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SPOOKY ACTION AT A DISTANCE

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Fine Arts at Virginia Commonwealth University.

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Thank you to my parents, Wes and Julie, for being endlessly supportive in my endeavors.

And of course, thank you to Kate Poulos, my home, my partner, my best friend, for showing more patience, love and generosity than I have any right to.

PREFACE

This document fulfills a requirement.

It is not intended to be read as a linear text.

This document can be navigated in its intended form at the following URL:

<http://spookyactionatadistance.jonrehwoldt.com>

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ABSTRACT

The question posed is “Can I experience remote human intimacy?” This is only posed after a network of computer code, images and entities have worked through the studio apparatus. These objects only materialize after chaos, the gap, the chasm has been recognized and a remote position has been realized. The work is about examining this constellation of objects and processes in their aspiration to answer the stated question in the affirmative. The resulting presentation is an experience of the failures and illuminations of both the material and the work.

This document attempts to establish a glossary of ideas that are enacted through the work and brings some light to the processes of my practice, both for myself and the reader.

ENTANGLEMENT AND SPOOKY ACTION AT A DISTANCE

Since most definitions of quantum entanglement are too convoluted and precise for me to fully comprehend, let alone translate, I will attempt to craft a definition for my own use. My definition is influenced greatly by Karen Barad's concept of Agential Realism.

Barad discusses the Agential Realism as way of thinking about phenomena producing systems as an entangled constellation of material discursive apparatuses working through one another.¹

Entanglement as a practical term for the artist is simple. It describes a relationship between the artist, their studio, the matter in that studio, the conversations around that studio, the public venue for that studio output, the receptive public for that output, the conversations generated by that public, etc. Entanglement produces art phenomena, which is all the things that I've listed and more and if there has to be a goal and target then that is it: To produce phenomena, through acting upon material and sharing that with a public.

This way of thinking can become overwhelming for it sets up a scenario in which the artist is not only a cultural producer but simultaneously an individual that is a product of culture

¹ Karen Barad, *Meeting the Universe Halfway* (Durham: Duke University Press, 2007), 199-208

and also a cultural regurgitator/transformer. It also forces me to consider what I am responsible for and who I am responsible to.

THE STUDIO

The studio is simply the space that the artist inhabits. This is not purely physical space but also refers to subconscious spaces and virtual digital spaces. Each space within the studio requires different kinds of attention to time and matter. No one exists independently but are engaged through one another, material translating, and re-forming. These spaces produce a particular vocabulary towards the materialization of phenomena within my own thought process and circulating outwards into the public venue.

PHYSICAL SPACE

Within the studio space I have established and fostered a productive interiority and paranoia. It is not the space in and of itself, but primarily its location within the architecture of the building and my deployment of it. It is the most distant studio from any of the entrances and therefore can only be visited with intention. It is a triangle that wedges itself towards the northwestern point of the property. Its windows do not open to the parades and traffic of Broad St. but instead to the train whistles, late night fighting and gossiping of the Carver neighborhood. Direct confrontation and violence is dispersed through its own network. Gunfire pops off in the distance. Minutes later, a police siren will sound and move through the blocks. I wait with my phone on the desk and then a mass text message appears: "VCU ALERT - Shooting OFF MP Campus".

I am devoted to labor and I spend the vast majority of my time in the studio space. I find that even while away, I am never free of it. It permeates beyond the physical constraints and I have built up a relationship with it that feels simultaneously strangling and familiar. My placement as a tangent within a larger cluster of studios and my relative isolation has magnified my interest in remoteness as a position.

MATRICES

Color serves as a context for the discussion of formal matters. Whether I am applying paint or modulating pixel, I am invested in a philosophy of painting that hinges upon the body's response to light, shadow, surface and the resulting intellectual and emotional processes. Since the screen is my primary support and matrix so I begin with an essentialist definition of color:

Color consists of the characteristics of light other than spatial and temporal inhomogeneity; light being that aspect of radiant energy of which a human observer is aware through the visual sensations which arise from the stimulation of the retina of the eye.¹ (McLaren 1986)

The human eye provides the context for the matrices through which form is organized within this body of work. There are more specific relationships between the body and matrices (networks, screens, thought) that occur here, but the eye is the place where those relationships stem from or at least come to be understood.

¹ The Committee on Colorimetry Optical Society of America, *The Science of Color*. (Washington D.C.: Optical Society of America, 1963), 221.

BURIAL

Prior to its usage in cave paintings, iron oxide was part of burial rituals. Iron oxide would be placed upon the breast and the cranium of the deceased.¹ One specific and historically re-interpreted example is of remains found in Wales that were adorned with iron oxide. The body has been identified as a customs agent, a prostitute, a witch, a hunter, and most recently a shaman.² No matter the interpretation, researchers have concluded that iron oxide was associated with energy and the ability to travel between a physical realm and an ethereal realm. I would argue that this ethereal realm described would be more accurately referring to the Greek air, Khaos more so than its counterpart, Aether.

¹ K McLaren, *The Colour Science of Dyes and Pigments* (Bristol: Adam Hilger Ltd, 1986), 1.

² Spike Bucklow, *Red* (London: Reaktion Books, 2016), 141-143.

RE-EXPERIENCING SCALE

The side effect of working for extended periods within virtual three-dimensional spaces is that the physical world begins to take on new traits. Scale and size both become an issue while walking around or particularly when driving and viewing the physical space of the environment through the undifferentiated matrix of the windshield.

Skyscrapers, rivers, human bodies begin to take on different scales. They appear flat and described and feel smaller in relationship to my own body. The head begins to feel large and expansive and its central position within my perspective and positioning becomes fore-fronted. This experience is similar to that of crossing over the threshold while meditating. The feeling of the skull folding out into space and ceasing to be a small container vessel within it but additionally the housing for the receptor that frames and contains all of the incoming information.

These scale shifts make me alert to my body and its positions: where I sit, how I stand, and how I approach a friend, a stranger, a group, how I am as proxy in public. I re-orient myself within my own biography, re-calibrate a scale of time and try to still be present.

GREEN POISON

Modern consumer television displays possess color spaces that skew green so that they can hypnotize consumers with vibrating neon green grass that encompasses premium space of the screen during sporting events that are often running as demos in the showroom.



I think of green as an infringement always. I have my filmic references, and cultural associations, and so green persists in the work. Within the images I produce, it often appears garish, an exaggerated green that one would associate with a Saturday morning cartoon notion of radiation or plutonium; the Chevy Malibu's ascent in the climax of Repo

Man. While the color green within the work has come to represent the alien, the alienated, and the poisoned, the deployment of it within the image space operates to bring a dimension of levity to the otherwise dense images. Green is to the image as humor is to the text.

ERASURE

The function of the Compressed Layers worked the same way as the four-track and the William Gibson poem with the substitution of video for sound/text and the use of motion detection to trigger the play/advance and record “buttons”. Each instance of video, triggered by the presence of movement, is recorded and previewed simultaneously while the previous instance is played as a semi-transparent layer on top of the recorded instance. When this event is repeated, it compresses all previously recorded material into the next instance. “Encryption”, in this case is derived from the repetition of recorded movement and the interaction of pixels. Each image is rendered with transparency in order to communicate the presence of the layers and so the most recent instances take precedence over the less recent. The visibility of the live video is placed on the top of the stack to prioritize the most current situation.

Because of that prioritization, instances of recorded images drop further down the virtual stack and are degraded until they are no longer visible. These diminishing returns provide the piece with a flawed memory. While it attempts to illustrate the dimensionality of time, it also illustrates erasure through accumulation.

AGRIPPA

Directions for Agrippa:

Agrippa is set to run with 3MB's of memory; it will run on 2.5 if you change the memory setting in Get Info and override the setting.

Agrippa takes anywhere from 30 seconds to 5 minutes to set up, depending on your computer. Do not be alarmed if any of the windows or graphics remain on the screen for periods of up to 5 minutes.

Agrippa has no commands that can be executed. When it is over it will quit by itself.

Agrippa will not run if the disk has been locked. Agrippa is intended to rewrite portions of itself, if you attempt to prevent this from happening the program will not execute.

Agrippa will also not run from a copy made of the file. You must run Agrippa from the diskette that came with Agrippa (a book of the dead). Also, do not copy the application Agrippa.

Lastly, Agrippa will not run if there is a debugger in RAM. If you regularly use a debugger please move it out of your system folder and restart your computer.

Note: Agrippa is not a virus, nor does the disk it comes on contain a virus. It does not permanently alter your computer's memory, either physical or RAM, however it is very important that you heed the instructions given above.

If for any some reason you encounter a difficulty with your disk due to high speed copying processes a replacement disk will be provided. Disks which break down or refuse to run due to attempts at reproduction or disassembly will not be replaced.

CODE AND THE STUDIO

The origin of programming illustrates its viability and flexibility as a working medium and thought process. It was the potential Ada Lovelace discerned in the concept of a calculator that brought a new layer of process to Babbage's never built machine.

There is that potential to create the tool by which you make or as discussed elsewhere, the capacity to create new venues within a given platform. There is also the privilege of perspective afforded by seeing the infrastructure of how an image or interface is constructed. I regard this as another area within the studio space.

The code is an assembly line: mechanized and ordered with enough designation to avoid the need for any type of human intervention. But there are also spaces for contingency. The apparatus can operate seamlessly without an operator and it can be designed to remain dull until the operator is present. It can cater to the importance of the body, or it can do something more interesting. It can acknowledge the operator's body without submitting to it wholesale.

This was my motivation in writing the code that produced musical notes from pixel information. It detected presence by way of movement simply by checking for a change in value. When that value changed, music was produced, but the apparatus did not look for specifics in movement. It had its own tempo that adjusted based on the color of the

pixel/notes of the chord. It did not demand a performance. It only required that one show up and occupy a particular moment of space and time.

VIDEO

The video is made of three parts. A digitally constructed, virtual 3D space, a score produced by an apparatus, and the operating instructions for that apparatus. The apparatus is composed of a pair of computers, two instances of Skype, a piece of code, my partner, and I.

The video is of a corridor. A virtual corridor, produced in the computer using Maya and the Arnold Renderer with the skin shader material. The camera approaches the end/beginning of the passage for six minutes and is accompanied by music. A rolling text window sits to the left and moves through language that is the source of the music. It is a piece of code that functions to translate RGB values of pixels into chords. It is the apparatus made visible. What it is translating is not clear within the video itself but is pointed to within the text in the sandbag sleeves outside of the corridor in which the video is playing. Rhythms and rates of change within the score are subtle, some undetectable to a casual listener. It builds exponentially, coming nearly to a full crescendo. The camera creeps nearly to end of the passage. And this is where it ends. The intention is that if one stands in place with this experience, becomes familiar with its scale, trusts in its rate, then the crescendo will create a question of the future and the cut will ask the viewer to re-evaluate their positioning as a body within a space. There is the viewer, the black screen, within a passage.

The intention of the video piece is a result of my experiences in front of a screen and having moments of understanding the separation of my body from the matrix of the display and the virtual space that it iterates.

The installation is set up to promote the viewer to recall and re-evaluate elements of the video as well as other objects from moment to moment throughout the exhibition, drawing conclusions about their own relationship to their body, light, shadow and passage.

GALLIUM NITRIDE

Blue makes its appearance literally as Gallium Nitride. Gallium Nitride is a bit of a wonder material. Its synthesis in labs was perfected and made an affordable solution in the last 20 years. It was initially developed for the production of white LED light and as a laser diode for reading information off of high capacity digital versatile discs (the Blu-ray).

It also has further applications in the computing world as a material to replace silicon in power supplies and thus eliminating the need for power adapters and economizing energy usage. It is also a crucial material in the development of satellite systems being developed by Raytheon and used in the advancement of electronic warfare support: the remote detection and identification of architecture and vessels.

CONDUIT

Tubes, in their appearances as sculptural elements or as images represent the effort to constrain or compress a thing that fills a gap and channel it towards an end. This can be Khaos, as an idea or in its symbolic form as iron oxide. This can also be poison or it can be Aether.

Conduits are required to pass electrons through light emitting diodes, data from one port to another, to relay information, images, and descriptions of love and angst and effort.

Conduits are also sites and tools that simultaneously mediate and facilitate material. They are the thing that stands between two points but is also required to connect them and include them in a network and prevent their isolation within time and space.

TEXT

Text appears within the work as a point of entry. Language is presented in different syntaxes. Within the video work, it appears as code, giving glimpse to the construction of the work. In other places, it references the structure of code; a nested series of brackets, short prose, paraphrased quotations, or statements.

Language within the work appears similarly to how it does here, albeit more truncated. It works in support of the initial challenge of the work. I am paying attention to the gaps and spaces that I am leaving as much as what is written. If the objects and the text were to occur within a vector path moving through a matrix, the content of the text would behave as the discrete points. These statements and phrases are the nodes that form the chasm that the images attempt to fill.

By including iterations of both images and text constellated in a non-linear order, the viewer is free to arrive at several conclusions or questions that can occur simultaneously.

SPACE

Having been absent from a conversation with other addicts for some time, it has been illuminating to be in the company of other addicts that are artists at VCU and seeing compulsions to control played out in the images they produce, whether they are conscious of it or not. It became clear for the first time in the past month while discussing the work of one my students, who was explaining the “comfort” and “correctness” they found in the heavily patterned images they were producing. That a sense of calm was produced within the repetition and ordering. Not ideal as a motivator, but revealing nonetheless.

I suppose it’s a product of a consistent feeling of powerlessness. A space that is occupied is somehow controlled and ordered. The perceived emptiness of it can be pushed to the edges or in between a cluster of image nodes. Within my work, it has been tempered a bit, aided by some trust in the perception of an audience. The images within the work remain dense, but my intention is that they reach towards calamity instead of order within their discrete spaces and that their subjective system occurs within how they are related to each other through text and placement within the container space of the exhibition.

BLUE CHRYSALIS



The blue chrysalis reflects the green chrysalis in its shape and presentation. The materiality is slightly different. Where the green chrysalis is formed from paint skins, the blue is sleeved in lycra.

The patterning and the color of this sculpture is more abstracted. The image comes from the pixel matrix of a screen. The stress of gravity is more evident in this instance. Its support is more exposed. Its source of power is hidden within the gap beyond the wall. To approach it means passing through a doorway and one must contort a bit to view it in the round.

Together the two sculptures represent nested nodes within the total body of the exhibition. They flank the room and ask to be read as two points that emanate through the central corridor.

THE PUBLIC VENUE

The work never strives for optimism more than when it enters the public venue. This is the location where it has the audacity to ask if it has been heard or seen.

The optimism present, as a default parameter of the public presentation, cannot be conflated with the some of the pessimism within the depiction of the work's subject: the examination of its own aspiration to make a case for remote human intimacy.

The matter is in the room and by extension, the artist, or at least a residue. We showed up, but we reserve the right to be suspicious and critical about the scenario, not least of which are the images and objects that have populated it.

I remain optimistic that the public venue as a site catalyzes the phenomena I hope to produce through the viewer. I make art in a studio because I need to sleep and I need a reason to get out of bed. I show art because I want someone outside of myself to tell me about it. If it does what it is supposed to, then that phenomena and response is generated and I get to learn. If not, then it is met with indifference or apathy and I have to rely solely on the studio for a while.

GREEN CHRYSALIS



The green sculpture is the larger of the two. It is more manic in its color range, its accumulation and in the color of the LEDs assigned to it. It is a bag of tubes, conduits, tangled, unusable as a straight line. It resembles a chrysalis, a container for metamorphosis. In addition to the tubes are one half of a collaborative work that I made with my partner. That piece was a constellation of rock climbing holds adhered to vinyl that became a metaphorical object expressing the partial nature of our relationship. The holds were adhered to the vinyl on each side, with one of us applying pressure for the

other to complete the attachment. Two bodies separated by a reflective, undifferentiated matrix, holding on, supporting one another without actually touching.

The tubes protrude near the top, with ends visible. Wrinkled, and split, the orifice is exposed. I intend that the object can be taken as a whole, addressed and approached as a body suspended. Its wrapping, its insulating does not make it invulnerable.

Intertwined throughout it is the green poison of the LED tube, emanating its auratic bile into the space. It is wrapped about the object without ceremony. If I dare, I will regard this object as a surrogate and in doing so feel hopeful in thinking that I could aspire to it.

RISK IN EXCHANGE

Conversations in and around the studio can easily prove to be an avenue for miscommunication and frustration, particularly with my participation, my varying levels of arrogance and self-obsession. Although easy to interpret as, I do not intend these descriptions to be pejorative. Despite my efforts, these traits have taken some precedence, especially within a concentrated social environment. I will fall into the pattern of non-communicating and simply impressing my own knowledge or perspective upon others.

The over-explain is a result of a consistent failure to make myself understood. Not agreed with necessarily, but understood. Navigating this is an essential part of my practice.

This includes my acknowledgment of my privilege as a white man moving through society and understanding that there is a slippage between that labeling (white cis heteronormative male) and the self. There is the understanding that this labeling supposes certain details about my economic background, political perspectives, attitudes and levels of ignorance. Certainly, I have no issue with the vilifying of straight white men as a group. I understand the contexts, politically and historically, that makes space for my demographic to be the enemy of progress. There is the patriarchy, and there is me, a complicit individual, but not emblematic.

But of course, with this complicity comes a fair share of guilt. Guilty as an oppressor, guilty as an artist. This supports my decision to place the politics of identity away from the center of the work. There is always risk involved in maintaining space and inviting exchange; A risk in being miscommunicated, since each action within a body of work is vulnerable to being read as an act of authority.

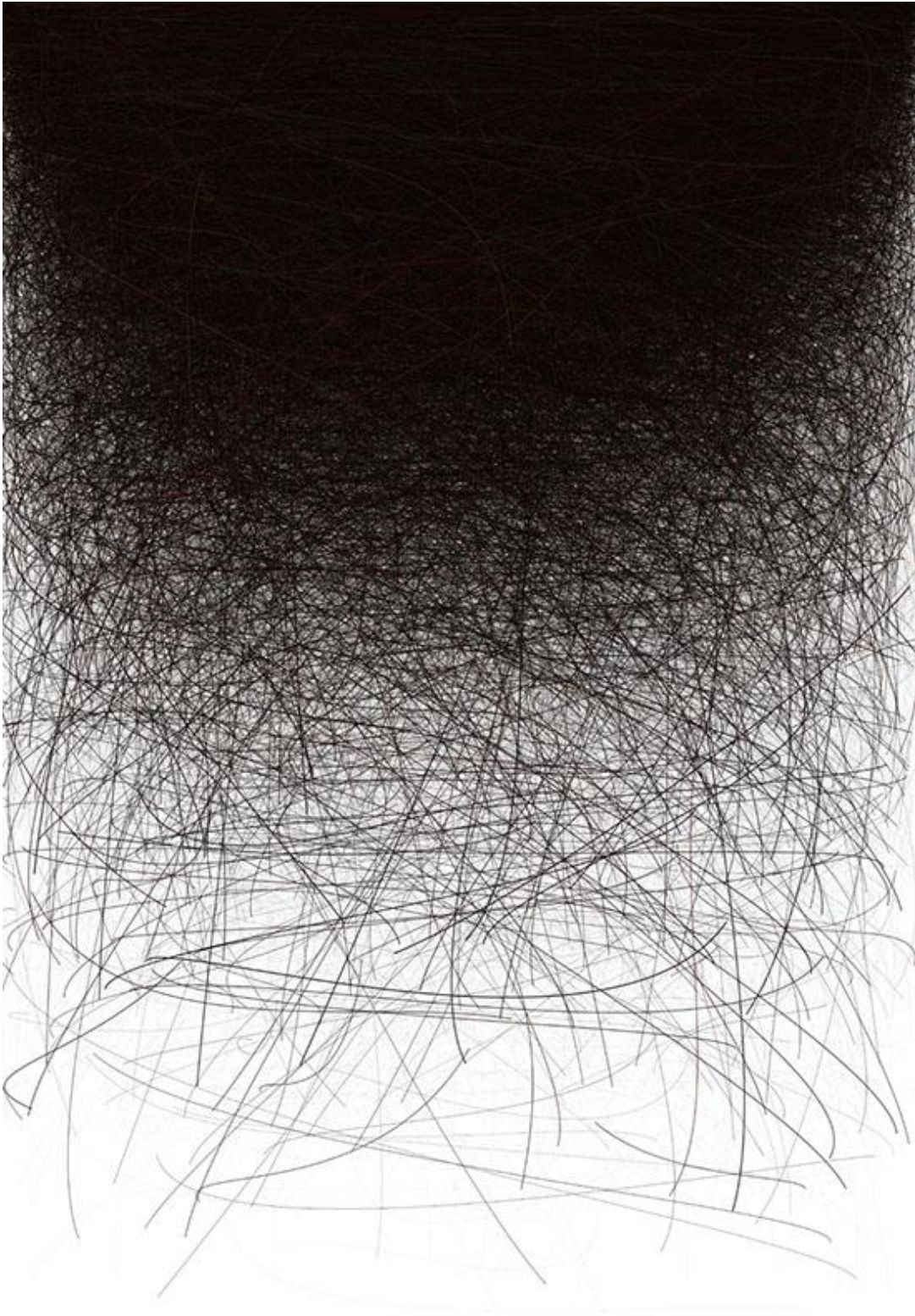
VIRTUAL SPACE

In addition to the physical space of the studio and the nebulous metaphysical space of the subconscious, there is also the virtual space of the screen display. This space, while presented two dimensionally and represented through the pixel matrix, must be navigated multi-dimensionally on an intellectual level. There is the interface and then there is computation. Within this space of the studio, data and algorithms become the materiality of making and are represented within the interface and resulting images, etc. as more intuitively discernable material such as shape and color and language.

SPIN

Influencing the operation of the time-based code pieces is this idea of entanglement as it occurs within the scope of quantum physics. Experiments around the notion of spooky action at a distance play out like this: A stable particle has a force applied to it, upon which it splits and the two resulting particles begin to “spin”. The measurements of these spins are equal and will continue to be from that point forward within predictable probabilities. Within the matrix mechanics of these experimental systems, there is an eigenstate, which is described as the actual spin and distance the particle travels along a particular axis. The vectors, which are other possible spin trajectories, are each found by applying a calculation to the eigenstate.¹ The time-based code, utilizes a time variable to determine its eigenstate and the visualized curves drawn are vectors based upon that condition.

¹ Peter J. Lewis, Quantum Ontology (London: Oxford University Press, 2016), 10-15.



A PAINTING

A painting creates a virtual space that capitalizes on the relationship between the second and third dimensions. This space can be absolute flatness or deep space. In any case, it is achieved through descriptions of light and shadow, projected by the artist, aided by material and thought. Its relationship to time is unnatural and unfixed. A painting is concerned with being referential and proudly false in the quest to offer a third option to the viewer.

THE LED

Red LED's were developed and manufactured affordably in the late 1960's and green followed shortly thereafter. As they became smaller, it became feasible to research their usage beyond laser and binary data relays and realize how they could work in tandem with other LED's to create image displays that could replace the Cathode Ray Tube.

The LED shrunk but was still not suitable as an element for display because of the difficulty in producing a light emitting diode that could produce blue. Gallium Nitride seemed to offer this potential and decades of research into its synthesis was finally realized in the late 1990's by Shuji Nakamura, Isamu Nakasaki, and Hiroshi Amano (which garnered them the Nobel prize in physics in 2014 based on its impact.) Eventually this research was implemented in the manufacturing of displays and eliminated the need for a conventional backlight,¹ cutting the depth of the screen down significantly leaving room for more intensive processors and creating higher resolutions. This resulted in the smartphone and partnered with expanding telecommunications infrastructure, the world became perceivably larger and thus more complex.

¹ Class for Physics of the Royal Swedish Academy of Sciences, "Efficient Blue Light-Emitting Diodes Leading to Bright and Energy-Saving White Light Source," Scientific Background on the Nobel Prize in Physics 2014, (2014).

SUBCONSCIOUS SPACE

The non-physical notion of studio space leads back into the idea of personal entanglement. This non-physical studio space has no physical architecture. It is dark and mysterious and within is the crushing presence of Khaos. It is this Khaos, often experienced in sleep, which has haunted me throughout my life. Neither emotional nor intellectual, of no body or discernable image, it is sensed and by extension felt. It is a force denying absence. This Khaos presents itself in dream space particularly after those days of sitting in front of the monitor, 60 Hz of flashing images and text imprinting themselves upon my retinas. These days end with eyes shut, phantom lights still flashing incessantly. Khaos is the sum of these flashes, revealing the inadequacies of their form, the failure in those photons. The light is only marginally enlightening. Khaos also reveals the meaninglessness of the knowledge they impart. It is the gap that is present when the cycles have ceased.

This subconscious can't help but frame the physical space of the studio. The relationship is described within Greek myth. Khaos, the first of the airs, the chasm between the living and the dead. Experientially, the physical studio and the realm of Khaos are juxtaposed. One phases into the other and back without any mediation. I, as the artist occupying these spaces must choose to act within the physical space of the studio in direct response to the notion of khaos. It presents an opportunity to be both present and totally absent. The subconscious space is the remote mind within present body in the physical space.

EIGENSTATES, VECTORS AND MATRIX MECHANICS

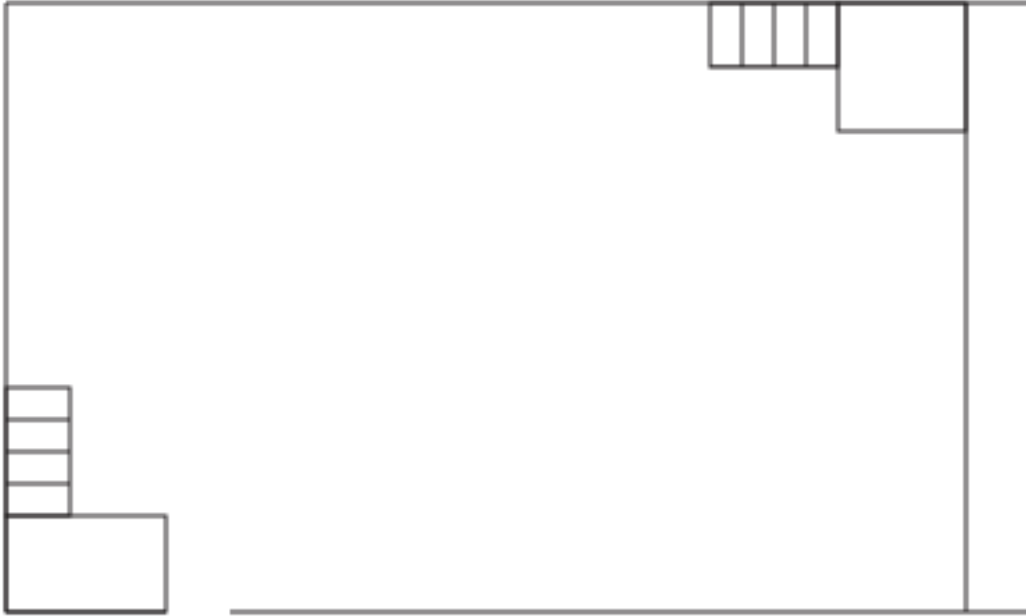
Spooky action at a distance discusses the relationship of two bodies that are physically remote. The phrase was introduced in the 1930's based on the observed behavior of particles. Though separated by time and space these bodies describe one another, even while active and the measurement of one has a perceptible effect on the other. So as one body changes, the other does as well despite there being no observable physical relationship. To add to this, the activity is related in such a way that with the knowledge of one body, you can describe the other.

CONVERSATIONS AROUND THE STUDIO

The studio in all of its material discursive apparatuses is nested within an institution. It provides both a venue and a framing device around which conversations occur. It not only promotes conversations about the phenomena produced through it but also informs the way in which I as an artist engage in tangential conversations. These conversations produce anxiety that illustrate the importance of space and a remote position.

The role of critique is especially valuable to my practice because I become embedded in the infrastructure of the work. It becomes very difficult to discern how images and objects operate. These moments also provide an opportunity to re-calibrate and evaluate the relative levels of control exerted over the work. This where intention, process, and reception must be balanced.

EXHIBITION SPACE



The space that contains the objects is approximately 25 x 30 feet in its area. It has two raised platforms in opposite corners and an open central space. The east wall is a facade with a two-foot space between it and the wall of the building's exterior. It is located on the north side of the fourth floor of the Anderson building. There is no elevator. Like the studio, it is a destination and is not happened upon with the same ease as the other spaces in the building.

The entry has a closing door and there is access to the room next door. This makes the space vulnerable to its neighbor. It is vulnerable to sound. It became overwhelmed in response to the music from next door during the installation process. It required its own

score as a vacant space before the sound of the video entered it. There were shadows and movement hosting me late at night after our neighbor's activities ceased. Shostakovich's Requiem for Strings became the soundtrack for the space to prepare it, myself, and my hosts for the work's temporary residence.

TIME IN STUDIO SPACE

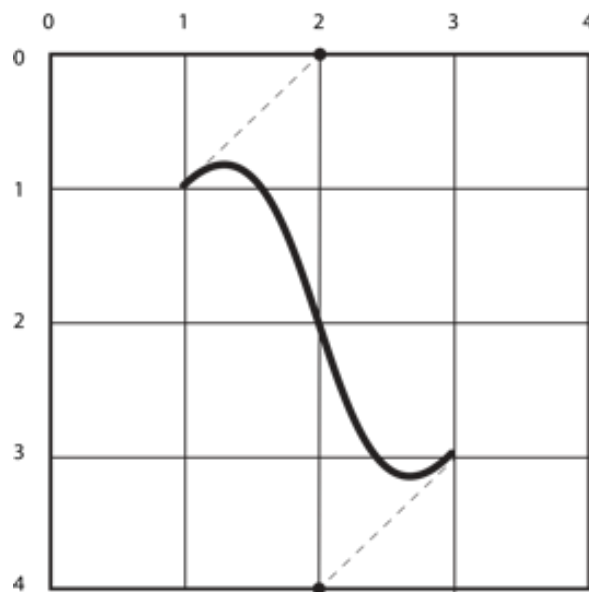
This visualization of an apparatus is made most clear and directly within the time-based code pieces that I wrote. They also perform the double duty of being brief illustrations of the fundamentals of quantum entanglement in spin experiments. Within the time-based codes, compression occurs as a result of time passing. This piece of code resulted from a need to see space fill time. There is no need for anything more complex than that, and so the code is quite simple. Curves are drawn with contingent coordinates all relating to one another and to their position within the randomly selected timespan of the program.

The process of writing the code operates in a similar way to the code itself. I begin writing, testing, writing. As soon as a threshold in patience is reached, I stop and re-consider the parameters while the code is out of view. I return to the screen and begin another cycle.

BEZIER CURVES

Vectors behave in the screen space as shapes more intimately tied to the infrastructure of a computational system. Though they are represented by pixels, the materiality of the vector is an array of data. A Bezier curve like the ones drawn in the time-based code, can be described as a table of values, that correspond to geometry. The curve as a path or a mark implicates the body as it simulates a what could be perceived as a body generated gesture in relation to a more pragmatic straight line from A to B. These pieces are not solely about systems but about imagining the body and time through systems.

	Starting Control Point	Starting Point	Ending Point	Ending Control Point
x-Coordinate	2	1	3	2
y-Coordinate	0	1	3	4



TOOLS

The origins of computer code can be located in the early 19th century. Charles Babbage, an English mathematician and inventor had devised a few inventions, notably the Difference Engine and the Analytical Engine. These inventions in and of themselves are not the origin of code, (especially considering the latter could never be built) but rather his protégé Ada Lovelace's writings about the Analytical Engine. While working with Babbage, Lovelace translated an Italian paper about the engine and in the process, took a series of notes that accounted for much more space than the translation itself. Within these notes, were series of instructions or algorithms for using the theoretical engine. These notes were lost until around a hundred years later, where they became the foundations of computer programming as we know it and foundational to the primary tools I deploy in the studio.

To make work and subsequently objects involves developing an infrastructure and procedures so that as much of the networking of thought and writing and material is apparent within the spaces of my studio, the same way that a chunk of code can offer a perspective that transcends the moment of the presentation and glimpses its process and potential.

TIME INFORMING SPACE

The program selects an integer between 0 and 846500000. This integer represents a timespan in milliseconds between 0 seconds and 24 hours. This number then dictates how long the program will run for, how the space of the resulting image will be mapped to the overall timespan and how the marks made within that space will rely upon the progress of the program's clock, the timespan selected and the space of the image.

When completed the images appear as a clump of hair, or several thousand tendrils all-reaching towards an edge of the picture plane with differing levels of urgency or success. The actions within these images cannot be described as noisy for they are each related to one another in their collective goal. They can be described as chaotic. I can relate them to the subliminal studio space I described before; material that grows and occupies a space between the life and the death of this momentary instance of computational activity. I imagine them as the actions of a body aspiring to reach from one edge to another despite the existentialist nature of its environment.

LAYERS

Layers are important formally, conceptually and as a tool. Using layers within the confines of Photoshop is an act of arrangement and compression. There is tension in the entangled space of the Photoshop Document. We view the image in two dimensions, one plane. At the same time, we view the layers in the panel next to it. There is no indicator of dimensionality or space. How thick are these layers? The idea of two-dimensional planes piling up starts to invoke a sense of anxiety. One quickly gets over that and begins weaving these layers like reeds in a basket. Navigating the stack requires negotiating multiple types of visual information and data.

This is where a majority the image-based work happens. My understanding of composition is rooted in the logics of Photoshop. Painting within my work has always incorporated collage, whether it is the juxtaposition of appropriated materials or the composition of passages in paint.

3-D RENDERING

There is an X-axis and a Y-axis and then there is a virtual Z-axis. The Z-axis is only described but is displayed convincingly enough based on a calculation of its relationship to the X and Y-axis and the fixed position of the viewer centered on the display within the interface.

The textures are also described but are simulated convincingly enough before the render occurs. When the render has completed, I am careful not to feel like I've pulled off some sort of magic trick by clicking a button to simulate light and refraction.



These types of images interest me because they exist within a transitional space. They present as photographs but are constructed in a different way. They are not objects lensed and exposed but simulations: data calculated and translated to masquerade as an object within a version of space the viewer is familiar with. They are images that mimic photographs and draw attention to their hidden layers.

ALIEN GREEN

Within the spaces of Andrei Tarkovsky's film *Stalker*, the primary setting of the Zone is full of green overgrowth, a simultaneous indication of it as an alien place but also a place absent the intervention of human beings. Within both this example and the Shunji Iwai film, there is also the addition of risk associated with the foreign nature of the color. In *Stalker*, a mysterious, unseen threat of literal death is always in play. This threat exists outside of invisible paths, or overt conduits within the gaps between waypoints.



IMAGES OF THE BODY

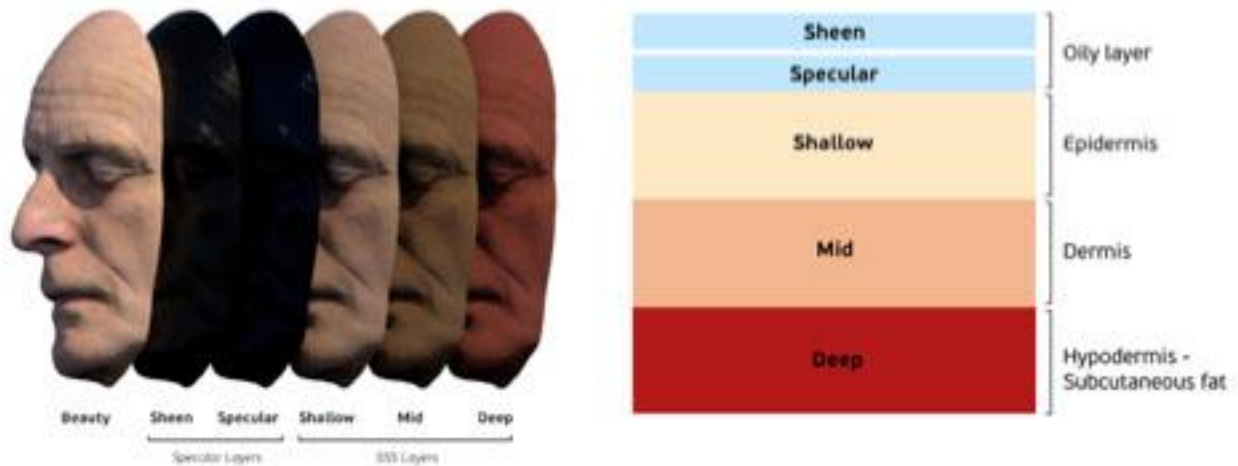
While iron oxide's abundance can be attributed for its appearance in cave paintings in Lascaux and Chauvet caves, its further usage in the construction of late renaissance frescos begins to offer a union of painting form and content as well as a connection to my current use of 3D rendering forms that reference the body. In his guide on painting, Cennini describes the method by which to paint the body is to use a series of layers beginning with earth green for the base and dark ocher as the underpainting for the flesh of live bodies.¹

This method is strikingly similar to the algorithm used by the Arnold Renderer in the way that it provides an interface for dealing with multi-layered skin textures and the simulation of subsurface scattering; the phenomenon of light entering a semi-translucent material at one point and exiting another. The skin material consists of three layers that are manipulated and colored in order to obtain varying degrees of verisimilitude. A dark ocher layer at the bottom and a light ocher layer in the middle are starting points for rendering convincing skin texture. The lowest layer in the strata is uniform for all human skin rendering as it is based on the presence of oxygenated blood. The upper layers are then referential to the melanin polymers found in flesh in varying quantities to produce different skin tones. These images and their construction illustrate a persisting history of attempting to evoke intimacy through the manipulation of space and layering. The objects

¹ Cennio D'Andrea Cennini, *The Craftsman's Handbook* (New York: Dover Publications, 1960), 44-48.

and images I assemble examine these methods in their attempt to accomplish similar ends. Through this act of examination and by promoting another level of participation, I am extracting a layer of intellectual engagement from beneath the façade. The stack can be re-ordered. Hito Steyerl makes a case for this in her essay, "A Thing Like You and Me":

To participate in an image—rather than merely identify with it—could perhaps abolish this relation. This would mean participating in the material of the image as well as in the desires and forces it accumulates. How about acknowledging that this image is not some ideological misconception, but a thing simultaneously couched in affect and availability, a fetish made of crystals and electricity, animated by our wishes and fears—a perfect embodiment of its own conditions of existence? As such, the image is—to use yet another phrase of Walter Benjamin’s—without expression. It doesn’t represent reality. It is a fragment of the real world. It is a thing just like any other—a thing like you and me.²



² Hito Steyerl, "A Thing Like You and Me." E-Flux Journal #15. April 2010. <http://www.e-flux.com/journal/15/61298/a-thing-like-you-and-me/>

ALIENATING GREEN



Shunji Iwai uses a digitally modulated green in the 2001 film, *All About Lily Chou-Chou*, a film that concerns itself with the inherent alienation, remoteness and often inhumane experience of adolescence and the idea of community in the era of message boards. Rice fields are neon, the night is emerald tinted black, interior lights skew a vibrating fluorescent green¹, and a green apple that could be shallowly read as a symbol of knowledge, is more likely a prosthetic to the gesture it accompanies: that of one character to be rid of their remoteness and to be known beyond the screen. As in *Stalker*, there is

¹ *All About Lily Chou Chou*, directed by Shunji Iwai (2001; Tokyo, Japan: Pony Canyon, 2012) Blu-Ray Disc.

always the presence of danger and risk. Here it is the risk of death as a social being, or murder and suicide as a result of that.

SANDBAGS



The sandbags line the corridor and aid the gravity that the infrastructure works against but is reliant upon.

These objects, as materials of the infrastructure, are records of my activities, my thinking, my feeling. While it is my intention that the gift of the work resides within the boundaries of the corridor and the sculptures, it is more likely that it resides in the exposure of process and processing. It is with hesitation, that I can arrive at this point of consideration where I feel that the work produces an act of generosity, and not of self-centeredness and self-obsession, as I have so often feared.

THE CLAUDE GLASS

The virtual space of the screen should not be treaded lightly. And it should not be merely considered as just another tool within the artist's arsenal. The screen is ever-present in the 21st century, more than when it was an issue that McLuhan was grappling with it in the late 1960's. And the level of spectacle that it imposes is more than DeBord could have imagined in the same period of time. The screen and its accessorized camera, and software re-imagine Foucault's description of the Panopticon, combine it with Orwell's description of the telescreen and mobilize it as to decenter the observer and effectively make us hermaphroditic nodes, simultaneously observing, transmitting and recirculating media, culture, community, and data.

Siva Vaidhyathan describes this current scenario as a Cryptopticon, a situation in which we are all remote, that has happened gradually enough to go relatively unnoticed or not minded:

...the Cryptopticon is not supposed to be intrusive or obvious. Its scale, its ubiquity, even its very existence, are supposed to go unnoticed. So while a closed-circuit television camera mounted over a counter at a convenience store openly warns would-be shoplifters or robbers to behave or risk being caught, the Cryptopticon relies on browser cookies, data streams retained by telecommunication firms, satellite imagery, global positioning system traces, covert voice surveillance, store discount cards, e-book readers, and mobile applications. Each of these things masks its real purpose: to gather or provide data and to track the behavior of millions of people with stunning precision. Beguilingly, though, most of these instrumentalities offer

something valuable (convenience, security, connectivity, information, efficiency, lower costs) to those who engage with them—often “for free.”¹

There is a connection between the Claude Glass and the modern display. In form, the Claude Mirror derivation could be often found as a portable object around the size of a modern tablet, so that it could be easily transported by tourists to picturesque vantage points so that they could view them in their enhanced beauty through the matrix of the mirror, as a sort of live photograph. The term Claude Glass refers to an array of colored glass filters that could be placed in front of the eye to affect the view and highlight certain colors, like a Victorian Instagram filter. The modern display paired with its various operating systems and social media platforms affords its user a picturesque version of the lives of others and allows for users to filter their own biography and formulate a networked constellation of text and images to create a picture of an ideal version. An extrapolated avatar, an unintended parody of Jørgen Leth’s film, *The Perfect Human*.

¹ Vaidhyathan, Siva. 2015. "The Rise of the Cryptopticon: A Bibliographic and Filmographic Guide." *Hedgehog Review* 17, no. 1: 77. Humanities International Complete, EBSCOhost (accessed April 30, 2017).



The Claude Mirror has with it, a connection to the demonic, or another realm. Mirrors have long had this association, but it's the Claude Mirror's and likewise the display's propensity for highlighting difference that enhance the treatment of these surfaces as portals to multiverses, or variations on the image of our understood reality. If this much distortion occurs upon approaching the surface of the screen, how can any one accurately communicate themselves through a conduit?

Engaging the screen simultaneously as a mirror and a portal, allows for moments where I occupy two spaces at once. I am in the limited matrix of the screen while being hyper conscious of my own body in the physical space in front of it.

INFRASTRUCTURE



The infrastructure of the installation is comprised of the hardware supporting the corridor, the lights and cords illuminating the corridor and space of the room, the sandbags pinning the base of the corridor, along with their sleeves which provide the conceptual infrastructure of the video and experiential components of the corridor and sculptures.

Lamps, painted black with flecks of blue mica, illuminate the bags and the exterior of the corridor. The temperature of every other bulb is warm or cool creating a subtle visual rhythm.

Likewise, the cords of the lamps reference the visual spectrum of the screen and the LED bulbs they power. Their patterning echoes the patterning of the color assigned variables within the exposed code in the video.

On the exterior of the vinyl, the surface of the paint is exposed. In this experience of the work, outside of the corridor, within the infrastructure the making is more apparent. My hand and its movement is shared, as well as my perspective during the process of materializing.

GLOSS

Gloss is important for two reasons. It is the sheen of acrylic without intervention. Matte finish acrylic is only so because of the addition of glass pigment that diminishes refraction in the finish. There is no sense in pretending that it is something else. Gloss also provides clarity to what it sits atop of and it provides a limited amount of reflectivity. Material with a gloss finish references the mirror but without a silver or black backing, it provides a more complex context. This context aids in the functioning of the art object as the facilitator of phenomena. It provides a surface that causes the viewer to make reference to themselves. The scope of the contextualizing information, visual or otherwise, becomes not only lensed by the viewer, but re-lensed through them.

Using gloss polymer as a binder to reference the characteristics of the digital display can provide an extra point of focus and enmeshes the viewer with the image.

CORRIDOR



Within the corridor is passage of the installation that favors bodily experience and response over the more intellectual engagement that occurs in the infrastructure. This is also the thread that ties together the corridor with the sculptures. These are objects that give priority to the body of the participant.

The corridor is made of transparent vinyl painted with iron oxide suspended in polymer. The material opens the road and extends itself to the participant. Its physical chemistry is tied to the minerals of the core of the earth and the core of the body. The magma that shapes topography and the blood that loops through the conduits of the body and perpetuates concentric loops of the heart pumping, the brain processing, the lungs expanding, beginning the day again, closing the night.

The corridor is a reverberation of the digital space emitting at the end of it. The relationship of the corridor to the digital image is not unlike the body's relationship to its own digital image. Both are constructed, but through different lenses of time and through different sets of mechanisms of imaging, pointing to the complexity of the relationship between the body and its image and asking the viewer to consider that relationship.

BLUE

Blue is what completes the RGB spectrum in the modern LED screen. It is what is responsible for poor sleeping habits and eyestrain. It makes possible the smartphone, the touchscreen display, as we know it. It makes possible the connection to a larger container world in smaller container form.

SCULPTURES

There is a sculpture in each corner of the main space and to see both at the same time, you must ascend either set of stairs in order to glimpse the other across the corridor and the infrastructure.

The screened in platform has a matrix placed between the space and the rest of the space. It is enclosed but the door is open. There is a doorway. There is the potential for passage. It is a space that must be entered. While the space outside the entry is open, the space within is a space that is entered.

GREEN

Green is an alien color and not just because cartoon aliens are green. It has had multiple meanings throughout history but it has a consistent relationship to otherness, poison, radiation, and cleanliness. Within the objects I produce, it presents as an indication of alien poison. An element that is foreign to its environment and by extension is hostile as a guest within that environment. The films in my collection that have received the most repeat viewings use green as a motif and I am interested in why that is.



COMPRESSED LAYERS

While layers are one of the fundamental logics of Photoshop, they also find a function within the nodal based algorithms that I have produced. The logic behind these algorithms is based on my experience playing in bands and using a four-track recorder to make demos. The four-track is an antiquated piece of technology that used a cassette tape to record and mix four separate inputs. Compression was an essential part of making the device work past its intended function. One could record four tracks simultaneously to a tape, remove that tape, and then feed the output of that tape into a single track, essentially compressing the four separate channels into one for three more layers to be added on top. This could be repeated over and over, with of course a loss in fidelity, an erasure.

Combined with this working knowledge of the four-track's limited compression utility, is my interest in William Gibson's 1992 poem, Agrippa. The poem was published on a 3.5" floppy disk. Being that it's subject was death and transience; the poem was designed to encrypt itself as it was read. This encryption was not paired with any decrypter and so the poem was essentially destroyed upon reading it.¹

¹ Alessandro Ludovico, *Post-digital Print: The Mutation of Publishing since 1894*. (Eindhoven: Onomatopee, 2012), 50.

RED

Red comes in the form of Iron Oxide, a pigment whose connections to narratives, both terrestrial and celestial provide a context for my work within an expanded timeline. Red is a thread through the development of the planet and the history of humanity and painting. It presents itself within the materiality of the Earth and the animal body. Its cultural use has ties to realms beyond our physical experience. Its inclusion attempts to highlight a commonality between myself, the audience and itself.

MORE INFLUENCE UPON THE STUDIO

In addition to conversations around the studio, there are other influences upon the studio. These could be referred to as inspiration, but I will choose not to. However, inspiration should be recognized as an idea and given a subjective definition. Inspiration is the result of making a connection between an a priori notion and the recognition of that idea existing in an unexpected location or container. While inspiration, as I understand it, certainly occurs, the word indicates a singular idea.

Again, the idea of entanglement and intra-action become important and an overlap begins to present itself. Relationships are made tangible and tease the ideas of connection and communication, particularly from a remote location.

PLASTIC

Beyond its artificial aesthetic, plastic is relevant to me as a material because of how it is manufactured. It is the solidified instance of molten polymer. This is particularly true in the case of extruded vinyl fabric. It begins as a liquid, which is then compressed and cooled and rolled and trimmed so that it comes to be a solid undifferentiated transparent matrix.

In most instances, I use it as a support. In the Thesis installation, the backside/painted side is exposed visible from the outside of the corridor. This is important because it pronounces the presence of the vinyl as functioning for a purpose other than preservation. It also pronounces itself as part of the image space in that it denies opacity or a controlled field on which pigment is applied. The vinyl is a transparent separation that sits between the viewer and the hand of the artist.

WHOSE BODY

There is then an important tangent about the rendering of flesh in a digital space and within the context of early Renaissance frescos as well as the origin of computer programming that I will address in conjunction with the studio. The question of who has developed these methods and which bodies are they intended to describe is important. The first thing one notices when beginning the process of delegating layers of Sub Surface Scattering and researching the methodology of it, is that there are few tutorials on how to render skin that is a color other than Caucasian. Within Cennini's handbook, it is very clear that the artist had no need to vary the method and so never addresses it. Within the 3D renderer, the software, of course possesses the capacity to render virtually any skin tone with a high level of verisimilitude, yet the default settings and documentation account for pale skin, but a search engine inquiry will find a you a user made video going over the alternative possibilities.



Because of course the intention or perceived market for a tool does not dictate its potential. The basis for computer programming was invented by a woman named Ada Lovelace in the early 19th century¹ and later, the development of telecommunication network infrastructure, which was designed to be used by “businessmen” conducting commercial activities over long distances, was utilized early on by women working in the home for the purposes of personal communication and the development of long distance community. I don’t wish to conflate too much, but this is the attraction to technology as a

¹ Liesbet Van Zoonen, “Gendering the Internet: Claims, Controversies and Cultures,” *European Journal of Communication*, Vol. 17 (2002): 6.

paradigm. Software platforms maintain a simultaneous position as location and tool in facilitating activity. This makes them viable sites for invention, positioning and constructing venues for creativity and criticality where it may have not been intended.

There is potential in using tools intended to expedite capitalistic momentum to instead promote and develop community and eventually discourse, particularly around the structures facilitating said community and discourse. Because these platforms act simultaneously as site and tool, they also enable the mediation and filtration of communication and confrontation. Room is made for consideration and delayed response. Hesitation has value and unconscious projection through body language is minimized.

FORMATION

Adornment is not isolated to any one instance but has been associated with prehistoric cultures globally. There are many explanations for the use of iron oxide, but they carry little relevance beyond the most fundamental one; that iron is the fourth most abundant mineral within the earth's surface and that oxygen comprises most of our atmosphere. All languages have terms for the colors black and white, and if a language developed the need for a third color term, it was "red". Words for other colors were developed later.¹ This can be explained by the association between these colors and the emissions of the body, which is then again tied to the formation of the planet and subsequently the body.

The abundance of this material is the result of nuclear fusion as it occurs in the lifespan of a star. A star is essentially a celestial nuclear fusion reactor facilitated by the forces of gravity. As a star moves through its cycling of relationships between mass and force, the atoms within in it take on nucleons until they reach the number 56, at which point they can no longer be efficient and can no longer produce energy. If they're small, they can fizzle out, but if they're large the diminishing energy will lead to the collapse of matter and result in a supernova casting off a large portion of the star's mass into the universe to be formed into other stars and meteorites and planets. So, this material has 56 nucleons but

¹ Jean-François Lozier, "Red Ochre, Vermillion, and the Transatlantic Cosmetic Encounter," in *The Materiality of Color*, ed. Andrea Feeser, Maureen Daly Goggin and Beth Fowkes Tobin (Surrey: Ashgate Publishing Ltd, 2012), 120.

can be many things depending on their ratio of protons to neutrons. The most stable element made from 56 nucleons is iron.²

When the planet Earth was in its formative stages, iron, dense as it is, sunk into the core of the planet. It is part of magma and is emitted from oceanic volcanoes where it came into contact with oxygen, thus producing iron oxide, and laying a foundation around which life developed.³

² Yonatan Zunger, "How the price of paint is set in the hearts of dying stars," Google Plus, May 08, 2013, <https://plus.google.com/+YonatanZunger/posts/EfmdR6VWvRM>.

³ Brian Kendall, Ariel D. Anbar, Andreas Kappler and Kurt O. Konhauser, "The Global Iron Cycle," in *Fundamentals of Geobiology*, ed. Andrew H. Knoll, Donald E. Canfield and Kurt O. Konhauser (Hoboken: Blackwell Publishing Ltd, 2012), 65.

MATTER

Matter in my studio is always in the position of betraying the activity that is facilitated by and occurs in the non-physical studio spaces. There is often an uncomfortable dialog between the physical properties of the matter and the ideas and emotions that it embodies, represents, calls into question.

At worst, the matter behaves as a proxy, the dumbest possible proxy for an idea. I can choose to deny this matter its place in the studio or I can come to identify with it as I do my own corporeal container. They are clumsy vessels that can oscillate between charming and annoying an outside party.

IRON OXIDE

Like the 3D rendered images, I am addressing the idea of iron oxide as a material that has the capacity to relay multiple types of visual information. As a painting material, its appearance points to the mud of the earth as well as the blood of the human body. It is a material that permeates, is emitted, travels and carries protein, history. This is the face of Khaos, primordial god and primary air. The goo and darkness that existed before Gaia and the air that fills the gap between the living and the dead. The name Khaos, literally translates to gap or chasm.¹ And that is the moment the images and objects exist within. Cycling, accumulation and repetition are strategies of resolving Khaos, the gap.

Its presence then, is crucial in my work because it is crucial to the body. As I examine how the body travels through gaps and conduits and is rematerialized as descriptions or pixels, it is important to be considering the origin of the body. Likewise, it is important to consider cycles of epic scales when discussing cycles that refresh by the millisecond. When doing so, we can conceptualize more and less massive chasms, and how that idea of massive is totally flexible and felt.

¹ Hesiod, and M. L. West. *Theogony*. Oxford: Clarendon Press, 1997. eBook Collection (EBSCOhost), EBSCOhost (accessed March 8, 2017).

NETWORKS OF ENTANGLEMENT

The first network that bears influence upon the studio is the IT network. At all times, my studio is connected to the Internet and its other inhabitants. My computers constantly stay in sync with my online repository of images and reading material. I utilize this network in conjunction with video conferencing software to have the body of my partner described to me in pixels. I simultaneously ask that my body be described by pixels to her. It gives the illusion that the chasm has been folded and that we are sharing space.

This illusion is cheap and is fragile and the clues of its infrastructure are always present. The artifacts in the image and the recurring lags in the transmission highlight the hundreds of miles separating us. This is heightened at dusk when the hour of difference in time zone becomes palpable in the described light of the connected environments. The influence upon the studio is not necessarily the content of the conversation but the confrontation with the scenario; the maintenance and care for something as vulnerable as a long-distance relationship by way of practical means.

The second network is more mysterious, but more direct and more evasive in the presence of its infrastructure. This is an ephemeral sort of hocus pocus. This occurs at non-sensory level. It is the connection I have long distance to my partner. I cannot, of course, describe the structure of it, but it has a role in how work within the studio develops. The felt existence of this network promotes an occasional divestiture of intervention when

approaching the image, the object, the relationship. Each decision and formal passage does not require a visible or knowable lattice to support it. This is a network of intuition.

The third network is internal and is comprised of a constellation of thought processes working through the spaces of the studio. This is a constantly shifting set of nodes representing my interests, obsessions, concerns. All of which are fueled, fixed, and augmented by the material of the studio and its movement through the other networks.

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