

Sacred Messages of the Earth

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Abstract

This thesis addresses the question whether fractal patterns in art affect the viewer physiologically. My research focuses on Benoit Mandelbrot's studies in Fractal Geometry, and where this exists around us. I will describe Emoto Masaru's explorations with water and vibration, and his findings involving waters' memory retention and the remnants that different vibrations leave behind. His theories inspired the basis of my artwork. Further, based on experiments led by Physicist and Theorist Richard Taylor, the human brain is hard-wired to notice and respond to a specific pattern, found in nature. Scientific evidence behind our brain's reaction and the physiological results of these reactions will be presented. I will explain how I replicate these patterns, and other artists who have also exhibited fractals into their work. I will share how I thoroughly incorporate my findings into my work visually, as well as my scientific and spiritual reasoning for utilizing these patterns in my artwork.

Acknowledgements:

First and foremost, I would like to take the time to recognize my *Creator*. With Love, I believe all things are possible. I am grateful for my existence, for my gifts, and for all of the sources of Love that have surrounded me, they have provided my life with inspiration and purpose.

I am so appreciative of the encouragement my family has shown me. I cannot express enough gratitude to my mom, the embodiment of elegance. My mom inspires my creativity by being the most soulful artist I've known, and she inspires my life by being the kindest and truest example of a human that has maybe ever walked this earth. I could not be here without my father. My dad listens to me with respect, as an equal. His constant presence, support, and hard work, have shown me how to be a dignified and independent woman. I must thank my Aunt Patty; she has always come to my aid in times of need. Her comfort and guidance helped me to find the peace I needed in order accomplish my goals.

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I. Introduction

Fractals, the infinitely repeating geometric pattern. Fractals appear everywhere around us, microcosmically in the snowflake, in crystal growth, in our veins, and in branches and macrocosmically in eroding coastlines, channeling rivers and galaxy formations. Throughout human history, fractals were recognized through observation, but in 1975, Benoit Mandelbrot finally defined the fractal as a geometric figure or curve where each part has the same statistical character as a whole.¹

Fractals can be numerically explained using the Fibonacci sequence: 0,1,1,2,3,5,8,13,21,34,55,89,144, etc. Mathematically, in a Fibonacci sequence, each number equals the sum of the two numbers before it, and is the difference of the two numbers succeeding it.² This is often referred to in art as the golden spiral or divine proportion, and utilized with the *Golden Ratio*. It has been theorized to be the most aesthetically pleasing to the eye.³

Many hold the theory that these perfect patterns present in our lives have purpose and represent something larger. In this thesis I will show a connection of fractal formation to vibration, and how I incorporate these formations into my artwork. I will also reveal how our bodies, are, in fact hard-wired to seek out and respond to the fractal patterns found in both nature

1. Mandelbrot, B. B. *The Fractal Geometry of Nature*. New York, NY: W.H. Freeman and Company, 1977.

2. Dussen, and Taylor. "The Art and Science of Hyperbolic Tessellations." *The Journal of Nonlinear Dynamics*, Psychology and Life Sciences, 2013.

3. Ocvirk, Stinson, Wigg, Bone, and Cayton. *Theory and Practice*. 9th ed. New York, NY: McGraw Hill

and art, as proven by Physicist Richard Taylor.⁴ Is there a link between love and a natural pattern that surrounds us; a perfect pattern that can be subliminally created, and unintentionally read affecting us physiologically?

II. Water and Vibration

My work began with an unstoppable loyalty to my water-based medium. I was encouraged frequently to abandon my medium, but I had an innate devotion to Watercolor and India Inks. Trusting my instincts, I decided to gain thorough understanding of my medium's tendencies while mastering my skills. My passion gravitates towards nature and wildlife, and as I surround myself with these environments and topics, I eventually stumbled on the research of Emoto Masaru. Masaru is a Japanese scholar who conducted water vibration experiments, giving verbal cues to water in the form of words with meanings ranging from positive to negative. He then froze the water and photographed the aesthetic results. His results showed that the words with generally positive meanings (i.e., love, happiness, prayer, etc.) formed into beautiful fractal-like snowflake patterns, while the words with negative feelings attached generated distorted and unorganized dull results (fig. 1).

4. Hausdorff, J. M., P. L. Purdon, C. K. Peng, J. Y. Wei, and A. L. Goldberger. "Fractal Dynamics of Human Gait: Stability of Long Range Correlations in Stride Interval Fluctuations." *Journal of Applied Physiology*, 1996.



His findings were summarized with the sentiment that, if this is how the vibration of our words and thoughts affect water and we as humans are made up of almost 70% water, this is also how we can affect each other.⁵

Figure 1

This idea that love and loving words have even more power than just emotional and spiritual effects appealed to me, but, like any new idea his research garnered both excited and dubious attention. It was important for me to replicate his experiments my own way in order to test its validity.

In my experiment, I filled four jars with a half cup of regular tap water, and a quarter cup of rice, and closed each jar. Each jar was set one inch apart on a shelf in a room that received no outside light. A different word was taped to each jar: Love, Acceptance, Money, Hate. Every day for 30 days, I whispered the corresponding word to each jar, and the jars remained closed for 30 days. At the end of the 30 days, the results were extreme. The jar labeled Hate had both black and red toxic-looking molds covering the inside, the jar labeled Money had both dark grey and

5. Emoto, Masaru. *The Hidden Messages in Water*. Translated by David A. Thayne. Hillsboro, 2004.

black molds inside, the jar labeled Acceptance had only a little white and light grey hairy mold forming, and, astonishingly, the jar labeled Love had not one spot of mold (fig. 2 and 3). It was clear to me that Emoto Masarus' results were trustworthy and, in fact, duplicatable. I began to create fractals.



Figure 2



Figure 3

III. My Process

Because these fractals originate in nature, I begin by fully immersing myself in the natural world. Observation and connection, reflection and clarification. Absorbing the world around me through all senses. Interacting with nature through long hikes into the depths and heights of the truest wilderness. This effort spent with the earth provides me with my comprehension of the natural rhythm of the environment.

In communication with the element of water, I use Ink and Watercolors as a medium to react with my verbal cues and sometimes even unspoken prayers. The pulse my focus radiates triggers endless fractals to palpitate within the wet media. I also began leaving the works outside so certain layers could collect interactions from precipitation, and occasional bird interaction (fig. 4 and 5)



Figure 4

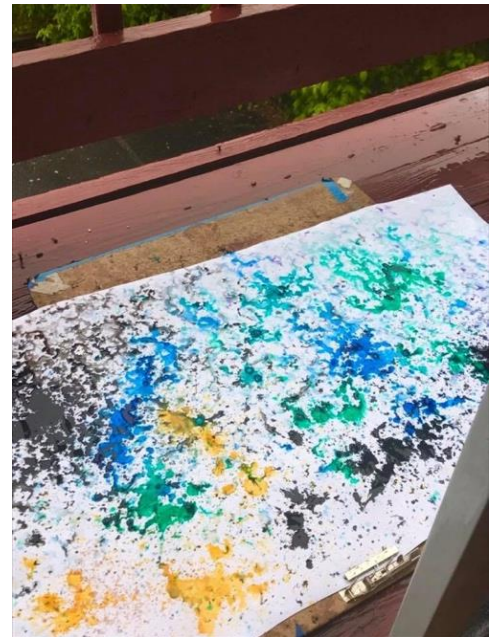


Figure 5

In this way, the foundation of each piece is created through the most natural means of existence, sincerely raw. I am careful to ensure that the initial framework of my art is influenced by my *physical* touch as little as possible. It is my belief that intertwined with the reality that everything exists as vibrating particles with a pulse all their own, love has a relationship to matter through cymatics.⁶ Visible in figures 6, 7, and 8, still-frames of fractals are captured by the media as each layer stroboscopically dries on top of itself.



Figure 6



Figure 7



Figure 8

At this stage, I accept what is created within the shapes of ink and water and then organize the chaos, recognizing the beauty of what had become. In my life, I have recognized this language, and in my work, I recreate it; my purpose as an artist is to act as a conduit. The first two layers resonate through; I respond to nature's mark with additions of realistic aspects and patterns that I've noticed in the wilderness. These additions are drawn with colored pencil or weaved throughout with Watercolor and India Ink (fig. 9- 13). My attraction to the repeated tree imagery stems from their role in the production and representation of the fractal pattern in nature.

6. *Cymatics derived from Ancient great wave. The study of visible sound and vibration. (Jenny)

Both their branches and roots symbolize the growth of the fractal pattern, and the evidence of its existence. In this way, trees represent all of nature to me.



Figure 9

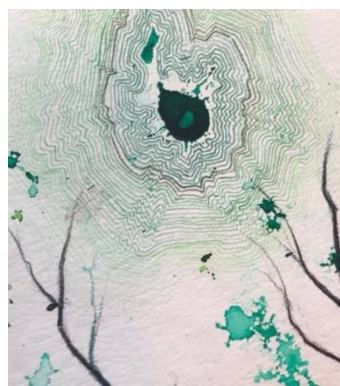


Figure 10



Figure 11

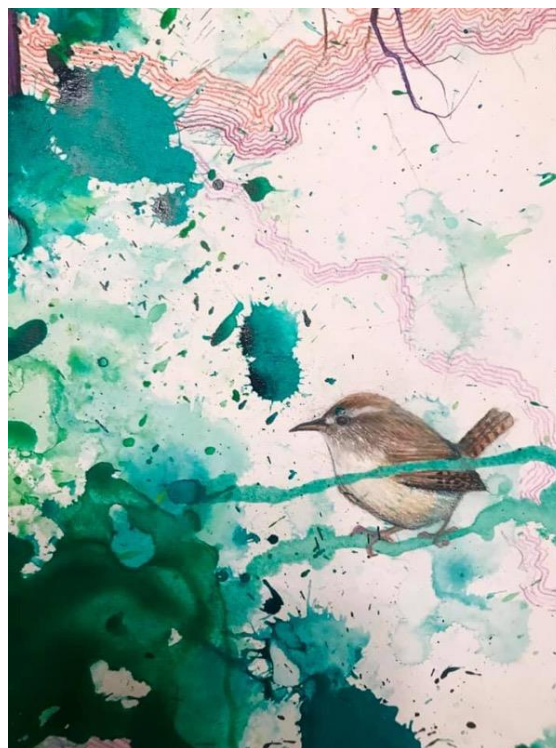


Figure 12

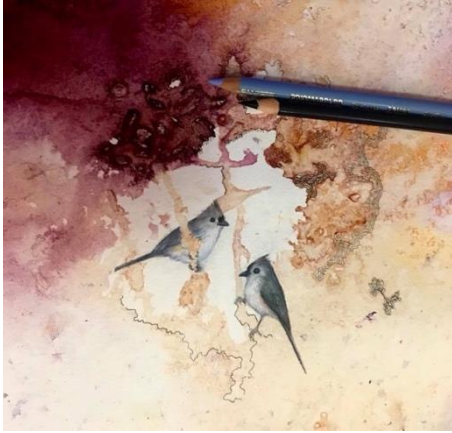


Figure 13

My artistic reactions parallel my cognizance of this passionate frequency in nature and articulate my gratitude. Multiple layers are utilized to portray the complexity and profundity of the world around us with its nearly invisible message (fig. 14). Currently my works are made up of four layers. The furthest background layer is a Watercolor wash with verbal cues, followed by India Ink with verbal cues. I then allow this layer to interact with precipitation and wildlife. Next, another layer of Watercolor with India Ink to paint the realistic forms, and finally a layer of colored pencil or pen, which I use for detail emphasis and the additions of line patterns.



Figure 14

Though lofty, I wanted to be sure that the idea that others were receiving internal benefit from viewing my work was more than wishful thinking. It took love to create it, but was it giving love back? Additional research revealed that there is more reason behind the existence of the fractal pattern. They were meant to heal, or *restore*.

IV. The Power of the Fractal

Physicist Richard Taylor holds a PhD in Physics, and a Master's degree in Art Theory. He has spent his life studying fractals, as they occur naturally and within art. Taylor collaborated with psychologists to conduct behavioral screenings, surveying participants on the aesthetic

appeal and emotional responses to fractal patterns in different visual settings (nature, artwork, and digitally/mathematically created fractals). Using applied computing programs to artworks from Jackson Pollock and MC Escher among other imagery, Taylor was able to quantify the fractal patterns present within each. The collectively calm responses, after viewing these fractal patterns drove him to continue his experiments using more measurable data. MRI's and EEG's were utilized to monitor brain activity, while eye tracking apparatuses mapped the movement and fixation of the gaze. Taylor's trials showed that the eye effortlessly focuses on the fractals, arousing the attention while calming the viewer. This was recognized in the MRI where stimulation in the parahippocampal region of the brain was apparent, which is involved in regulating emotions. Unlike other visual stimuli, which can strain or drain our focus, after viewing fractals, concentration is restored.⁷ Taylor and his team of psychologists and neuroscientists discovered a universal effect in their participants that they termed fractal fluency. Using the EEG to record the brain's electrical activity, he proved with his experiments that a stress reduction of 60 percent is triggered by a physiological resonance that occurs when the complexity of the fractal structure of the visual system matches that of the fractal image being viewed.⁸

V. Conclusion

By incorporating the vibrational cues into my work, which results in fractal patterns, viewing my work should physiologically create a restful mood in my audience. My compositions play with perspective, with angles, and with space (fig 15-30). My intention in creating these

7. Taylor, Richard. Interview by the author. University of Oregon, Department of Physics, OR. February 25, 2020.

8. Taylor, R. P., A. P. Micolich, and D. Jonas. "Fractal Expressionism." *Physics World* 12 (1999): 25-28.

intricate fantastical worlds is to contain the audience within the piece long enough for them to gain the benefits of the microscopic fractals. What I understand of love in the most basic emotional sense is that it is a feeling of peace. The purpose of my life and art is to share this feeling, in all of the ways that I can. The path I travel artistically is very connected to my spiritual journey. I live a life of intuition. Inside of me I listen to a voice that encourages me to share this language and I saw the signs I had to follow. I do not know for certain if what I believe to be true is, but I know connections are important to recognize, and so it is for this reason that I create.

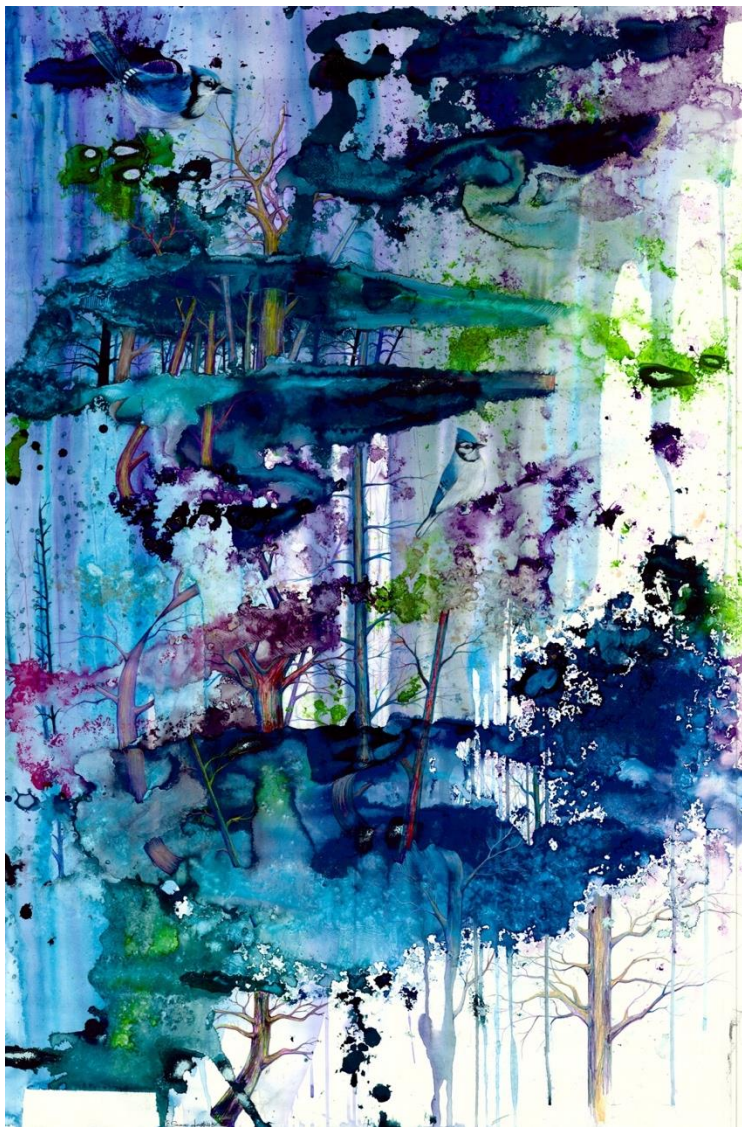


Figure 15



Figure 16



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21



Figure 22

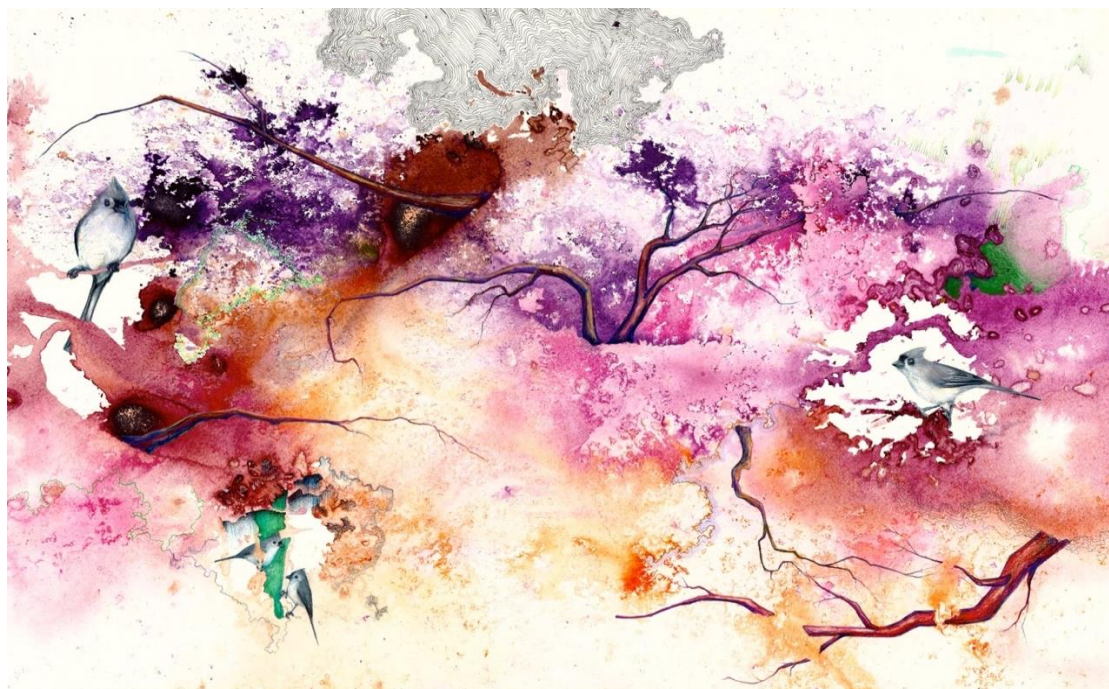


Figure 23



Figure 24



Figure 25



Figure 26



Figure 27



Figure 28



Figure 29



Figure 30

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