

MY REPRESENTATIONS: ENTROPIC MANIPULATIONS

by

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The Dorothy F. Schmidt College of Arts and Letters

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Master of Fine Arts

Florida Atlantic University

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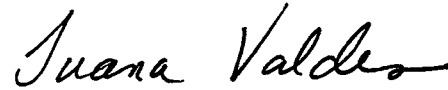
Isabel C. de Gouveia

This thesis was prepared under the direction of the candidate's thesis advisor, Carol Prusa, Department of Visual Arts and Art History, and has been approved by the members of her supervisory committee. It was submitted to the faculty of the College of Arts and Letters Dorothy F. Schmidt and was accepted in partial fulfillment of the requirements for the degree of Master of Fine Arts.

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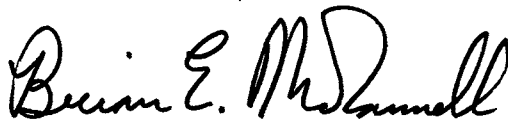
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ABSTRACT

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My thesis body of work developed from a desire to examine my nonrepresentational artwork in relation to the concept of entropy - the law of thermodynamics that measures the gradual, steady disintegration in a system such as our world. Experimenting with a range of approaches and mediums, I resolved to radically manipulate the inkjet printing of my digital photography files to introduce chance and provoke decay. The resulting prints operate as an orchestrated chaos alluding to environmental decline and collapse, and by extension, potential social degeneration. My art reflects my perceptions of our times as well as adds to the problem. I continue to produce waste through the consumption of materials. I contaminate through inks. I add to landfills with failures. My artwork points out the inevitable end.

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INTRODUCTION

The purpose of my thesis is to reveal the invisible process of environmental entropy that emerges due to consumerism and waste culture. I achieve this by subverting and manipulating inkjet prints of digital photography in ways that introduce chance, provoke decay, and ultimately reveal the process of entropy slowly unfolding in the environment. By examining how the concept of the nonrepresentational, entropy, intuition, and chance emerged during my artistic evolution, I will illustrate how “My Representations: Entropic Manipulations” came into existence.

PERSONAL BACKGROUND

Brazil

I was born in the countryside of Minas Gerais, Brazil. During my formative years as an artist, I experimented with painting and printmaking in an attempt to find an appropriate mode of expression. Primarily, I was interested in using these mediums to abstractly represent Brazilian geography, especially elements of the *cerrado* or savanna grasslands, which is an arid region characterized by hardy trees, dry vegetation, and a variety of hanging seeds and pods. My work was highly influenced by constructivism, expressionism, and of course, the resilient, organic shapes present in my surroundings. Merleau-Ponty writes, “*perception begins with a sedimentation from the past*, its task is not to ‘explain’ the world but to describe the world that is already there in terms of its

own givenness.”¹ The emptiness of my childhood landscape influences my current aesthetic, especially my affinity for minimalism. The simplicity derived from the distillation of these elements into abstracted shapes on a flattened ground in my non-objective landscape paintings is what moves me.

The United States

After moving to the Florida as an adult, I continued to make paintings referencing Brazilian landscapes through form and color, paying special attention to the compositional elements of the *cerrado*—such as hills, spaced but prominent in this kind of landscape—that I missed. However, after several years, I felt that my art, with its simple shapes, subtle colors, flat surfaces, and suppression of narrative, was valued but missing something. These kinds of feelings persisted and culminated in 2010, when I applied to the Master’s program in F.A.U. and was not admitted. This rejection was the starting point in my resolution not to make art. However, this resolution was short-lived. I quickly decided to transmute the feeling that my art was garbage into actually working with garbage, and to incorporate the cast-off materials and leftovers surrounding me into my new body of work.

In order to understand the artwork I was making, I began a series of investigations as an attempt to understand my need to collect ordinary things, sorting and reordering what might normally be put in the garbage. I found it was necessary to be surrounded by the waste of living objects that are selected from my daily life; living with them and knowing they had the potential of becoming something else, like artwork.

¹ Albert Rabil, *Merleau-Ponty: Existentialist of the Social World*. (New York: Columbia University Press), 19.

STUDIO PRACTICES

Recycled Objects

This new direction in my art would incorporate the ideas of recycling and repurposing trash as art materials. This idea of recycling was derived from my initial observation of how abundant the excess waste is in the United States. The French bricolage artist Arman described a similar feeling about the consumerism he witnessed in France: “As a witness of my society, I have always been very anguished by the fact that one of the more conspicuous material results is the flooding of our world with junk and rejected odd objects.”² The consequence of having too much to consume is the inevitable mountain of garbage. This detrimental effect increases the rate of entropy, a force that I determined to address and express in my work. The Oxford Dictionary defines entropy as “a thermodynamic quantity representing the unavailability of a system’s thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system.” In simpler terms, it is the excess of heat we are producing, mostly through burning fuels, that stays in the environment and cannot be used. It causes a “gradual decline into disorder.” However, there has been a push to recycle and reclaim materials from these mountains of garbage, in a seemingly futile effort to reduce waste. In his interview “Entropy Made Visible,” Robert Smithson articulates the futility of recycling: “The earth being the closed system, there's only a certain amount of resources

² Jaimey Hamilton. “Arman's System of Objects.” (*Art Journal*),55.

and of course there's an attempt to reverse entropy through the recycling of garbage.”³

My art is an attempt to prolong the lifespan of these entropic materials, while acknowledging the inevitability of entropy and the limitations of recycling. In a sense, as an artist, I am much like Arman, who described himself in an ambiguous position as both a “witness” and a “participant”⁴ in consumerist culture. The witness/participant position forced me to confront the paradox of being an artist who is environmentally conscious and concerned, but still participating in the production of artistic commodities.

The irrational need of humans to continuously produce new consumer goods and in excessive amount surpassing our real needs, I call manipulations. Any chemical or mechanical transformation increases entropy, which is a natural process in a closed system. However, we are increasing this rate by producing more than we are able to wear out and use up, generating excesses. These excesses and amount of waste also increase entropy, driving global warming rates higher, promoting environmental degradation and harmful contamination of necessary resources such as air and water.

My first attempt to utilize scavenged, primarily plastic, material was to disassemble the object and maximize the abstract forms that I perceived in them. This practice speaks to my natural aptitude for identifying an object’s multiple purposes and functions. I produced a body of work utilizing these ordinary materials. This series, called *Oniric Places*, is comprised of drawings made with small scraps of anything that would create a mark, shape or line such as colored shards, pencils, pens, nail polish and metal. I reapplied to graduate school with this body of work.

³ Robert Smithson, *Robert Smithson: The Collected Writings*, (Oakland: University of California Press, 1996), 302.

⁴Jaimey Hamilton, “Arman’s System of Objects.” (*Art Journal*), 55.

Transition into Photography

While initially, I used entropic materials as an installation in my studio, by the end of the first semester of graduate school I was taking photographs of entropic materials that were organized within a diorama. This abstract photography series is called *Mornings*. These photographs are printed on matte 24" x 36" paper. I conceived of these the photographs as windows spaces. This series subverts the standard photographic process by purposefully overexposing the image lit with the natural backlighting. I photographed close-up, capturing filtered light through the translucent, plastic, entropic materials in the diorama to produce unusual shapes and saturated, highly synthetic colors. While initially the overexposure of the photographs was a mistake, my intuition told me to continue in this manner. The resulting images operate with a narrow depth of field leaving many of the forms out of focus, confusing the viewer's perception. The narrow focus of the images results in few forms that are discernable as to their origins. This selective focus, to me, references western high-speed consumer culture, highlighting the short lifespan of objects and even shorter memory of them. Unfortunately these objects have an extremely long afterlife as waste material, hence the process of entropy is accelerated.

The medium of photography has a lot of established conventions to play with, offering space for the subversion of the power of an established system. Also, photography is filled with loss as Robert Smithson said in an interview about spiral Jetty, "I think photographs have a lot to do with loss. A lot of people are disturbed by them, they're threatened by photographs, because photographs disclose instants gone forever. The photography always exists in the past. – it's a constant reminder that you are moving

toward your grave. Photographs are maps, little entropic bits that siphon off moments of experience. – You are constantly faced with reminders of things you would rather forget.” By photographing my dioramas and removing the recognizable forms, I am siphoning off some of the experience they represent. Thereby showing the loss caused from the disorder that humans create.



Figure 1 Morning 51, 2011

After this series was completed, I realized that the absence of distinct shapes and overexposed images were an attempt to capture the Platonic reality of a scene—or the abstract essence of it—creating a new form made visible by my camera lens and experimentation with light. These enigmatic shapes I chose to print resulted from my intuitive search for beauty, and desire to reveal what is not initially perceptible to my eye. The abstract images produced by the light awaken the viewer to a higher, albeit

disorienting, realm of consciousness, an experience which is captured by Plato's allegory of the cave in *Republic*:

“But anyone with any sense,' I said, 'will remember that the eyes may be unsighted in two ways, by a transition either from light to darkness or from darkness to light, and that the same distinction applies to the mind. So when he sees a mind confused and unable to see clearly he will not laugh without thinking, but will ask himself whether it has come from a cleaner world and is confused by the unaccustomed darkness, or whether it is dazzled by the stronger light of the clearer world to which it has escaped from its previous ignorance.’⁵

Following *Mornings*, in a search for a more conceptual approach to the diorama photography, I created two different series called *Cave*, and *Underneath/Under the Skin*. These series also referenced Plato's *Republic*, as well as referred to the unknown truth of contamination in landfills. Both of these series were printed in 24” x 36” size on a 210 grams photo matte paper. In *Cave*, I used fishing line to hang pieces of plastic from the top of a diorama, and filtered the backlight source through these objects, while photographing them from the front. *Underneath/Under the Skin* uses the same technique; however, the pictures are digitally manipulated in Photoshop. Some of these images have their color information inverted to achieve toxic feeling colors, giving the final image an

⁵ Plato, *The Republic*, trans. Lee Desmond (Baltimore: Penguin, 2007), 282.

x-ray look. Just as x-rays reveal what is under the skin, this series also addresses what is hidden in the environment under contaminated soil and the colors allude to the imperceptible sickness lingering underneath the surface.



Figure 2 Cave 1128, 2011



Figure 3 Underneath

After I completed these series, my professors encouraged me to find a medium that was more original, rather than simply a photographic representation. In the summer of 2012, I went to a workshop in Ox-Bow, Michigan. I made collages with pictures from *Mornings*, *Cave*, and *Underneath/Under the Skin* and painted over them using acrylics.

Simultaneously, I was working on a project that involved disassembling boxes and using them as stencils. While my initial collage project was highly derivative, this second project allowed me to accidentally discover the use of containers and packaging material, which constitutes a large percentage of garbage. I began to see this process in terms of consumerism.

Fall of 2012, I proposed to develop a series called *De-Composition*, which compared the decomposition of photography (specifically, the data loss that occurs from digital file compression) with the degradation of the environment that results from human manipulation. Initially, I was planning on contrasting altered JPG files, which degenerate every time they are manipulated, with TIFF files, which do not. The compressed JPG images create free memory space, which can readily be used to produce and store more information. Metaphorically, this represents the same high-speed consumerism culture that I wished to capture with *Mornings*; however, I did not go far with the project because when I altered the JPGs, the pixels became more visible, and while this illustrated my initial theory, the final images were not aesthetically satisfying.

DE-COMPOSITION PROCESS: MANIPULATING THE PRINTER

During my experiments with JPG images, I've developed a process that I use in my current thesis project, *De-Composition*. This process was inspired by a studio visitor who reminded me about Anthropophagy, a Brazilian movement that was established to create a national art language by appropriating and subverting the influences of European art movements and popular culture. Inspired by these ideas, I decided to deviate from the traditional photography process. I deliberately interfered with the language of the

standard system of the digital printing process in a number of different ways, which allowed me to divert the production mode and change the end result. First, I changed the traditional arrangement of CMYK colors in the printer head, which enabled me to create unexpected color combinations with distorted colors and altered the final prints. During one of my initial color experiments, I accidentally paused the printer and noticed how the picture was composed. Each color in a particular area was comprised of layered, concentrated ink dots. By stopping the process, I could see the decomposition process of the image in its moment of formation. I deliberately kept repeating this process in an effort to capture more of these incidents.



Figure 4 Fragment, 2011

Through the disruption of the CMYK configuration and the manipulation of the print head, I created an innovative process that uses a new tool: the subversion of the printer. In the words of Walter Benjamin, “The history of every art form shows critical epochs in which a certain art form aspires to effects, which could be fully obtained only with a

changed technical standard, that is to say, in a new art form.”⁶

The re-appropriation of the printer allows me some freedom with my creative expression, as well as allows me to partially avoid making aesthetic choices. In essence, I am splitting the responsibilities of decision making with the machine. By reconfiguring the printer heads I am introducing chance into the process and generating surprising colors. By interrupting the standard printing process, I can take back a measure of control from the printer. Metaphorically, this process emphasized the importance of resisting the system that we are trapped in, so that we may maintain some level of control. Chance is the ingredient that brings back the emotion I had once lost in my art.



Figure 5 Goiania, 137 years after Cs, 2011

Figure 5 represents the first stage of development in my process. For this project, I used JPG files from my summer trip to Brazil. The series was entitled *Goiania, 137*

⁶ Walter Benjamin, *Illuminations: Essays and Reflections*, (New York: Schocken), 237.

years after Cs. The project was about contamination. I shot some photographs in a park in the city of Goiania near where a radioactive incident occurred in 1987 and contaminated parts of the city, causing four deaths. The contamination occurred when abandoned medical equipment was scavenged for scrap metal. Ignorance on the part of the metal pickers led to the spread of radioactive cesium, which glowed blue. The pictures were taken for the sake of mementos, but when I was researching the locations, the incident came to light. I made an installation with those pictures with the intention of revealing how the people contaminated with radiation were treated. I made boxes of various sizes, which represented urns, and were enclosed in lead and thick Plexiglas. Inside of each box, there was a distorted picture, which symbolized an individual who had been afflicted. Symbolically, the lead represents a force that stops contamination. The color blue is also significant, as Prussian blue was used as an oral antidote to remove the heavy metal cesium from the contaminated people. It is also the color of the light that emanated from the radioactive unit that was used for cancer treatment and contained the cesium. Contamination can have many repercussions in future generations, producing subsequent mutations and aberrations.

This process was developed with my printer, a Canon MP620, resulting in two bodies of work: the first explored in the initial stage of the process is called *Goiania, 137 after Cs*, and the following series that gave its name to my independent study; *Painterly Photography: De-Composition*. In the images, *De-Composition* approached the formal qualities of painting, and is aesthetically pleasing. These were more successful, and came to complement my original intentions of making a contemporary painting. The synthetic color derived from the process is simultaneously attractive, vibrant, burned, and

repulsive. These qualities deal with the color assigned to changes of the environment generated by entropic manipulations. The colors are generated at the time of printing, by repeatedly disrupting the printing process. Some explanation is required: the printer works horizontally, and deposits ink on the paper through small perforations in the ink print head. The printer can only deposit the ink evenly by making multiple passes over a given area. I handle this process by prematurely stopping the printer, or by forcing several passes over the same area. These practices create moments of accumulation and disturbance, which cause the ink layers to develop and soak the paper. The print heads visibly marks the paper exposing the mechanics of the printing process, and the resulting flaws metaphorically represent failure and decay.

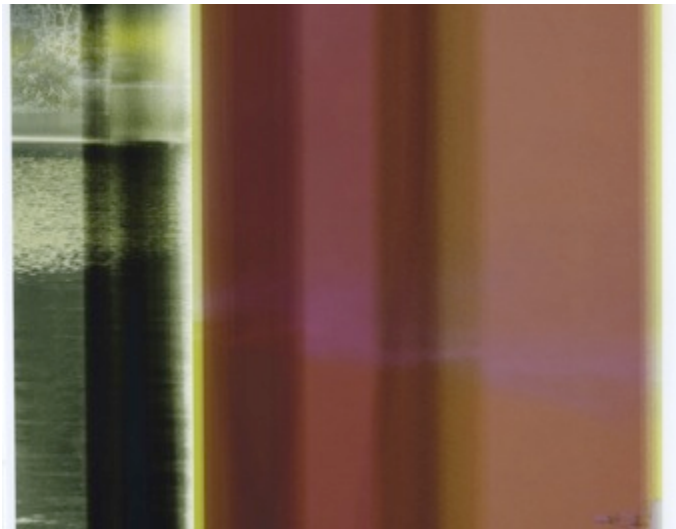


Figure 6 De-Composition 9, 2012

In continuing my exploration of the printing process, I further subverted the standard system. I used the original digital image sources and also the manipulated prints, which were scanned. By overlapping various print operations on top of original and previously altered images, I accomplished more intricate compositions and also achieved

a degree of transparency. These prints were first printed on 210 grams weight paper in a 24" x 36" format and later in various dimensions up to 36" x 72" on both gloss and matte paper. The glossy paper was very reflective, which was distracting. The matte surface was less distracting, but lacked some depth. I learned to "clean" the dust from the scanned pictures, in Photoshop, which restores the vivid colors, enabling to print large, as the inkjet prints initially appeared on 8.5" x 11" photo paper. These works were segments of landscape elements, spaces of time that I call *De-Composition: Experiments*. Just as with the scientific method, the manipulations were repeated to prove a hypothesis. These results had obliterated most of the representational content, becoming abstractions made from parts of pictures of the natural landscape.

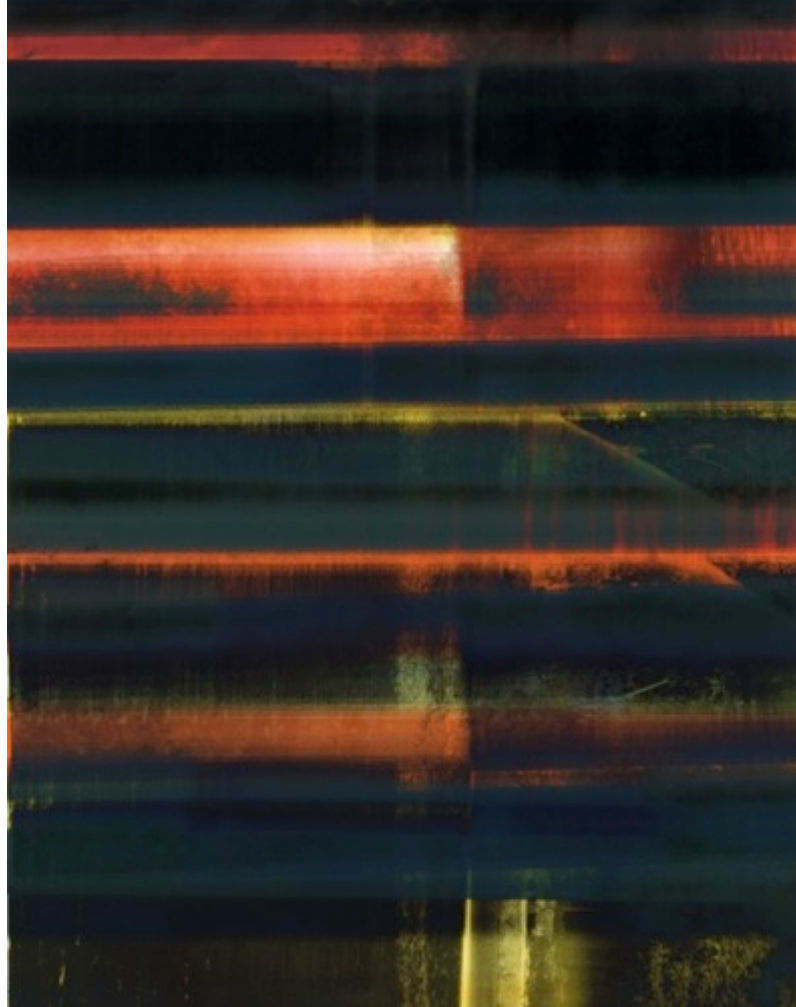


Figure 7 De-Composition: Experiments 1317

The decomposition of the image reveals fragmented landscapes and abstract elements of nature, which are obscured by the interruption of the printing process and the persistent point offcuts of the print head. The oversaturation of the ink creates intense, perhaps overwhelming, colors that have a surreal computer-generated quality. This project was developed along with other photographs that were more formalistic, with a painterly approach referencing minimalism.

De-Composition is more successful than *Goiania* because it better fulfilled my initial intention of pursuing painting, as it is focused on color, abstraction, and the decomposition of an image. However, I added complexity to this process by using a new medium—the printer—as a painter’s tool. In reference to this idea of hybridization, Merleau-Ponty points out, “paintings are the artist world made available to others through the artist perception” and “photography freezes it in a specific instant.” My work rests in between the realms of photography and painting, as I am not “freezing” a moment, but using photography to make available my perception and sensibilities as a painter.⁷

⁷ Chris Murray, *Key writers on art the 20centure* (Daniel F Chamberlain – M M-PONTY)- (Routledge, New York), 219

THESES EXHIBITION WORK

My thesis exhibition installation titled, *My Expressions: Entropic Manipulations*, is comprised of three separate artworks that maintain a close conversation and coherency between them.



Figure 8 Mutants

MUTANTS

Mutants is an 8' x 13' mural, composed with five prints, each 36" x 96", on glossy finished film, and three 52" x 96" prints with a matte finish on vinyl. All of the images' sources are from the series *De-Composition*, and have been manipulated in my printer, scanned and printed as large format photography. The background of the image is

composed of a manipulated landscape printed on vinyl overlaid with gloss transparencies of digitally printed trees hung from the top of a Plexiglas bar. These transparencies are placed two inches away from the background and almost touch the gallery floor. The transparency acts as foreground and depicts green trees appearing and disappearing, composing and re-composing from chaotic compositional segments. By being a reflective surface, viewers can experience a sensation of depth and movement while standing or walking alongside of it; this can prompt the viewers to consider the interplay of color, composition, as well as question what is going on beyond the surface and perhaps even glimpse themselves. *Mutants* is purposefully scaled to appear larger than the size of a human, and this large size allows the viewer to inspect the miniscule and subtle alterations of the landscape.

Most of the colors of the photographs printed on vinyl are both attractive and aposematic, much as it is my goal to attract and repulse the viewer. Consciously, we know what we are doing to the Earth, but we continue because we are attracted to materials comforts. Bright colors such as red, yellow, orange and black, which can act as warning colors of animals or insects, send an avoidance signal to its predators and natural enemies. These aposematic colors are unusual choices for the depiction of a landscape, but they are being used to send a signal about the environmental manipulations. In addition to highly saturated colors, the environmental damage is made visible through ink spills, disruptions and discontinuities of the image. The fragmented images reveal abstract elements of vegetation, which are obscured by interruptions of the printing process. The de-composition denotes mankind's careless actions.

As some animals use aposematic colors to prevent harm by signaling danger, my landscape wants to send the same signal. The blue section at the end of the image communicates a sense of calm, lack of action, an absence of energy, and can possibly be interpreted as the color of the point of death. However, the green trees represent nature's ability to regenerate even after considerable damage has been done to the environment. This concept encourages us to confront the organized disorder in our own daily lives; it also prompts us to consider the impact of our lives on the environment, reminding us of our power to change conditioned habits. Although it is commonly said that nature always wins in the end, we may be excluding our survival at the end of everything.



Figure 9 Constant Evolution, 2014

CONSTANT EVOLUTION

Constant Evolution is a 3' x 38' print and is made on matte photo paper, 280 grams. This print is comprised of numerous photographic sources, which appear as segments within segments. They originate from the prints from my *De-Composition* series. These 8.5" x 11" images were placed in sequential order, to suggest that each segment is giving rise to subsequent sections. Rather than hanging in a traditional way, this print will remain a part of the paper roll. The work will be hung with stainless steel cables, roughly 5 feet from the 22-foot ceiling, looping and almost touching the floor. These cables will attach to the spindle, which is the printer paper's holding device. The

paper roll will be looped like a vertically oriented belt, and the viewer will be able to see the place where the paper overlaps on top.

We cannot always see the many ways in which nature has been modified, either because of our physical limitations of our bodies or the psychological barriers of our minds. I am able to make visible the effects of human manipulation on the environment by fragmenting the landscape and portraying it with my version of false colors. The process of manipulating the printer breaks the initial image into small sections, which I am using to represent the many ways that we can interfere with or transform nature.

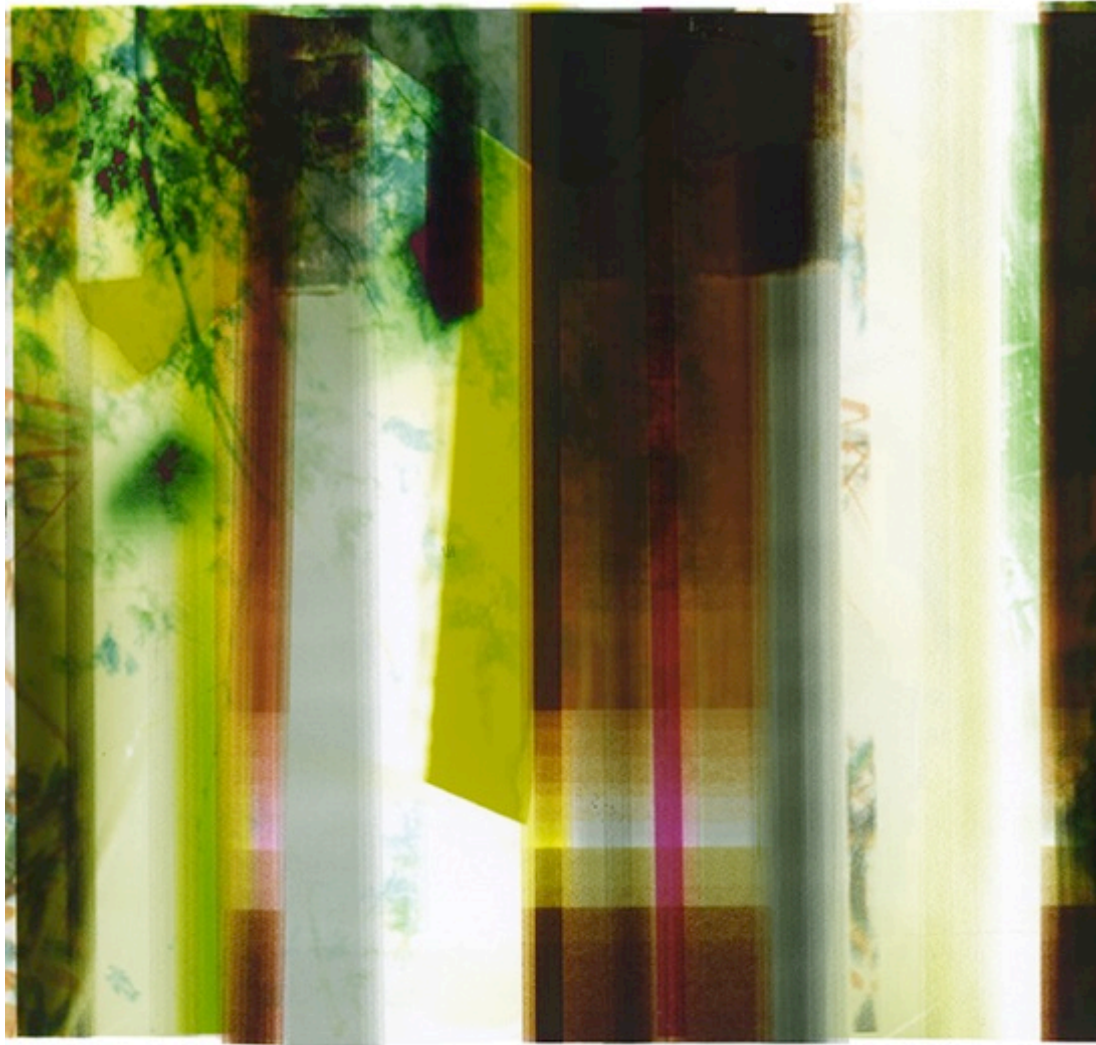


Figure 10 Constant Evolution, 2014 (detail)

Because my manipulation of the printer has produced unexpected colors, which do not naturally depict a landscape, I consider them to be false colors. A false color refers to “a group of color rendering methods” used in fields such as thermography, astronomy, and chemical imaging in order to detect changes that otherwise pass unnoticed. Further, a false color image is “an image that depicts an object in colors that differ from those a

photograph (a “true-color image”) would show.”⁸ While traditionally false colors are red, green, blue, and grey, I am using this phrase to describe the vibrant, unnatural colors I have chosen to expose the manipulations of the environment.

When I initially looked at the print in sequence-form on the computer screen, the colors appeared to be loosely arranged into a spectrum. The false colors are more vibrant and warm in the beginning, changing to cooler colors, until they reach stages of disintegration, and ultimately, erasure. This sequence follows the linear direction of the arrow of time, a concept that is bound to the irreversibility and inevitability of entropy. By printing this project as a continuous piece, still attached to the paper roll, I am referencing the continuous progression of time and life.

When the installation is seen up close in its looped configuration, the sequence of images is perceived as a chaotic amalgamation of fragmented landscapes and blocks of color. While the aposematic colors in *Mutants* signal attraction and danger, the false colors in *Constant Evolution* symbolize and highlight the underlying environmental modification.

⁸ S.C.Liew, “Principles of Remote Sensing,” *Centre for Remote Imaging, Sensing and Processing*, last modified 2001, http://www.crisp.nus.edu.sg/~research/tutorial/opt_int.htm.



Figure 11 Entropic Manipulations 14-7, 2013

ENTROPIC MANIPULATIONS

Entropic Manipulations is an inkjet on paper print, which combines three sheets of 8.5” x 11” in a 8.5” x 27” glossy photo paper into one continuous image. It represents a number of different pieces that I have produced in a similar manner of subversion. However, unlike the aforementioned pieces in this thesis project, *Entropic Manipulations* is unique because the subversions and manipulations are solely generated with my inkjet printer, a Canon MP620, and not with my computer. *Entropic Manipulations* is presented unframed.

As previously mentioned in my section entitled “De-Composition Process,” for this piece as well as the others like it, I used pictures from a park that I took in the summer of 2012 in the city of Goiania, Goias-Brazil, as well as new pictures that I shot on a farm in the summer of 2013. I recycled and repurposed these images for sentimental

reasons, as well as to make a statement about the manipulations of the environment. Some other prints (not pictured above) are as long as four sheets and taped together, while some are comprised of only one or two sheets of paper. Sometimes I cut up and recombine various prints because of the printer's quirks—for instance, the first portion of a print is often super-saturated with ink, and I may think that this dark color is better suited for a different piece of work. Therefore, this illustrates how often the paper is pushed and pulled, as the printing process is interrupted and started over again. I know the limits of the printer but it is still a struggle and sometimes it can cause frustration. This process easily mirrors the incremental, harmful actions we perform every day that harm our environment. *Entropic Manipulations*, the smallest work, is a microcosm of *Mutants* and *Constant Evolution*, which are rendered on a larger scale. Metaphorically, the relationship between *Entropic Manipulations* and the other pieces symbolizes the ways in which a number of small and subtle manipulations of the environment can gradually accrue to produce catastrophic consequences.

This work of art is inspired by the modifications I randomly made with the printer and responded to. I intuitively have been using chance as collaborator in my process. Georges Bataille stated in his essay “Chance arises from disorder”⁹. I am using chance to express my view of the entropy's disorder.

⁹ Margaret Iversen, *Chance*, (Cambridge: The MIT Press, 2010), 32.

CONCLUSION

My process has been a continuous search to satisfy my curiosity of what will happen if I change the rules. As such, I would like to continue to use intuition and chance as operators in my work. Even though the vision of my project is pessimistic as I am depicting potentially irreversible environmental destruction, I enjoy the innovative and technical aspects I developed to create this body of work. Still, as an artist concerned with entropy, I face a major ethical questions: should I continue to make objects, which ultimately contribute to entropy and the production of waste?

To address this question in the future, I will strive to create art with as many recycled entropic materials as possible. While this thesis project involved a mix of old materials (i.e. photographs) and new materials (i.e. paper and ink), my goal is to minimize the use of new materials and perhaps eliminate their need entirely. Where exactly might this road take me? I do not know yet, but I am excited about the contributions I can make to the ongoing dialogue about entropy in the years to come.



Plate 1 Gallery View: Constant Evolution (detail), Mutants (detail), and Entropic Manipulations 14-7, 2014

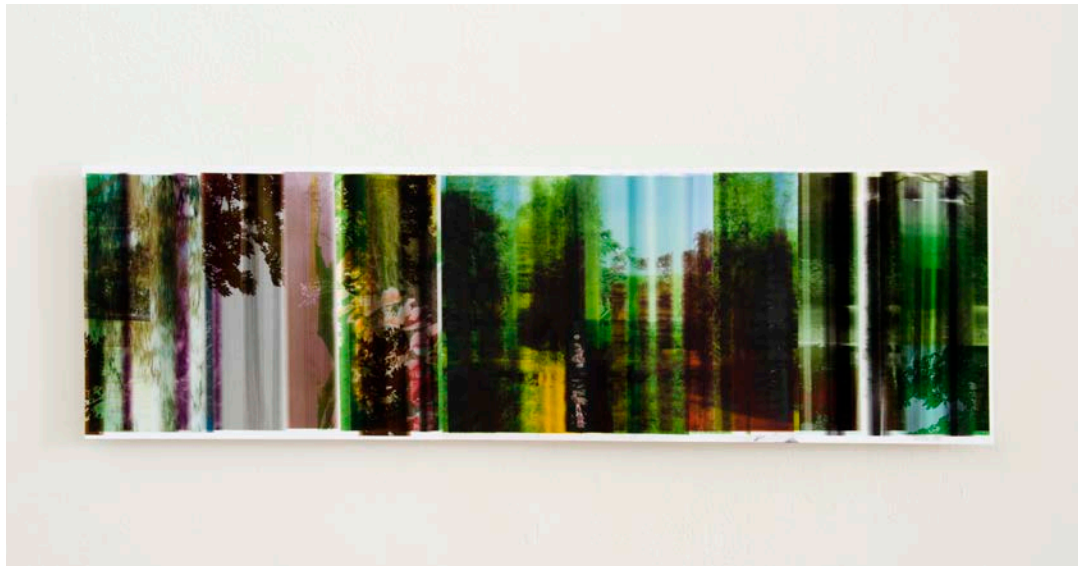


Plate 2 Entropic Manipulations 14-7, 2014



Plate 3 Plate 4 Mutants, 2014



Plate 5 Constant Evolution (view 1), 2014

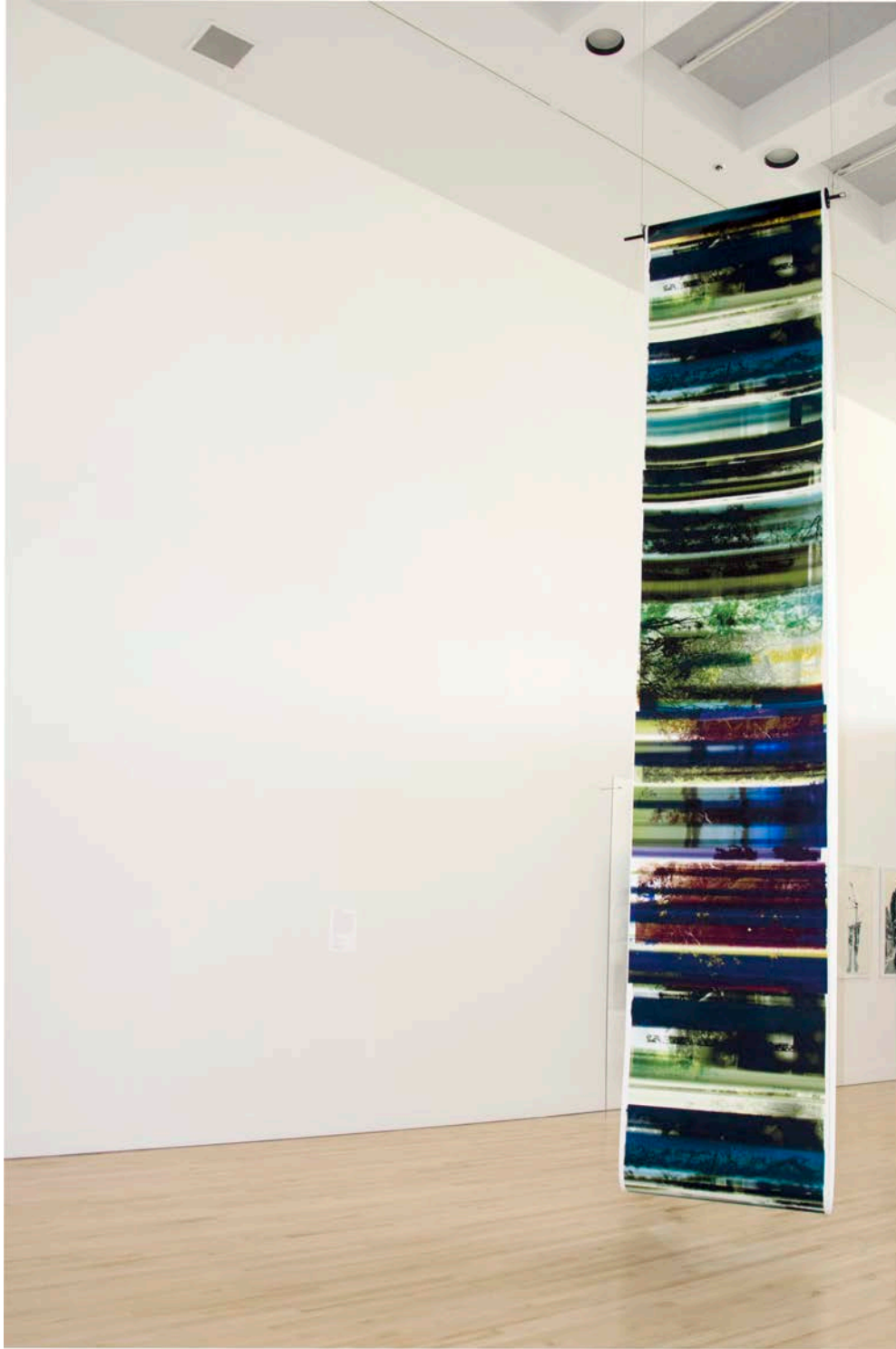


Plate 6 Constant Evolution (view 2), 2014

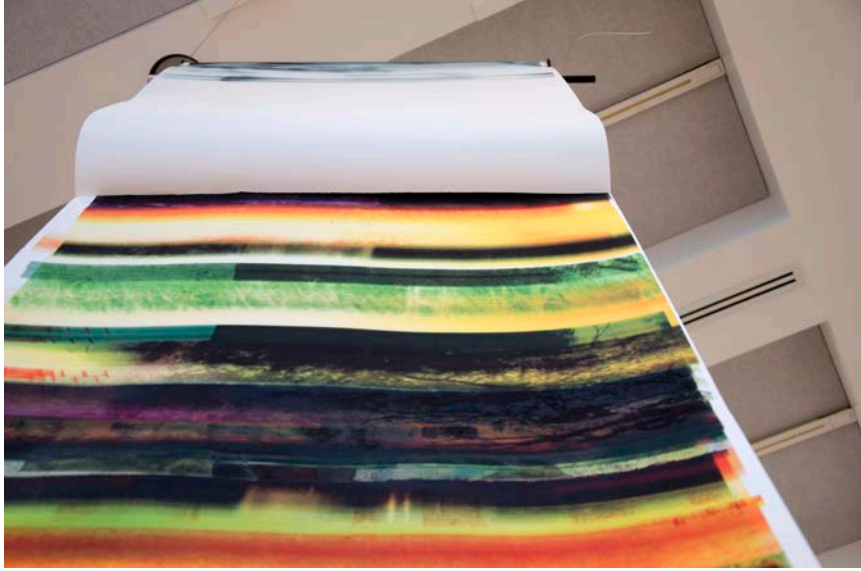


Plate 7 Constant Evolution (top detail 1)



Plate 8 Constant Evolution (top detail 2)

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