (fig. 3.9). The crinkles in the paper exist above the white forms and appear to outline or mimic the form’s shape.

Picture Made by My Hand exhibits white quasi-geometric forms floating in a black space beneath a cracked veneer (fig. 3.9). The forms are unrecognizable and foreign. The non-figurative work succeeds in Beshty’s task of creating photographs that do not reflect or describe reality.⁷⁰ Yet although Beshty’s photograms are highly formalistic and lack clear references to reality, he does not consider them abstract because “they literally are what you are

⁶⁵James Nisbet, "Walead Beshty: PROCESSCOLORFIELD," *X-tra: Contemporary Art Quarterly* 14, no. 2 (Winter 2011): 46-47, <http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=69721453&site=ehost-live>.

⁶⁶Eliel, "Painting Photography," 294.

⁶⁷Beshty, "Artist Talk," lecture, YouTube.

⁶⁸Nisbet, "Walead Beshty," 46-47.

⁶⁹Beshty, "Artist Talk," lecture, YouTube.

⁷⁰Walead Beshty, "Walead Beshty in New Photography 2009," interview by Eva Respini, *Inside/Out*, last modified November 18, 2009, accessed April 6, 2020, https://www.moma.org/explore/inside_out/2009/11/18/walead-beshty-in-new-photography-2009/.

looking at, the image themselves and the context of their production.”⁷¹ In referring to his work as “concrete,” he means that these works are about the photograph itself, and so its physical and formal components. This understanding of his work complicates his argument that his photograms are not about photography: “the reflexivity of my work has never really been ‘about photography’ or ‘about the digital,’ but a response to the specific conditions related to their use.”

⁷² However, the context of production behind *Picture Made by My Hand* upends that statement (fig. 3.9). The entire act of Beshty physically crumpling a photogram and selectively exposing it to light creates an undeniably self-reflexive photogram.⁷³ The photogram is not solely about how it is not representational or figurative. I hold that these crumpled paper photograms are about photography itself because of how the black space and the white shapes are formed. When Beshty flashes light onto a crinkle or fold in the paper, the light gets deflected, causing shadows of the photo paper to be cast on its surface.

The visual tactility of the silver gelatin paper in *Pictures Made by My Hand* further emphasizes the idea that Beshty’s photograms are about photography. In *Picture Made by My Hand*, the surface looks cracked (fig. 3.9). It almost looks as if cellophane was roughly and carelessly placed over a black and white photograph to protect its surface from dust and scratches. In most photographs, the surface of the print is not called attention to; in this photogram series, however, the fractured surfaces command attention. The seductive nature of the surface is created by the haptic quality of the folds. As viewers, we are confronted by

⁷¹Walead Beshty and Eileen Quinlan, "Walead Beshty and Eileen Quinlan," *Bomb Magazine*, September 21, 2009, 13, accessed April 4, 2020, <https://bombmagazine.org/articles/walead-beshty-eileen-quinlan/>.

⁷²Moshayedi, "After Materiality," 136.

⁷³All of Beshty’s photograms in the *Pictures Made by Hand with the Assistance of Light* series are dated in 2011 yet this does not mean they were made in 2011. He started this series in 2006. His work receives dates when they are first exhibited.

photography's materials and left to analyze them as part of the photograph. Beshty described crumpled paper photograms as the ultimate materialist photogram.

Something else occurs that extends the self-reflexive quality of the crumpled paper photograms. Because photograms are unique images, they have to be scanned or photographed to be turned into a digital file that can exist on a website. Whether *Picture Made by My Hand* was scanned or photographed with a camera, there is light reflecting on it that does not appear to be a part of the original photogram (fig. 3.9). The glossy reflection of light along the left side of the image of *Picture Made by My Hand* (2011) on the Art Institute of Chicago's website supports this supposition (fig. 3.10). You can tell that it is not inherent to the photogram because the light quality does not match the richness or hues of the white silver gelatin paper creates. The same glossy effect is present in *Picture Made by My Hand* from the Guggenheim Museum website (fig. 3.9). The light is reflecting off the surface, almost obscuring the shapes in the top third of the photogram. This is important because even after Beshty finished the work, it still produces forms that speak to its materialist and formalist motivated creation.

Beshty began a color photogram series entitled *Curls* that involves a similar physical process and formal result as *Pictures Made by My Hand*. Instead of physically folding the paper as in *Pictures Made by My Hand*, in *Curls*, Beshty lets the natural curl and bend of the photo paper generate forms when struck by light. *Curls* continues to emphasize the sculptural potential of photography, but it does so with a more material-focused approach than Beshty's previous work. Here, the sculptural element of photography is not constructed by Beshty; it is a result of how the photo paper naturally exists. Beshty used roll photo paper for *Curls*, instead of sheet paper, which means the paper comes on a roll and is cut by Beshty into smaller pieces in his

studio.⁷⁴ This is important because the forms that are present in the photograms are a result of Beshty highlighting and making visible the natural bends and curvature of rolled photo paper, which is actively flattened out for the presentation of prints in contemporary practice.

There are two types of work in *Curls: Three Color Curl* (photo paper that is exposed to three colors) and *Six Color Curl* (photo paper exposed to each color twice). To make *Three Color Curl* (CMY: Irvine, California, August 19th 2008, Fuji Crystal Archive Type C) and the colored lines and rectangular chunks of color in them, Beshty unrolled the photo paper in the darkroom, exposed it to one color from the color enlarger, rerolled the paper, and repeated these steps for the remaining two colors (fig. 3.11).⁷⁵ The title of *Six Color Curl* (CMMYYC: Irvine, California, July 19th 2008, Fuji Crystal Archive Type C) tells us that Beshty exposed the paper to the three colors twice (fig. 3.12). These titles make clear that the artist did not want to obscure the process in mystery, since the whole purpose of his work is to open up closed procedures in photography's history.⁷⁶ For *Six Color Curl*, the paper was exposed to the colors in the following order: cyan, magenta, magenta, yellow, yellow, cyan. We would not know how the photograms were made without watching interviews, for example, unless Beshty provided the process information in the titles. Letting the viewer into his process supports his desire to have viewers focus on the forms and the materials, not the process or content. Since we are not trying to figure out how the overlapping, semi-translucent color blocks were made, we are left to inspect their appearance. Moreover, in *Curls* specifically, the title includes the paper type and what colors it was exposed to and in what order. We are therefore directed to look at this piece with materials

⁷⁴Beshty and Trotter, "Walead Beshty," lecture, YouTube.

⁷⁵Ibid.

⁷⁶Katya Tylevich, "Invisible Transformations," *Elephant*, Winter 2013/2014, 131, <http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=112821492&site=ehost-live.>; Beshty exposes the paper to cyan, magenta, and yellow, the three colors lights in the enlarger.

in mind because they are included in the title. How Beshty titles his work also supports his desire to eradicate narrative and meaning from his work, furthering his overall aim to produce work that is neither abstract nor based in reality nor labeled as a mere experiment.

Photographs are expected to be two-dimensional. We analyze them as flat pieces of paper that present an illusion of depth. With Breuer and Beshty, depth is not an illusion. While Breuer scars and marks the surface of photo paper to reject the conventional two-dimensionality of photography, Beshty transforms an inherently flat piece of photo paper into a free-standing form in his *Fold* series. The black and white photograms are made by Beshty taking light-sensitive photo paper and turning it into a three-dimensional structure. Like *Curls* and *Pictures Made by Hand with the Assistance of Light*, the photo paper in *Fold* was measured off of Beshty's body in the darkroom and then cut, highlighting the atypical, physical way in which he interacts with photography's materials.⁷⁷ After cutting the paper, Beshty folds it into a free-standing form. In the last step, the three-dimensional paper structure is exposed to directional light or light that is pointed at a certain spot of the paper.⁷⁸ Typically, photo paper is exposed to light evenly from an enlarger that is positioned above the paper. The photograms are not presented as three-dimensional artworks, yet they do display folds and bends that result from making the paper a three-dimensional object. In *Fold*, he goes even further in titling information to include not just the paper type but also the precise angle of the directional light used. *Fold (45° directional light source)*, December 22, 2006, Santa Clarita, California, Ilford Multigrade Fiber IV is made with Ilford Multigrade Fiber IV exposed to a forty-five-degree angle light source (fig.

⁷⁷Walead Beshty, *Fold (45° directional light source)*, December 22, 2006, Santa Clarita, California, Ilford Multigrade Fiber IV, 2006, black and white fiber-based photographic paper, Jameel Arts Center, Dubai, UAE, accessed April 7, 2020, <https://jameelartscentre.org/collection/walead-beshty/>.

⁷⁸Beshty, "Artist Talk," lecture, YouTube.

3.13). You can tell the paper was constructed into a three-dimensional form because of the sharp crease that seems to go into what may have been a corner of the free-standing form in the bottom right of the photogram. In *Fold (45°/135°/225°/315° directional light sources), December 31st 2012, Los Angeles, California, Ilford Multigrade IV MGF.1K*, the creases are visible throughout as thin white lines (fig. 3.14). The creases are highly visible and so they show us the shape that the paper was folded into. Although the *Fold* photograms are not shown as the three-dimensional forms they were shaped into, the physical presence of creases and the marks on the damaged paper underscores the tactility of photographs.

Even though Beshty and Breuer work with the essential materials of the photogram differently, they both introduce a new mode of photography that is focused as completely as possible on materials. Beshty says his photograms are not abstract because the photogram is the subject and therefore nothing is abstracted. Breuer holds a similar position, as he contends that the shapes in his photograms are “not technically abstractions because they really don’t have a source in the external world. They’re really developed out of this negotiation between hand and tool and material.”⁷⁹ Because their photograms are products of photography’s materials alone, they do not view their work as abstract or pictorial. They benefit from refusing the description of their work as “abstract,” because it ensures that the work does not become representative of something out in the world. By stressing that their works are not abstractions, Beshty and Breuer enable photographs to exist as formal artworks where the colors, shapes, and lines present are directly linked to the materials of photography. Without the photogram process, Breuer and Beshty would not have been able to achieve purely materialistic photographs. In other words, the

⁷⁹Breuer, "Marco Breuer," lecture, YouTube.

sculptural component in which the photogram is treated as an object and not a photograph is a key reason why their processes can deviate from the traditional notions of a photograph. Overall, their photograms evade our formal expectations of photographs and content because they do not use any element of reality to make pictures. The photogram process allows artists to work with bare bones of a medium. In the case of Beshty and Breuer, this process enabled them to physically interact with light, photo paper, and chemicals, so that they could treat the photograph as an object in all stages of production.

Chapter 3: Figures



Figure 3.1. *Fotogramm*. László Moholy-Nagy. 1925. Gelatin silver print. $9 \frac{3}{8} \times 7$ inches.

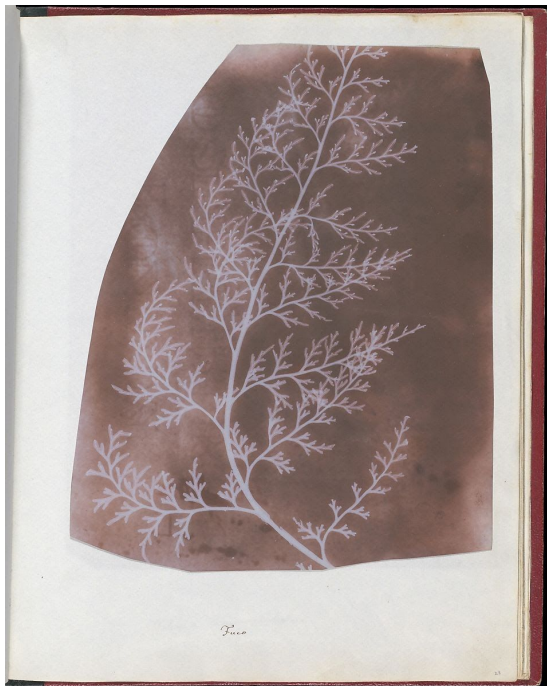


Figure 3.2. *Wrack*. William Henry Fox Talbot. 1839. Salted paper print. $8 \frac{11}{16} \times 6 \frac{7}{8}$ inches, irregularly trimmed.



Figure 3.3. *Untitled (C-1189)*. Marco Breuer. 2012. Chromogenic paper, burned. Unknown dimensions.

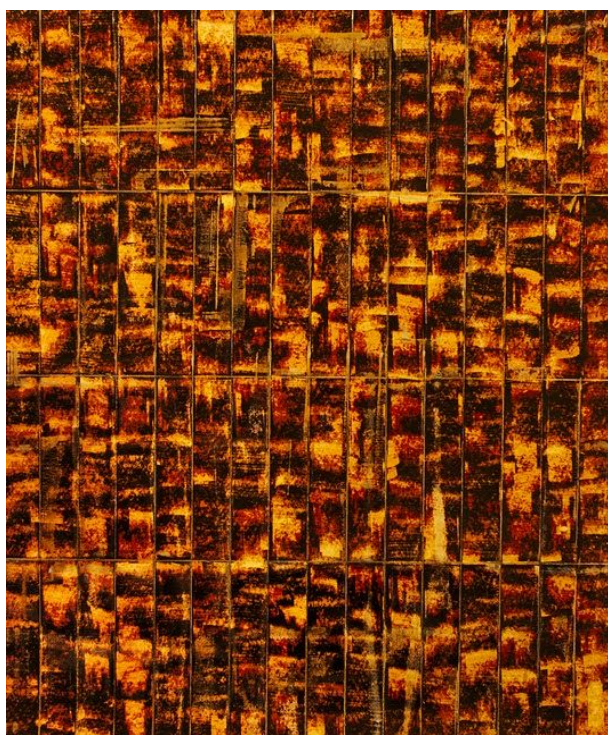


Figure 3.4. *Untitled (C-1657)*. Marco Breuer. 2014. Chromogenic Paper, folded/burned/scraped. 22 15/16 × 19 3/16 inches.



Figure 3.5. *Pan (C-397)*. Marco Breuer. 2003. Chromogenic paper, scratched. $23 \frac{1}{2} \times 19 \frac{9}{16}$ inches.



Figure 3.6. *Spin (C-824)*. Marco Breuer. 2008. Chromogenic paper, embossed and scratched. $13 \frac{5}{8} \times 10 \frac{5}{8}$ inches.

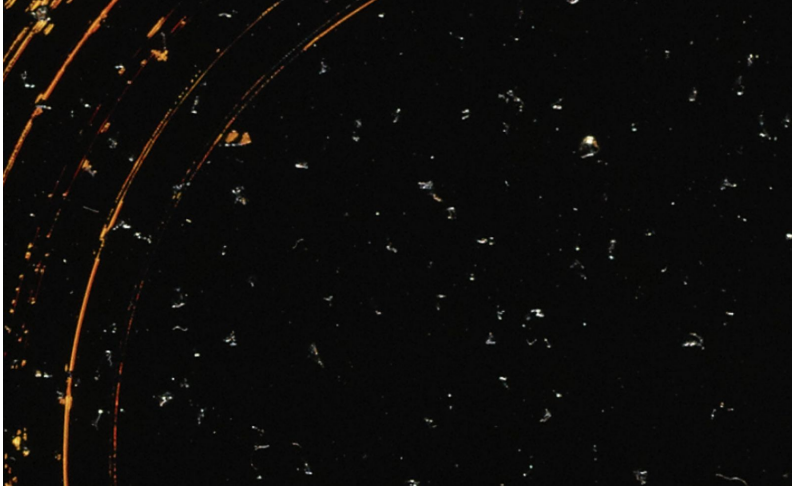


Figure 3.7. Detail of perforated holes on surface of *Spin* (C-824) (fig. 6).



Figure 3.8. *Fotogramm*. László Moholy-Nagy. 1926. Gelatin silver print. 9 7/16 × 7 1/16 inches.



Figure 3.9. *Picture Made by My Hand with the Assistance of Light.* Walead Beshty. 2011. Gelatin silver print (photogram). 55 x 93 1/2 inches.



Figure 3.10. *Picture Made by My Hand with the Assistance of Light.* Walead Beshty. 2011. Gelatin silver print. Roughly 96 × 56 inches.



Figure 3.11. *Three Color Curl (CMY: Irvine, California, August 19th 2008, Fuji Crystal Archive Type C).* Walead Beshty. 2008. Color photographic paper. 97 5/8 × 51 1/8 inches.



Figure 3.12. *Six Color Curl (CMMYYC: Irvine, California, July 19th 2008, Fuji Crystal Archive Type C).* Walead Beshty. 2008. Color photographic paper. 92.1 × 50 inches.



Figure 3.13. *Fold (45° directional light source), December 22, 2006, Santa Clarita, California, Ilford Multigrade Fiber IV.* Walead Beshty. 2006. Black and white fiber-based photographic paper. Roughly 24 × 20 inches.



Figure 3.14. *Fold (45°/135°/225°/315° directional light sources), December 31st 2012, Los Angeles, California, Ilford Multigrade IV MGF.1K.* Walead Beshty. 2012. Black and white fiber based photographic paper. 55 × 108 inches.

Conclusion: What Is Next?

When I first started my research, I was concerned with the following question: why are artists today using the photogram process? After reading Rexer's *Photography's Antiquarian Avant-garde*, my research question evolved. I developed an interest in understanding how technical choices connect to the reasons why artists make photograms. Written in 2002, *Photography's Antiquarian Avant-garde* is about the renewed attraction for early photographic processes starting in the 1970s and increasing in popularity in the 1980s. Rexer considered alternative processes to be "pre-twentieth-century methods of photography."⁸⁰ Digital photography was invented in 1975, making it relatively new at the time Rexer wrote his book. Digital photography was not as universal when Rexer wrote *Photography's Antiquarian Avant-garde*, however, he still argued that using alternative processes was a response to the introduction of digital technology. In his chapter on photograms, he argues that contemporary artists such as Ellen Carey, Adam Fuss, Graciela Sacco, and Derges have adopted the photogram to revolt against digital photography.⁸¹

Rexer contends that artists revisited the photogram and other early photographic processes to go back to photography's origins. He specifically believes that

many photographers working today in old processes express the same intense desire to recover the hand-made quality of images, even though the outcome of their labor is reproducible on a mass scale.⁸²

Rexer thus considers the reversion to early photographic processes as a means of working with the physicality of the medium. Given that digital photography has now reached the saturation of its popularity and proliferation, it seems that Rexer's argument is even more true today than in

⁸⁰Rexer, *Photography's Antiquarian*, 10.

⁸¹Rexer, *Photography's Antiquarian*.

⁸²Ibid, 25.

2002. Because digital photography's materials include the intangible pixels of a photograph, it makes sense that artists would seek out processes that maintain traditional values of photography (e.g. interacting with its physical elements). Derges' series *Shorelines*, for example, depends on the artist's physical engagement with paper, light, and the natural environment, creating works that would not be possible with digital means. However, Rexer does not believe the return to the photogram is solely motivated by wanting to make hand-made photographs in a way not possible digitally.

Writing that "photography began to give up its formal preoccupations and stylistic imperatives in favor of cultural criticism and intellectual program" Rexer argues that as contemporary photography turned toward conceptual or critical objectives, photographers uninterested in these intellectual motives sought instead to return to a materialist way of engaging the medium.⁸³ To some degree, I accept Rexer's logic. Artists want to work with photography's materials, evident in how the photogrammers I have written about execute varying degrees of a material-driven process: Derges places photo paper onto shorelines, Breuer carves into the surface of photo paper, Beshty constructs three-dimensional forms out of photo paper, and Robertson flips and turns her metallic photo paper while painting and dripping chemicals onto its surface. This does not mean that the physicality and materiality of the photogram is the only reason they all use it. Ingrained in the contemporary return to the photogram is an inadvertent or intentional encounter with physicality. Working with photography's early manual processes warrants photogrammers' expanding and reworking the

⁸³Ibid, 21.

foundation of photography, because photography itself has changed with or because of contemporary culture.

Whereas Rexer holds that the return to the photogram was to avoid making work concerned with issues born outside of photography, I believe that contemporary photograms can be used to raise issues beyond form and material. For example, the London based collaborators of Adam Broomberg, a South African born artist, and Oliver Chanarin, a British artist, have used the photogram to subvert the embedding process that is now the standard management of photojournalists in war zones. The embedding process began with the First Gulf War in 1990. The system developed by British and American military authorities provides photojournalists with access to the frontline of wars.⁸⁴ Even though it seems like a great opportunity for photographers, the military leadership controls how the photojournalists depict war:

the army agree[s] to take you as a journalist and they agree to show you the war. They...look after you and they give you a place to sleep and they feed you...In exchange, you give them access to you and that is the bargain. It means that they can then control what you do[,],...what you photograph[,],...what you see[,], and what you write about.⁸⁵

Chanarin is describing the embedding system as a contradictory experience because an unequal exchange takes place between the photojournalist and the military. Because the military command uses photographers to share what they want the public to know about conflict, they benefit from this system more than any other party involved. To become embedded, you have to sign a form that outlines what types of scenes you can and cannot photograph.⁸⁶ As an embedded

⁸⁴Adam Broomberg and Oliver Chanarin, "Adam Broomberg and Oliver Chanarin, Slade Contemporary Art Lecture Series 2011-12," lecture presented at London's Global University, Slade School of Fine Art, London, March 18, 2013, YouTube, last modified March 18, 2013, accessed December 29, 2019, <https://www.youtube.com/watch?v=w5NCIdjA7iA>.

⁸⁵Ibid.

⁸⁶Adam Broomberg and Oliver Chanarin, "What Is Conceptual Photography? (part 3)," lecture presented at Source Photographic Review, September 18, 2012, YouTube, last modified September 18, 2012, accessed December 29, 2019, <https://www.youtube.com/watch?v=9TvpXG9fLqo>.

photojournalist, you commit to not photographing the following: wounded or dead people, evidence of enemy fire or conflict, hospitals, and battlefields.⁸⁷ These limiting guidelines explain why different wars are pictured in a similar way, detached from truth and reality.

The Day Nobody Died created in June 2008 arose from the experience Broomberg and Chanarin had as judges for the World Press Photo Awards.⁸⁸ As judges, they pushed buttons to vote on whether or not an image should remain in the running.⁸⁹ Chanarin and Broomberg were bothered by the homogeneity of the images.⁹⁰ The photographs of embedded journalists were often repetitions of cliches, such as soldiers standing in a desert with a sunset in the background. Broomberg and Chanarin believed photographs like these presented a false depiction of war. *The Day Nobody Dies* questions the way photographs of war and conflict are produced and addresses their structural limitations.

An image they saw at the World Press Photo Awards led them to adopt the photogram as the tool to combat the limitations of the embedding system. Among the cliches of straight, and often picturesque war photographs, there was a blurry, chaotic photograph of the assassination of Benazir Bhutto taken by photographer John Moore in 2007 (fig. 4.1).⁹¹ The photograph presents the exact moment a bomb detonated on December 27, 2007, killing Bhutto, the first female Prime Minister of Pakistan.⁹² Moore's photograph stood out to Broomberg and Chanarin because

⁸⁷Ibid.

⁸⁸Ibid.; Broomberg and Chanarin were elected to be judges at the World Press Photo Awards because of their experience working for a magazine called *Colors*; they left the magazine to make work about issues they saw with how images are used, abused, and produced for magazines and newspapers.; Robyn Dixon, "Oliver Chanarin and Adam Broomberg Look at a Bigger Picture," *Los Angeles Times* (Los Angeles, CA), February 6, 2011, accessed December 27, 2019, <https://www.latimes.com/entertainment/la-xpm-2011-feb-06-la-ca-cultural-exchange-20110206-story.html>.

⁸⁹Broomberg and Chanarin, "What Is Conceptual," lecture, YouTube.

⁹⁰Ibid.

⁹¹Ibid.

⁹²Owen Bennett Jones, "Benazir Bhutto Assassination: How Pakistan Covered up Killing," *BBC News*, December 27, 2007, accessed December 29, 2019, <https://www.bbc.com/news/world-asia-42409374>.

it did not whitewash or romanticize war, which most embedded photojournalist photographs do. Moore's image is effective in portraying war because of its indexicality. The photograph lacked a sharp focus; consequently, it contained little visual information. The lack of crispness exhibited a scene more true to the moment the bomb went off than an in-focus image would have. The commotion and fear experienced during that specific event are portrayed through the image's dynamism.⁹³ From the upper right corner to the bottom left corner, there is a sweeping motion that expresses the intense action of the event. Broomberg and Chanarin realized that to subvert the norms of the embedding system they had to rid themselves of the camera because the accuracy of Moore's photograph stemmed from its emotional and physical connection to the moment it depicted.⁹⁴ This radical step is important because it supports my belief that photographs can also serve social and political aims.

To unsettle the embedding system, Chanarin and Broomberg had to start by getting themselves embedded. The artists falsely presented themselves as photojournalists to receive status as embedded photojournalists with the British army.⁹⁵ Although they did not break the rules outlined in the embedding form they signed, they were eventually forced to leave Afghanistan for not photographing the war the way the British military command wanted and expected. To make their photographs in Afghanistan, Broomberg and Chanarin brought a roll of Fujifilm color photo paper with them that was roughly one hundred and sixty-four feet long by two and a half feet wide.⁹⁶ When escorted to a scene to take a photograph, the artists opened the

⁹³Broomberg and Chanarin, "What Is Conceptual," lecture, YouTube.

⁹⁴Ibid.

⁹⁵Broomberg and Chanarin, "Adam Broomberg," lecture, YouTube.

⁹⁶Adam Broomberg and Oliver Chanarin, "The Day Nobody Died," lecture presented at Barbican Art Gallery, London, December 4, 2008, Broomberg & Chanarin, last modified December 4, 2008, accessed April 26, 2020, <http://www.broombergchanarin.com/new-page-4>.

back of their Snatch Land Rover which acted as their darkroom, unrolled a roughly twenty-foot long section of the photo paper, exposed it to the sun for twenty seconds, closed the door, and then put the paper back into the box.⁹⁷ In a way, the long horizontal photograms are records of time. This is because they are each twenty-second long, nondescript records of each instance that they stopped to photograph.

The one-hundredth British soldier was killed on June 8th. In response, they took the paper out of the box, unraveled part of it, and exposed it to sunlight for twenty seconds, creating *The Day of One Hundred Dead* (fig. 4.2; 4.3).⁹⁸ This nondescript photogram has no reference to the death of the one-hundredth British soldier apart from the title; only colors adorn the paper's surface. The panorama of color derives from varying exposure to sunlight and extreme heat which makes visible colors on the spectrum between black and white.⁹⁹ White figureless space takes over the entire right half of the paper and part of the left (fig. 4.3). On the far left side of the image, there is a dark black color that creates a mouth-like shape opening towards the white color on the right side of the paper (fig. 4.2). Whereas the white color is created from a lack of light, black is the result of complete contact between sunlight and the photo paper. Colors

⁹⁷Mariko Finch, Adam Broomberg, and Oliver Chanarin, "Points of Memory: Broomberg and Chanarin: Conflict, Time, Photography," *Tate Etc.*, Fall 2014, accessed December 29, 2019, <https://www.tate.org.uk/tate-etc/issue-32-autumn-2014/points-memory-broomberg-and-chanarin>.; Broomberg and Chanarin, "The Day Nobody," lecture, Broomberg & Chanarin.; Broomberg and Chanarin do not deliberately say they cut their photo paper after exposing a twenty-foot long section of it, yet I believe this must be how they have separate photograms rather than a single one hundred and sixty-four foot long photogram (which is the size of the original Fujifilm roll paper they brought with them to Afghanistan).

⁹⁸Finch, Broomberg, and Chanarin, "Points of Memory."

⁹⁹Photo manufacturers, specifically Fujifilm (which is the type of paper Broomberg and Chanarin use), recommend storing light-sensitive paper in a relatively cool environment around fifty degrees 50°F and with low humidity to avoid altering the chemical makeup the paper and causing unplanned exposures to occur prior to intended use.; B & H Foto and Electronics, "FUJIFILM 600008949 Overview," B & H Photo Video, accessed April 25, 2020, https://www.bhphotovideo.com/c/product/748149-REG/Fujifilm_600008949_Crystal_Archive_Type_II.html/overview.

besides black and white are caused by different temperatures of sunlight exposing the paper.¹⁰⁰

Emerging from the black c-shaped color is a luminous and intense red color. A gradient begins to slowly develop, changing from the rich red color to light red, pinks, and ending in pure white.

Almost dripping from the deep black color at the top and bottom of the left side of the photogram are small pops of a vivid purple and electric blue color (fig. 4.2). The brilliant colors do not make one think of one hundred deaths, yet that is what this photogram was made in response to. The colors in their photograms are not meant to signify anything--neither red for violence or white for purity; they explain that they “weren't concerned with what the images looked like, as long as they were different, the important thing was that the paper was physically in that place, bearing witness.”¹⁰¹

Even though there were no recorded deaths on their fifth day, Broomberg and Chanarin still made photograms. In fact, on this day they made several photograms with the same title, such as *The Day Nobody Died III* and *The Day Nobody Died VI*, perhaps to exaggerate the types of images that suit the embedding system (fig. 4.4;4.5;4.6). By making photograms of moments that would not typically be photographed, they reveal the innate paradoxical nature of embedded photojournalism. The system is paradoxical because it calls for photographs of conflict without displaying conflict. In a way, their nondescript photograms of unimportant instances fervently adhere to the system’s rules while simultaneously uncovering its contradictory structure. War photographs are misleading because they are tied to a conflict that they do not depict. Like the war photographs, photograms such as *The Day Nobody Died III*, *The Day Nobody Died VI*, and

¹⁰⁰Broomberg and Chanarin, "Adam Broomberg," lecture, YouTube.; The chemicals in color paper respond to heat, humidity, and types of light sources in specific ways and different combinations of these factors result in the production of certain colors.

¹⁰¹Finch, Broomberg, and Chanarin, "Points of Memory."

The Day of One Hundred Dead are deceiving because the vivid bursts of color are not what one would expect to see with artworks whose titles indicate that they have some connection to violence and death.

The work of Derges, Breuer, Beshty, Robertson, and Broomberg and Chanarin point to the various methods used to make photograms as well as the reasons for using such an antiquated process in 2020. You can perform a more hands-on approach like Beshty and Breuer, scraping away emulsion or crumpling the paper itself. In contrast, the photogram also allows artists to make work in which they are not the only actor, or even the principal actor, evident in the chance filled photograms of Robertson and Derges. On the other side of the spectrum is the photogram process of Broomberg and Chanarin. Their work proves that contemporary photograms can comment on issues outside of photographic discourse and do not have to be about material, form, or chance operations. In a way, their anti-pictorial photograms contain elements of chance because they do not know what their photograms will look like until they are finished. The grid-like pattern in *The Day Nobody Died III* supports the notion that accidental elements exist in their photograms, as they did not plan for the pattern of white cubes to be present; the pattern is the logo of the Fujifilm color photo paper.¹⁰² Even though the artists recognize unplanned elements in their work, it is an afterthought rather than the reason they make photograms. Similarly, they are only concerned with the materials of photograms because they can produce abstract images, not for their formal elements. In fact, they do not necessarily care how the photograms look as long as the images look “different.”¹⁰³ This criterion may bring us back to

¹⁰²Broomberg and Chanarin, "What Is Conceptual," lecture, YouTube.

¹⁰³Finch, Broomberg, and Chanarin, "Points of Memory."

the artists' intention to make images that are actively complete opposites of the homogenous photographs made under the embedding system.

The photogram has evolved formally and technically since its inception as Talbot's photogenic drawing in the nineteenth century. By the twentieth century, photograms were made with artificial light, not just sunlight. The subjects of photograms also broadened. Photograms were no longer only of natural forms; they came to include objects such as household appliances and cut-paper. I believe that the photogram changed overtime because, for each generation, photography was at a different developmental stage. In the mid-nineteenth century, photography was just in formation, therefore, there were no strict rules about what a photograph should look like or how it should be employed. By the twentieth century, modernist photographers took the poorly defined nature of photography and started to identify and explore its unique characteristics. This meant that photographers could start inviting metaphor and abstraction into their work, which Moholy-Nagy and Man Ray did with the photogram. Because photography has been around for over a hundred years, contemporary photogram practice has more tools to work with and conventions to break. In a sense, because photography as a medium has developed since its invention, contemporary photograms can be more diverse in technique, formal properties, and application. However, evolving technological developments could lead to the obsolescence of conventional analog photograms (photograms made with emulsion, light, and objects).

Photograms are reliant on the continued production of analog materials (emulsion, light-sensitive paper, and chemicals) in a time when digital technology dominates culture, especially photography. What if analog materials disappear? Can photograms be made digitally?

The answer is yes, photograms can be made digitally via a process called ‘scanography.’

Scanography is relatively new and not very well known. It involves placing objects on top of a flatbed scanner and having the machine record the composition.¹⁰⁴ Images made with a scanner can be considered the digital counterpart of analog photograms, evident in how they are made without a camera, and light is a fundamental material in their creation. They are made by light underneath the glass bed of the scanner (where the composition lays on the glass) capturing the information of the objects on it. The movement of the light beneath the glass is controlled by a machine, which moves it evenly across the whole scanner bed.¹⁰⁵ There are charge-coupled device (CCD) image sensors that are responsible for gathering and converting variations in light into electronic signals. The signals are then sent to the scanner software running on the computer.¹⁰⁶ The way scanners work supports my claim that scanographs are photograms because the CCD image sensors are equivalent to the light-sensitive materials used to make analog photograms and no camera is used. The definition of the photogram as an image made without a camera also supports my claim that scanographs are the digital counterpart to analog photograms.

Like contemporary photograms, scanographs do not necessarily exhibit the expected silhouette and luminous compositions of traditional photograms (fig. 4.7; 4.8). As the work of the six contemporary photogrammers I discuss attest, photograms today cannot be exclusively understood in terms of the traditional photogram process (placing objects on light-sensitive material and exposing the paper to light). Contemporary photograms and scanographs both speak

¹⁰⁴Janet Dwyer, "Scanography – What It Is and Why You Should Try It Today," *Expert Photography* (blog), entry posted 2018, accessed April 20, 2020, <https://expertphotography.com/scanography-photos/>.

¹⁰⁵John Papiewski, "How Does a Document Scanner Work?," *The Arizona Republic* (Phoenix, AZ), accessed April 20, 2020, <https://yourbusiness.azcentral.com/flatbed-scanner-work-13403.html>.

¹⁰⁶Ibid.

to the way photography and the photogram has evolved because of changes to its use and developments to photographic technology. Scanography is then a way for the photogram process to persist in a digitally-focused culture. The analog photogram is safe for now due to the continued production of analog materials, but who knows how long these materials will continue to be manufactured? I propose that scanographs could be the frontier of photograms if analog materials stop being produced. Of course, digital photograms would look different from photograms I have been discussing, but they will still allow photographers to work in this type of avenue. However, the difference in appearance and approach seems to follow the evolution of the photogram given that contemporary photograms today are not made nor do they necessarily look like the flat and luminous photogenic drawings Talbot made in the nineteenth century. What is key to saving a process of this nature is finding another method that allows artists to work with combinations of the elemental principles of photography.

Conclusion: Figures



Figure 4.1. *Assassination of Bhutto*. John Moore. December 27, 2007. Rawalpindi, Pakistan. Unknown material. Unknown dimensions.



Figure 4.2. Installation shot of *The Day of One Hundred Dead* (furthest image on the right). *The Day Nobody Died* series. Adam Broomberg and Oliver Chanarin. June 8, 2008. Unique C-type. 30 × 236.2205 inches.

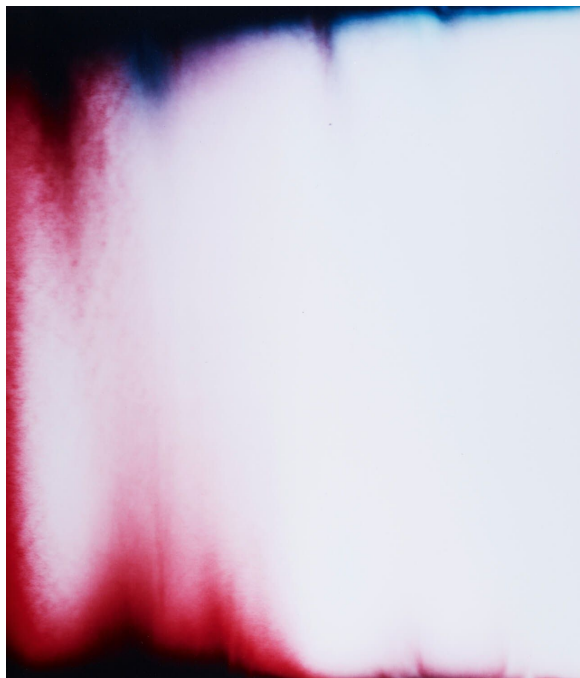


Figure 4.3. Detail of *The Day of One Hundred Dead*.

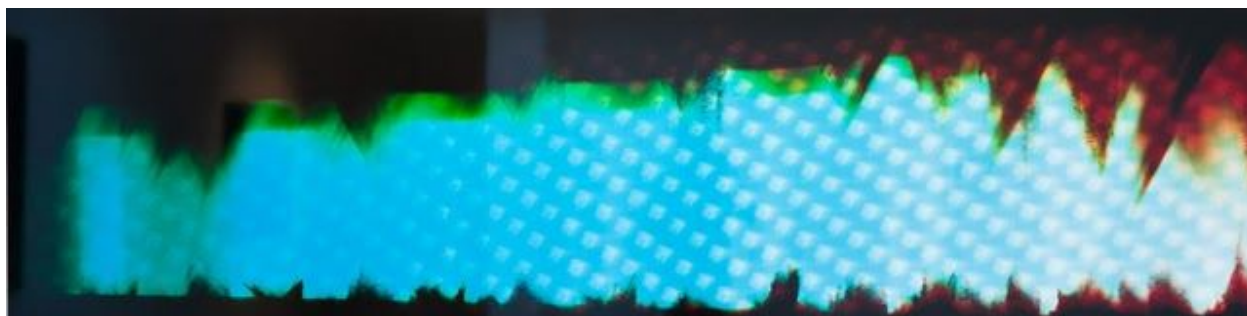


Figure 4.4. *The Day Nobody Died III*, 2008. Adam Broomberg and Oliver Chanarin. 2008. C-41 type print. 30 × 236 1/5 inches.

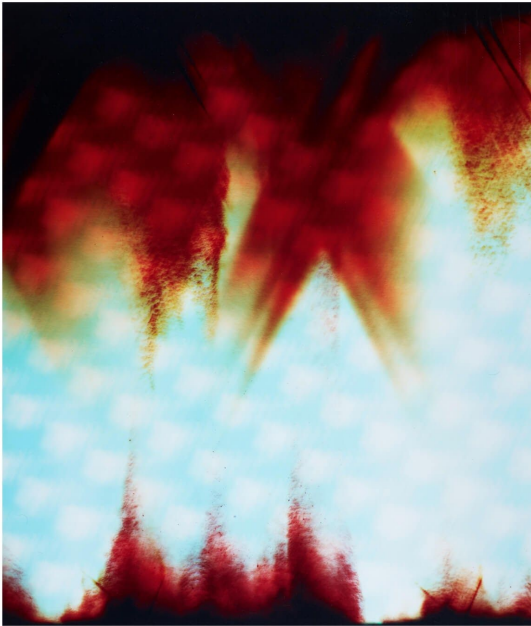


Figure 4.5. Detail of *The Day Nobody Died III, June 10*.

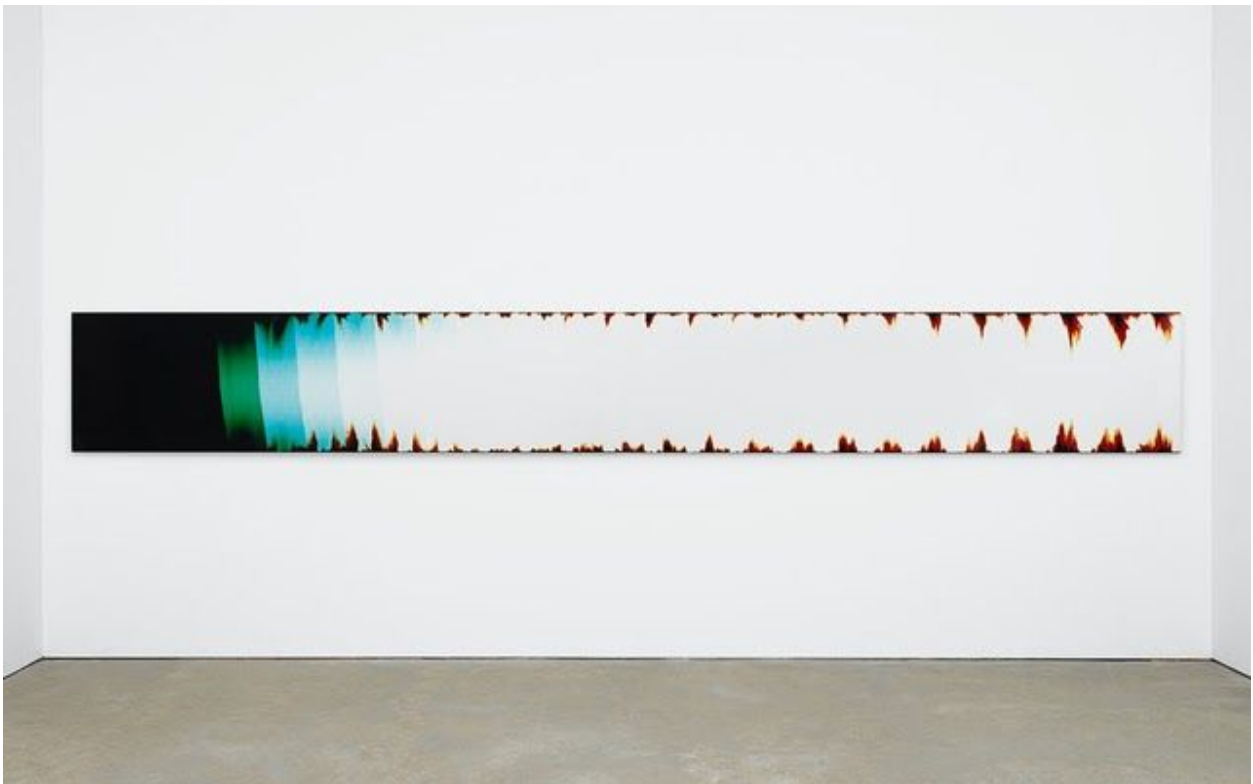


Figure 4.6. *The Day Nobody Died VI - 10 June 2008*. Adam Broomberg and Oliver Chanarin. 2008. C-print mounted to aluminium and digital film. 30 × 236.2205 inches.



Figure 4.7. Untitled scanograph. Susan Andreas. December 2019. Tinfoil and snow. The digital file is 11 × 14 inches at 300 ppi (pixels per inch).

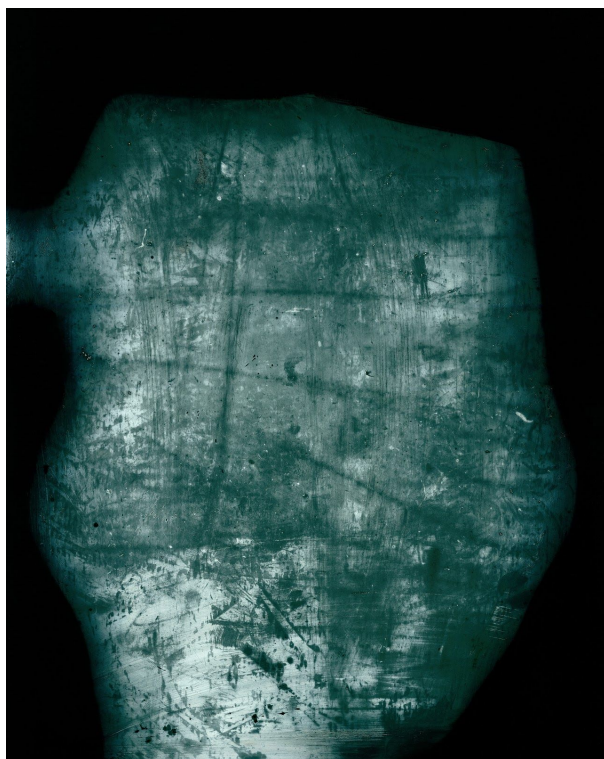


Figure 4.8. Untitled scanograph. Susan Andreas. February 2020. Scan of condensation on the glass of the scanner. The digital file is 11 × 14 inches at 300 ppi (pixels per inch).

Bibliography

- Andreas, Susan. Untitled Scanograph of Condensation. Photograph. February 2020. JPEG.
- . Untitled Scanograph of Tinfoil and Snow. Photograph. December 2019. JPEG.
- Atkins, Anna. *Sargassum bacciferum*. ca. 1835. Cyanotype. Metropolitan Museum of Art, New York. Accessed November 3, 2019.
<https://www.metmuseum.org/art/collection/search/291504?&searchField=All&sortBy=Relevance&ft=Anna+Atkins&offset=20&rpp=20&pos=26>.
- Batchen, Geoffrey. *Burning with Desire: The Conception of Photography*. Cambridge: Massachusetts Institute of Technology Press, 1997.
- Beshty, Walead. "Artist Talk: Walead Beshty." Lecture presented at Peter B. Lewis Theater, Guggenheim Museum, New York City, May 26, 2010. YouTube. Last modified November 8, 2010. Accessed April 4, 2020.
<https://www.youtube.com/watch?v=k1aihTTaJuE>.
- . *Fold (45°/135°/225°/315° directional light sources), December 31st 2012, Los Angeles, California, Ilford Multigrade IV MGF.1K*. 2012. Black and white fiber based photographic paper. Thomas Dane Gallery, London. Accessed April 7, 2020.
<https://www.thomasdanegallery.com/artists/34-walead-beshty/works/5043/>.
- . *Fold (45° directional light source), December 22, 2006, Santa Clarita, California, Ilford Multigrade Fiber IV*. 2006. Black and white fiber-based photographic paper. Jameel Arts Center, Dubai, UAE. Accessed April 7, 2020.
<https://jameelartscentre.org/collection/walead-beshty/>.
- . "In Conversation: Walead Beshty with Amy Ontiveros." Interview by Amy Ontiveros. *The Brooklyn Rail*, June 1, 2017. Accessed April 26, 2020.
<https://www.regenprojects.com/attachment/en/54522d19cfaf3430698b4568/Press/5a9071c2bcc138fa44323b92>.
- . *Picture Made by My Hand with the Assistance of Light*. 2011. Gelatin silver print. Art Institute of Chicago, Chicago. Accessed March 22, 2020.
<https://www.artic.edu/artworks/211704/picture-made-by-my-hand-with-the-assistance-of-light>.
- . *Picture Made by My Hand with the Assistance of Light*. 2011. Gelatin silver print (photogram). Solomon R. Guggenheim Museum, New York City. Accessed March 22, 2020. <https://www.guggenheim.org/artwork/31255>.
- . *Six Color Curl (CMMYYC: Irvine, California, July 19th 2008, Fuji Crystal Archive Type C)*. 2008. Color photographic paper. Thomas Dane Gallery, London. Accessed April 7, 2020. <https://www.thomasdanegallery.com/artists/34-walead-beshty/works/1468/>.

- . *Three Color Curl (CMY: Irvine, California, August 19th 2008, Fuji Crystal Archive Type C)*. 2008. Color photographic paper. Museum of Modern Art, New York City. Accessed April 7, 2020. <https://www.moma.org/collection/works/128442>.
- . "Walead Beshty in New Photography 2009." Interview by Eva Respini. *Inside/Out*. Last modified November 18, 2009. Accessed April 6, 2020. https://www.moma.org/explore/inside_out/2009/11/18/walead-beshty-in-new-photography-2009/.
- Beshty, Walead, and Eileen Quinlan. "Walead Beshty and Eileen Quinlan." *Bomb Magazine*, September 21, 2009, 1-34. Accessed April 4, 2020. <https://bombmagazine.org/articles/walead-beshty-eileen-quinlan/>.
- Beshty, Walead, and Marrikka Trotter. "Walead Beshty: Artist and Writer." Lecture presented at Southern California Institute of Architecture, Los Angeles, September 26, 2019. YouTube. Last modified November 4, 2019. Accessed April 29, 2020. <https://www.youtube.com/watch?v=1sCWDvoMIMU>.
- B & H Foto and Electronics. "FUJIFILM 600008949 Overview." B & H Photo Video. Accessed April 25, 2020. https://www.bhphotovideo.com/c/product/748149-REG/Fujifilm_600008949_Crystal_Archive_Type_II.html/overview.
- Boehmer, Konrad, and Ian Pepper. "Chance as Ideology." *October* 82 (Fall 1997): 62-76. <https://doi.org/10.2307/778999>.
- Breuer, Marco. "Marco Breuer." Interview by Mark Alice Durant. Saint Lucy. Accessed April 26, 2020. <https://saint-lucy.com/conversations/marco-breuer-2/>.
- . "Marco Breuer Lecture | Larry Sultan Photography Award." Lecture presented at California College of the Arts, Timken Lecture Hall, San Francisco, CA, April 21, 2016. YouTube. Last modified November 29, 2016. Accessed April 9, 2020. https://www.youtube.com/watch?v=ufojR_h_qVY.
- . Marco Breuer Photography Website. Marco Breuer. Accessed April 26, 2020. <http://marcobreuer.com>.
- . "Marco Breuer: Pushing the Boundaries of Photography." Lecture presented at San Francisco Museum of Modern Art, Headlands Art Center, Sausalito, CA, April 2016. YouTube. Last modified September 24, 2018. Accessed April 29, 2020. https://www.youtube.com/watch?v=3hQ_3yuk_Cc.
- . *Pan (C-397)*. 2003. Chromogenic Paper, scratched. Von Lintel Gallery, Los Angeles. Accessed March 21, 2020. <https://www.artsy.net/artwork/marco-breuer-pan-c-397>.

- . *Spin (C-824)*. 2008. Chromogenic paper, embossed and scratched. J. Paul Getty Museum, Los Angeles. Accessed March 21, 2020. <http://www.getty.edu/art/collection/objects/265060/marco-breuer-spin-c-824-german-2008/>.
- . *Spin (C-824)*. 2008. Chromogenic paper, embossed and scratched. J. Paul Getty Museum, Los Angeles. Accessed March 21, 2020. <http://www.getty.edu/art/exhibitions/process/>.
- . *Untitled (C-1189)*. 2012. Chromogenic paper, burned. Yossi Milo, New York. Accessed March 13, 2020. <http://photographmag.com/news/marco-breuer-wins-larry-sultan-award/>.
- . *Untitled (C-1657)*. 2014. Chromogenic Paper, folded/burned/scraped. Yossi Milo Gallery, New York. Accessed March 15, 2020. <https://www.artsy.net/artwork/marco-breuer-untitled-c-1657>.
- Broomberg, Adam, and Oliver Chanarin. "Adam Broomberg and Oliver Chanarin, Slade Contemporary Art Lecture Series 2011-12." Lecture presented at London's Global University, Slade School of Fine Art, London, March 18, 2013. YouTube. Last modified March 18, 2013. Accessed December 29, 2019. <https://www.youtube.com/watch?v=w5NCIdjA7iA>.
- . Adam Broomberg and Oliver Chanarin Website. Broomberg & Chanarin. Accessed April 26, 2020. <http://www.broombergchanarin.com>.
- . "A Conversation with Adam Broomberg and Oliver Chanarin." Interview by Jörg Colberg. *Conscientious*, 2013. Accessed April 26, 2020. <https://cphmag.com/convo-broomberg-chanarin/>.
- . "The Day Nobody Died." Lecture presented at Barbican Art Gallery, London, December 4, 2008. Broomberg & Chanarin. Last modified December 4, 2008. Accessed April 26, 2020. <http://www.broombergchanarin.com/new-page-4>.
- . *The Day Nobody Died III, 2008*. 2008. C-41 type print. Paradise Row, London. Accessed April 26, 2020. <https://www.artsy.net/artwork/adam-broomberg-and-oliver-chanarin-1-the-day-nobody-died-iii>.
- . *The Day Nobody Died VI - 10 June 2008*. 2008. C-print mounted to aluminium and digital film. Goodman Gallery, Cape Town, London. Accessed April 26, 2020. <https://www.artsy.net/artwork/adam-broomberg-and-oliver-chanarin-the-day-nobody-died-vi-10-june-2008>.
- . *The Day of One Hundred Dead*. June 8, 2008. Unique C-type. Private Collection. Accessed April 26, 2020. <http://www.broombergchanarin.com/installation-the-day-nobody-died>.

- . "Lecture: Adam Broomberg and Oliver Chanarin." Lecture presented at Zurich University of the Arts, Zurich, Switzerland, October 27, 2013. YouTube. Last modified January 6, 2014. Accessed April 26, 2020. <https://www.youtube.com/watch?v=2kNEsp8y1gY>.
- . "What Is Conceptual Photography? (part 3)." Lecture presented at Source Photographic Review, September 18, 2012. YouTube. Last modified September 18, 2012. Accessed December 29, 2019. <https://www.youtube.com/watch?v=9TvpXG9fLqo>.
- Bucklow, Christopher, Jeffrey Fraenkel, Susan Derges, Garry Fabian Miller, and Adam Fuss. *Under the Sun: Photographs*. Edited by Jeffrey Fraenkel. San Francisco: Fraenkel Gallery, 1996.
- CBS Interactive. "Pakistan Bombing." CBS News. Accessed December 29, 2019. <https://www.cbsnews.com/pictures/pakistan-bombing-27-12-07/>.
- "Chance." In *Merriam-Webster*. Accessed October 14, 2019. <https://www.merriam-webster.com/dictionary/chance>.
- Department of Photographs. "Photography at the Bauhaus." In *Heilbrunn Timeline of Art History*. Metropolitan Museum of Art, 2000-. Last modified October 2004. Accessed March 13, 2020. https://www.metmuseum.org/toah/hd/phbh/hd_phbh.htm.
- Derges, Susan. *Full Moon Shoreline, 2003*. 2003. Unique photogram on Cibachrome paper. Ingleby Gallery, Edinburgh. Accessed October 15, 2019. <https://www.inglebygallery.com/exhibitions/567/works/image4/>.
- . *Shoreline, 11*. Unique photogram on Cibachrome. Accessed October 15, 2019. <https://www.onlandscape.co.uk/2015/12/beyond-visual-sound-word-landscape/11-shoreline/>.
- . *Shoreline, 9*. Unique photogram on Cibachrome. Private Collection. Accessed April 26, 2020. <http://susanderges.co.uk>.
- . *Shoreline, 19*. Unique photogram on Cibachrome. Private Collection. Accessed October 28, 2019. <http://susanderges.co.uk>.
- . *Shoreline, 17*. Unique photogram on Cibachrome. Private Collection. Accessed October 28, 2019. <http://susanderges.co.uk>.
- . "Susan Derges." Lecture presented at International Center of Photography, New York, March 14, 2012. International Center of Photography. Last modified March 14, 2012. Accessed October 14, 2019. <https://www.icp.org/browse/archive/media/susan-derges>.

- . Susan Derges Photography Website. Susan Derges. Accessed April 26, 2020.
<http://susanderges.co.uk>.
- Dixon, Robyn. "Oliver Chanarin and Adam Broomberg Look at a Bigger Picture." *Los Angeles Times* (Los Angeles, CA), February 6, 2011. Accessed December 27, 2019.
<https://www.latimes.com/entertainment/la-xpm-2011-feb-06-la-ca-cultural-exchange-20110206-story.html>.
- Durant, Mark Alice. "Marco Breuer." Saint Lucy. Accessed April 26, 2020.
<https://saint-lucy.com/essays/marco-breuer-the-material-in-question/>.
- Dwyer, Janet. "Scanography – What It Is and Why You Should Try It Today." *Expert Photography* (blog). Entry posted 2018. Accessed April 20, 2020.
<https://expertphotography.com/scanography-photos/>.
- Eliel, Carol S. "Painting Photography Film for a New Century, or Just What Is It That Makes Moholy Today So Compelling, So Appealing." In *Moholy-Nagy: Future Present*, by Matthew S. Witkovsky, Carol S. Eliel, Karole P. B. Vail, and Julie Barten, 291-303. Chicago: Art Institute of Chicago, 2016.
- Ewing, William A. *Landmark: The Fields of Landscape Photography*. New York: Thames & Hudson, 2014.
- Finch, Mariko, Adam Broomberg, and Oliver Chanarin. "Points of Memory: Broomberg and Chanarin: Conflict, Time, Photography." *Tate Etc.*, Fall 2014. Accessed December 29, 2019.
<https://www.tate.org.uk/tate-etc/issue-32-autumn-2014/points-memory-broomberg-and-chanarin>.
- Franko, Mark. "Expressivism and Chance Procedure: The Future of an Emotion." *RES: Anthropology and Aesthetics*, no. 21 (Spring 1992): 142-60.
<https://www.jstor.org/stable/20166846>.
- Fried, Michael. *Why Photography Matters as Art as Never before*. New Haven: Yale University Press, 2012.
- Fuller, John. "Atget and Man Ray in the Context of Surrealism." *Art Journal* 36, no. 2 (Winter 1976-1977): 130-80. <https://doi.org/10.2307/776161>.
- Fuss, Adam. *Now!* 1988. Gelatin silver print; photogram. Metropolitan Museum of Art, New York. Accessed February 13, 2020.
<https://www.metmuseum.org/art/collection/search/266427>.
- Heckert, Virginia A., Marc Harnly, and Sarah Freeman. *Light, Paper, Process: Reinventing Photography*. Los Angeles: J. Paul Getty Museum, 2015.

- Horenstein, Henry, and Russell Hart. *Color Photography: A Working Manual*. Boston: Little, Brown, 1998.
- Hostetler, Lisa, Lisa Hostetler, and William T. Green. *A Matter of Memory: Photography as Object in the Digital Age*. Rochester, NY: George Eastman Museum, 2016.
- Jones, Owen Bennett. "Benazir Bhutto Assassination: How Pakistan Covered up Killing." *BBC News*, December 27, 2007. Accessed December 29, 2019.
<https://www.bbc.com/news/world-asia-42409374>.
- Kelsey, Robin, and Blake Stimson, eds. *The Meaning of Photography*. Williamstown, MA: Sterling and Francine Clark Art Institute, 2008.
- Laxton, Susan. "Automatism." In *Grove Art Online*. Last modified August 12, 2019.
<https://doi.org/10.1093/gao/9781884446054.article.T005221>.
- . "'Flou': Rayographs and the Dada Automatic." *October* 127 (Winter 2009): 25-48.
<https://www-jstor-org.ezprox.bard.edu/stable/40368552>.
- . "A Modern Critical Ludic." Introduction to *Surrealism at Play*, 1-28. Durham: Duke University Press, 2019.
- . *Surrealism at Play*. Durham: Duke University Press, 2019.
- Lovejoy, Carly. "How Do We See War?" *Aperture: Talks & Interviews* (blog). Entry posted September 27, 2017. Accessed April 26, 2020.
<https://aperture.org/blog/how-do-we-see-war/>.
- Man Ray. *Untitled Rayograph*. 1922. Gelatin silver print. The J. Paul Getty Museum, Los Angeles. Accessed October 14, 2019.
<http://www.getty.edu/art/collection/objects/64737/man-ray-untitled-rayograph-american-1922/?dz=0.5000,0.5000,0.50>.
- Marien, Mary Warner. *Photography and Its Critics: A Cultural History, 1839-1900*. Cambridge: Cambridge University Press, 1997.
- Mercer, Edward. "How Does a Flatbed Scanner Work?" *The Arizona Republic* (Phoenix, AZ). Accessed April 20, 2020.
<https://yourbusiness.azcentral.com/flatbed-scanner-work-13403.html>.
- Miller, Wesley, Nick Ravich, and Clair Popkin. "Mariah Robertson Wears a Yellow Suit to Work." Video, 06:42. Art21. June 27, 2011. Accessed April 26, 2020.
<https://art21.org/watch/new-york-close-up/mariah-robertson-wears-a-yellow-suit-to-work/>.

- Miller, Wesley, Nick Ravich, Rafael Salazar, Ava Wiland, and Ian Forster. "Mariah Robertson's Chemical Reactions." Video, 09:21. Art21. October 17, 2014. Accessed November 7, 2019. <https://art21.org/watch/new-york-close-up/mariah-robertsons-chemical-reactions/>.
- Mirlesse, Sabine, Adam Broomberg, and Oliver Chanarin. "Adam Broomberg and Oliver Chanarin." *BOMB*, no. 130 (Winter 2014-2015): 32-40. <https://www-jstor-org.ezprox.bard.edu/stable/24365666>.
- "Modernism." In *Art Terms*. Tate. Accessed March 21, 2020. <https://www.tate.org.uk/art/art-terms/m/modernism>.
- Moholy-Nagy, László. *Fotogramm*. 1925. Gelatin silver print. Metropolitan Museum of Art, New York. Accessed March 13, 2020. <https://www.metmuseum.org/art/collection/search/265200>.
- . *Fotogramm*. 1926. Gelatin silver print. Metropolitan Museum of Art, New York. Accessed March 22, 2020. <https://www.metmuseum.org/art/collection/search/265197>.
- . *Vision in Motion*. 4th ed. Chicago: Paul Theobald and Company, 1947.
- Moore, John. "The Assassination of Benazir Bhutto." *The Digital Journalist*, February 2008. Accessed December 29, 2019. <http://digitaljournalist.org/issue0802/the-assassination-of-benazir-bhutto.html>.
- . Assassination of Bhutto. John Moore/Getty Images. Accessed December 29, 2019. <http://digitaljournalist.org/issue0807/john-moore.html>.
- Moshayedi, Aram. "After Materiality and Style." *Art in America*, April 2009, 130-62. <http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=504268839&site=ehost-live>.
- Museum of Modern Art. "Abstract Art." In *Art Terms*. Museum of Modern Art. Accessed March 13, 2020. <https://www.moma.org/collection/terms/3>.
- National Oceanic and Atmospheric Administration. "Currents: Tidal Currents 1." National Ocean Service. Accessed November 14, 2019. https://oceanservice.noaa.gov/education/tutorial_currents/02tidal1.html.
- Newhall, Beaumont. *The History of Photography: From 1839 to the Present*. Completely revised and enlarged ed. New York: Museum of Modern Art, 2012.
- . "The Photography of Moholy-Nagy." *The Kenyon Review*, Summer 1941, 344-51. <http://www.jstor.org.ezprox.bard.edu/stable/4332261>.
- Nisbet, James. "Walead Beshty: PROCESSCOLORFIELD." *X-tra: Contemporary Art Quarterly* 14, no. 2 (Winter 2011): 45-53.

<http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=69721453&site=ehost-live>.

Ollman, Leah. "Critic's Choice: Mariah Robertson's Vigorous Tussle with Photography." *Los Angeles Times* (El Segundo, CA), March 12, 2015, Entertainment & Arts. Accessed April 26, 2020.

<https://www.latimes.com/entertainment/arts/la-et-cm-mariah-robertsons-vigorous-tussle-with-photography-20150309-story.html>.

Papiewski, John. "How Does a Document Scanner Work?" *The Arizona Republic* (Phoenix, AZ). Accessed April 20, 2020.

<https://yourbusiness.azcentral.com/flatbed-scanner-work-13403.html>.

"Photogram." In *Merriam-Webster*. Accessed October 14, 2019.

<https://www.merriam-webster.com/dictionary/photogram>.

"Rayograph." In *Art Terms*. Museum of Modern Art. Accessed November 4, 2019.

<https://www.moma.org/collection/terms/176>.

Rexer, Lyle. *Photography's Antiquarian Avant-garde: The New Wave in Old Processes*. New York: Harry N. Abrams, 2002.

Robertson, Mariah. Mariah Robertson's Artist Website. Mariah Robertson. Accessed April 26, 2020. <http://mariahrobertson.com/index.html>.

———. 108. 2012. Unique chemical treatment on RA-4 paper. Lora Reynolds Gallery, Austin. Accessed November 7, 2019. <https://www.artsy.net/artwork/mariah-robertson-108>.

———. 135. 2016. Unique chemical treatment on RA-4 paper. M+B, Los Angeles. Accessed November 7, 2019. <https://www.artsy.net/artwork/mariah-robertson-135>.

———. 399. 2017. Chemical treatment on RA-4 paper. Lora Reynolds Gallery, Austin. Accessed November 7, 2019. <https://www.artsy.net/artwork/mariah-robertson-399>.

———. 365. 2017. Chemical treatment on RA-4 paper. Lora Reynolds Gallery, Austin. Accessed November 7, 2019. <https://www.artsy.net/artwork/mariah-robertson-365-1>.

———. "Visiting Artist and Scholars Lecture: Mariah Robertson." Lecture presented at Visiting Artist and Scholars Lecture, San Francisco Art Institute, San Francisco, February 24, 2015. Vimeo. Last modified 2015. Accessed November 7, 2019. <https://vimeo.com/121646722>.

Ruskin, John. "Various Writings 1845-1879." In *Photography in Print: Writings from 1816 to the Present*, edited by Vicki Goldberg, 152-54. Albuquerque: University of New Mexico Press, 1981.

- Schwabish, Jonathan. "Color." In *Better Presentations: A Guide for Scholars, Researchers, and Wonks*, 29-50. New York: Columbia University Press, 2017.
<https://www-jstor-org.ezprox.bard.edu/stable/10.7312/schw17520.6>.
- Small, Rachel. "Mariah Robertson's Unplanning." *Interview*, October 30, 2013. Accessed May 2, 2020. <https://www.interviewmagazine.com/art/mariah-robertson-american-contemporary>.
- Stein, Emma. "László Moholy-Nagy and Chicago's War Industry: Photographic Pedagogy at the New Bauhaus." *History of Photography* 38, no. 4 (November 2014): 398-417.
<https://doi.org/10.1080/03087298.2014.949487>.
- Talbot, William Henry Fox. *Lace*. 1845. Salted paper print from paper negative. Metropolitan Museum of Art, New York. Accessed October 14, 2019.
<https://www.metmuseum.org/art/collection/search/289186>.
- . "Some Account of the Art of Photogenic Drawing, 1839." In *Photography in Print: Writings from 1816 to the Present*, edited by Vicki Goldberg, 36-48. Albuquerque: University of New Mexico Press, 1981.
- . *Wrack*. 1839. Salted paper print. Metropolitan Museum of Art, New York. Accessed October 14, 2019. <https://www.metmuseum.org/art/collection/search/282756>.
- "Tapping the Subconscious: Automatism and Dreams." In *MOMA Learning*. Museum of Modern Art, 2006. Accessed November 21, 2019.
https://www.moma.org/learn/moma_learning/themes/surrealism/tapping-the-subconscious-automatism-and-dreams/.
- Tate. "C-print." In *Art Terms*. Tate. Accessed March 13, 2020.
<https://www.tate.org.uk/art/art-terms/c/c-print>.
- Trachtenberg, Alan, and Amy Weinstein Meyers. *Classic Essays on Photography*. 5th ed. New Haven: Leete's Island Books, 2005.
- Tumlir, Jan. "Walead Beshty: Piece by Piece." *Aperture*, Fall 2008, 32-39.
<http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=505347411&site=ehost-live>.
- Tylevich, Katya. "Invisible Transformations." *Elephant*, Winter 2013/2014, 122-33.
<http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=112821492&site=ehost-live>.
- Tzara, Tristan. "Dada Manifesto." In *Manifesto: A Century of Isms*, edited by Mary Ann Caws, 297-304. Lincoln: University of Nebraska Press, 2001.
- Vaughan, William. "Romanticism." In *Grove Art Online*. Last modified 2003.
<https://doi-org.ezprox.bard.edu/10.1093/gao/9781884446054.article.T073207>.

- Vorenkamp, Todd. "How Your Digital Camera Works." B&H. Last modified 2016. Accessed March 21, 2020.
<https://www.bhphotovideo.com/explora/photography/tips-and-solutions/how-your-digital-camera-works>.
- Walead Beshty Studios. Walead Beshty Artist Website. Walead Beshty. Accessed April 26, 2020. <https://www.actionstakenunderthefictitiousnamewaleadbeshtystudiosinc.com>.
- Ward, J. P., Mary Warner Marien, and Gerald W. R. Ward. "Photography." In *Grove Art Online*. Last modified January 10, 2019.
<https://doi-org.ezprox.bard.edu/10.1093/gao/9781884446054.article.T067117>.
- Ware, Mike. "On Proto-photography and the Shroud of Turin." *History of Photography* 21, no. 4 (Winter 1997): 261-69.
- Williams, Maxwell. "House of Games." *Blouin Art + Auction*, January 2015, 42-46.
<http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asu&AN=100375278&site=ehost-live>.
- Zabel, Barbara. "Man Ray and the Machine." *Smithsonian Studies in American Art* 3, no. 4 (Fall 1989): 66-83. <https://www-jstor-org.ezprox.bard.edu/stable/3108991>.
- Zilczer, Judith. "Stieglitz, Alfred." In *Grove Art Online*. Last modified 2003.
<https://doi.org/10.1093/gao/9781884446054.article.T081415>.