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UNIVERSITY OF CALIFORNIA  
SANTA CRUZ

**PRESENCE INTERFERENCE**

A thesis paper submitted in partial satisfaction  
of the requirements for the degree of

MASTER OF FINE ARTS

in

DIGITAL ARTS AND NEW MEDIA

by

**Carinne Lynae Knight**

December 2018

The Thesis of Carinne Lynae Knight  
is approved by:

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Professor Soraya Murray

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Professor Jennifer Parker

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Lori Kletzer

Vice Provost and Dean of Graduate Studies

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2018

## TABLE OF CONTENTS

<b>Abstract</b> . . . . .	iv
<b>Dedication</b> . . . . .	v
<b>Acknowledgement</b> . . . . .	vi
<b>List of Figures</b> . . . . .	vii
<b>Prologue</b> . . . . .	1
<b>Introduction</b> . . . . .	4
<b>The Presence: Formal Project Description</b> . . . . .	7
<b>The Interference: Conceptual Design</b> . . . . .	18
<b>Roy Ascott: Moistmedia &amp; Technoetics</b> . . . . .	21
<b>Biophotonics &amp; Kirlian Photography</b> . . . . .	27
<b>Synergetics: Past to Present/Presence</b> . . . . .	34
<b>Artistic Insights</b> . . . . .	40
<b>Reflective Analysis</b> . . . . .	57
<b>Conclusion</b> . . . . .	63
<b>Bibliography</b> . . . . .	66

## ABSTRACT

### *Presence Interference* - Carinne Lynae Knight

*Presence Interference* explores the relationship between the human body and temporal ecologies by making invisible elements of ephemeral materiality visible. All living beings are interconnected and communicate within vast, integrative networks of biological and ecological systems. A dialogue emerges between the past and present by re-contextualizing work by Buckminster Fuller, Roy Ascott, with biophoton theory, and Kirlian photography. Combining concepts through research and aesthetics encoded by personal experience, *Presence Interference* incites a new awareness of synergetic transference through time and space. This work visualizes an interaction between the human body as a conscious, electronic transceiver in an energetic network of communication, creating a biotic feedback loop within an environment.

## **DEDICATION**

To my mother, Renda Lee Greer Knight, who left Earth too soon and continues to live through spirit. Everything I am is because of who you were. You always believed me and encouraged me to find my own path, even if it was the road less traveled and least understood.

Life truly is a journey, not a destination after all. I am forever honored and thankful to be your daughter.

## ACKNOWLEDGEMENT

First and foremost, I wish to express my tremendously deep gratitude to my thesis committee; Elliot Anderson, Newton Harrison, Soraya Murray, and Jennifer Parker, for their inspiring words of wisdom, critique, and encouragement through the development of this work.

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Additionally, I'd like to thank my 2018 DANM cohort, or should I say, "fam-danm-ily;" Tony Assi, Ann Altstatt, Simon Boas, Christophe Ivins, Colleen Jennings, Lindsay Moffat, Ian Newman, and Parul Wadhwa for their friendship, collaboration, and fond memories. Thank you also to Ruby Barnett, Magenta Howard, Matt Mitchell, Greg Sullo, Kathleen Deck, Shimul Chowdhury, and Zoe Sandoval for helping with the project install, conceptual discussions, and thesis composition.

Finally, thanks to all my family and friends, too numerous to name here, who have helped and supported me along the life's journey to the present moment. Thank you all for your love!

## LIST OF FIGURES

- FIG. 1:** *Presence Interference* installation displayed at the exhibition *Interstices, 2018*.
- FIG. 2:** Interaction with *Presence Interference, 2018, Installation*.
- FIG. 3:** Raw imagery for projected video of *Presence Interference, 2018, Photography*.
- FIG. 4:** *Self-Portrait #1 & Self-Portrait #2; Studies For & Stills From Presence Interference, 2018, Photography*.
- FIG. 5:** Display of prints at *Interstices* exhibition of *Studies For & Stills From Presence Interference, 2018, Photography*.
- FIG. 6:** Frontal, interaction view of *Presence Interference, 2018, Installation*.
- FIG. 7:** Still image from archive film footage of Kirlian photography study at UCLA, *early 1970s, Film*.
- FIG. 8:** The Harrison's UCSC Arboretum *Future Garden, 2018, Eco-Art*.
- FIG. 9:** Ando Takahiro's domed *Bio Photon: Allelopathy, 2007, Installation*.



**FIG. 10:** Still image of scene from Char Davies' *Osmose*, 1995, *Virtual Reality*.

**FIG. 11:** Still image of scene from Char Davies' *Ephémère*, 1998, *Virtual Reality*.

**FIG. 12:** Combining past and present in Shimon Attie's *Writing on the Wall*, 1991-2, *Photography & Installation*.

**FIG. 13:** Robert Buelteman's Kirlian-style in *Purple Clematis*, 2006, *Photogram*.

**FIG. 14:** A dog interacts with *Presence Interference*, 2018, *Installation*.

## PROLOGUE

For thirty years I wandered the earth without knowing a face that looked mine. Sure, I saw plenty of faces, but never got to experience the elemental biological reflection in my family that so many take for granted. Thankfully, at a very young age I discovered that I was adopted. Although I could not comprehend all the implications of my circumstance at the time, learning this so young gifted me a chance to grow my identity around this ubiquitous fact. Most of the time, my existence was unproblematic. I was lucky enough to have been given to a large, loving family. However, as I became more conscious of myself, my immediate family, and my surroundings through the years, I began to sense a sprouting disparity. Somehow, something was still missing

My mother always encouraged me to follow my intuition in any aspect of life. Even if she didn't understand them, she always encouraged my creative ambitions and my curiosity, but also to seek out my biological family. After

her passing, a deep void remained. With the discovery that she had been trying to find my biological family for several years, I gained the courage to finish what she started.

In 2015, the magical moment finally arrived to meet my biological mother, father, and respective families. Nothing in the world could have prepared me; for all the anxiety and nerves that this meeting spurred, the actual moment was awash with a strange familiarity and sense of calm. A missing piece, that I was never aware was missing in the first place, had been found. How were these complete strangers so much like me? How is it possible that I share strange coincidences in life milestones, likes, dislikes, idiosyncrasies, behavior, and personality traits that are normally attributed to environmental impressions?

Instead of finding specific answers, I was confronted with whole new sets of questions; such as: Where is the intersection of genetic and environmental influence? Is there an unseen relationship between past, present, and future experiences? How can memory, intuition, mannerisms,

and circumstances transcend time and space? Where does this information manifest physically and what biological devices communicate this data through the generations? Can one really distinguish between coincidence, serendipity, and synchronicity? How can we become more consciously aware of the entanglement that exists not just between one another, but with other living beings and the greater macrocosm?

These kinds of rhetorical questions speak from my heart and have impacted my process as an artist. This paper, research, and project describes a tiny step towards developing a practice of seeking. I find it less imperative to have a singular, astute answer to such blurry questions, as the important aspect is the act of asking. Through the pursuit of intimate inquiry, I've come to better understand myself. Ultimately I am a unique player in the grand experiment of nature versus nurture, where both genetic and environmental influences spin fluidly together in an unchoreographed dance, immersed intrinsically in every moment. Although most of my questions will remain unanswered, I will continue to resonate with the music of uncertain reverie.

## INTRODUCTION

*Take this moment to stop... Relax the gaze of your eyes. Take a deep breath in through the nose and out through the mouth. Repeat this breath once more. Feel your feet take root into the ground. The heart is opening upward. A faint pulse radiates through the fingertips, the toes, the face and crown of the head. Become aware of the body identified as you and the space in which you inhabit. This energy expands into the surrounding space. Can you now sense your presence?*

*Presence Interference* is an investigation into the awareness of connectivity between all living entities and between their environments. Acting as biological transceivers, our bodies are constantly engaged in a feedback loop by communicating and interpreting messages between other biological bodies and the living environment. By encouraging humankind to adapt their consciousness, we can co-create a world that reflects our integral role as an existential mechanism of a larger ecological system. How do we create the means to enact conscious change and effectually communicate perceptive awareness through time and space? How does one begin to contextualize a sense of self within an environment? How might the

environment be experiencing our energetic presence, or perhaps our interference?

My interests as an interdisciplinary artist investigates how digital art utilizes multiple senses to engage, connect, and communicate consciousness through connecting the past to the present. By encouraging a participant to become aware of their energetic presence and conscious of their actions within time and space, my work explores the intersection of technology and consciousness through playful interaction and mindful self-discovery.

*Presence Interference* addresses four main conceptual and aesthetic frameworks: Roy Ascott's moistmedia and technoetics, biophoton emission theory developed by Dr. Fritz-Albert Popp, Kirlian photography which captures bioenergy fields, and Buckminster Fuller's notion of synergetics and the geodesic form. These themes are explored within the context of digital art and new media by using tools such as digital photography, video editing, projection mapping, motion sensors and programming.

Inspired conceptually by my inexplicable personal experience as an

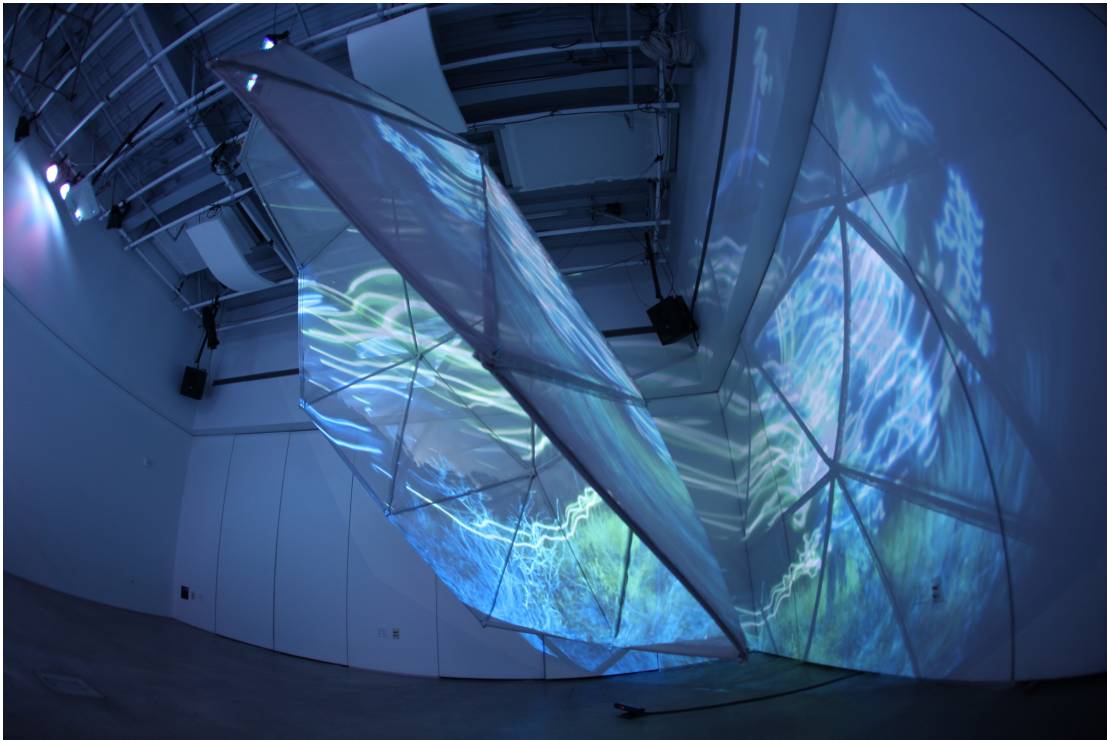
adopter, *Presence Interference* seeks to visualize a mysterious unseen presence that secretly pervades our lives everyday. Energy transference quietly occurs between yourself and other living entities; bonding all of life in an immersive web of correlation—like long-lost family. The intention behind and presentation of *Presence Interference* is speculative in nature and mindful in practice, remaining open-ended for anyone from any walk of life to experience. New media, digital art has provided an exceptional aesthetic and practical platform to incorporate both theoretical analysis, creative vision and sensory perception by creating an interactive interface which appeals to multiple senses simultaneously.

## **THE PRESENCE: Formal Project Description**

*Presence Interference* is designed to illustrate an inherent communication network between human bodies and the surrounding environment. Four main components create the aura of this installation: an ambient soundscape, physical sculpture, video projection (animated from long exposure photography), and bodily interaction encoded in real-time. This chapter introduces the project in a formal sense, and specific conceptual details about design decisions are discussed in the following section entitled *The Interference*.

Upon entering the installation, one is initially confronted with a large and immersive geodesic satellite sculpture, an ever-changing projection of contrasting darkness with colorful lights, and a soothing, meditative soundscape of flowing water. Although *Presence Interference* is not site specific, the place of installation can contribute to the overall reception of the piece. Because the imagery is designed to bleed through the sculpture and





**Figure 1: *Presence Interference* shown at the University of California Digital Art and New Media (DANM) M.F.A. show *Interstices* April 27-29th, 2018.**

into the surrounding interior or exterior landscape, how this project is placed within an exhibition space must be considered. At UCSC, *Presence Interference* was installed in the Light Lab: a 25 x 25-foot light-sealed room with a sixteen-foot high theater rigging grid and the ability to project on 360° of white wall surfaces. The geodesic sculpture was rigged approximately two feet off the ground at a sixty degree angle from the floor.

The geodesic satellite is comprised of custom cut, partially flattened

and drilled lengths of steel conduit pipes which consist of two different lengths (61" and 58") for the "2v" geodesic form. 2v indicates the classification of the geodesic structure, meaning that only two types of triangles make up the shape; an equilateral and isosceles. The geodesic structure is fitted with a custom modulated theater scrim material which allows the projection to be captured on the shape while also allowing the projected content to extend to the walls of the surrounding space. The ideal placement of the satellite is between three and five feet from a solid surface such as the walls of the light lab. The sculpture is hung with aircraft cable proximately two feet off the floor by three points; two on one side, skipping one vertex and the center of the structure. This creates a slight tilt to the 14-foot-wide structure, establishing an overwhelming object-presence.

The installation requires the use of an extreme short-throw projector, preferably capable of 3500 or more lumens. This is important to note for two reasons. First, the extreme short-throw allows for such a large image to be cast in a very small space. Second, the long exposure light painting

photography is relatively dark imagery which requires a high lumen power to provide detail in projected video. For this installation, an Optima GT5500+ ultra short throw projector was hung from the light lab grid with a standard pipe projector mount.

A Kinect sensor is placed on the floor directly below the lowest hanging area of the satellite. This device, primarily used for gaming, was chosen as an adaptive depth sensor to detect movement and accurately map a localized area. A specialized program created with Max/MSP encodes a photo-animated video loop with a grayscale depth map feed from the Kinect. This dictates the real-time changes and effects being made upon the projected image in the form of abstract, bodily noise which interferes with the projected images. This interference noise is ephemeral; not logged or independently recorded.

Audience members are invited to become active participants, whom I call “players,” within a representational environment. Why a player as opposed to a viewer? The act of playing implies that that the audience



**Figure 2: Interaction enacts change in the form of auditory and visual noise depending on the player's place and movement in the installation space.**

member's body is integral to how *Presence Interference* works. The act of performing, becoming, and being reflected in the piece is elemental to how a player perceives the piece. This visually shows how each player within the installation becomes an active transmitter and receiver, thereby creating a feedback loop of biotic data.

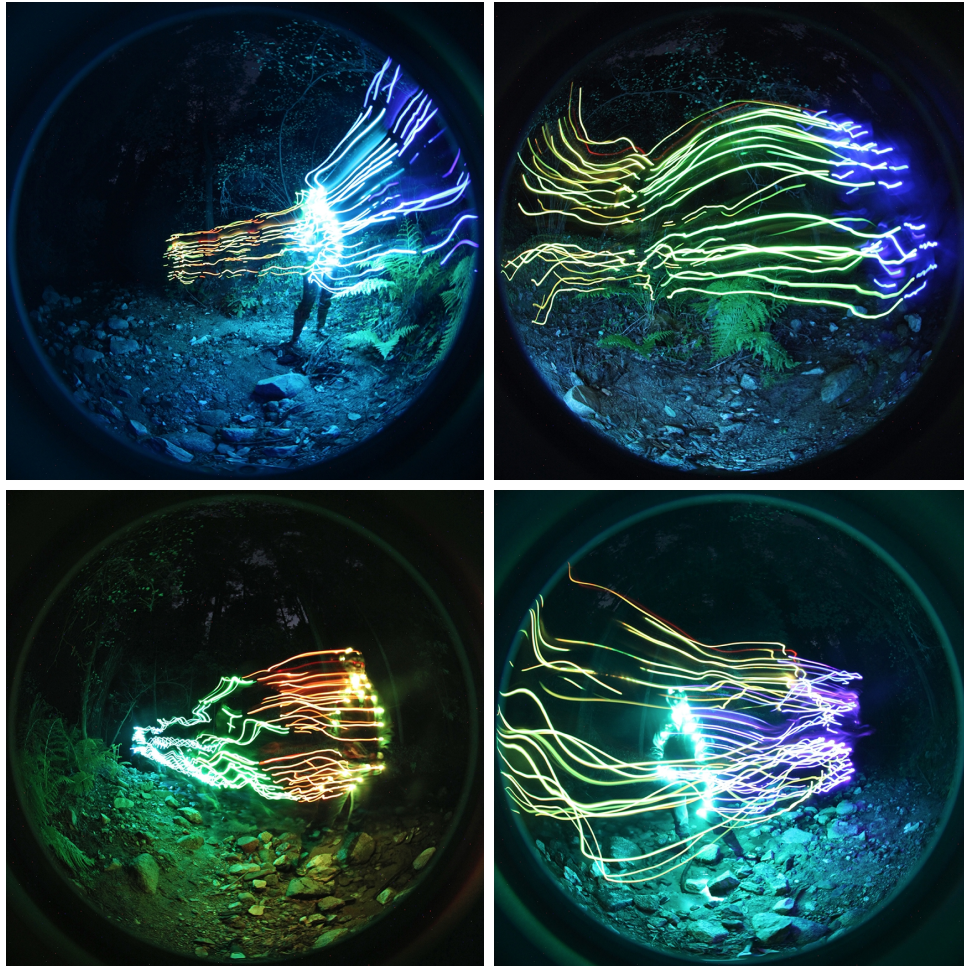
By wandering close to the geodesic, satellite structure animated by a 360° long exposure time-lapse, the projected and audible environment

undergoes various changes. These aesthetic choices were made as indirect cues to influence interaction. For instance, a pervading, meditative, and ambient sound of bubbling water fills the space when no interaction is taking place within the fifteen feet of immersive geodesic space. The audio abruptly evolves from a meditative bubbling stream of water to an electronic noise reminiscent of broadcast disruption when a player wanders too close to the structure. The volume of this noise acts as a warning, raising dramatically when the player comes within two feet of the lowest interior zone of the satellite sculpture. Additionally, an interfering mirrored “shadow” in the form of a pixelated visual static or noise will appear if the edge geodesic depth plane is activated. Not a typical black shadow, this shadow consists of ever-changing, colorful particle pixels that disperse around as the body moves through the space.

The installation features a looping photo-animation projected into the geodesic structure. The imagery is composed of long exposure, light-painting photography shot as a 360° geolocation marker within a specific

environment. This means each marker has four unique angles that when stitched together create a seamless 360° panoramic image. Inspired by the route water takes through a watershed in the coastal redwoods near Santa Cruz, California, my own body is employed as a tool to navigate the landscape of four environments: a beach, a meadow, a forested creek, and a redwood grove. The images projected onto the geodesic sculpture of the abstract narrative are inspired by the technique of Kirlian photography which captures energetic frequencies. The photo animation features my body which radiates the idea of this bioenergetic glow into the surrounding landscape.

My bodily movements through time and interaction with the various environments create the content of the abstract narrative highlighted in the animated video. This process is similar to site specific performance, of which the environment becomes the audience. By performing in the long exposure photographs, taken alone at night far from civilization provided an extraordinary moment for self-reflection and self-integration by becoming very aware of my presence and my interference.



**Figure 3: This grid of four images shows the four cardinal angles that comprise a 360° view of the forested creek environment. My body is tracked through the space of each environment using thirty-second exposures while wearing LED lights controlled with a remote.**

This narrative animates pieces of a 360° panorama and painted with colorful spectrums of light to illuminate interconnectivity between an intangible past and the interactive present. Only one of the four cardinal panoramic shots of the 360° view is ever seen at one time from the player's perspective in the physical installation. This choice was made for a few key reasons. First, it grounds the participant of the installation to a representational space that slowly becomes familiar through experiencing the animation. This happens visually with the content of the images in the animation, but also dynamically, giving the projection a ground plane for the participant to step into the interaction of the piece. Additionally, the way a 360° panoramic image is shot and stitched together using an 8mm lens creates a circular perspective showcasing 180° of information both vertically and horizontally, making it an ideal format to project into a circular shape such as a dome or disc.





**Figure 4: Self portraits as studies for long exposure photography aesthetics based on the Kirlian photography process.**

Partnered with the installation is a set of eight photographic prints which showcase stills from the projected animation and conceptual studies for producing the project. The gallery of prints, four 18”x 18” and four 20”x 30” create a meditative space of their own where an audience can contemplate or become familiar with the ever-changing places and ephemeral moments highlighted in the installation’s animation. These prints act more as an echo of the installations concept, not a replacement to the project itself. Intentionally displayed separately on a different floor from the full installation, the imagery invites viewers to come close and peek into these environments, providing a sense of familiarity or new perspective to the interactive work.

The project *Presence Interference* attempts to remain rather ambiguous while being encoded with various layers of visible intentionality. This helps retain relevance and meaning within its layers to a variety of potential audiences with varying backgrounds and degrees of perception. The ephemeral temporality of the installation ensures that no two participants will experience the piece in exactly the same way. Overall, *Presence Interference* is a highly conceptual piece which strives to create an ephemeral relevance by combining multiple layers of conceptual expression.



**Figure 5: A set of eight archive prints accompany the installation as *Studies For & Stills From Presence Interference*.**

## **THE INTERFERENCE: Conceptual Design**

Conceivably, a dialog for human-induced climate and environmental change at the present time of the Anthropocene, *Presence Interference* draws on many areas of conceptual and aesthetic inspiration. In attempting to understand my identity and presence via biological versus ecological influences, synchronistic occurrences have led down varying theoretical research paths. Each question has led to more questions; such as:

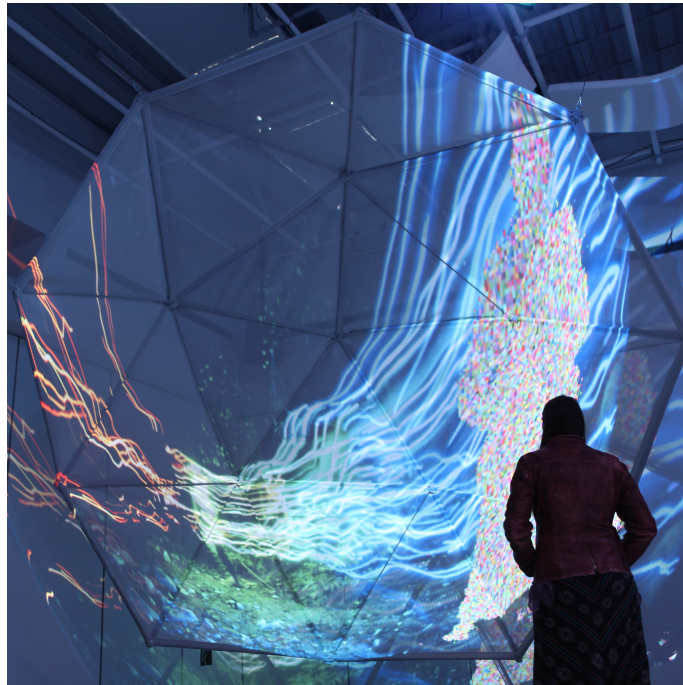
How are human bodies disrupting and interfering with the natural order of Earth's planetary systems? How can we prevent these disturbances? What does consciousness do to a body? Why are light and water essential ingredients to life? How can invisible impressions become visible?

In addressing these complex issues, the most inspiring answers began to emerge from theories of discourse nearly fifty years old. Although some of these concepts are considerably not contemporary, they continue to be relevant and deserve to resurface within the context of new media, digital art.

Modern tools such as digital photography, motion sensing, computer programming and projection mapping can quite literally shine new light on ideologies slowly fading into the history.

For example, the aesthetics implied by long-exposure, light-painting photography are reminiscent of Kirlian photography to capture the objective impression of biophoton emission. This type of image capturing was happening long before the Kirlians gave their name to the process, but very little research has probed the topic since the height of its popularity in the 1970s. Similarly, *Presence Interference* is inspired by Buckminster Fuller, who fifty years ago, discussed how and why society should understand synergetic life systems. Fuller's logical, mathematical implications and geodesic design are integral to the metaphoric development of the project. Additionally, Ascott's conceptual neologisms: technoetics; a confluence of technology and consciousness, and moistmedia; an interface between computational systems and biological bodies, bridge the conceptual and operational interstices of my work.

The following three topics introduce the basic conceptual foundations, dialogue, and research interests of *Presence Interference*. These subjects begin to dissect my enigmatic, personal experiences and how to relate the unexplainable or invisible within a purposeful context. It must be noted that some assertions are required in applying meaningful theoretical and conceptual references to my work. Please approach the following research with an open mind and a mindful soul.



**Figure 6: Frontal view of projected images and geodesic satellite of *Presence Interference*, at the angle of interaction.**

## **ROY ASCOTT: MOISTMEDIA & TECHNOETICS**

In confronting the uncertain future of our planet in the Age of the Anthropocene, we must open the dialogue for the potentiality of change, of comradery, and of commonality between humanity and planetary systems dynamics. By addressing the interconnected reality of all living systems to create an awakened and empathetic society, we may be able to change the course of our perceived future just enough to avoid complete annihilation. This may be possible by redefining our “self” as human in our relationship with the “other” as nature and different living organisms through evoking a new communicative language, coherence and consciousness. Art, technology, and the application of moistmedia can help bridge the chasms between an anthropic demise and build an ecocentric niche where all life can thrive within the living system of Earth.

Moistmedia is a concept developed by Roy Ascott to describe a potential space of synthesis between technology and nature. He explains:

Between the dry world of virtuality and the wet world of biology lies a moist domain, a new interspace of potentiality and promise. Moistmedia (comprising bits, atoms, neurons, and genes in every kind of combination) will constitute the substrate of the art of our new century, a transformative art concerned with the construction of a fluid reality. (Ascott 363, 2003).

Ascott implies virtuality in the sense of computer simulation, reproduction or extension being the source of dry media. The wetness accompanies biotic presence. Conceivably we live in a “moist” environment daily, treading space somewhere between the virtual and the physical. Our bodies therefore become an extremely effective and ideal moist interface between the dry computational world and the wet biological world.

By delineating biotic bodies in this way, a unique relationship between concepts of self, body, and the other begin to occur. The other simply becomes any biological agent expressing a life force or bioenergetic system containing water and electricity separate from the body one identifies as self. Establishing the fact that “water is the most important constituent of all living organisms (70% of the total mass and 99% of all molecules),” (Giudice,

355) a point of commonality and coherence appears. “Water... is a device able to collect low-grade energy...” (Giudice, 358) Water is not only an essential ingredient to biotic beings, but water also becomes an electrical conduit aiding the transference of energy throughout a living entity. “Whenever we look at life, we look at networks.” (Capra, 82) If the natural world is perceived as an intrinsic energetic network operating at a variable energetic frequencies, then bodily circuits integrate within the system and reflect back as perceptive reality. Essentially this represents the architecture of a feedback loop, demonstrating an synergetic framework through which we create a conscious bodily identity while also connecting a sensibility to the other.

Technoetics transcends the boundaries of technology and consciousness to define an overarching awareness present in moistmedia environments in a synergetic sense. Another philosophical neologism coined by Ascott, further describes such awareness through the integration of intelligent architecture and the intelligent presence of nature:



This burgeoning awareness is technoetic: *techne* and *gnosis* combined into a new knowledge of the world, a connective mind that is spawning new realities and new definitions of life and human identity. A mind that will seek new forms of embodiment. At the same time as we seek to enable intelligence to flow into every part of our civilization, we recognize that nature is no longer to be thought of as over there, to be viewed in the middle distance, benign or threatening as contingency dictates. (Ascott, 364-365, 2003)

The inclusion of moistmedia such as atoms, neurons, and genes with technoetic methods of conscious connectivity create the conditions for empathetic engagement and interactivity to facilitate the cognitive and behavioral changes required to resolve our potential future ecological conundrums. A networked technoetic existence implies the ability to inspire change at a collective, mass conscious scale.

Progressing into the contemporary digital age, new metaphors and language like the key terminology developed by Ascott become crucial to shifting knowledge and perception in art practice. The future is conceivably both technoetic in nature and moist in media. Through self-awareness, we can begin to create greater influence and potency in cultural conveyance; beginning with the interconnected consciousness between our newly created

identity of one's self and all planetary living systems. "The key to understanding this new state of being is... that language is not merely a device for communicating ideas about the world but rather a tool for bringing the world into existence." (Ascott, 2000) As artists, we are tasked with bringing new life, new ideas, and new visions into existence. We are the conduits of metaphor and communication. In calling into existence an interpretation of our perception, an energetic ripple flows through the entangled energetic network's web. The next visionary challenge is to adapt an visual aesthetic and artistic media to represent the transmission of conscious cohesion.

The project *Presence Interference* addresses technoetic theory by actively using the body of the participants as a moistmedia interface to interact via a communication network with the art object (satellite sculpture and projection). Without a player, there is no subjectivity, no witness to the effects, no changes to be made within the piece. "Living systems are then neither mere subjects, nor objects, but subjects and objects at the same time." (Popp, 453) As living systems, players' bodies become both object and subject

within *Presence Interference*, by which one comes to know and understand both their self and the other.

The work requires conscious interaction in order to display the ephemeral temporality, exercise the fleeting moment, and create change. The body becomes an integral, moist tool for the feedback loop present in the constructed environment of the installation, but also projected into the perceived environment determined by the narrative video element. The human body is a conduit of electrical energy vis-à-vis bodily water retention, which also influences the audio design of the piece. The permeating trickle of ambient water audio also eludes sonically to a representational biotic body.

## **BIOPHOTONICS & KIRLIAN PHOTOGRAPHY**

Following Ascott's inquiries of connectivity and coherence, a generally unknown field of biological study provides greater introspection in relation to unexplained coincidences between inaccessible biology and informative environments. Inherently entrenched within genetic structure, forms of behavior, memory and communication are dictated by a transference of detectable and visible light. When we break down our own DNA to basic particles, we enter the curious world of biophotons. Contained within our own bodies, tiny particles of light connect us to all other biological beings through networks attached to the earth and its' living systems.

Dr. Fritz-Albert Popp is accredited as the founder of study of biophotonics. Once a speculative theory, Popp confirmed through experimentation "the existence of ultra-weak photon emission (biophotons),... its universal occurrence in almost all biological species,... that the helical molecules of DNA are the main source of biophoton emission,... [and] that the

light stored in DNA together with a coherent biophoton field permeates at least the cell, if not the whole organism.” (Bischof, 269) Popp’s analysis has indicated that a communication system between cells exist and is animated by biophotons present in DNA, thereby networking all living beings together.

Adapting to various frequencies and wavelengths, biophotons encode messages transferred between cells. Popp’s research has found that:

...this can be found in resonance-like biophoton interactions of DNA between cells, organs (within an organism) and even between organisms. This would lead automatically to an integration of translational, rotational, and vibrational modes, serving as a basis for development of further communication... This means that in an autocatalytic way the biological evolution extends the coherent states of DNA to larger and larger coherence volumes, incorporating with an increasing evolutionary development of longer and longer wavelengths. (Popp, 452)

Ever-changing epigenetic frequencies are constantly interacting with our bodies and the bodies of other biotic beings. The root of such unseen biological communication occurs quite literally by enlightened emission which stimulates genetic memory hidden in DNA. “Living organisms are not isolated from their environment.... At the human level, we experience this

self-determination as the freedom to act according to our own choices and decisions... determined by our nature, including our past experiences and genetic heritage.” (Capra, 85, 2002) Perhaps this luminescent emission which transmits biological data is also the origin of instincts and intuition? This a rhetorical rabbit hole that begs to be examined further, but at another time.

Hence, we emit a coherent biophotonic light frequency that connect us to all other biological networks including Earth. Seemingly unnoticed, profound connections are made between the charged energetic fields of enlivened biotic bodies: the self and the other. This subtle and unseen system of communication is both symbiotic and synergetic in nature. Such connections are only detectable with proper mechanisms and awareness. “The electrodynamics of living systems are vitally important, and that some means of detecting or recording the biodynamic relationships within a living organism have to be developed. The method of contact photography using high-frequency electric current may be the means of recording the bioenergetic phenomenon of living organisms.” (Krippner, 34) These powerful

images help to visualize the typically invisible and bring to light an unseen energetic presence that exists in all. This energy, determined by Dr. Popp to be biophotonic emission, binds all beings together including the Earth.

Realizing our coherent and intrinsic attachment to Earth, perhaps the awareness we seek has been inside our human beingness all along, waiting to be unlocked. Humankind is not separate, but merely a part of a whole. The Earth and all inhabitants, human and non-human, are inherently connected. Through ontological artifacts and technological devices, we can aim for a balance of species and environmental equality.

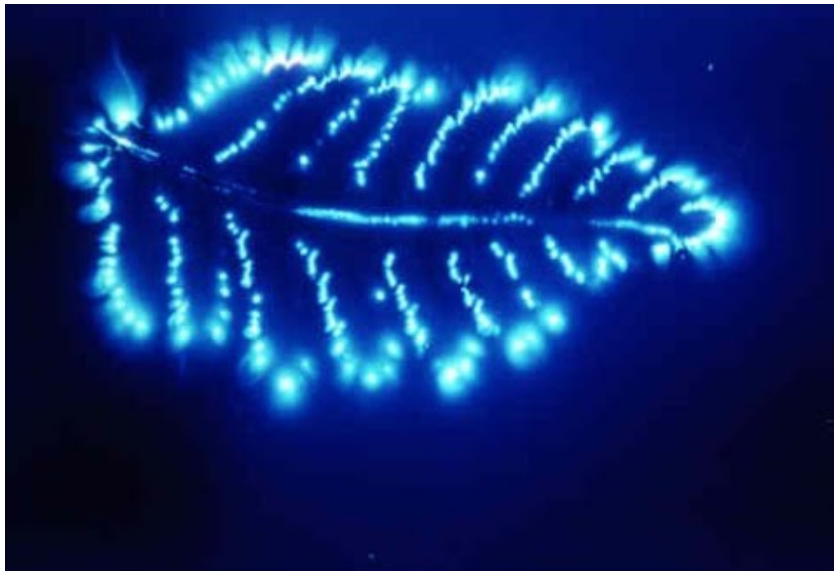
Some tools are able to record the prevailing presence of a biophotonic life force. “Bioenergy is apparently a kind of force much more subtle than electromagnetic waves and is always associated with psychic impulses and psychic components of a living organism.” (Krippner, 32) This referred bioenergy, analogous to biophotonic emission, is recorded in the process of Kirlian photography where high voltage electricity is applied to a metal plate with photo emulsion or photo sensitive paper. A biotic material or body is

placed on the plate when electricity is applied and the result is a radiating impression, or aura which has been interpreted as a life force or bioenergy field. For example, if you were to place your fingers on the photo emulsion, and have the electricity applied to the plate, a haunting electrical imprint would appear in the exposure. In seeing the body as an electrical circuit or mechanical object, the body produces “short electromagnetic waves register on the skin. The skin acts as a detector of low-frequency discharges. Thereby, a man seems to function as a receiving antenna.” (Krippner, 145) In this way we are both transmitting energetic information into the environment while also receiving these impulses from other entities. This process therefore exemplifies how bodies function as a moist interface within a biotic feedback loop.

Implying an awareness of the self in relation to the other, the notion of ecognosis is more akin to awakening the self as an embodied consciousness. “Ecognosis is like knowing, but more like letting be known. It is something like coexisting. It is like becoming accustomed to something strange, yet it is



also becoming accustomed to strangeness that doesn't become less strange through acclimation. Ecognosis is like a knowing that knows itself.” (Morton, 5) I comparably define this concept as an eco-recognition, or eco-awareness. This is the same “strangeness” humans seek understand and adapt through enlightenment, meditation, or spiritual and religious practices.



**Figure 7: Still from a study of Kirlian Photography at UCLA in the 1970s.**

Biophoton theory and Kirlian photography inspired the aesthetic representations and conceptual development behind *Presence Interference*. Although these ideas come from very different backgrounds and perspectives,

both achieve the same idealized effect and ideological sense. Each attempts to visualize an unnoticed or unseen presence and exchange of energy.

During my long exposure self-portrait presence “performances” obtaining the imagery for *Presence Interference*, I would changed the frequency of my movements and the colors of the lights. The results are a very distinctive visual aesthetic. However, the process of making these images imprinted a profound effect on me. Becoming immersed in the dark night, my body covered in lights, I became acutely aware of my sense of awareness and my presence. In those moments when I embodied the light and quite virtually becoming a biophoton or Kirlian exposure as I traversed the environment, I found it surprising hard to see the context of my surroundings. One might assume that the light would make it much easier to see in the dark, but once my moistmedia body became the luminosity, the light created a sharp dissociative barrier between my perception and my reality. Thankfully, this quite unexpected coincidence has simply added more value, intrigue, and questions to pursue as I continue to work with these conceptual themes.

## **SYNERGETICS: PAST TO PRESENT/PRESENCE**

To better understand the place we currently occupy in the present, it is important to reflect on the past. In 1969, Buckminster Fuller published the book *Operating Manual for Spaceship Earth* in which he introduces a discourse describing why society should evolve into a symbiotic, synergetic and sustainable life system. Fuller recognized fifty years ago that the planetary future was in dire need of change in the trajectory of Spaceship Earth.

Assessing the condition of ship and how to shift its course, Fuller elaborates that:

...thought processes operate with mathematical logic. The mathematics involved consist of topology, combined with vectorial geometry, which combination I call 'synergetics'...Synergy is the only word in our language that means *behavior of whole systems unpredicted by the separately observed behaviors of any of the system's separate parts or any subassembly of the system's parts.* (Fuller, 70-71)

Synergetic strategy suggests that the effect of the whole is stronger than the effect of each individual piece. Not to say that each piece does not have a fundamental role to play in the function of the overall system.

Working with the mathematical logic referenced previously, Fuller constructed complex geometric frameworks “Geodesic structures are being used by nature in providing the ‘spherical’ enclosures of her own most critical design-controlling programming devices for realizing all the unique biochemical structures of all biology—which device is the DNA helix...” (Fuller, 1071) Basic organic materials epitomize complex mathematical structures and geometry that Fuller has adapted into his well-known geodesic dome architectures which adhere to the same principles that also structure our DNA. Recognizing this correlation, we can begin to see how organic matter has the ability to self-organize formative bodies. “Self-organization is the spontaneous emergence of new structures and new forms of behavior in open systems far from equilibrium, characterized by internal feedback loops and described mathematically by nonlinear equations.” (Capra, 85) Just as curvature requires nonlinear analysis and computation to determine spherical shapes, the information feedback depends on data arriving back to the origin by way of a circular loop.

The reason why Fuller is adamant about using the concept of synergetics is because he conceives the downfall of humanity in general to be overspecialization. He goes to great lengths to describe metaphorically and anecdotally all the ways in which humanity has gone beyond the natural order of Earth's living system. Because "...systems thinking is 'contextualized' thinking, and since explaining things in terms of their context means explaining them in terms of their environment, we can also say that all systems thinking is environmental thinking." (Capra, 37) The important takeaway from Fuller's narrative is that overcompensation and overspecialization leads to the disappearance of a species or an occupational niche in the encompassing network's hierarchy.

It's a question of disappearance, not exhaustion, extinction or extermination. The exhaustion of resources, the extinction of species—these are physical processes or natural phenomena. And that's the whole difference. The human species is doubtless the only one to have invented a specific mode of disappearance that has nothing to do with Nature's law. Perhaps even an art of disappearance. (Baudrillard, 9-10)

Humankind has considerably overachieved and overspecialized to the point of

disappearance from the systematic life web—which is arguably becomes an incredible cure to the unhealthy planetary ecosystems.

To face extinction in the present age of the Anthropocene, is to face the fear of death itself. Richard Rorty describes this fear of extinction as fear of the loss of individual identity. Humans are too preoccupied with their own existence and perhaps ascribe more meaning to our current spatiotemporal location than contingent possibilities of what simply *is*. In describing Nietzsche and how to abandon the age-old humanistic search for the ultimate truth, Rorty explains “he saw self-knowledge as self-creation. The process of coming to know oneself, confronting one's contingency, tracking one's causes home, is identical with the process of inventing a new language—that is, of thinking up some new metaphors.” (Rorty, 27) Perhaps being present to focus on what *is* now and the inherited earth we access currently, we can focus less on potential futures and more on influencing the various ecologies in which we exist.

Where anthropocentrism considers the environment as valuable only to

humans, biocentrism concedes that all things within the environment inherently have agency within their own being or existence. Understanding our precarious role on Earth is essential to creating a cohabitational respect for our environment. “The environmental crisis clearly shows that we don't know what we (collectively) are doing, and environmental degradation is certainly out of control. Humans don't 'shape' Nature, they *influence* it, and that is a critical difference” (Washington, 79). The most important innovation we can generate as a society of humankind is to alter our perception of importance over non-human others and respect the integrative technoetic network known as Earth. In caring for the whole system, we are enacting a collective mindset of change within the system. Initial change is seeded in a sense of self-awareness and self-responsibility. By first becoming conscious of how our actions and energetic presence affects not just other humans, but all beings with which we co-create our present reality, we can presently begin to a cognitive shift from an anthropocentric worldview to a biocentric one.

Art and culture play an influential role in helping us gain insight into

the co-creative relationship between humankind and nature. “The artist's role at the larger planetary level of self-organizing, self-aware systems, will be to plant, grow and cultivate new forms, new structures and new meanings... the creative challenge being to create a Moist synthesis of artificial and natural systems.” (Ascott, 2000) The work of *Presence Interference* attempts to rise to Ascott's challenge.

Fuller's geodesic shape is an ideal structure to visualize and map unseen bioenergetic networks that span space and time, as well as represent the geometric architecture of planet Earth. The structure of the geodesic satellite dish directly implies a networked, synergetic relationship between a human body and its environment, creating a self-organizing feedback loop as transmitter and receiver. Water, a recurring thematic motif in *Presence Interference* has demonstrated the ability to self-organize under proper conditions. (Giudice, 357) Also, when the interaction ceases, the player's image disappears, just like humanity's potential fate.



## ARTISTIC INSIGHTS

Gaining insight from relevant artists has significantly molded the way I integrate and visualize themes within the context of my own work. By breaking apart related concepts and aesthetics and how other artists perceive these elements are indirectly referenced in *Presence Interference*. A variety of different media and artistic practice from photography, virtual reality, projection mapping, installation, and eco-art are considerable inspirational sources. Each of the artists referenced below have helped to either position my conceptual logic, shape my approach to working with media, tools, or aesthetics, and/or set an example to aspire to in evolving a creative art practice.

## HELEN MAYER HARRISON & NEWTON HARRISON

Many artists who address issues of climate change and anthropocentrism by envisioning changes in both natural and social landscapes provide inspiration for my work. For instance, the legacy of works by Helen and Newton Harrison tackle physical manifestations of pragmatic solutions to elicit responses in ecosystem behavior and experiments which work symbiotically and harmoniously within the natural life web. Helen and Newton Harrison have dedicated their life work to finding solutions to living creatively, cohesively, and sustainably with our natural world. Similar to the Anthropocene, they call the current age we live in *The Time of the Force Majeure*. In its most basic sense, the Harrisons define the Force Majeure as “the force of humanity, as creators.” (Harrison, 377) In order to think about the current ecological problems, the Harrisons ask “What is the property common to all living things, but which is enacted by humankind such that it puts much of the rest of life at risk?” (Harrison, 427); to which they answer,

“the will to expand and procreate, using all energies available—and that the human twist was to refuse limitation of any kind.” (Harrison, 427) In their artwork, they use the refusal of limitation to their advantage by proposing work that aids in the migration of slow moving species, the reformation of landscapes to capture water more effectively in the face of drought caused by climate change, and by redesigning forest landscapes to prevent additional atmospheric pollution.

The grand scale of these projects are overwhelmingly hard to comprehend, but perhaps this is the scale on which nature needs to be addressed in order to achieve change. The Harrisons certainly “create on the same scale that society has the capacity to destroy.” (Rabinowitz, 1984) Beginning to search for equilibrium in the life web by accessing the excess of ecosystems, “with the free energy sources being the sun and the available waste of others, nature can and does grow. The difference between how nature works and human industry works is that nature uses the waste it creates and industry in the main does not. Above all, nature does not charge a

profit.” (Harrison, 374) Devising new technology to aid the harvest of excess may be the way humankind can save ourselves from a dystopian future.

However, the Harrisons give organic agency back to nature, where their various *Future Gardens* attempt to transform ecosystems through the assisted migration of plants which allow localized species to take root and flourish in preparation for a new climate in a new space and time.



**Figure 8: The Harrisons unveil new *Future Gardens* in three geodesic domes housed at the UCSC Arboretum in Santa Cruz, CA.**

The concept of the *Future Garden* is thinking through ecosystems as an intrinsic life web, where space and time converge to form a specific metaphor. Taking action in the present is of utmost importance in order to affect the rapidly-changing potential futures that await, giving rise to the guiding metaphor that “every place is the story of its own becoming.”

([centerforforcemajeure.org](http://centerforforcemajeure.org), 2018) The gardens are designed to act unassisted once the preliminary groundwork has been laid. By transferring agency from human hand to the environment, nature is able to take hold and transform the proliferation of various plants. Therefore, the Harrison’s work acknowledges a timescale diverted from human perception to one more in tune with the slower scale of nature.

## TAKAHIRO ANDO

Other artists investigate biological processes to create visually interesting artistic studies. Japanese artist Takahiro Ando finds inspiration in “the mysterious feelings found through experiencing individual particles of light as physical sensations.” ([photonterrace.net](http://photonterrace.net), 2018) Ando creates installations that use biophotons in a conceptual sense and a practical sense by using specific tools more commonly used for scientific study.

In a work entitled *Bio Photon: Allelopathy*, Ando visualizes the emissions of biophotons in real time using photomultiplier tubes. These tubes are designed to magnify photoelectric sensitivity which detect sensitive spectrums of light and even individual photon expression. ([andou.info](http://andou.info), 2018) Ando’s installation actively uses a photomultiplier tube, contained within a light sealed box, which detects the biophotonic emission of a plant seed. This data is then processed by a computer which also controls the visible projections onto the dome.

A series of electric signals from both the viewer and the plant subject control projections onto a domed screen to visualize energetic emissions and the effects of allelopathy between selected herbs and vegetables. Allelopathy is a way that plants communicate using biochemical emissions which affect various life functions such as reproduction or growth of other nearby plants. What Ando does is attempt to combine the actual physical emissions of biochemicals into a visual display that interprets communication of plants as a biophotonic process.



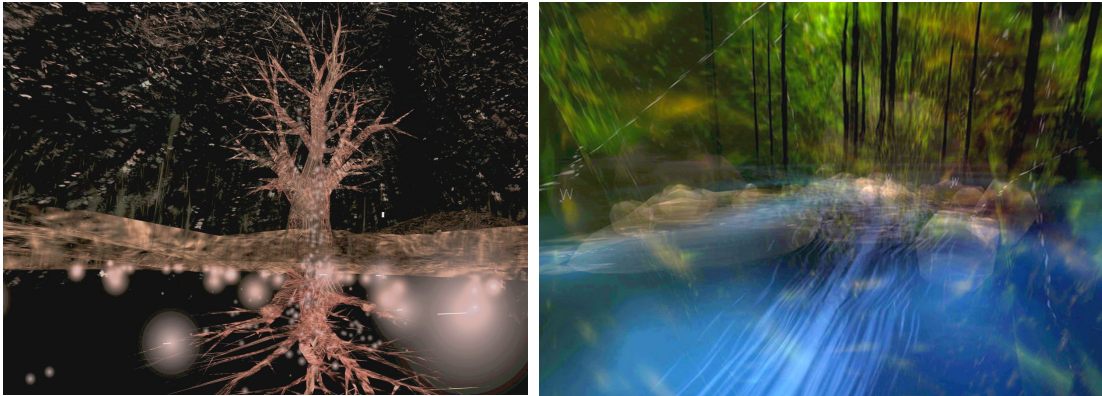
**Figure 9: Takahiro Ando uses a domed environment in his installation *Bio Photon: Allelopathy*, which has been shown at multiple exhibitions.**

This work provides real time feedback and a tangible reality to an invisible natural process. In addition to the visible dome projections, the biophotonic emissions detected in the plants contained within the installation send electrified pulse signals to electrode pads that the audience can touch. ([andou.info](http://andou.info), 2018) Spectators then become an active element of the piece, allowing electric current to transfer from the piece to them. I appreciate the subjectivity of including the audience to feel the biophotonic emission through an additional medium than just visual representation.



## CHAR DAVIES

Char Davies completely immerses her audience in a new sensory world pioneering virtual reality, experimental systems of perception, and generative storytelling. By layering metaphors with themes such as the ephemerality of an ever-changing world and relationships between body and environment, Davies' work aims to transform perspective through experience and interaction.



**Figure 10: (Left) *Osmose* (1995) and Figure 11: (Right) *Ephémère* (1998) are virtual reality installations which influence perceptual awareness of a conscious self and environment.**

Davies began incorporating virtual reality [VR] as an artistic medium in the early 1990s. *Osmose* was a breakthrough piece for Davies, which explored

the use of VR to make connections between virtual space and reality, but also primal feelings with behavior. “*Osmose* incorporates the intuitive processes of breathing and balance as the primary means of navigating within the virtual world. By breathing in, the immersant is able to float upward, by breathing out, to fall, and by subtly altering the body’s centre of balance, to change direction.” ([immersence.com](http://immersence.com), 2018) By referring to her work’s audience as an “immersant,” Davies hands power of co-creating the functional reality of the piece to the immersed participant.

*Ephémère* is an expansion on the project *Osmose*. Also utilizing biological data acquired from an immersant contained within a virtual space, *Ephémère* contains more structured narrative themes which play on concepts of ephemerality and relationships between the body and its environment. “Within the work [*Ephémère*] are recurring ‘archetypal’ elements suggesting a co-equivalency between the chthonic presences of the interior organic body and the subterranean earth.” (Ascott, 197, 1999) *Ephémère* challenges senses of perception to examine not only our biological connection to our environment,

but also conscious or subconscious reliance on nature.

Adapting a painterly and otherworldly aesthetic with corresponding audio, Davies integrates her unique thematic style as a painter with emerging digital technologies. This aesthetic seems to tap vividly into emotive receptors of participants by creating an altered state of consciousness. “Not only do the works’ reliance on breath and balance facilitate relaxation, but they also tend to facilitate a mental state in which logical, rational, goal-oriented behavior is abandoned for perceptual free-fall.” ([immersence.com](http://immersence.com), 2018) Both *Osmose* and *Ephémère* are groundbreaking bold assimilations of traditional visual mediums with new media tools for art-making.

## SHIMON ATTIE

In *Writing on the Wall*, Shimon Attie layers the past with the present using the light of projectors. Photographs taken at specific locations in Berlin pre-WWII are positioned and projected into the present space, creating a bridge between the past and the present. “By using slide projection on location, fragments of the past were thus introduced into the visual field of the present.” ([shimonattie.net](http://shimonattie.net), 2018) This body of work is half site specific installation using projections and half documentation in a neatly organized architecture and aesthetic of long exposure photography.

Working with themes such as memory, identity, time and place a connection is made between the self and a collective representation of combined stories or memory. Attie explains, “I use contemporary media to reanimate sites with images of their own lost histories. I think of my work as a kind of peeling back of the wallpaper of today to reveal the histories buried underneath.” (Attie, 2003) In a way, Attie’s act of reanimation in the projected

images create a ghostly illusion which serves to bring more attention and awareness into the present moment.

Attie utilizes layers of meaning and technology in new and interesting ways, bringing understated attention to the analogue process by impressing the temporality of time/space on viewers. For instance, “the mechanical process of photography and the memory of images recorded by the mind’s eye is made real here... reflected light imprints itself on light-sensitive surfaces, whether film or retina, that bear its traces afterward.” (Young, 70) Meaning is found less in the mechanical representation of an image, but more connected to the space and times being represented by the inferred narrative. Each image becomes a longstanding testimonial to the contextual fluidity of access to the fourth dimension.

Another important aspect of Attie’s work is the primal search for his own identity as a theme in and of itself. Installation locations were targeted in historic areas of East Berlin in Germany which were largely Jewish neighborhoods prior to WWII. Attie is making a unique claim into his own

heritage by integrating the ancestral memory into his current one. Attie therefore integrates the past and present in a seamless experience and document.



**Figure 12: Shimon Attie combines the past and present landscapes through projected interventions and long exposure photography in Writing on the Wall.**

## **ROBERT BUELTEMAN**

Robert Buelteman is a fine art photographer who integrates the Kirlian photography process with a new approach to the technique. Buelteman's images are camera-less photograms with an applied electrical discharge similar to the original Kirlian procedure, except that he incorporates fibre optic and strobe light. According to Buelteman's artist statement, "The imagery succeeds once I reach a point where my conscious intention dissipates, and is replaced by a sense of being a conduit for the serendipitous dance I've imagined between the subject of the piece and the spirit of its expression," (Buelteman, 2012) where the odds of creating a successful image are 100 to 1. (Petal to the Metal, 2009) The resulting lucky images from Buelteman's perspective are hauntingly beautiful, one-of-a-kind photographic imprints of plant life.



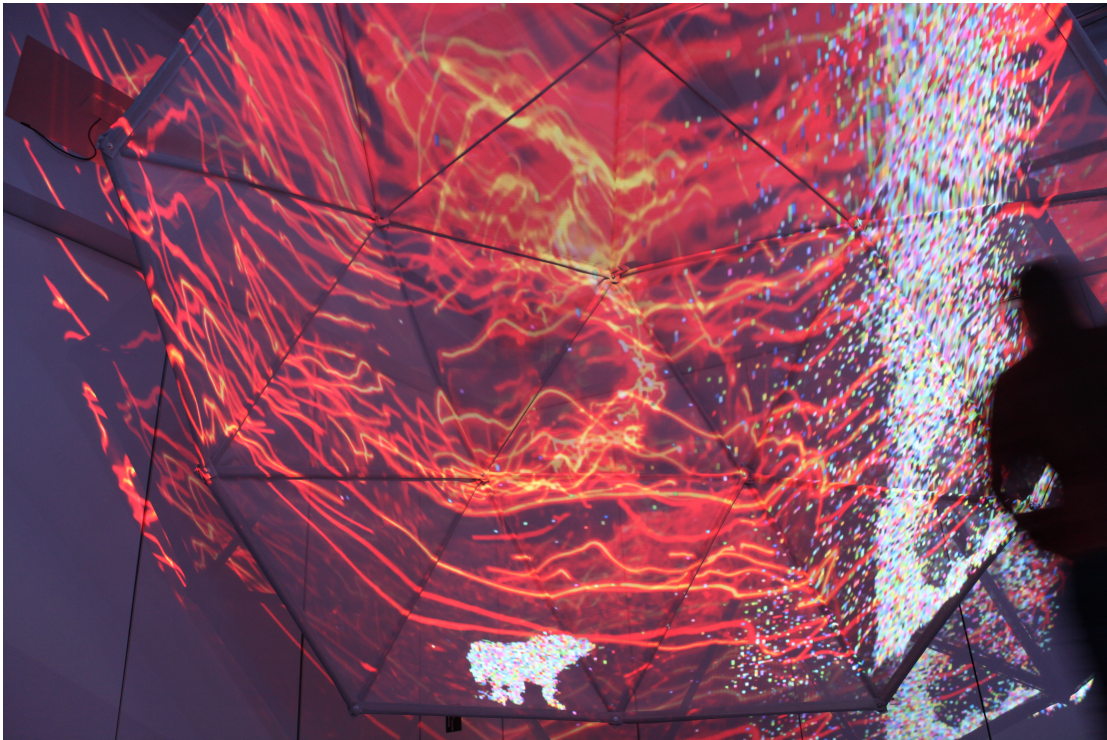
**Figure 13:** *Purple Clematis* is part of Buelteman's series *Sangre de Cristo*. Buelteman combines classic Kirlian photography technique with new tools such as fibre optics and strobe lights.



Buelteman approaches his work from a philosophical and metaphysical stream of consciousness. He explains that “in my work as a photographer I have gained a profound understanding of life by being present to the world as it is, without thought, without interpretation. Indeed, it seems that Presence, the mind silent, the heart open, is the sole requirement for the experience of beauty.” (Buelteman, 2012) Certainly, this type of mindfulness is necessary not only for his artistic practice, but also because he must handle dangerously high levels of electrical voltage to expose his images. His photograms combine concepts of bioenergetic presence with traditional photographic media, contemporary devices, such as fibre optics, and an awakened artistic vision.

## REFLECTIVE ANALYSIS

My creative process and research topics are greatly influenced by personal experience as a means to collaborate with others and express a relationship with reality either past, present, or future. This study reflects a growing awareness of my own self, as well as a cognizant medium to communicate inherent insights relative to my journey as an adoptee. I feel nearly all people can relate to this endeavor on some level simply because the overarching rhetorical question of ‘why am I here,’ ‘what is my purpose,’ or ‘what is this world about’ is an intrinsic parallel to being human. My work procedurally begins as highly conceptual which leads to an active investigation of thoughts and ideas. Several preliminary prototypes helped test various elements of the installation. Through the implementation of metaphorical and literal applications to available media, a viable understanding of my relationship with both ‘the other’ and myself began to take shape.



**Figure 14:** Any body can interact with *Presence Interference*, including dogs.

The goal of the *Presence Interference* installation is to construct an artwork that creates a sense of curiosity for the players attempting to interact with the media landscape; where they are invited to form one's unique conclusions, experience, and imprint their own memory upon the space. Informally, this relationship also developed within myself in both the visual and conceptual design of the project. Another expectation was to influence some degree of awareness in each player, and create a meditative space for

contemplative reflection. My ambition is to awaken an empathetic connection with the places or beings one interacts with daily and ignite self-awareness to enact change in the larger synergetic system in which one coexists.

In considering the audience for this project, it is hard to predict who would come into contact with this piece. The audience I hope for, in this case, is one who is, perhaps, unconsciously uncertain about their role in the greater discourse of environmental and climate change in the age of the Anthropocene. A large portion of the audience who came see the installation at the DANM M.F.A. show seem to already be knowledgeable with ideas conceptually developed through the work, but were pleasantly surprised to experience the layers of symbolism embedded with it. One participant clearly proclaimed, “who knew I could have such an impact!” Another witnessed response, one which I did not expect, was that many participants had a sense of uncertainty or coyness when interacting with the structure. Some would notice their pixelated projected noise “shadow” and slowly back up to the wall of the light lab to watch the video as a silent observer. In either case, there is

no directly explicit way to participate or play with the *Presence Interference* installation. In this way, the player co-creates a unique reality through both their presence and interference.

Overall, I feel the installation is successful in eliciting a variety of responses depending on what each player brought to the piece. Some children would stoically pace around in a circle just to experience all the stages in a rhythmic pattern. Adults would slowly walk up to the center and quickly run away giggling and laughing, just to run up again to make the visuals and audio disrupt. Some liked to stand back and watch others interact, or simply passively watch the projections, which became a trance-like dance of colored lights through unobtainable environments. Still others filtered their own perceptions into the images, where they would claim to see dragons or other whimsical figures, shapes, and content. Because reactions were so varied and dependent on the player, my main goal of creating an experiential landscape for in which to imprint memories and derive unique conclusions has been achieved.

This creative process and research has brought up more questions for me than have been answered. As Dr. Popp states, "...the more questions are answered, the more new questions can be asked." (Popp, 454) There are many more unexplored and unrealized avenues towards connecting new media, digital art to evolving subjects from the past and present that deserve further investigation. I am ambitious to continue down a niche path that I foresee playing a role in both developing new scientific inquiry and amassing conscious awareness at a global scale.

Like most work, there is plenty of available room for improvement. The main concern in this pieces is installation time. The process of building the piece is not overly strenuous once all the pieces are fabricated. However the most time consuming aspect of the install is that the custom, modulated scrim cover for the geodesic sculpture is held together with clear silicone sealant which requires time, at minimum around twenty-four hours, to cure. First each modulated cover piece must be aligned and pinned before adhesion. The rest of the components are rather straightforward and much

less time consuming, including building the geodesic frame and hanging the sculpture.

Future work is potentially an expansion on the motifs which *Presence Interference* engages. I can imagine breaking down the concepts into even smaller pieces of themes in which to explore in more detail. For example, one of these aspects might include a closer investigation of the body as both an elemental tool for integration design and networked communication. This may be realized within the context of a VR space and accessed either through a headset or in an internet platform. The photographic imagery for *Presence Interference* was shot with the prospect of eventually accommodating an immersive 360° VR space. Also, by integrating other forms of programming and data, including terrestrial LiDAR (Light Detection and Ranging) pulsed laser scans, a whole new dimension of informative media may be added to these environments or experiences. Yet another future endeavor may be creating an exhibition of smaller works through expands upon the presented themes within a relatable context.

## CONCLUSION

Stepping forward yet looking back, I cannot help but comment on the exclusive progress that the work *Presence Interference* has reflected directly back to me. I see clearly just how much I have grown and evolved from a coy child who at times was deathly afraid of the dark, to someone who wanders the forests at night alone for the sake of art, ready to face fears and take on an immensely heavy discourse to contextualize.

The act of creating *Presence Interference* has directly mirrored the intention of the piece back onto the artist in a profound sense. Because the work strives to awaken self-perception and awareness, I have reached an insightful understanding of my own identity, value, and potential. Positioning my project among such talented artists and thinkers commented upon within the context of this paper has been both the biggest challenge and reward. Furthermore, I am thankful for the opportunity to work directly with Newton Harrison's studio and Center for the Study of the Force Majeure to experience



first-hand his elaborate creative process from conceptual development to actualization. Metaphors, although seemingly simplistic are meaningful tools for developing context and situating ideas to drive a larger message that the Harrisons wisely engage.

Understanding our individual importance to the Earth's living system is essential to creating a collaborative shift en route to our collective future. Every biotic body is interconnected by a seemingly invisible network of energetic exchange. By breaking down these bodies to their biophotonic elements, we can begin to visualize how extensive and omnipresent these energetic relationships are in actuality.

Art and culture can play an integral role to gaining insight into co-creative relationships between humankind and nature. *Presence Interference* utilizes several forms of digital media art to illustrate how self-awareness and interaction affect Earth's living system as a whole. Humankind must act presently within the system to achieve a synergetic response to an immanent and problematic environmental reality.

Ultimately, we are all on this journey together: one cosmically and energetically interconnected biotic family operating Spaceship Earth toward an altered potential future by referencing the past and participating in the present. Our presence and interference will determine how much longer we remain onboard.

## BIBLIOGRAPHY

- “A Manifesto for the Original 1984 Electronic Cafe Network Project.”  
Electronic Cafe, Sherrie Rabinowitz and Kit Galloway, 1984, [ecafe.com](http://ecafe.com).
- Ascott, Roy. “*Biophotonic Flux*.” *Academia.edu*,  
[academia.edu/1081142/Biophotonic\\_Flux](http://academia.edu/1081142/Biophotonic_Flux), 2003.
- , editor. *Art, Technology, Consciousness: Mind@large*. Intellect, 2000.
- , editor. *Reframing Consciousness*. Intellect, 1999.
- . *Technoetic Pathways towards the Spiritual in Art: A Transdisciplinary Perspective on Issues of Connectedness, Coherence and Consciousness*. The Planetary Collegium, University of Plymouth, 2005.
- Ascott, Roy, and Edward A. Shanken. *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*. University of California Press, 2003.
- Attie, Shimon. “The Writing on the Wall, Berlin, 1992-93: Projections in Berlin’s Jewish Quarter.” *Art Journal*, vol. Vol. 62, no. No. 3, Autumn 2003, pp. 74–83.
- Attie, Shimon, and Mazal Holocaust Collection. *Sites Unseen: Shimon Attie European Projects: Installations and Photographs*. Verve, 1998.
- Baudrillard, Jean, et al. *Why Hasn’t Everything Already Disappeared?* Seagull Books, 2011.
- “Bio Photon Allelopathy.” Takahiro Ando, Takahiro Ando, [andou.info/](http://andou.info/), 2015.

Bischof, Marco. "A Tribute to Fritz-Albert Popp on the Occasion of His 70<sup>th</sup> Birthday." *Indian Journal of Experimental Biology*, vol. Vol. 46, May 2008, pp. 267–72.

Buelteman, Robert and McDonald, Robert. "Signs of Life." *Science to Sage International Magazine*, Jan. 2012.

Capra, Fritjof. *The Hidden Connections: Integrating the Biological, Cognitive, and Social Dimensions of Life into a Science of Sustainability*. 1st ed, Doubleday, 2002.

---. *The Web of Life: A New Scientific Understanding of Living Systems*. Doubleday, 1996.

Chang, Jiin-Ju, et al., editors. *Biophotons*. Kluwer, 1998.

"Ephémère" and "Osmose." Char Davies Immersence, Char Davies, 2018, [immersence.com/](http://immersence.com/).

Fuller, R. Buckminster. *Operating Manual for Spaceship Earth*. [Carbondale: Southern Illinois University Press, 1969.

Fuller, Buckminster R. *Synergetics*. Macmillan Publishing Co, Inc., 1979.

"Future Gardens." Center for the Study of the Force Majeure, The Harrison Studio, 2018, [centerforforcemajeure.org/future-gardens/](http://centerforforcemajeure.org/future-gardens/).

Giudice, Emilio Del, et al. "The Role of Water in the Living Organisms." *Neural Network World*, Jan. 2009, pp. 355–60.

Harrison, Helen Mayer, and Newton Harrison. *The Time of the Force Majeure: After 45 Years Counterforce Is on the Horizon*. München London New York: Prestel-Verlag, 2016.

Krippner, Stanley, and Daniel Rubin, editors. *The Kirlian Aura: Photographing the Galaxies of Life*. 1st ed., Anchor Books, 1974.

McRobert, Laurie. *Char Davies' Immersive Virtual Art and the Essence of Spatiality*. University of Toronto Press, 2007.

Morton, Timothy. *Dark Ecology: For a Logic of Future Coexistence*. Wellek Library Lectures in Critical Theory. New York: Columbia University Press, 2016.

“Petal to the Metal.” *Digital SLR Photography*, Dec. 2009.

Popp, Fritz Albert, K. H. Li, and Q. Gu, eds. *Recent Advances in Biophoton Research and Its Applications*. Singapore; River Edge, N.J.: World Scientific, 1992

Rorty, Richard. *Contingency, Irony, and Solidarity*. Cambridge University Press, 1989.

“The Writing on the Wall.” Shimon Attie, Shimon Attie, 2018, [shimonattie.net/](http://shimonattie.net/).

“Transforming photons and time into art.” Photon Terrace, Ando Takahiro, 2018, [photonterrace.net/en/professional/vol\\_02/](http://photonterrace.net/en/professional/vol_02/).

Washington, Haydn. *Human Dependence on Nature: How to Help Solve the Environmental Crisis*. London; New York: Routledge/Earthscan, 2013.