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Leslie  
Rollins

Energetic Vessels  
Flow-Through Transformation

Alfred EIA  
2020

# Energetic Vessels: Flow-Through Transformation



Leslie Rollins

Alfred University  
MFA Thesis Report  
May 2020

“The picking of the process is  
the element of control.”

– Peer Bode



# **Energetic Vessels**

## **Flow-Through Transformation**

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# **Energetic Vessels**

# **Flow-Through Transformation**



# MFA Thesis Report

# Energetic Vessels

As a child I remember waking up each morning to one of two sounds: a piano student playing through their lesson in the living room directly below my bedroom, or the chirps and calls of birds enjoying breakfast at the feeders my mother faithfully filled. Of the two choices, I preferred the cheerfulness of the birds over the varying skills of my mother's students. The numerous feeders outside attracted an ever-changing assortment of feathered visitors, who came for the food but stayed for the variety of habitats within the yard. My sandbox was tucked away in a stand of blue spruce trees, and I played in the cool shadows, accompanied by the sounds of blue jays, crows, robins, and woodpeckers.

I can't recall a time when I was not surrounded by sound of some sort, either of a human-generated musical variety or ornithological in nature.

My love for being in the outdoors may have started as a child, but my field work began as the result of some creative lesson planning by my 8th grade science teacher. He saw I was struggling with the coursework shift from natural sciences (which favored my reading and vocabulary-memorization capabilities) to laboratory-based sciences (which revealed my weaknesses in math) and his solution was to send me into the field to record the numbers and activities of birds and other wildlife on our school campus.

While this alternative science class didn't develop my understanding of hard sciences, it did set me on a path that evolved from counting birds to field-based photography, video recording, and audio recording. As I developed and refined my interests for field work I prioritized the acquisition of high-quality field recorders, microphones, hydrophones, and a parabolic dish (which allows for a sort of audio zooming-in). My expanding abilities and equipment led to opportunities for me to record around the US, as well as to travel to places like Kenya, Taiwan, and Peru, where artist residencies provided me with a base of operations in remote locations.

Field recording, both audio and video, is still a critical element of my artistic practice, but an earlier drive for documenting unspoiled subject matters far-removed from human interference has shifted with my realization that humans impact everything all the time. There is no removing us from the environment. This revelation came to me in the jungles of Peru after I had hiked 8 miles deep into the Amazonian Highlands in search of an untrammled place to do some field recording. I felt like I had finally reached a location where I could only hear myself breathing among the insect, animal, and bird sounds, and the noises of the plant materials themselves, creaking in the breeze that flowed through the foliage. I unpacked my field gear, set up the elaborate microphone

systems on tripods, put on my headphones to monitor the audio, and pressed record. Within 30 seconds, the sound of a chainsaw ripped through the space and completely overpowered the audio landscape. Apparently, I was not the only one who had hiked a distance into the jungle looking for greener pastures. I stopped the recording and explored the area to find out who was using the chainsaw. I came upon one of the banana farmers from the village, busily clearing out some land to expand his family farm. I eat bananas every day, and they are especially delicious in Peru. As I considered my annoyance at his chainsawing interrupting my field recording, I suddenly understood the conflicts between this farmer, my daily banana habit, and my quest for capturing a wilder, purer Peru on record.

I also questioned why I found human noises in nature so aggravating. I can appreciate a deliberate use of noise in music composition in early *Musique concrète* and tape music, or when introduced as a random compositional influence in the writing and performance of mid-century composers. I'd found space for noise in the concert hall, and within sound-objects in a gallery, but it displeased me in the "natural world." Wasn't this a place where wildness should be the ruling influence?

While this moment in Peru began my exploration into the expectations I held for my own experiences in the natural

world, I spent the last year of my MFA program considering the impact that humans have on nature. During this process I realized I was one of the sorts of people I was getting so annoyed with because of the seemingly unwitting damage they were doing. I was complicit in a type of unconsciousness.

I am a product of a form of Transcendentalism, itself springing from a Judeo-Christian Romanticism, rooted in an idea that the best Earth is a pure Earth. I was brought up to believe that there was once an unspoiled creation that reflected a powerful divine will at work in the universe. Through the Fall of Humankind, when they gave in to Sin and Temptation, spoilage was first introduced. Pain and suffering appeared and thus began the slippery descent from Perfect into a complete degradation in need of salvation. The Transcendental dream of reconnecting to this divine, natural state offered an escape from organized religion, but replaced the Christian zeal for personal purity facilitated by deity with the idea that Nature was itself somehow pure, functioning above, or at least in spite of human influence. The push to explore, preserve, and perhaps even become one with wild spaces led to lives and practices which can seem quite ascetic. Champions of this point of view—Thoreau, Muir, Turner, and Walden—all propagated this myth-making about raw, untamed places.

Growing up in the late twentieth century, these ideals seemed comforting and appealing when viewed from my own experience of industrialized globalism, a human propensity for cruelty and violence, and a rabid capitalism that consumes raw materials with a seemingly unquenchable thirst. A desire to escape this tainted world was coupled with a temperament that loved finding rare things, adding them to my collection, and then sharing them with others, and so I voraciously sought this natural ideal off the beaten path, deeper in the forests, higher in the mountains, further from human occupation and settlements, ever looking and listening.

When I felt like I had discovered a place still pristine enough, my impulse was to catalog it, document it, and share it in the hopes that perhaps, if someone experienced it the way I did, they might come to value it, too; in turn, to treasure it, to promote it in the hopes of somehow preserving it. The ideal outcome in my mind was for humans to allow it to be and to live its way in the world without what I perceived as human-meddling at best and a callous disregard for nature to the point of extinction at worst.

In the middle of the jungle with that chainsaw roaring, I felt shame about my genuine but misguided attempts to “save the world.” What impact had I had by simply being in that place? All the noise and pollution made by multiple

modes of transportation as I traveled thousands of miles from home to stand in this spot, seeking the unspoiled wild? The reality was: I was making just as much “noise” as the man clearing the land. And I wasn’t even planning to grow bananas, though I did have another “fruit” in mind: a hope to share sonic and visual findings with others, to perhaps foster an interest or nurture an awareness of this place.

I realized that I needed to better consider the human animal in my passion for the animal world, difficult though this might be. This is an aspect of my practice that is developing and is still lacking natural compassion. I’m eager to give examples and account for as much non-human agency as possible, but I get increasingly unsettled thinking about how to account for and support a human agency. While this nervousness seems understandable given the experience of unchecked human agency equating to a “dominion,” pushing anything other-than-human to the brink of extinction and ecological disaster, I fear I am taking too simple a view of good vs. bad. It seems that environments are remarkably resilient and strong, oftentimes not only able to survive ecological disaster, but to rebuild in novel and successful ways. More and more, the primacy of human agency has been questioned and a definition of a “life supporting” ecosystem has expanded to consider potential futures where humans are not likely

needed. What were former outliers in a world weighed against the ego of human dominion might come out just fine.

In response, I am seeking shared spaces between human and non-human agencies which can support, nurture, and leave room for the other to thrive. In navigating and mapping such spaces, I regularly encounter unexpected phenomena. I am heartened by Karen Barad's notions in this area, particularly her use of the word "intra-action":

...in contrast to the usual "interaction," which relies on a metaphysics of individualism (in particular, the prior existence of separately determinate entities). A phenomenon is a specific intra-action of an "object" and the "measuring agencies"; the object and the measuring agencies emerge from, rather than precede, the intra-action that produces them (*Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 128).

I like the push/pull of inhabiting space as both "object" and "measuring agency" within my practice since it lets me both play with and probe the nature of entangled intra-activity. The binary idea that it is humans vs. the non-humans is crumbling. Neither can decide for the other. Both get to contribute in their own way on their own terms for their

own reasons. Intervention is called for when something overwhelms the other-thing to the point of degrading their quality of life and ability to simply live. But the question remains: is there an observing entity governing a balance and keeping score?

My interest in collaborating to create the body of work in this thesis is to consider the histories at work within the various contributing actants. My embodiment of artistic intent intermingles with the biological history of the avian specimens in the collection, the human histories of the collectors and preparators, and the institutional history of Alfred as a place of science, ecology, and art. An exploration of these intersections has produced a body of work that speaks to my concerns for conservation and a related site-specificity, promoting opportunities for all inhabitants to not merely survive, but to thrive.

When my collected data and observations suggest possible deterioration, these moments are more closely considered. Loss of life is one such deterioration, and something that provokes and moves me towards action and consideration as a way of processing my discomfort and grief. The bird wing pictured in several of my pieces belonged to a young, first-year peregrine falcon found dead at the corner of Satterlee Hill Road and State Route 21 in Allegany County on October 16, 2019. This immature male did not

survive its first migration from the tundra of Northern Canada to South America. Postmortem measurements and body weight suggest that he was malnourished, and it is hypothesized that in his eagerness to feed, he lost track of his environmental situation and was struck down by a moving vehicle while in flight.

Peregrines are remarkable birds for many reasons. One of the fastest birds, they have been clocked at over 200 miles per hour when diving from above to snare flying birds. Such staggering speeds are supported by a vision system thought to allow them to register around 130 frames per second. The human visual system can only process 10 to 12 images per second and perceive them individually, and any higher rates are perceived by humans as motion. The peregrine sees nearly 10 times as much as humans do, yet the superior sight was not able to protect him from the speed of human technology.

The impactful roles of humans within our shared ecologies raises concerns about the rippling effects that actions/inactions have, not only on our shared environments, but also on our psycho-spiritual selves. Seeking interventions, I collaborate with multiple intelligences to shift consciousness. This process of engaging the “other” generates much rich material from gathering in the field and processing in the studio. My field studies and recording

practices create spaces where participation from often unconsidered “others” makes their presences known in a seemingly endless array of phenomena.

The collaborations found in this creative practice encode the experiences of the journeys in a primordial mythical symbolic language of vessels, animals, and smoke. Such symbols are often found inscribed within and around transformative ritualized spaces of caves, temples, chapels, and sacred sites. Resultant media and objects that are gathered during these encounters with non-consensual realities are then recombined through processing using generative tools from more contemporary electronic systems—re-encoded for transmission with marks that preserve and protect the artifacts as vessels for the use of past, present, and future selves.

Considered as an expanding cartography, this body of research maps travels and experiences as witnessed within and around the spaces of liminal psycho-ecologies—documenting energetic responses to internal and external resonances and dissonances.

Nuances of phenomena are loosed when exploring the many layers found within embedded ecologies—layers of intertwined relational states comprised of co-mingled intelligences sharing consciousness and environments

through co-inhabitation of mind, body, and spirit. Through cataloging aspects of such encounters experienced during frequent collaboration, my artistic practice articulates experiences through transcription, transmutation, and transmission.

Transcription is the act of documentation, most commonly through audio and video recordings. Transmutation is the process of giving voice and agency to unseen collaborators by allowing them to encode their presence in the processing of the gathered transcriptions. To this end, my natural improvisational performance practices are bolstered with multiple layers of aleatoric and chance methods employed to influence the generation and embellishment of the materials. Through intentionally leaving space for decisions and actions of an “other” I consider this entire process a collaborative one. I pause my making and creating to listen for them, look for them, and I respond to them. It’s a similar process to what I understand about Paulina Oliveros’ Deep Listening, except I expand my understanding of her methods to include full participation of non-human agencies. This heart-open stance is engaged through a practice that is fully embodied and tuned to experiences that are grounded in Earth-honoring traditions and teachings. I am grateful to the myriad intelligences at play all around me and am thankful to the teachers and explorers who have helped me better learn to navigate and

celebrate my path.

Finally, transmission is the point the material is sent out into the world for display, contemplation, and further consideration. It is my belief that some of the same resonances and dissonances I experience in the gathering and creation of these materials will respond energetically when other “others” come in contact with them. To that end, the whole process continues to unfold in cyclical fashion, which will likely continue to yield surprising and unexpected results.



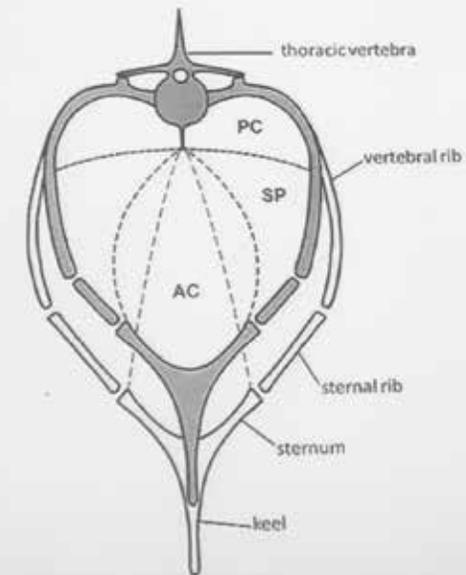
# MFA Thesis Exhibition

# Introduction

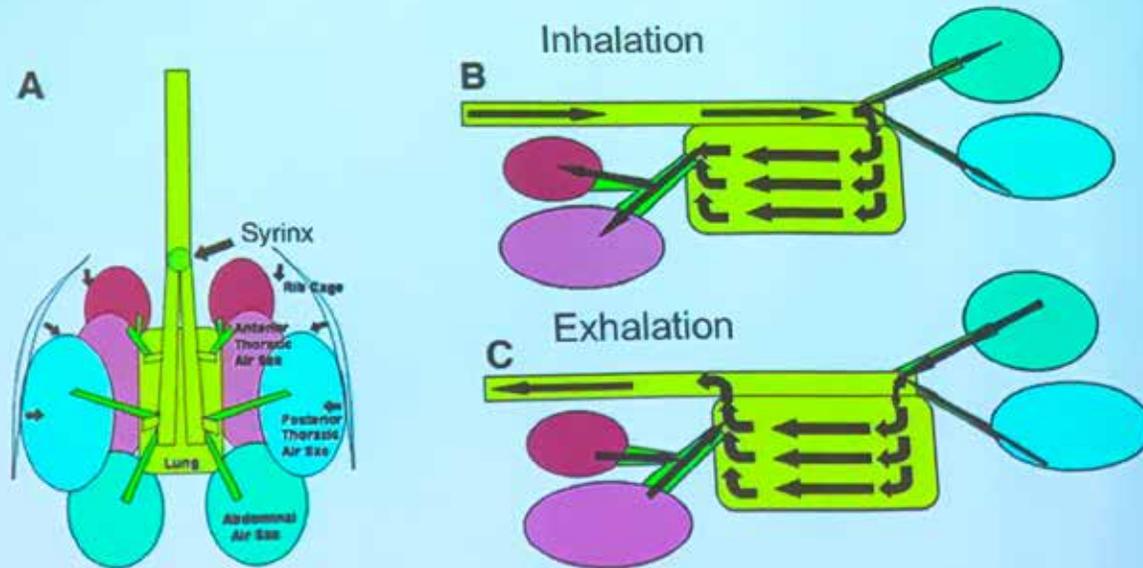
Bird-related imagery and sounds are prevalent in my thesis. The exhibition's title is inspired by birds having a one way at a time flow-through respiration system—with air moving in only one direction through their nine air sacs. The unidirectional flow of air through a bird's respiratory system maintains higher blood-oxygenation levels. Air moving into their system is called inspiration, and air exiting their system is called expiration. In contrast, air flow for mammals is bidirectional—moving both into and out of the lungs at the same time. The air reaching a mammal's lungs is less oxygen-rich because the overall air mixture contains a significant portion of older air that has already been in the lungs for a while, and is hence deoxygenated. Simply put, birds are more efficient breathers than humans.

Energies, much like oxygen, can flow in, through, and out of various bodies, with each body having differing capacities for gathering, processing, utilizing, and storing such energies. The pieces discussed here are records of phenomenological interactions with myriad impulses and intelligences encountered within and around rituals of making and other flow-through states. Additional symbolic language is further explored using my personal audiovisual vocabulary of lights, darks, colors, movements, and repetition.

Birds do not have a diaphragm  
So how do they move air?



# Circulatory & Respiratory systems



Pages 23-25: Installation in varying light levels, *Peregrine Offering* (left, in image), *Re-Winged* (center, in image), *Barred Owl* (right, in image)









# Performance

# Lasered Palo Santo for Peregrine in Bull Moon

Although pieces in a gallery context are often considered the finished products of an artistic practice, my practice favors the state of making over any production-oriented goals for finalized pieces. Engaging in intentional acts of creation presses the pause button on consensual reality and opens access to non-ordinary states—allowing a different experience of time in which to more fully encounter and process emotion or energy-in-motion.

I planned to open my show with a ritual performance to prepare the gallery space. Stills from video documentation show this ritual, which was performed in my home studio instead, due to school studios being shuttered in response to the Covid-19 pandemic.

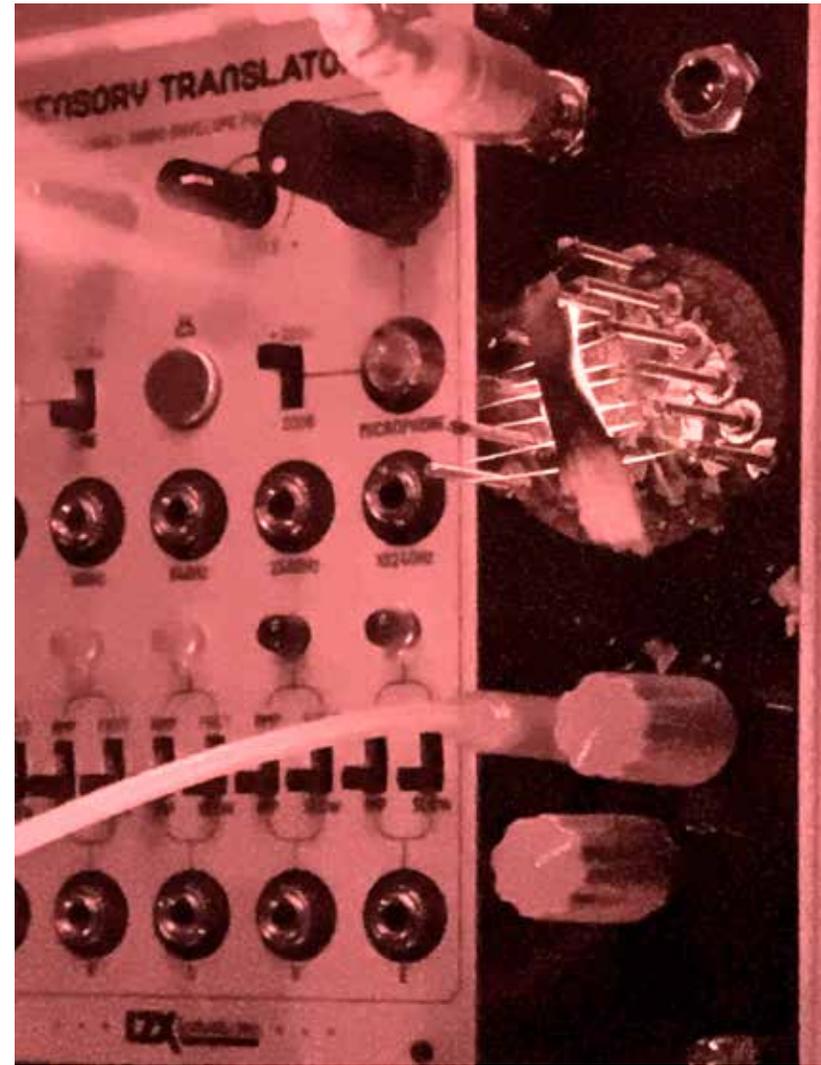
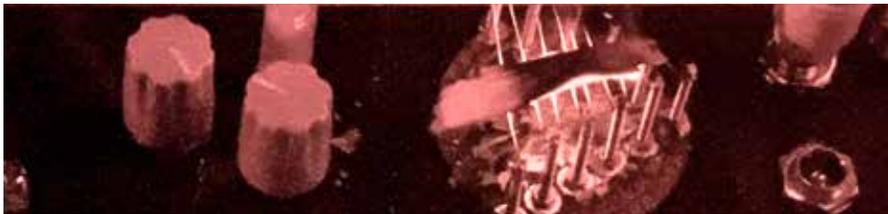
This energetic preparation of both myself and the gallery denotes a threshold and establishes a portal between consensus and non-consensus realities. The ritual is a symbolic vessel meant to hold and protect space for all entities contributing to our co-mingled states of consciousness. This is deeply similar to my artistic practice—intentional acts of creating and making in response to energies I feel intuitively resonant with. This making practice is often responsive, but it can also be an act of intentionally transmuting energies at play in the world to celebrate and claim space. This ritual is a way to mark a before and after, to invite movement through

pre-existing energies past a threshold, into an enlivened shared space bathed in traditional elemental semiotics of heat, light, fire, and smoke.

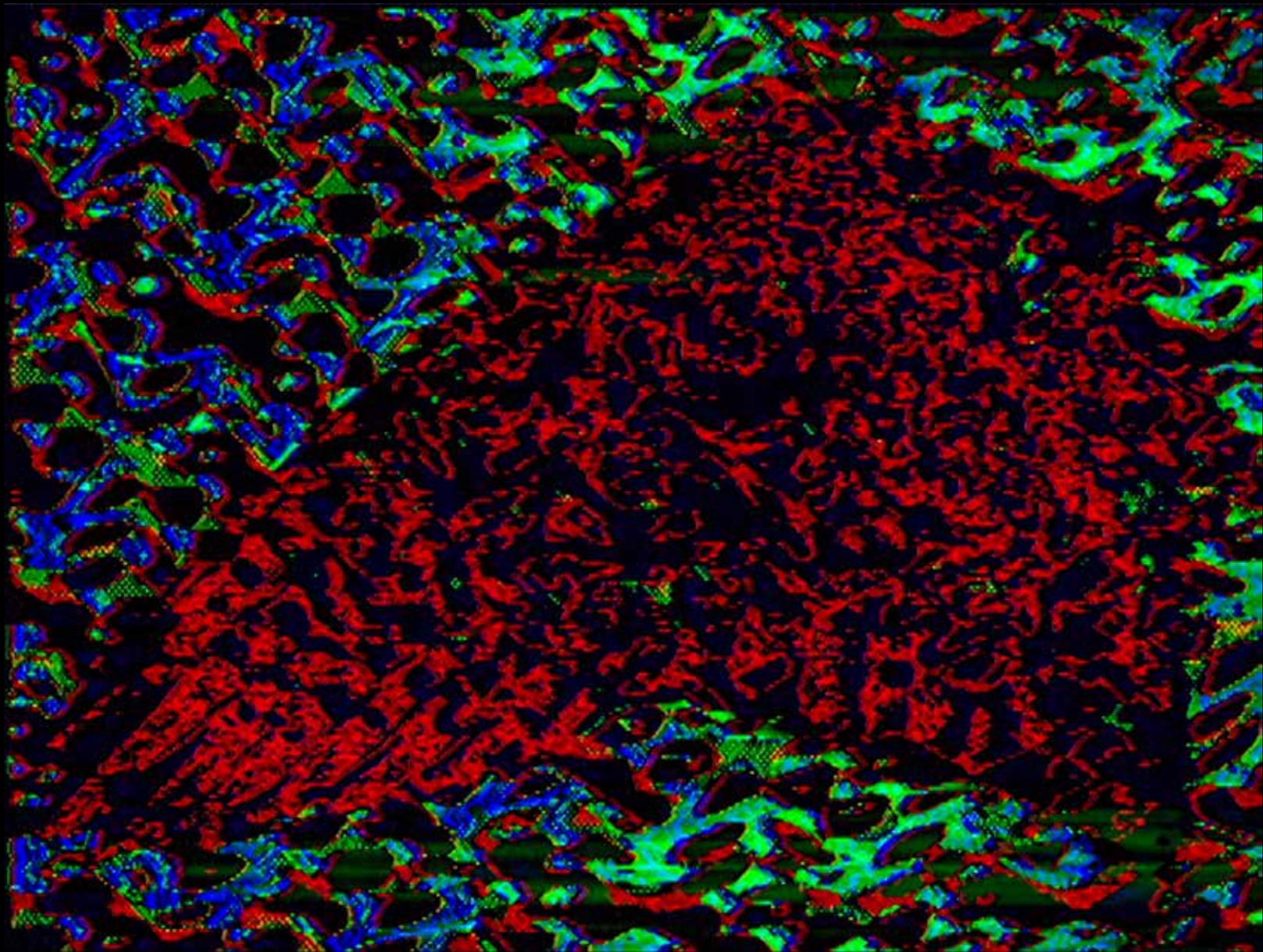
This performative ritual includes burning a piece of palo santo on the wires of a module in my synthesizer, with the temperature and intensity of burning controlled by voltage signals from the rest of the system. The smoke rising from the wood interacts with a red laser aimed into another module's photonic sensor, and influences the coloring and patterning of an image of a bird's wing. When the laser connects fully to the sensor of the module, the wing on the screen floods with red—the light (the laser) gives life (red color, symbolizing blood) to a dead object. When the laser is blocked, the wing is in darkness, becoming a void made visible only in relation to the patterns around it, depicting the ways we may not be aware of non-alive things even though they are unmistakably all around us and impacting our shared ecosystem.

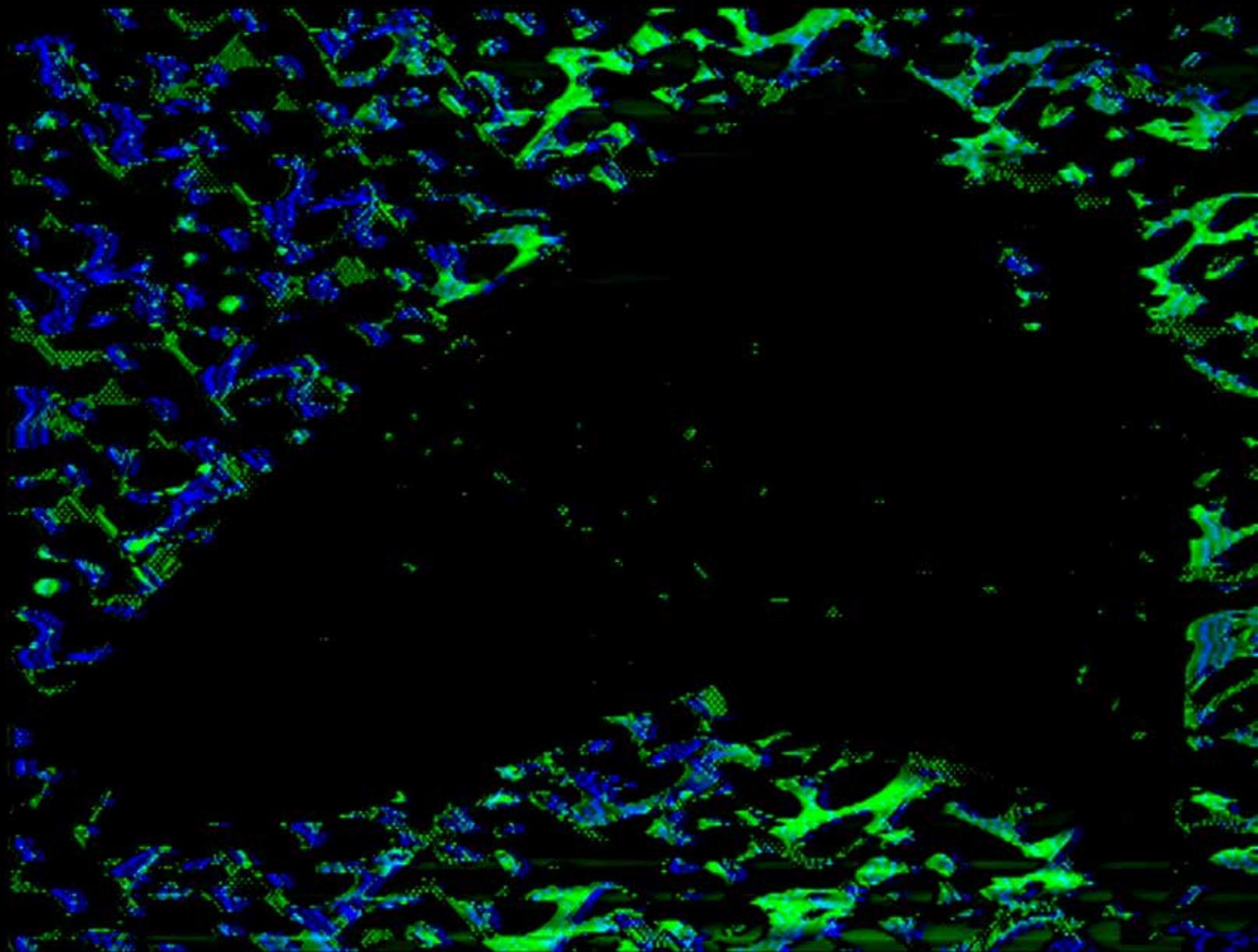
The transmutation of palo santo wood through the audiovisual system is transmitted to the viewer via floor-to-ceiling wall projection. This ritual makes visible the energetic transformation that I experience when interacting within my studio and in performance practices. After the initial gallery performance, documentation of it would be projected for the duration of the exhibition. I'm

inspired by people like Joseph Beuys, Merce Cunningham and John Cage in the way that they performed within a space and then left behind artifacts of that performance. This is a process of not deliberately constructing an object, but rather leaving traces of a lived experience meant to aid in remembering the activities of creative response.



This page: Palo Santo wood burning on the hot wires of a module  
Pages 30-31: Stills from the performance, showing the peregrine wing flooded with blood and in darkness







# Sculpture

# Barred Owl (Spiral Pyramid Form)

A photographic still image of a dead Barred Owl, processed with my video synthesizer to re-color and animate its movement, is shown on a synchronized set of six cathode ray tube (CRT) television monitors. This image of a dead creature, methodically photographed using a copy stand setup to capture twenty to thirty separate images with differing focus points, has been digitally post-processed to combine the collection of related photographs into one hyper-realistic composite image. The image is then mapped onto analogue CRT monitors with the use of what some may consider a dead or dying technology: a machine that creates frame-accurate synchronization from the output of multiple DVD players.

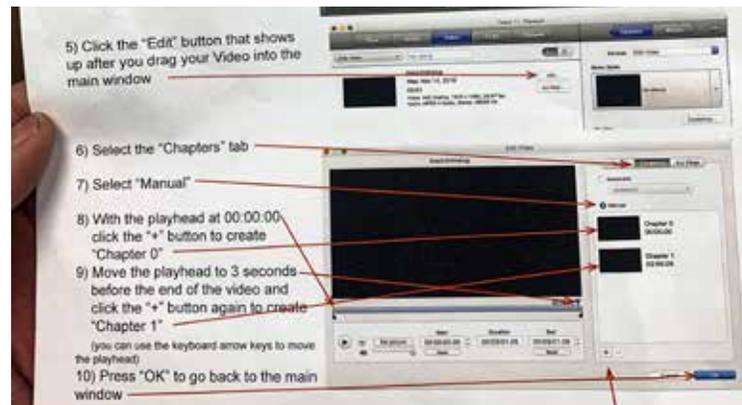
The resultant colors and image quality displayed on the screens vary in unpredictable ways due to the degradation of the aging monitors—degradation exacerbated by, ironically, first overuse and then long periods of very little use. While this video could be displayed using more contemporary technologies (4K monitors and a computer-based sync system), which would yield much more predictable results, I instead choose to frame natural history findings through media archaeology, exploring the remains of both a formerly living entity and an historic technological system, seeking to preserve personally significant elements within this piece. While the sync system is designed to create a unity across the screens, the monitors instead reveal color, pattern, and

detail inconsistencies due to the age and electromechanical degradation of the component parts. It is the unpredictable results I find so intriguing: they seem to breathe a new, unexpected life into the images and the sculptural structure of the stacked monitors. The monitors are stacked in a pyramid-type shape, and each monitor is rotated within the stack to emphasize the spiraling directionality of the images. Audio field recordings of Barred Owls also play through the individual television speakers in the stack, snaking and spiraling in and around the pyramid. The pastoral sounds captured at dusk are quiet and often a stark distinction to the high-contrast, intensely colored images of the owl. The visual elements remind me of an iconography often used in doors, windows, and other elements of temple architectural. In combination, the visuals on the screens, their arrangement in the stack, and the sounds may be read as a sort of altar; an intentional built space to remember... remember animal lives, remember technologies and their makers, remember the intersections of institutions which value and collect such elements.

Technological advances, which are often hard-won through intense effort and an ecological price, are ever accelerating and reshaping our world. I struggle with anxiety about how I am shaped, and how I contribute in shaping. How is my regular use of technologies impacting ecologies I might not even be aware of? With things moving so quickly, what may

we have missed in our hurry to move on to something new? What happens when things which were thought to be dead and forgotten are brought back into view? Re-engagement of “obsolete” technologies may extend their usefulness, or even uncover new possibilities for use, but this revisiting of the past may also be viewed as complicit in creating a halo of sentimentality. I recognize myself in this accusation in some ways, fully admitting to my interest in utilizing vintage equipment, or equipment designed to mimic vintage capabilities. Historically, access to such equipment required deep institutional support for funding the creation, acquisition, use, and maintenance of many of the tools I employ in my studio practice. In my lifetime, the use of

professional quality audiovisual tools was financially limited to professional filmmakers, musicians, and academics. I grew up soaking in the stimulating stew that they made and distributed through television, radio, and cinema. Now, over a quarter century from the time I first viewed/heard/experienced such technological marvels, the affordability and availability of many of these older tools has reached a level that I can participate in. I temper some of my concerns of complicity in noting that I regularly rescue tools left for dead and thoroughly enjoy breathing new life into them. I believe my explorations matter since access to and use of these tools is new to me.

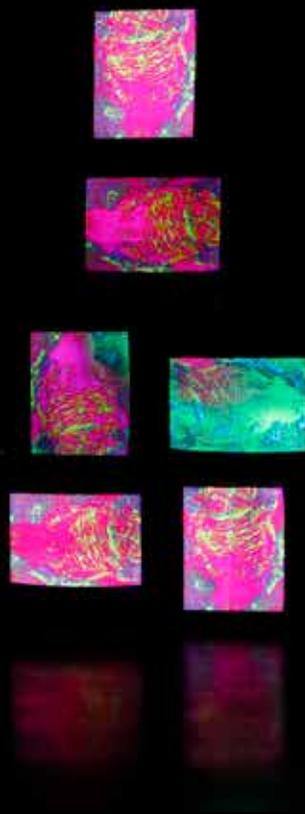


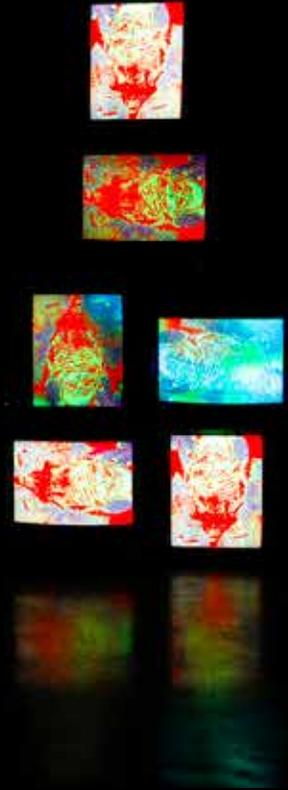
This page: Instructions for authoring DVDs used in *Barred Owl (Spiral Pyramid Form)*

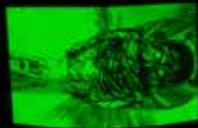
Pages 36-37: Installation view of *Peregrine Offering* (left, in image), *Re-Winging* (center, in image), and *Barred Owl* (right, in image)

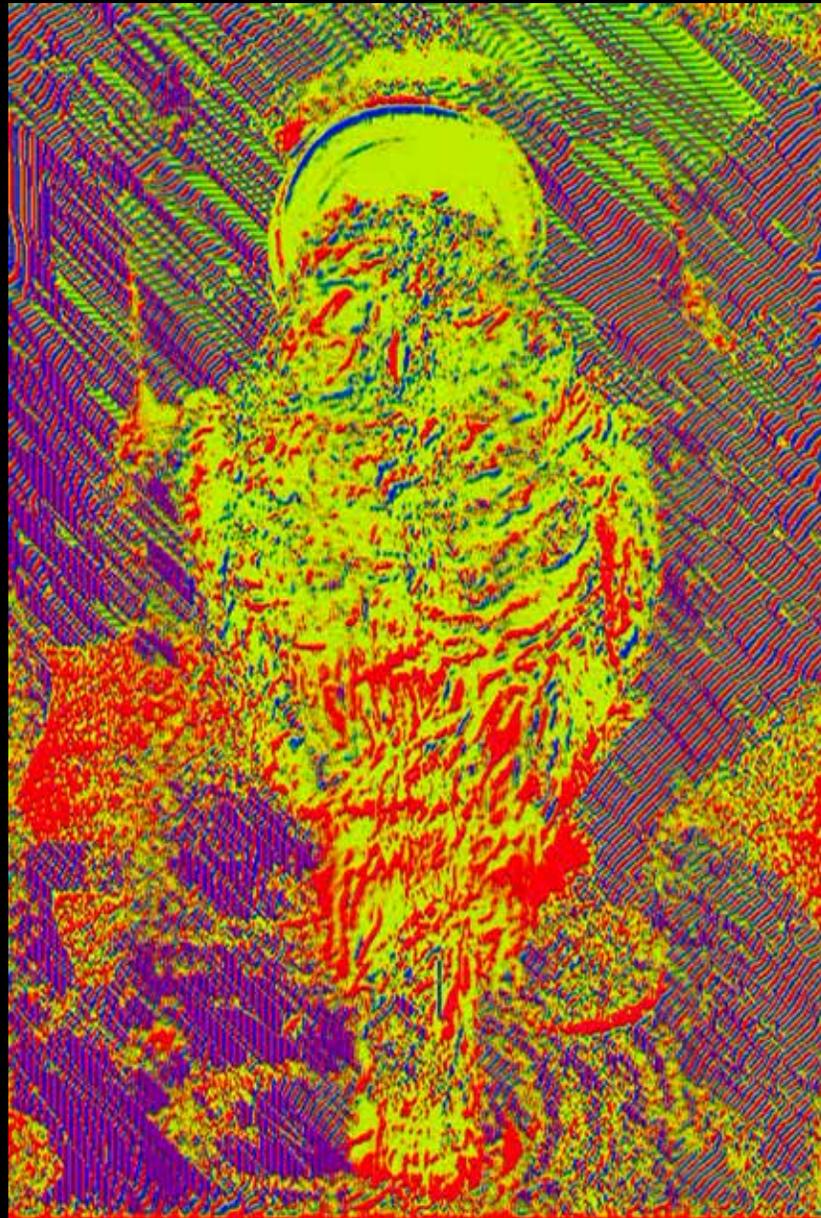
Page 38: Installation of *Barred Owl*

Page 39: Still from *Barred Owl*









# Falcon Flight through Lunar Orbit Lander Issues

I worked in TouchDesigner with my professor, Eric Souther, to prototype an alternative arrangement of the six synced CRT screens.

We envisioned the screens arranged side-by-side in a horizontal line. A digital model of a falcon flies from one screen into the next, through a background of synthesized analogue video patterns.

The contrast of the older technology (CRTs) with the low-resolution, analog background and the high-resolution, computer-modeled falcon would explore the evolution and movement of technological advances, how they contrast or battle with each other, and how they are able to coexist.

With the outbreak of Covid-19 this alternate version of the sculpture remains as of this writing unrealized.







# Peregrine Offering

These multi-media sculptures incorporate ceramic bowls—made in collaboration with Chris Alveshere, a gifted potter and fellow MFA graduate at Alfred University—with video projections mapped onto their surfaces.

Projecting colorful video onto these highly reflective colored bowls created an engaging challenge of composition since the material properties of the glazes greatly altered the light transmissions—enhancing the vibrancy for some colors of light while dampening or outright changing the color of others. Experimenting with what light reacted with which glaze was an unpredictable but engaging process of discovery and I am disappointed that Chris and I were not able to fully realize the complete set of red, green, and blue (RGB) bowls that we designed.

Creating a set of ceramic bowls that are glazed in RGB is of particular interest because it matches the colorspace I am accustomed to working with in my video synthesizer for pattern generation and coloring, as well as in projection and display of video playback. The black and white bowls we produced had somewhat more predictable results as alternative screens, behaving much more like the monochromatic screens of cinema. The colored bowls behaved in a much less predictable way, with projected colors that shifted hue, brightness, and intensity in numerous interesting ways. My initial research in

expanded cinema techniques is what eventually prompted me to work with RGB ceramic bowls, after working through a variety of other alternative screens, from salt to glass to mirrored glass to a variety of liquids and their surfaces. In this pursuit, the way materials either absorbed the projections or reflected them was endlessly fascinating and I anticipate much more research into these sorts of materials.

As hand-thrown earthen vessels, bowls can be functional and sacred objects, and are often decorated and designed for both practical and ritual purposes. In this series I am marking these bowls with moving light for my own ritual purposes and visual intentions. The falcon in the video was injured through an unexpected interaction with humans, and I invoke his image as a way of honoring his life and processing the dissonant energies I feel when confronted with his horrific injuries and loss of life.

The projection-mapped videos in and on the earthen bowls are of a live peregrine falcon (with human-induced injuries which compel it to live in permanent captivity to survive) moving his head from side-to-side, and a dead peregrine falcon's wing “flying” through a still-life of mirrored glass vessels and a week's worth of personally generated non-recyclable waste.

The flying wing, which I am moving through the air in mimicry of a bird's flight movements, celebrates his life and mourns his loss through imitation and reflection—reenacting his navigation through a hostile environment to symbolically bring him back to life for me. Through this installation of ritual objects I mourn the damage done while honoring the life prematurely lost. In highlighting the beauty I find while observing living creatures, which can usually only be observed in short bursts from far distances in the wilds, I seek to celebrate liveness and to encourage conservation.

These elements create, interact, and influence ringing feedback oscillations as generated and captured during studio-embodied reanimation rituals for synthesizer, camera, and video projection. The video-feedback recordings of studio ritual are then projected on the sides of the bowl that is placed under a freestanding sculpture of wood and metal suspending a downward-facing projector over the bowl which is resting face down atop appropriated wooden speaker enclosures. An uninterrupted, clear view of the falcon's head is presented in the central footed portion of the vessel, allowing for longer, clear views of the bird looking around its place of captivity.

The same video of the falcon's head is combined with synthesized visual static, modulated by field recordings

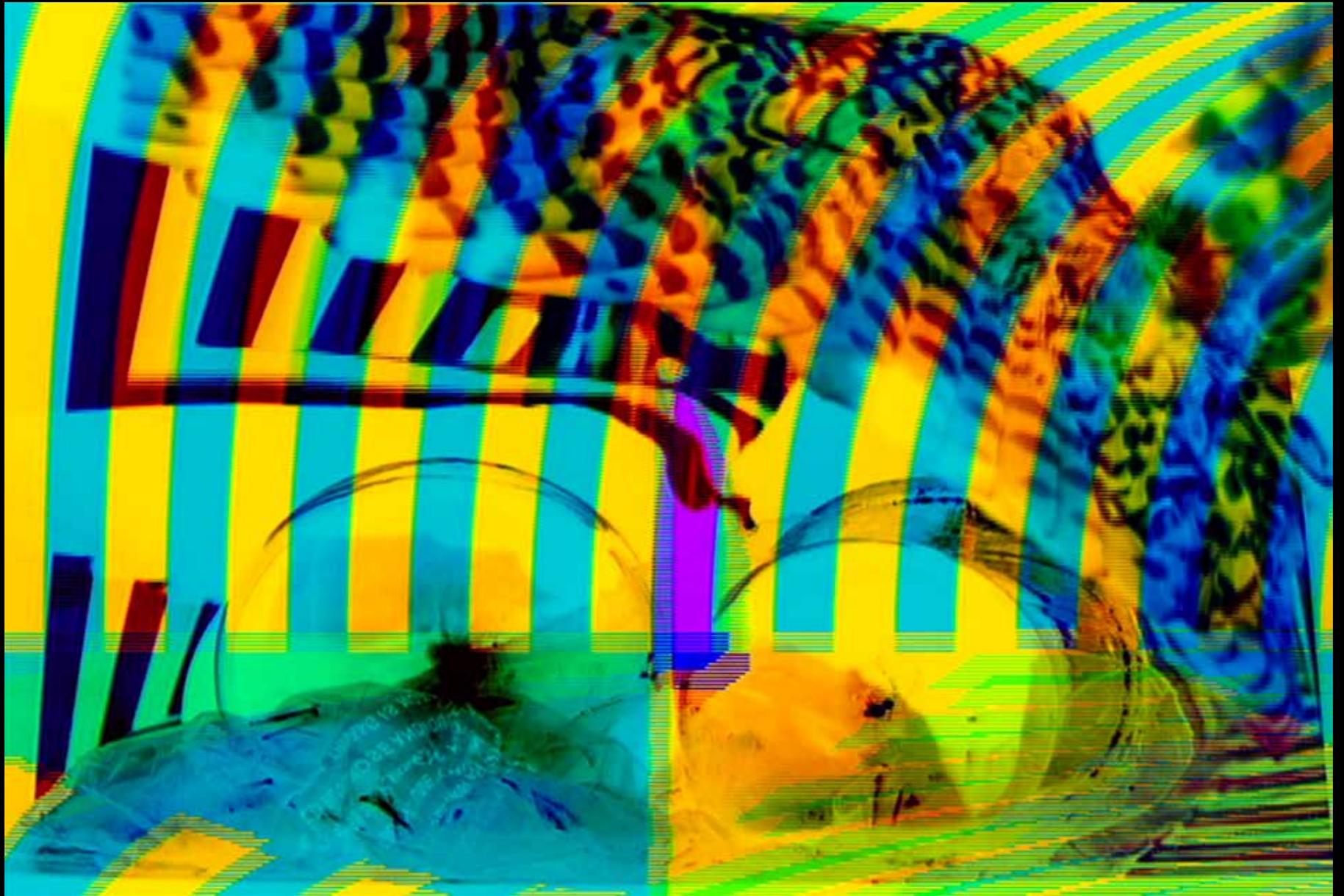
of its own territorial calls, and projected onto the speaker cone surfaces. The positioning of the foot on the bowl and the two speaker cones outline a triangular shape, and the downward-facing bowl itself forms a sort of pyramid on the wooden plinth of the speaker enclosures.

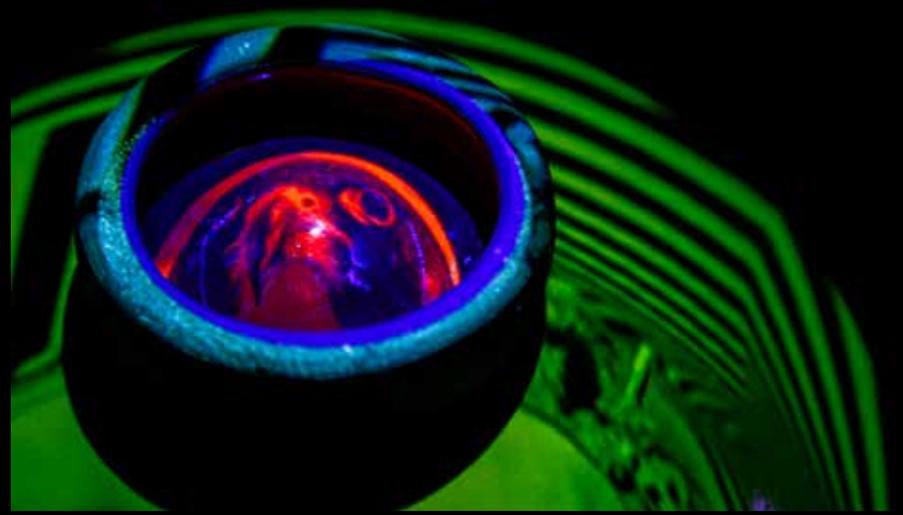
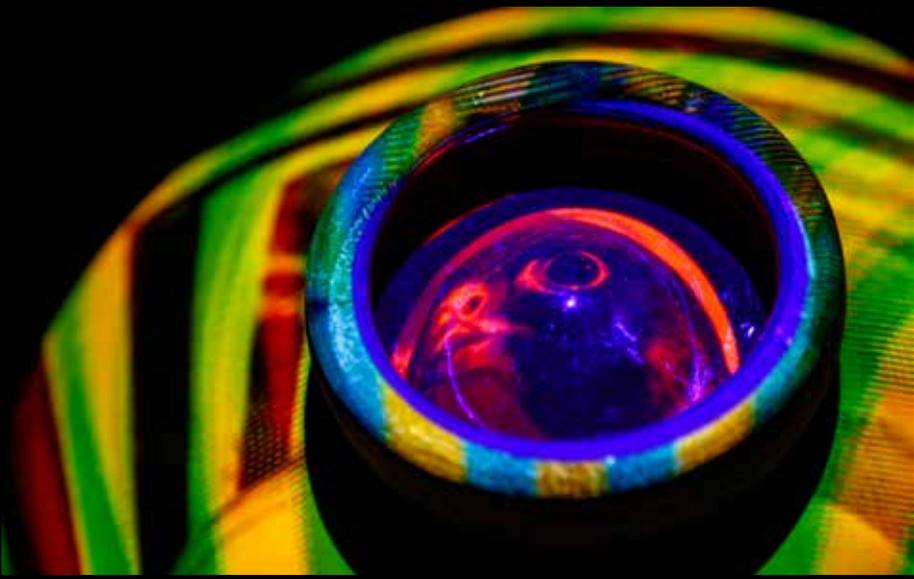
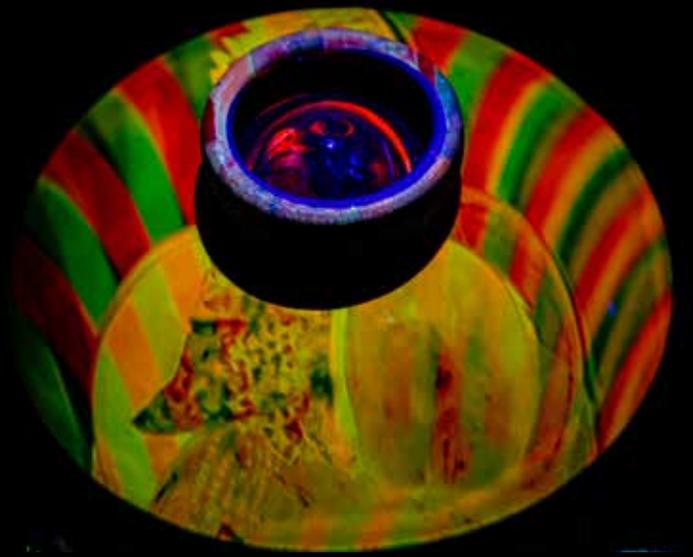
Within a very darkened gallery, these sculptures encourage movement through the space for closer experiences with the glowing surfaces. The speakers play a combination of field recordings of local birds, pastoral environments, and synthetic sounds which sonify the various wild sources. Gallery-wide this multi-channel soundscape is immersive, pushing and pulling one by the ears to explore the gallery ecology to better hear specific details which are calling out—much in the same way one might hear interesting sounds and seek a closer view when exploring the wilds.

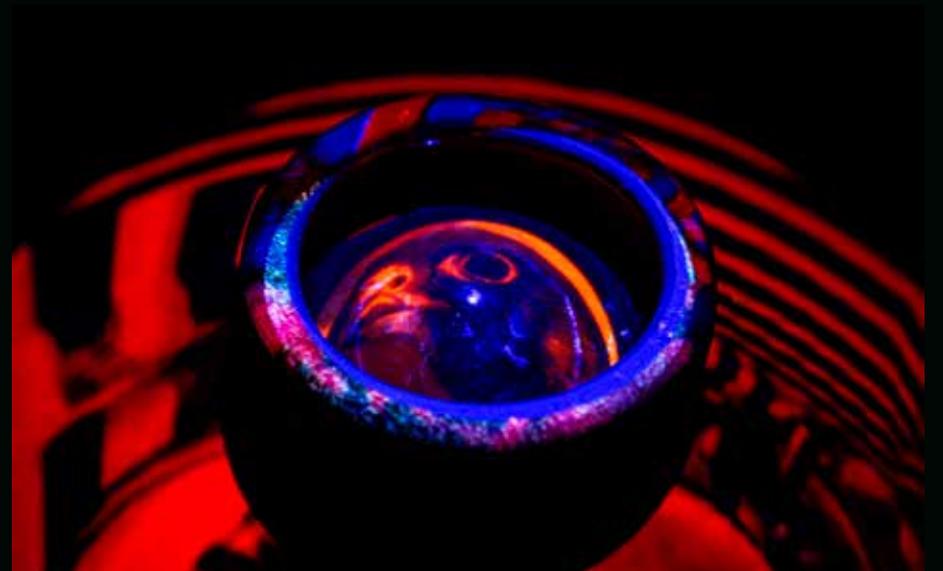
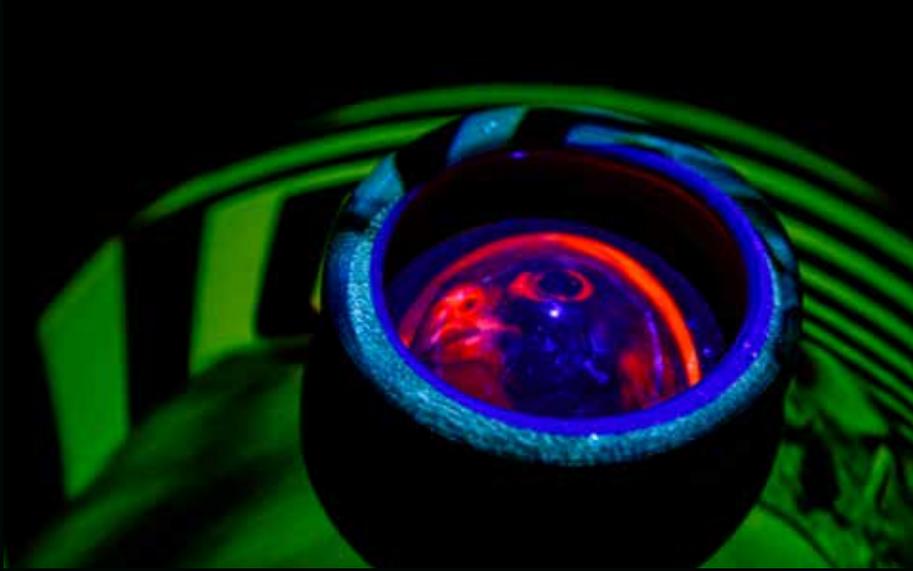
Page 47: Installation of *Peregrine Offering* (left, in image) and *Re-Winging* (right, in image)  
Pages 48-55: Details from installation

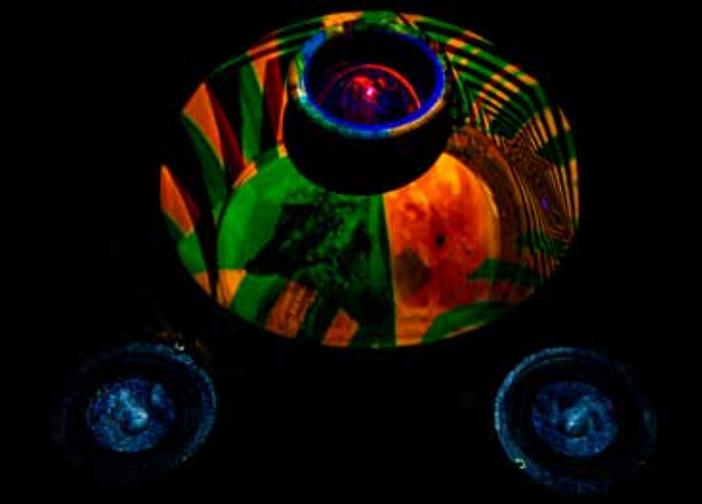
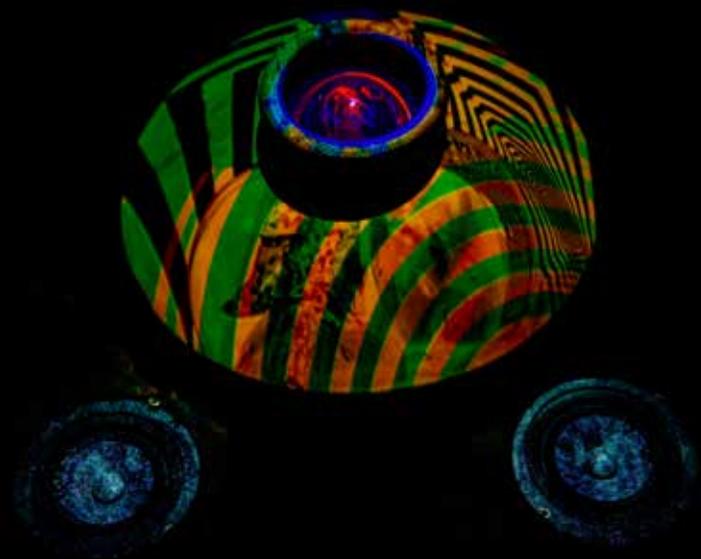
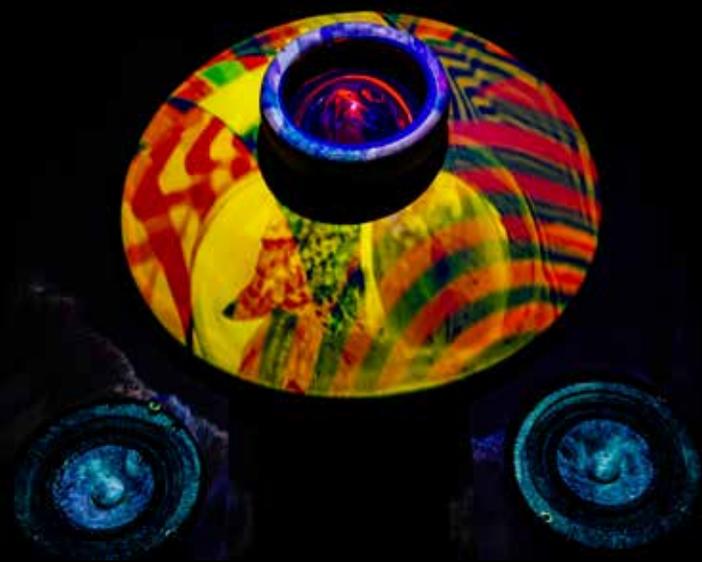
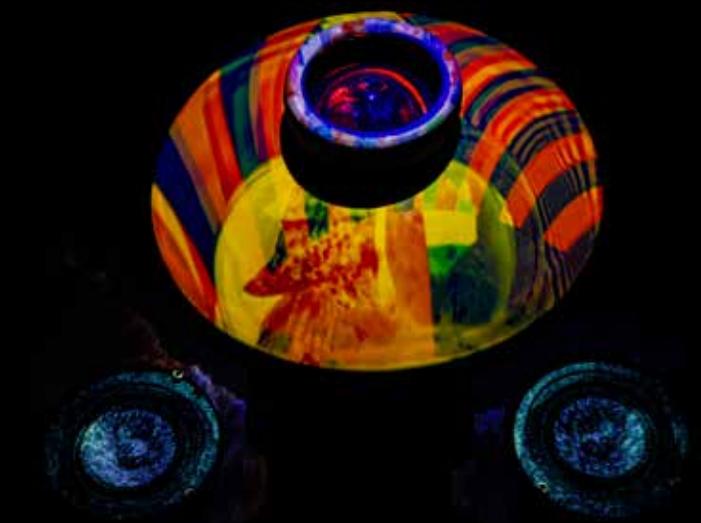


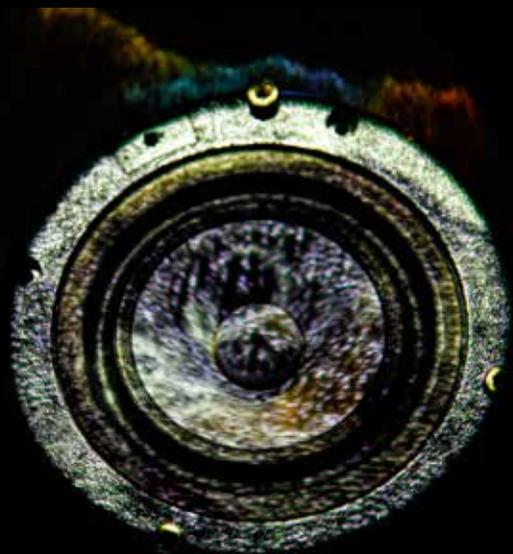
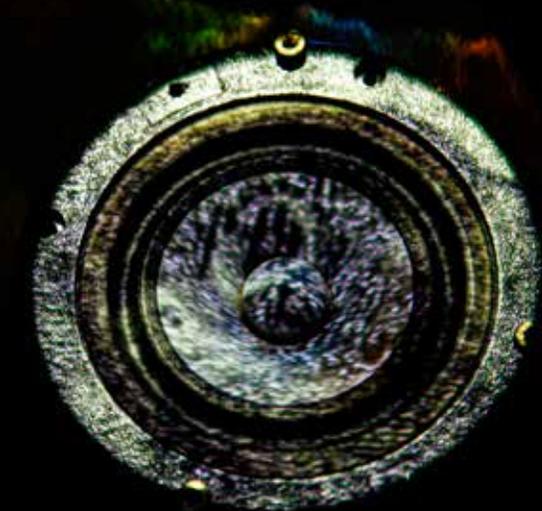
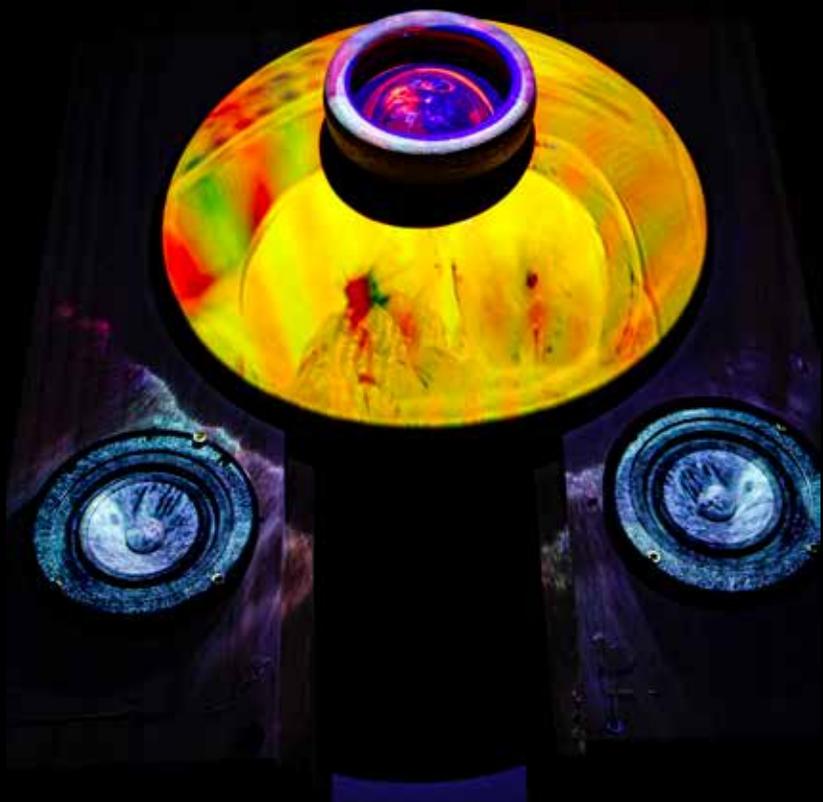
















# Re-Winging

Re-Winging introduces a layer of performative and collaborative liveness into the sculptures within the installation. The pieces featured on previous pages use pre-recorded audiovisual materials for projection and playback. Re-Winging features visual geometries that are created live and in real-time through a hybrid analogue/digital audiovisual synthesis system.

The audiovisual system processes incoming audio information to generate and shape video patterns which are then composited and keyed together with in-camera video footage of wild bird habitats like trees, mountains, and water.

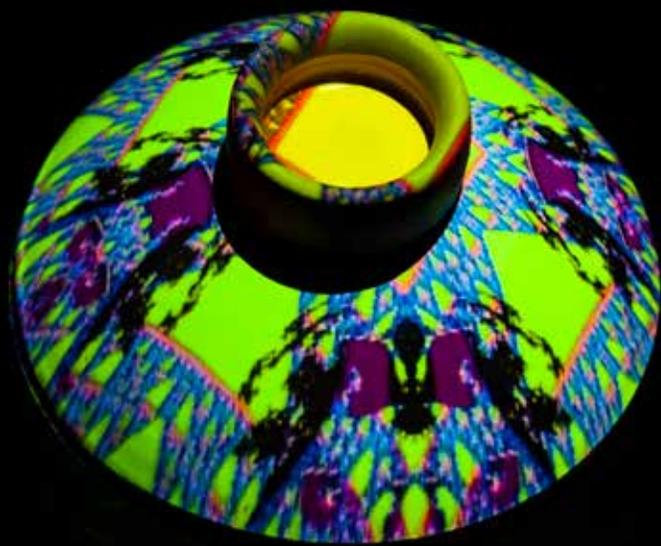
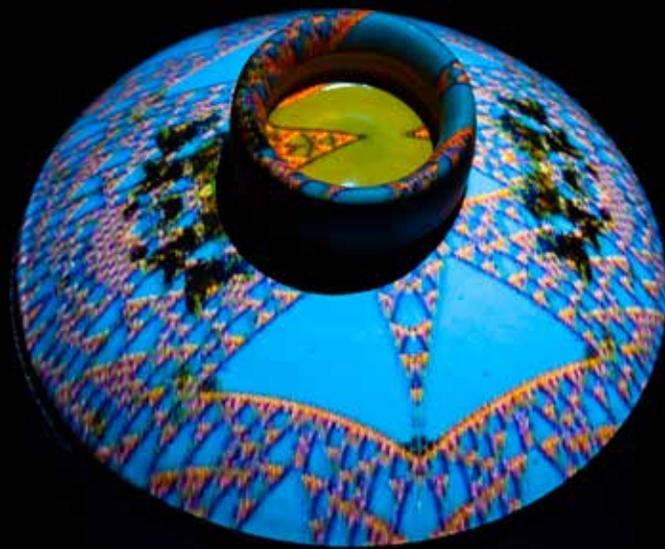
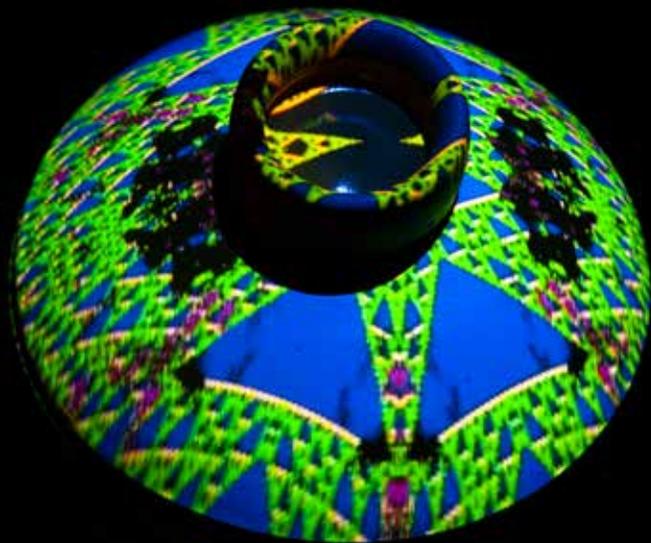
Microphones placed in and around the sculptures and throughout the gallery also capture live sounds created by visitors within the gallery space. These sounds are transmitted into the synthesizers which then responsively shape the colors and patterns that are projected onto the ceramic vessels.

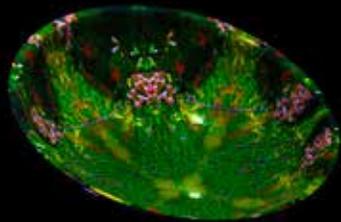
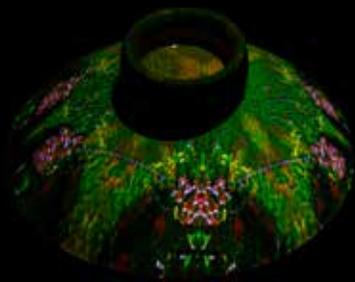
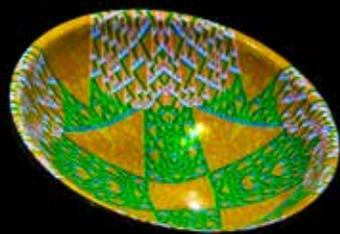
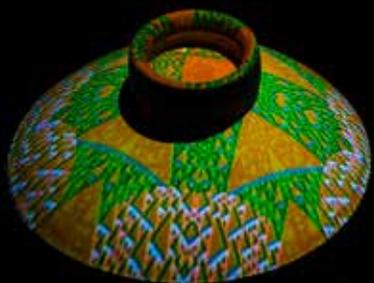
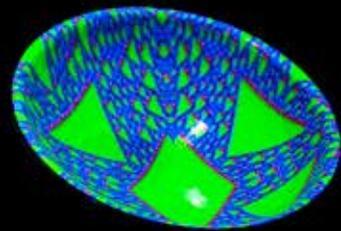
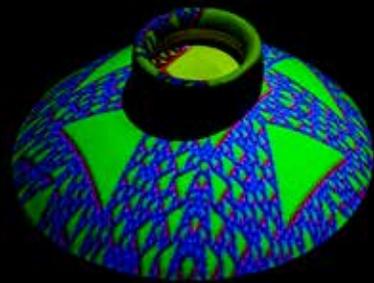
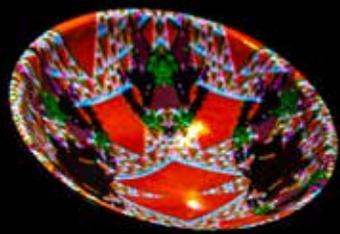
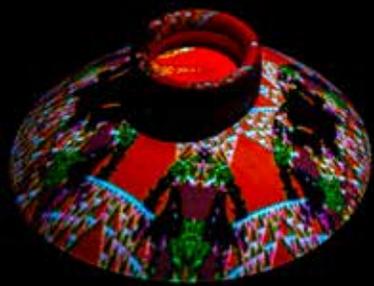
A visitor's presence activates a real-time collaboration with the gallery soundscape of field recordings, live-synthesis, and their own movements and voices. This system offers an opportunity for participatory resonance that activates the audiovisual material projected on the vessels.

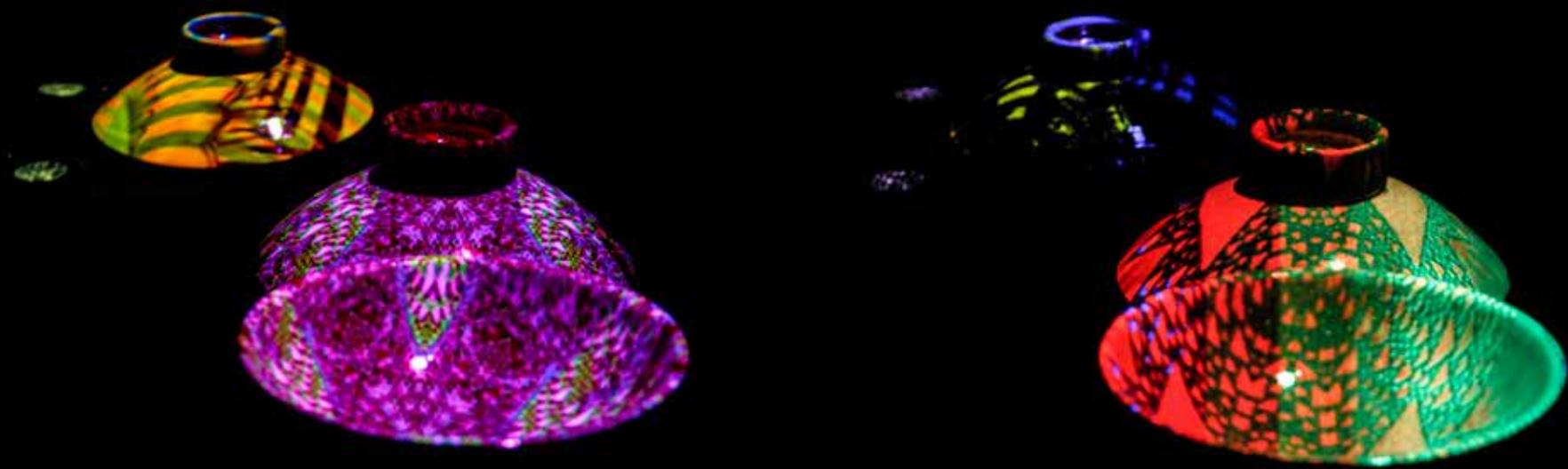
This piece seeks to recreate the sort of energetic resonance I feel when working in the field. Through this experience, visitors impact the ecosystem of the gallery space in a similar way to how the ecologies of the wild world are impacted by the presence and activities of humans visiting there.

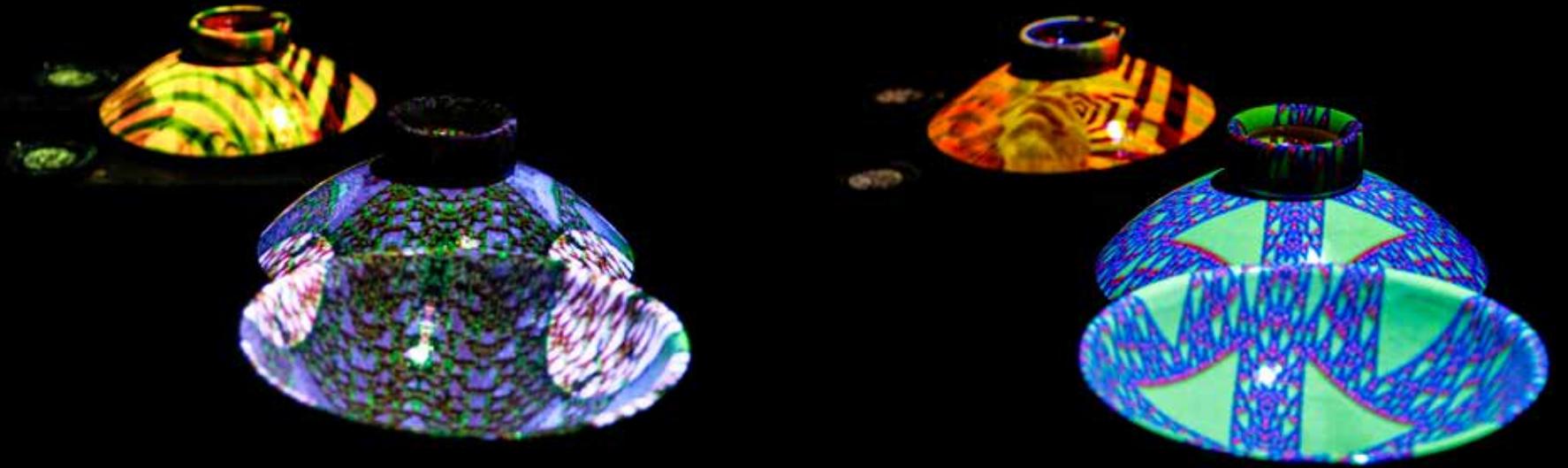


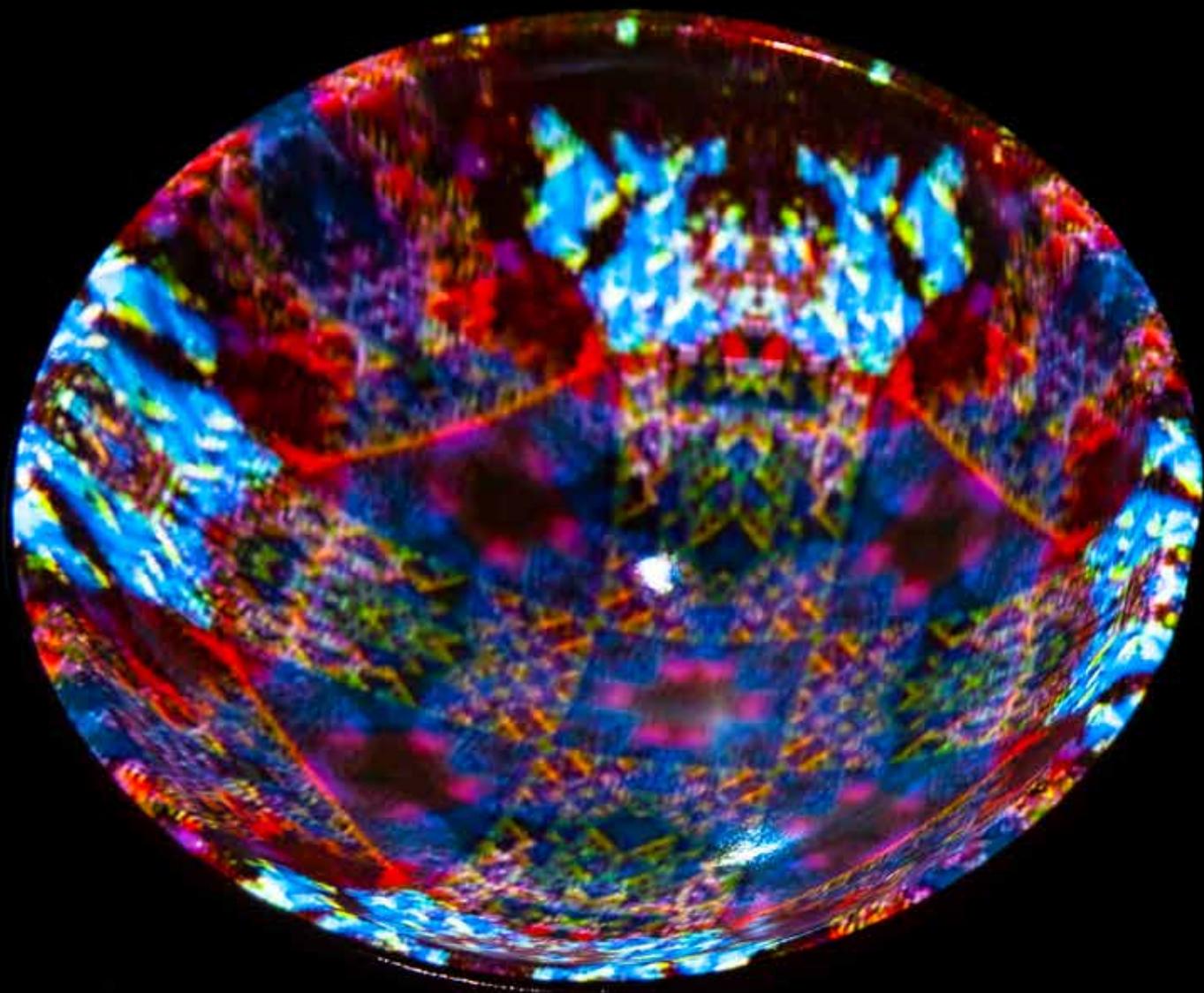
Pages 57-59 and 62: Installation view of real-time video synthesis projected on/in-to the bowls of *Re-Winging*  
Pages 60-61 and 63: Bowls of *Re-Winging* (front, in image) and *Peregrine Offering* (back, in image)













# Bowl for Bubba Ayoub (RGB Laser Studies)

This is another live and in real-time interactive sculpture, which combines an array of visual pattern-generators through multiple self-influencing feedback paths within a system for the transmission, reflection, and capture of red, green, and blue light. The system starts with a synthesizer that moves the lens of a voltage-controlled RGB laser beaming into the concavity of a deep-black glazed earthenware bowl.

A video camera focused on the bowl captures reflections on the glazed surface and the resultant video footage of the bowl is fed back into the synthesizer to further influence its movements. The video is then composited and keyed with a photograph taken during an earlier studio ceremony for a Barred Owl and red bowl. The photograph is processed through and animated with OpenGL GLSL code running on a module in my synth. This module also receives feedback signals from the video and laser interactions that are cycling through the system. The feedback actively reshapes the resultant shape of the image of owl and bowl—stretching, pulling, and contorting it in real time, through continually changing energies in the system.

The resulting video is transmitted to a single CRT viewing monitor of the type used in *Barred Owl (Spiral Pyramid Form)*. The CRT screen shows a processing that is decidedly more hybridly digital than the more purist take on traditional

analogue synthesis and processing described earlier.

This hybridity is further complicated through destabilizing the video's frame synchronization with the deliberate introduction of modules geared towards glitchier results. The unpredictable nature of sync-shredding, by feeding unexpected and “out-of-bounds” signals into the system's synchronization stream, is met with additional unexpected phenomena unleashed through the influence of the system's multiple feedback loops which generate and shape the very signals which destabilize the sync itself.

The laser, as reflected in the bowl, reveals energies contained within a vessel; a container holding light and darkness. This play of light and dark as captured by the camera, processed through the synth, and shown on the CRT crackles with hypnagogic feedback loops like the currents of energy at play in and around us. The energetic responses and movements in my opening performance piece explored similar ideas by delineating spaces for reflection and movement through lights and darks. This piece was designed as a spatial-dynamic system for the more energetic types of entities and phenomena embodying more active and vigorous qualities. This likely feels different than the pieces on the previous pages, and stands in stark contrast to the photo-realistic precision of the prints we will explore in the next section.



Installation of *Bowl for Bubba Ayoub*

Page 67: Stills from Structure OpenGL GLSL module monitor screen  
Pages 68-69: Stills from CRT monitor

IMG1

EFX1

OUT



CLR < PREV ||NEXT > LIST

IMG1

EFX1

OUT



CLR < PREV ||NEXT > LIST

IMG1

EFX1

OUT



CLR < PREV ||NEXT > LIST

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OUT



CLR < PREV ||NEXT > LIST





Pages 71-73: Installation of laser projected into black ceramic bowl on coiled cable  
Pages 74-75: Stills from final output monitor with all feedback paths composited













# Prints

# So Below, As Above

These prints offer detailed views that are larger and in much sharper focus than we could ever perceive with our own biological vision. This direction into a kind of hyper-realism was possible through studying a digital processing technique that I call “The Scheer Moth Process” (thank you, Joseph!) where multiple photos, each with unique focus points, are layered and stitched together to create a composite image that is more clearly in-focus than would be possible to capture in a single exposure... or to even see with the naked human eye.

The highly detailed views of the birds shown in these prints can only be captured with a very still bird. These birds are ultimately stilled in death. Their collection and preservation allows for closer examinations of their biological components.

In the earlier video material, I sought to bring back life, movement, and energies that I felt were missing. With these prints I seize a rare opportunity to look very closely within a meditative and still space.

Photography was a big part of my undergraduate experience, and I have not engaged in copy-stand photography for at least 30 years—and certainly never with such a high-quality lens and digital camera. These explorations presented a welcome opportunity to return to a photographic process,

but enhanced with much more advanced digital technology for both creative capturing and post-processing.

These prints appear very “real” and “natural”—presented raw and seemingly unaltered by technology. They don’t look particularly processed, especially when compared to the other more “synthetic” pieces in this show. But the secret is that it is only through high-tech cameras and highly stylized post-processing of the photos that the viewer is able to see the material so clearly and so magnified. Many of these images are printed with physical dimensions which measure many times larger than the actual birds themselves. They are literally larger and clearer than “real life.” As such, these images may feel like some sort of reward—a precise realism gained after catching only glimpses of recognizable material throughout the abstractions of earlier pieces in the show. Actually, these images are perhaps even more abstract than anything else seen in the exhibition. They are presented with more precision and deliberate structuring to appear to be more like things we might already be familiar with from our experiences in consensual reality.

The level of abstraction brought about by a precise ordering and arrangement moving towards hyper-realism may become even more obvious as additional objects are added to the photos.

The bowls themselves, made with a variety of shapes, colors, lines, and volumes, offer significant compositional possibilities for symbolic arrangements. As vessels, they can also hold different elemental items (palo santo, sage, a speaker cone, candles, liquids, and a Peregrine Falcon wing) pertaining to their ritualized usage.

*So Below (Ishkodic Offerings Red & Yellow and Black & White Mirrored)* documents a significant portion of my creative research and practice, which has been helped and shaped by many generous teachers and collaborators.

My earliest thoughts on alternative screens began with embodied research into the history of expanded cinema. Art historian and professor Laura McGough encouraged me along this path and I enthusiastically explored possibilities. This research led to me learning to blow glass with Karen Donnellan and mirroring my primitive forms. An entire body of earlier vessels with projections were made and exhibited, but my limited abilities in blowing glass only generated exceptionally thin forms that are very fragile. During my process of blowing, cooling, and mirroring the forms, catastrophic breakage occurred in well over seventy percent of what I generated. So I collaborated to design and build with someone greatly skilled in working glass. The beautiful cylindrical vessel (with strong and well-made walls) pictured in the center of the image was blown and

worked by sculptor Erin Hoffman, a fellow MFA graduate at Alfred University.

I mirrored the cylinder with the help and teaching of Garrett McGowan and Ann Rossington, who graciously offered to not only train me in the process of mirroring, but provided me with the necessary materials (including actual silver!) all while making me feel welcome and supported in their chemistry lab.

After working with a variety of glass vessels of varying shapes and sizes that I mirrored on the inside surface, I grew frustrated in my attempts to use the glass forms as screens to project video in and on. I found myself wanting wider, more open forms to explore. Erin and I intended to continue research in this direction, but ran out of time. I hope to have an opportunity to work with her again in the near future and pick up where we left off.

The speaker in the image on page 107 references my life-long pursuits in sound exploration. My mother, Carolyn, raised me as an active listener and performer and I'm thankful for her patient listening and interest over the years. Alfred University itself presented a dream opportunity to learn from Andrew Deutsch, who I have eagerly listened to in recorded form since I discovered his vast array of output in the 1990s. Andrew always listened closely and challenged

me to explore a staggering assortment of sounds and methods for their creation and presentation. He perhaps influenced me most in my growing understanding of sound as object, or sound objects, which can be clearly seen and heard in this body of work—and he gave me the speaker pictured.

I am grateful to my ornithology professor Frederick Beaudry and the Alfred University ecology program for the use of their collection of avian museum skins. The opportunity to study with Fred, and to process the Peregrine with him really opened the floodgates of this project. The historical foundation of this bird skin collection was gathered and prepared by Mark Klingensmith's father.

I love the connections that this research makes between Alfred the institution, its mission, and the people who make it happen.

For all prints, dimensions variable but generally 24 x 30-42 inches and printed on Xuan Paper

Page 82: *So Below (Scan)*

Page 83: *As Above (Scan)*

Page 84: *So Below*

Page 85: *As Above*









Page 87: *So Below (Lesser/Median Coverts)*  
Page 88: *So Below (Leading/Trailing)*  
Page 89: *So Below (Axillars/Humerus)*  
Page 90: *So Below (Primaries)*  
Page 91: *As Above (Primaries)*  
Page 92: *As Above (Bend/Humerus)*  
Page 93: *As Above (Coverts/Tertials)*















Page 95: *Eastern Screech Owl (Front/Sclerotic Rings)*  
Page 96: *Eastern Screech Owls (Front/Down / Back/Up)*  
Page 97: *Eastern Screech Owls (Front/Down / Front/Up)*  
Page 98: *Barred Owl (Front)*  
Page 99: *Barred Owl (Back)*  
Page 100: *Sharp-Shinned Hawk (Front/Sclerotic Rings)*  
Page 101: *Sharp-Shinned Hawk (Grasp)*

Page 102: In studio, side-by-side comparison of museum skin and print



Alfred Univ. Dept. Biology  
Screech Owl, Eastern  
*Otus asio* ad. ♀  
coll. C. Klingensmith  
#537





Alfred N.S. Wetmore, Dept. of Ornithology  
Screech Owl, Eastern  
Otus 4542  
Nov 27 1937

Alfred N.S. Wetmore, Dept. of Ornithology  
Screech Owl, Eastern  
Otus 4542  
Nov 27 1937



Wgt 275g. length 45cm  
wing up to 40cm  
wing down 30cm  
tail 21cm  
upper mandible 12cm.



Wgt 27g. Length 45cm  
wing span 45cm  
wing chord 45cm  
Tail 21cm  
Upper mandible 13cm.



Alfred Univ. Dept. Biology  
Sharp-shinned Hawk ♂  
Accipiter striatus ♂  
#517 Coll. C. Klingensmith





Page 104: *Ishkodic Vessels (Red & Yellow and Black & White Horizontal)*  
Page 105: *Ishkodic Offerings (Red & Yellow and Black & White Horizontal)*  
Page 106: *So Below (Ishkodic Vessels Red & Yellow and Black & White Mirrored)*  
Page 107: *So Below (Ishkodic Offerings Red & Yellow and Black & White Mirrored)*  
Page 108: *So Below (Ishkodic Vessels Red & Yellow Dyad)*  
Page 109: *So Below (Ishkodic Vessels Black & White Dyad)*  
Page 110: *As Above (Ishkodic Vessel Yellow)*  
Page 111: *As Above (Ishkodic Offering Red & Yellow Dyad)*  
Page 112: *Barred Owl (Red Rest)*  
Page 113: *Barred Owl (Red Diagonal)*  
Page 114: *Eastern Screech Owls (Black & White Feet First, Head Down)*  
Page 115: *Eastern Screech Owl (White Grasp)*  
Page 116: *Eastern Screech Owls (Yellow Lemniscate)*  
Page 117: *Ishkodic Vessels (Red & Yellow and Black & White Diagonal Cluster)*

































Left: Wheel-working a bowl with potter Chris Alveshere in his studio

Above: Copy-stand photography setup in my studio

Right: Bird skins stored in the archives of the Alfred University ecology program

# Conclusion

Because I work with technologies that are in a constant state of evolution and often manufactured with planned-obsolescence in mind, much of my artistic practice is concerned with the impact that consumption at such an accelerated pace has on our collective psycho-ecology. I also consider how continual exposure to energetic transmissions all around us—from both easily noticeable and less obvious entities—impacts our collective experience.

My artistic practice moves in and around the resonances and dissonances that arise when confronting questions about my own privilege, personal responsibility, and agency in the face of inequality and complex global issues. I puzzle over the ever-present cycles of living and dying, beginnings and endings, “advances” and “obsolescence,” and I embody it all within the specific challenges of trying to better navigate my own personal Now. Making sense of this particular ontology can be uncomfortable, and my impulse for response starts with this dis-ease and moves through me in intentional practices to process it.

I often don’t know how to respond to these psychological discomforts. They can be overwhelming. But I find that sitting with them, holding space for them, and really feeling them helps. In these pieces I am exploring my responses to these feelings and experiences through an intermingling

of old and new technologies—reflecting the wild world and the synthetic. This is an uneasy space cognitively—how do the commercial aspects of technologies I use impact the wild subjects shown within my work? Such things are not easily resolved for me.

Beyond my own considerations, these pieces can be viewed more simply as colorful and beautiful objects, eye-catching and interesting to explore, in much the same way that humans may have at least a surface regard for the wild world. But similar to the wilds, the enticing facade often conceals considerable tensions within the ecology.

In this exhibition, there is space to consider the rituals and practices we may carry to help process the tensions that are experienced through the frequent changes encountered while we’re living life. These changes can be negative and positive . . . sometimes both at the same time. Ideally, in developing a growing awareness of how we interact and impact our environments, we may better understand our own contributions to the co-creation of realities.



Test prints outside of Immersive Gallery



# **Creative Practice and Embodied Research 2018-2020**



# Chronological Record of Audio and Visual Output

# Chronological Record of Audio and Visual Output

In the two years I spent at Alfred University during my MFA program, I was continually exploring.

The majority of my creative output derives from my material studies in audio and video synthesis. Both forms of synthesis find output in their singular modes, but are most often combined into audiovisual hybrids where one form influences the other, provoking and responding to shifts and changes.

Similarly, drawings and writings often morph into prints and performances.

All output is considered combinatorially for possible confluences through additional processing, performativity, and presentation.

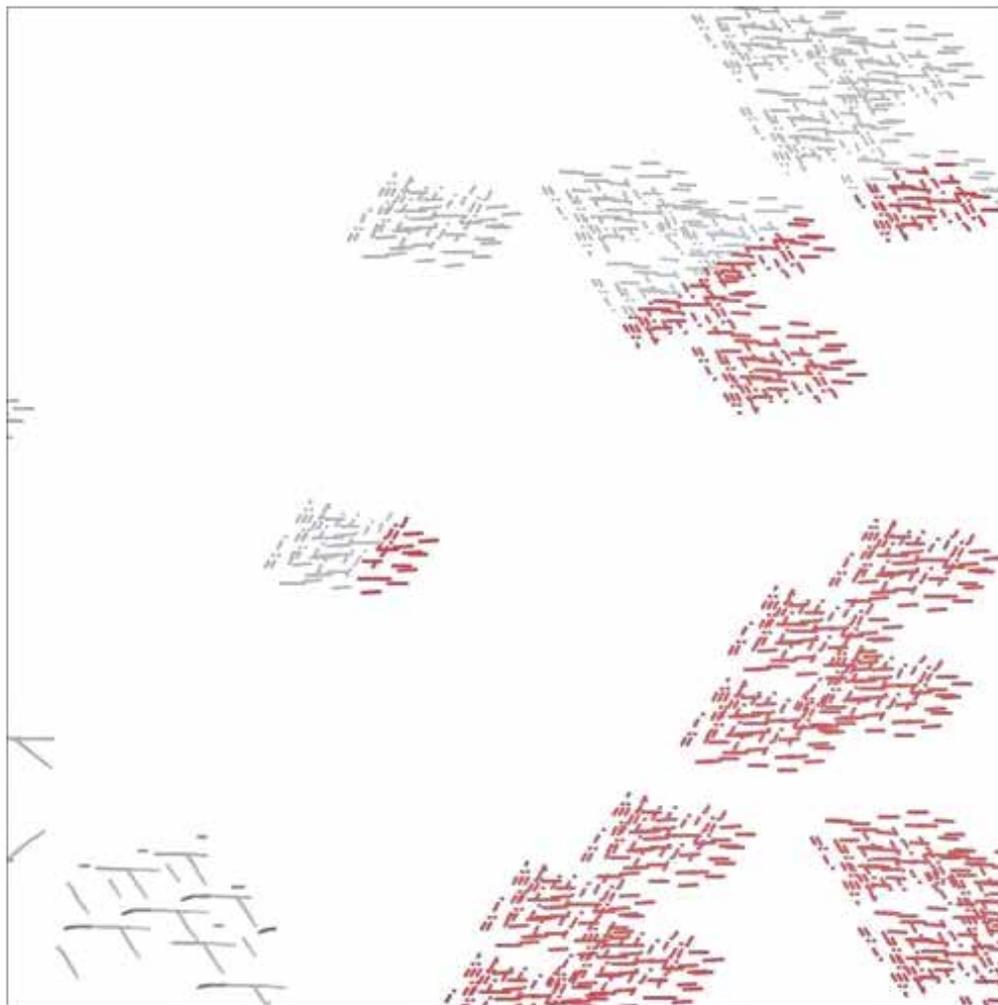
The following pages are a chronological catalogue of accumulated output between 2018 and 2020.



Artist talk during presentation of *Fragile Vessels*

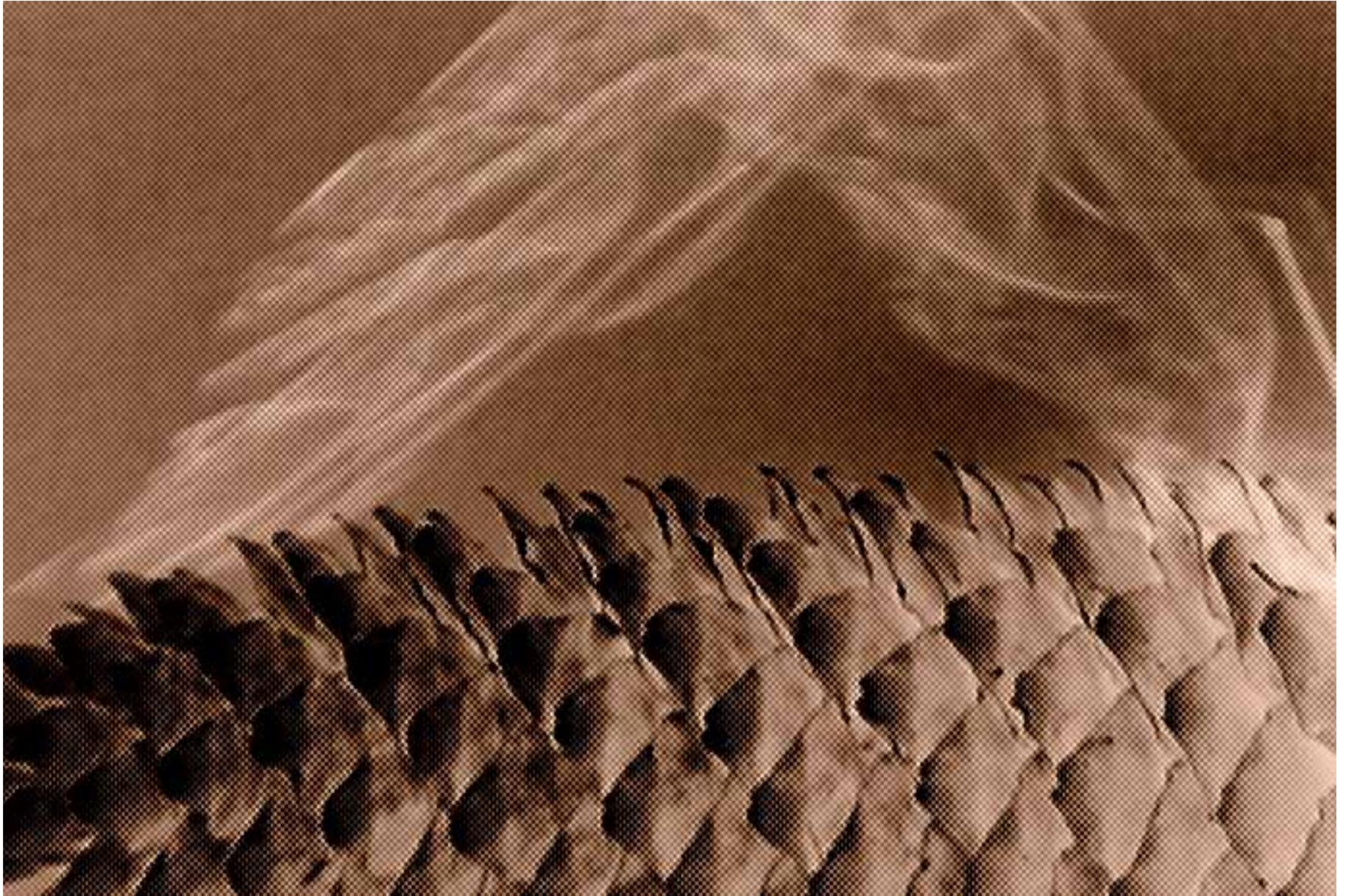
## Dawn Spear

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*The Key's the Thing*, 2018, single-channel video, 8:11 minutes





Installation view of *Evolving in the Presence of Fire*





*Train*, 2018, single-channel video, 2:44 minutes

Crane (disquiet0350)



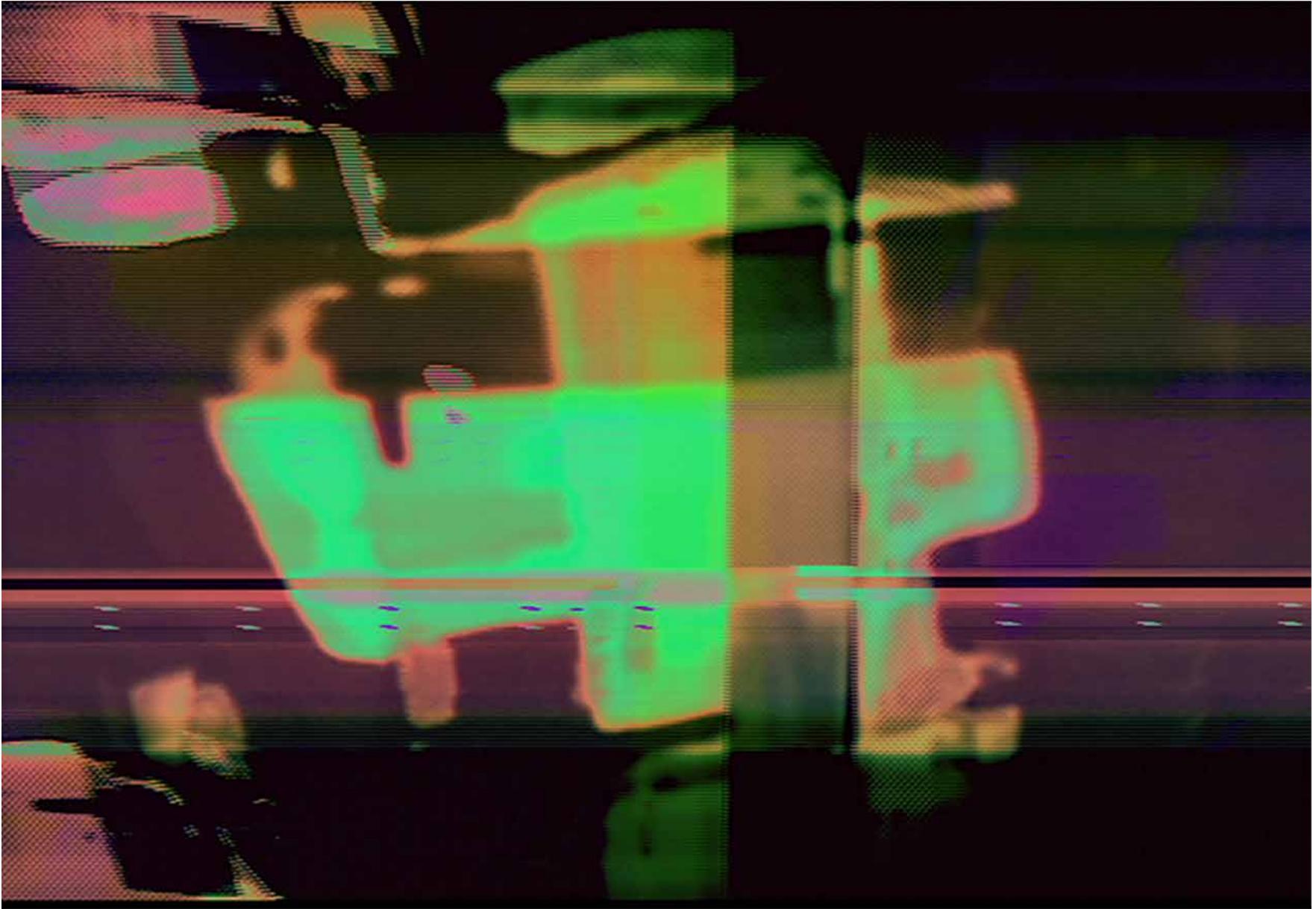


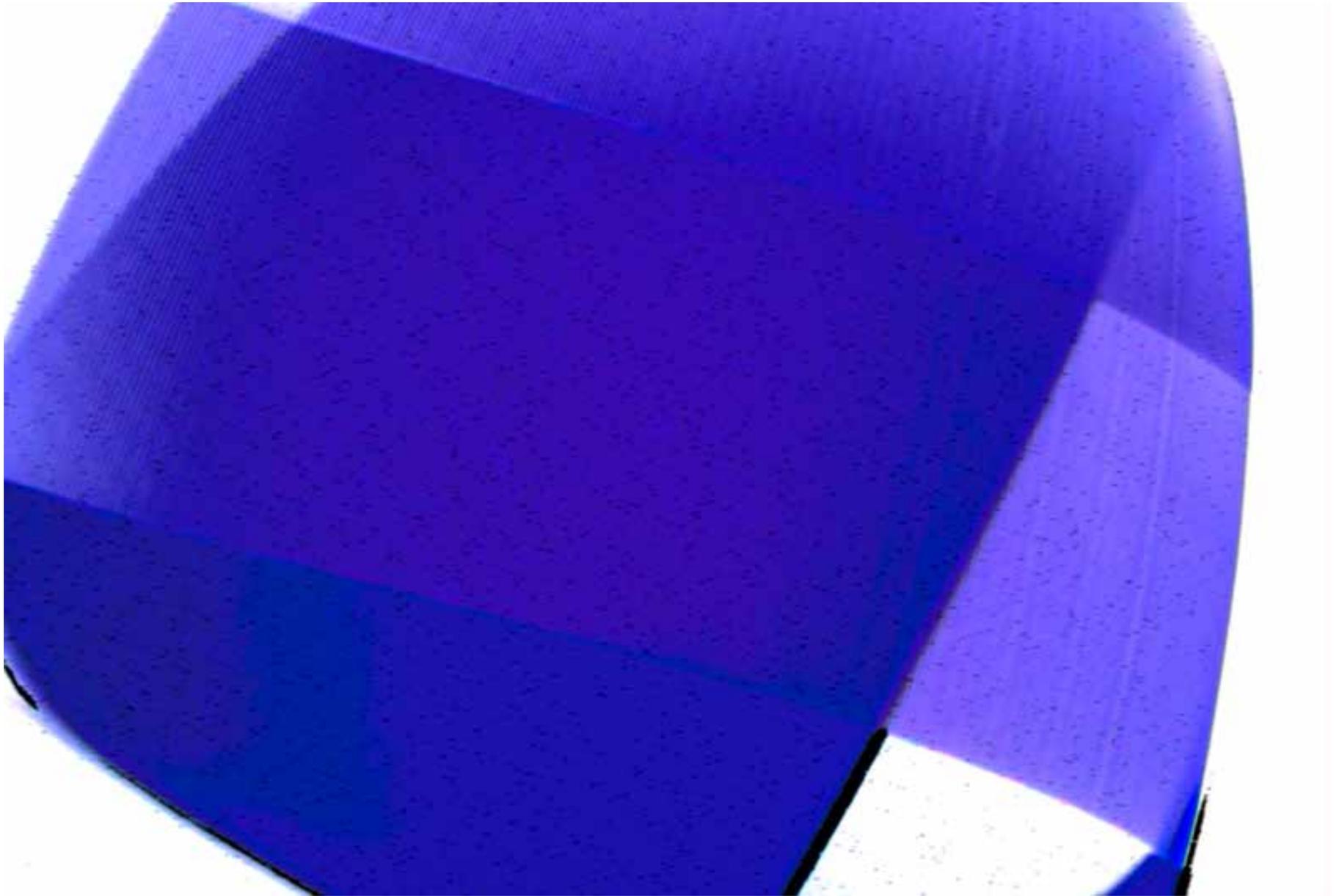
*Childhood Banister Spindle (Palmyric Mode)*, 2018, three-channel video, 2:57 minutes





*Green Harmonic Study for 10% Square Wave & 18dB Resonant Filter, 2018, woodcut print, 24 x 36 inches*





*Risky Wave*, 2018, print, 8.5 x 11 inches

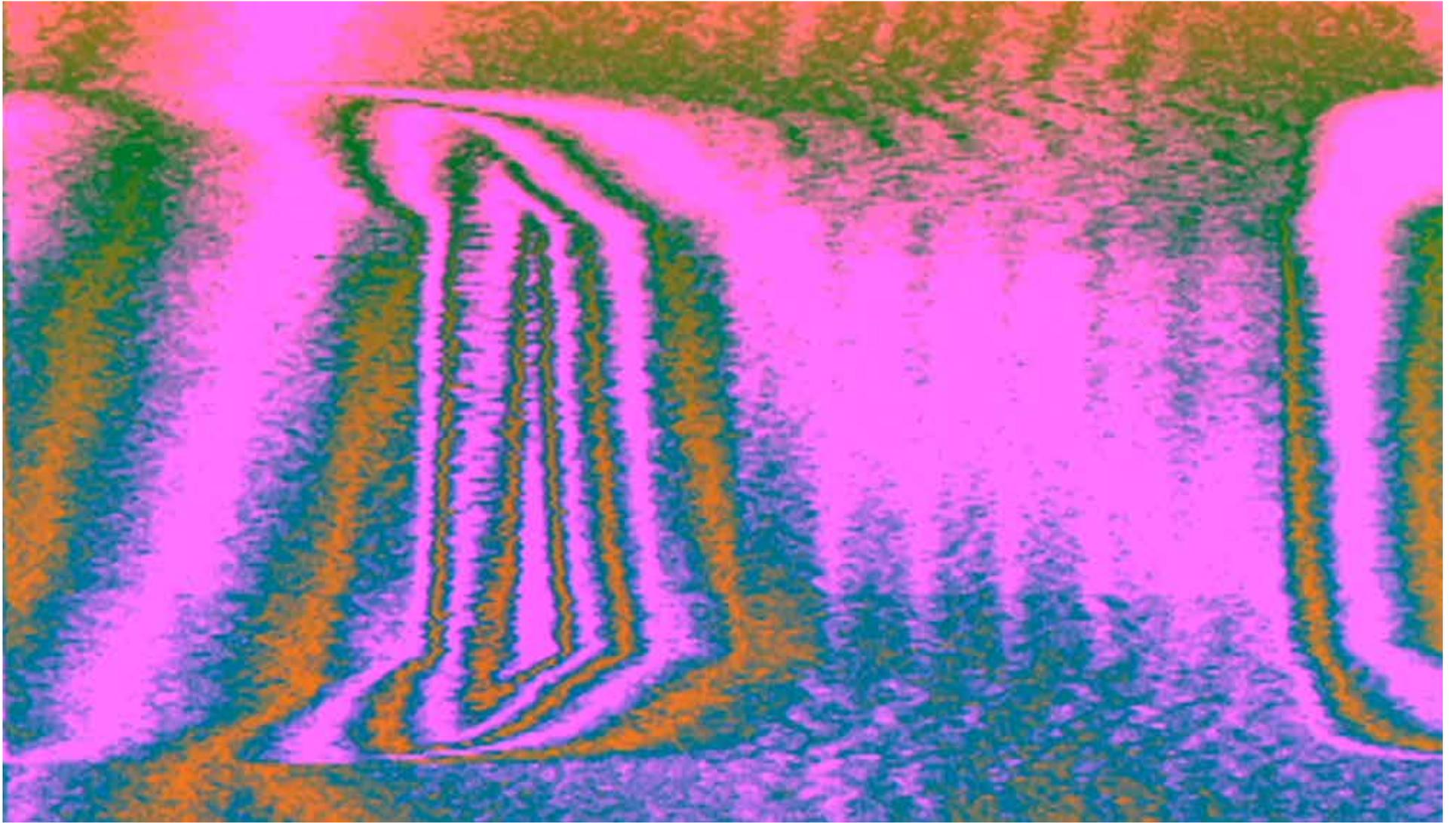


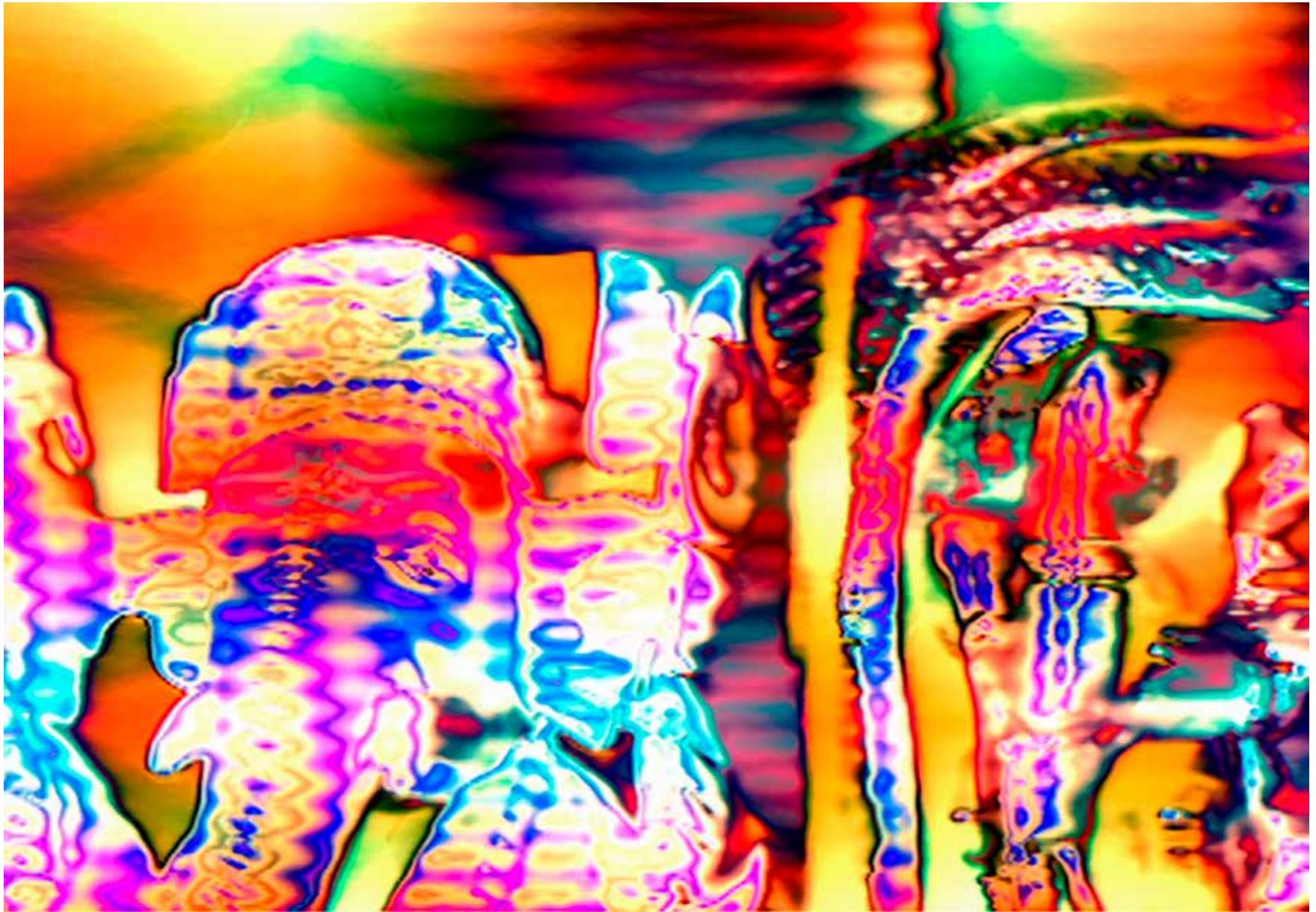






*Canopy (Kawsay)*, 2018, fabric print, 24 x 50 inches





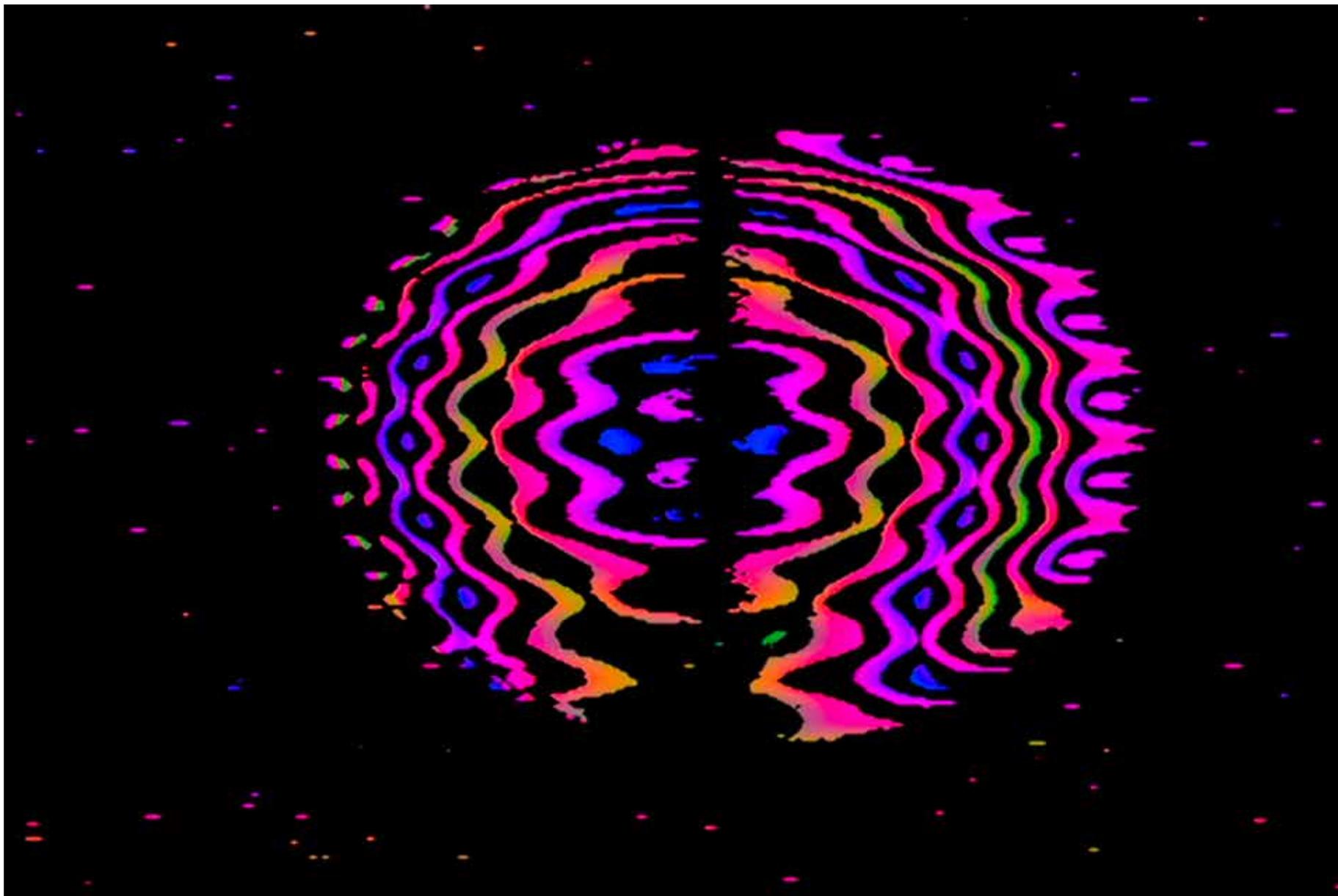
*No. 2880 Seraphic BobbleHeads (337is "Isaiah, Answer The Doorbell" Mix), 2018, print, 24 x 34 inches*



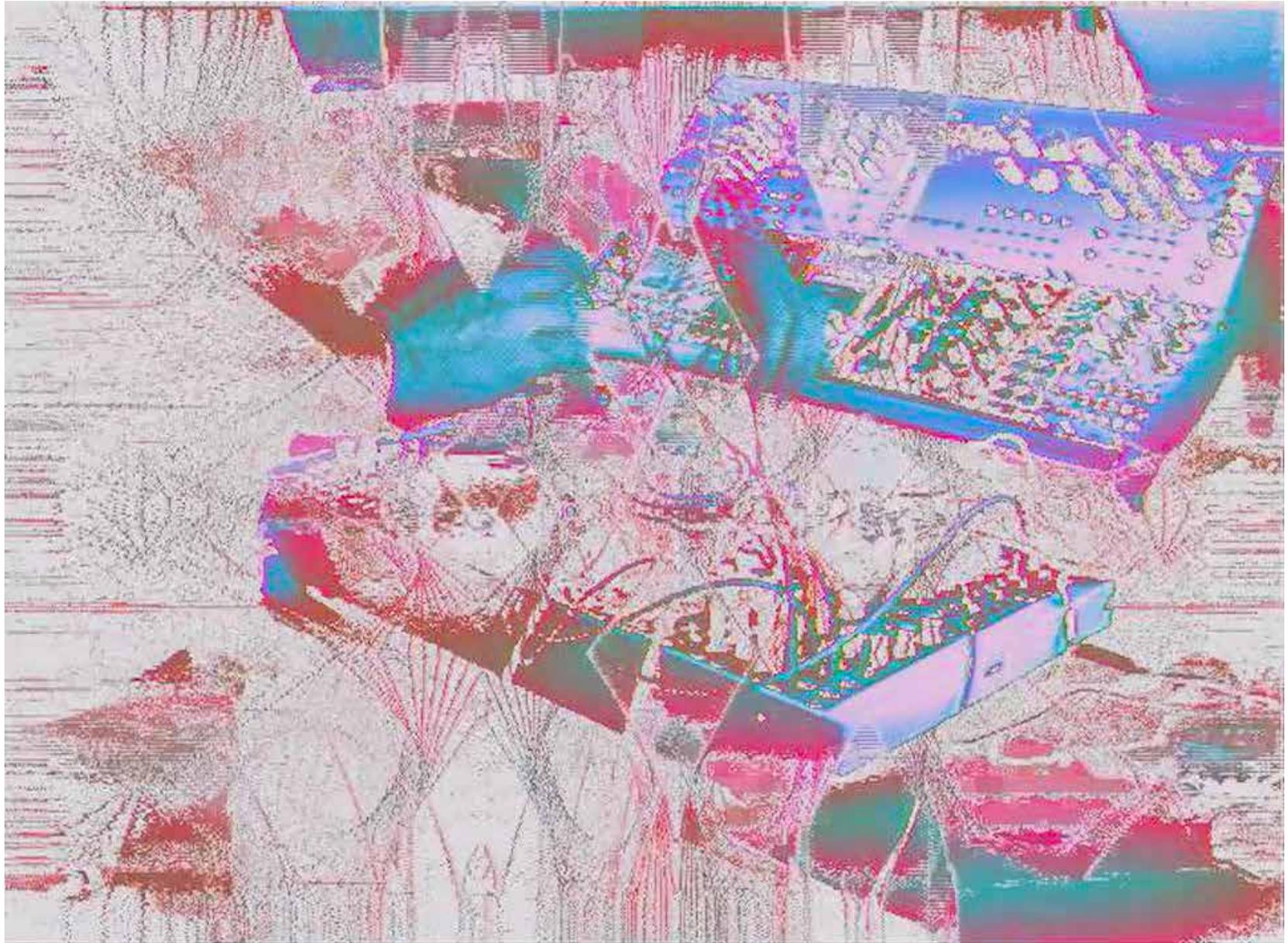


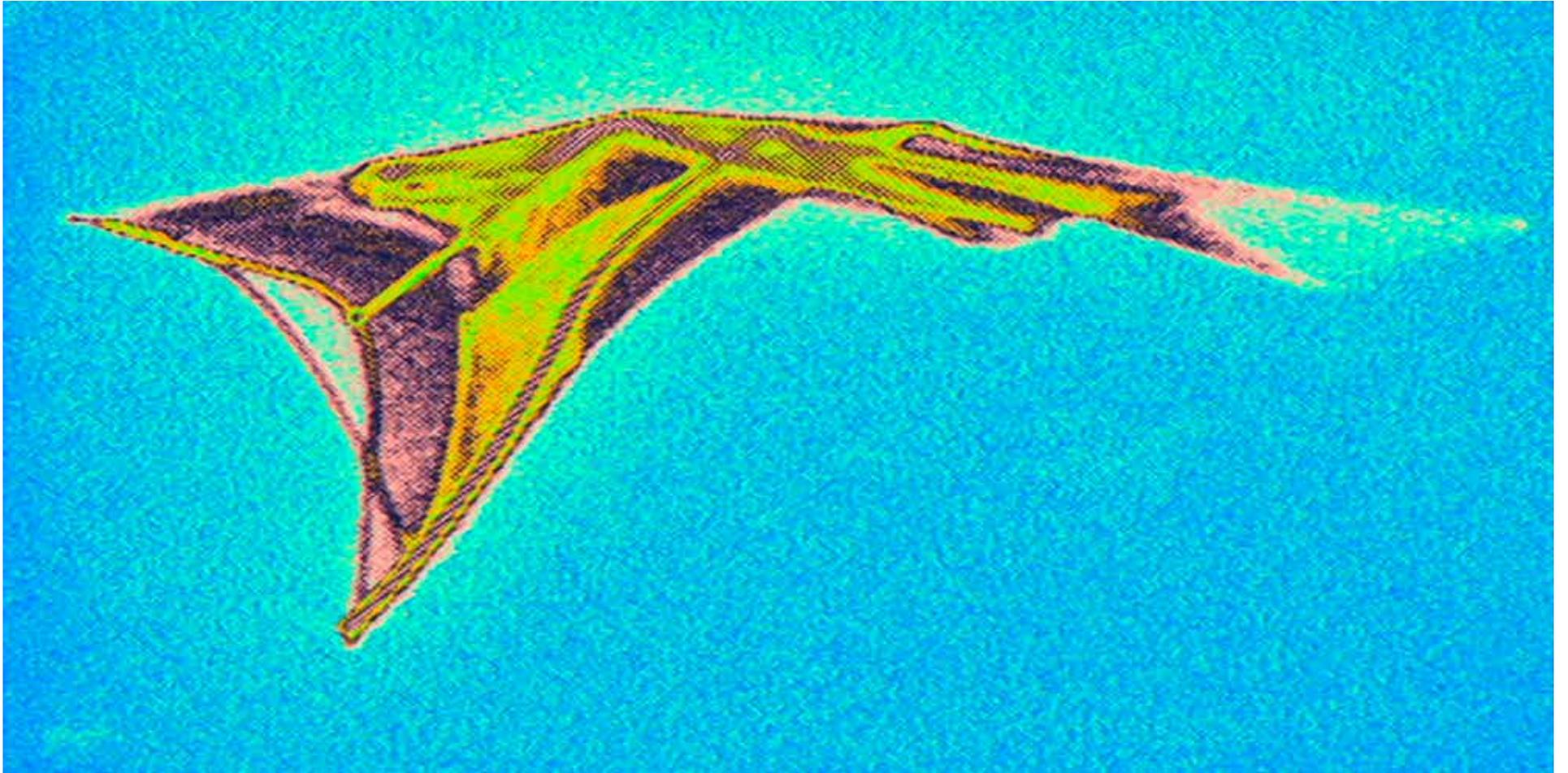
*Rhodes 73 Improvisation 2*, 2018, single-channel video, 3:10 minutes



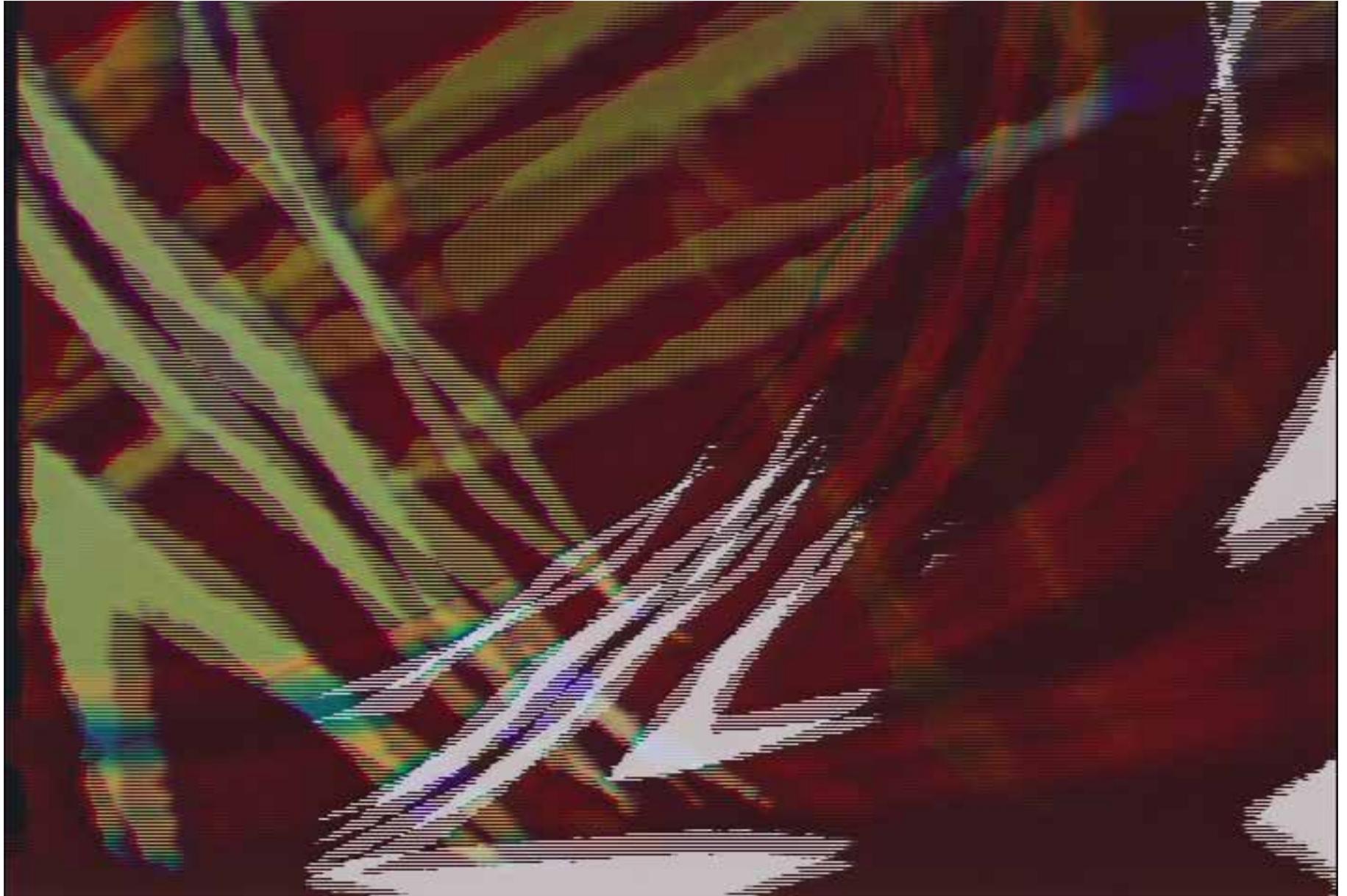


*Game On, Gamelan (337is Distributing Threes & Sevens to Boson Spin & Glenn Sogge)*, 2018, print, 24 x 34 inches



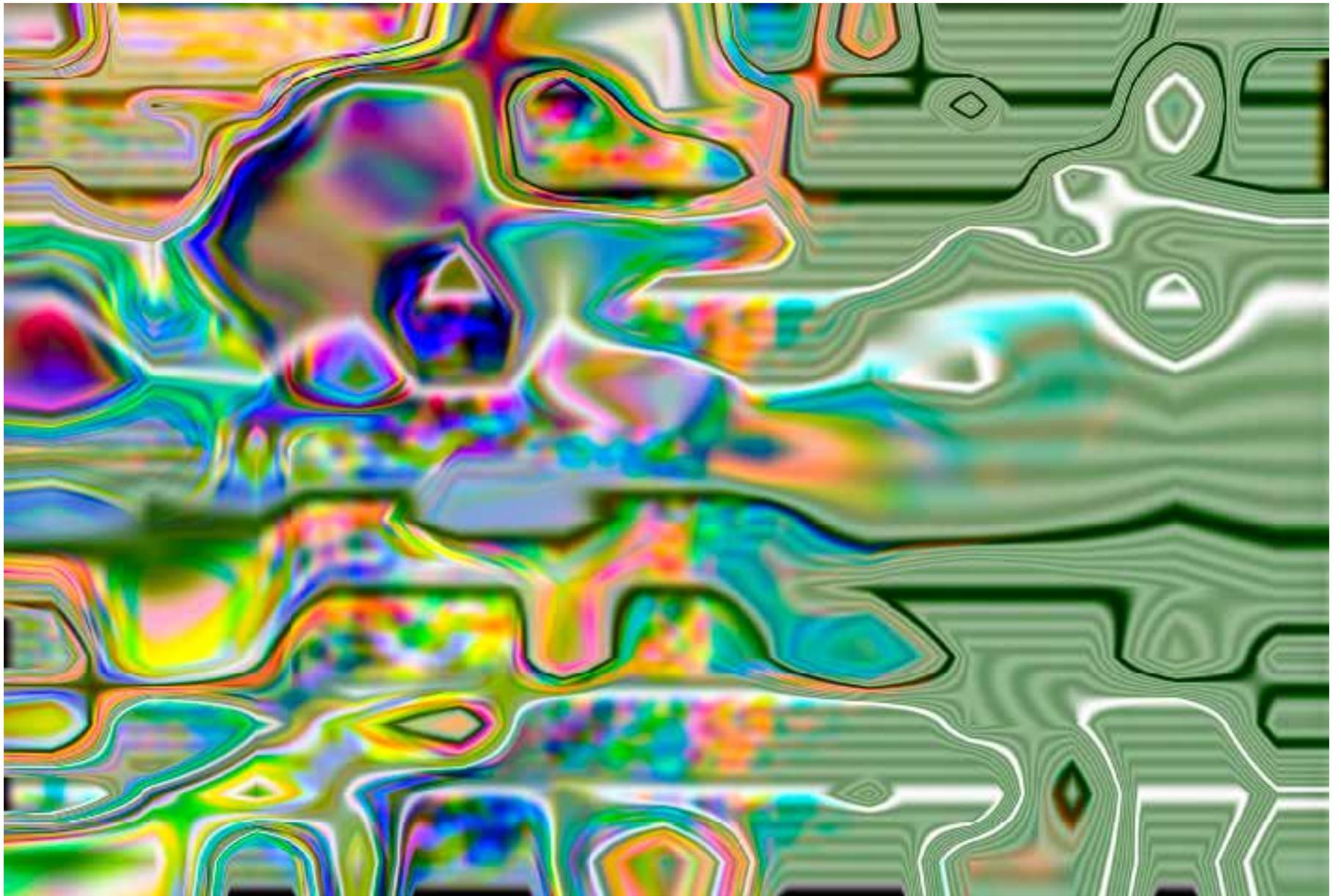


*Healing Pool*, 2018, print, 24 x 60 inches





*Blue Jay in Flight*, 2018, drawing, 11 x 17 inches





*Red-Robed Self-Portrait*, 2018, woodcut print, 24 x 36 inches





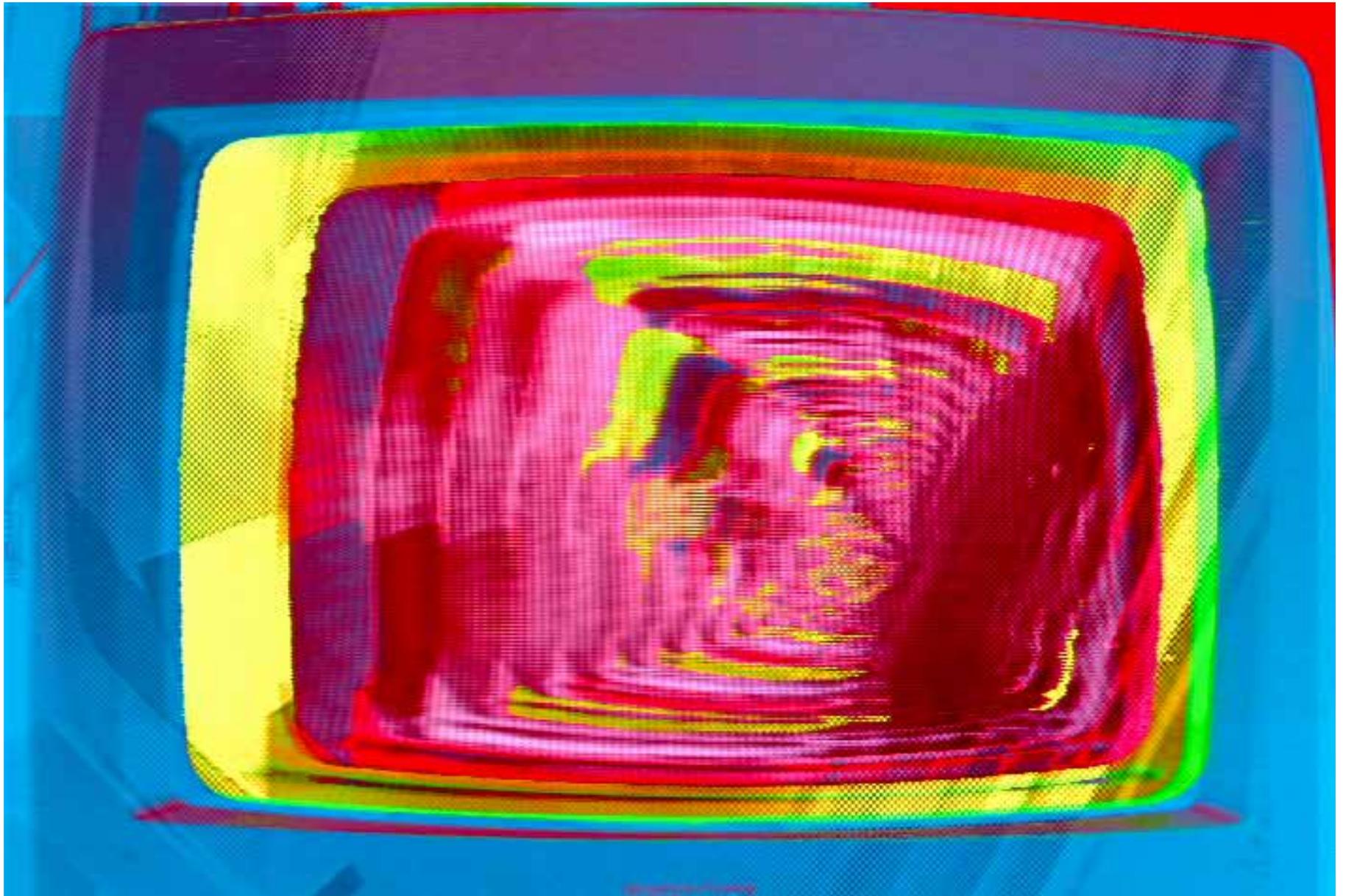
*Leaves*, 2018, photo polymer print, 24 x 36 inches





*Tree Roots*, 2018, photo polymer print, 24 x 36 inches





*They Say You*, 2018, single-channel video, 20:49 minutes

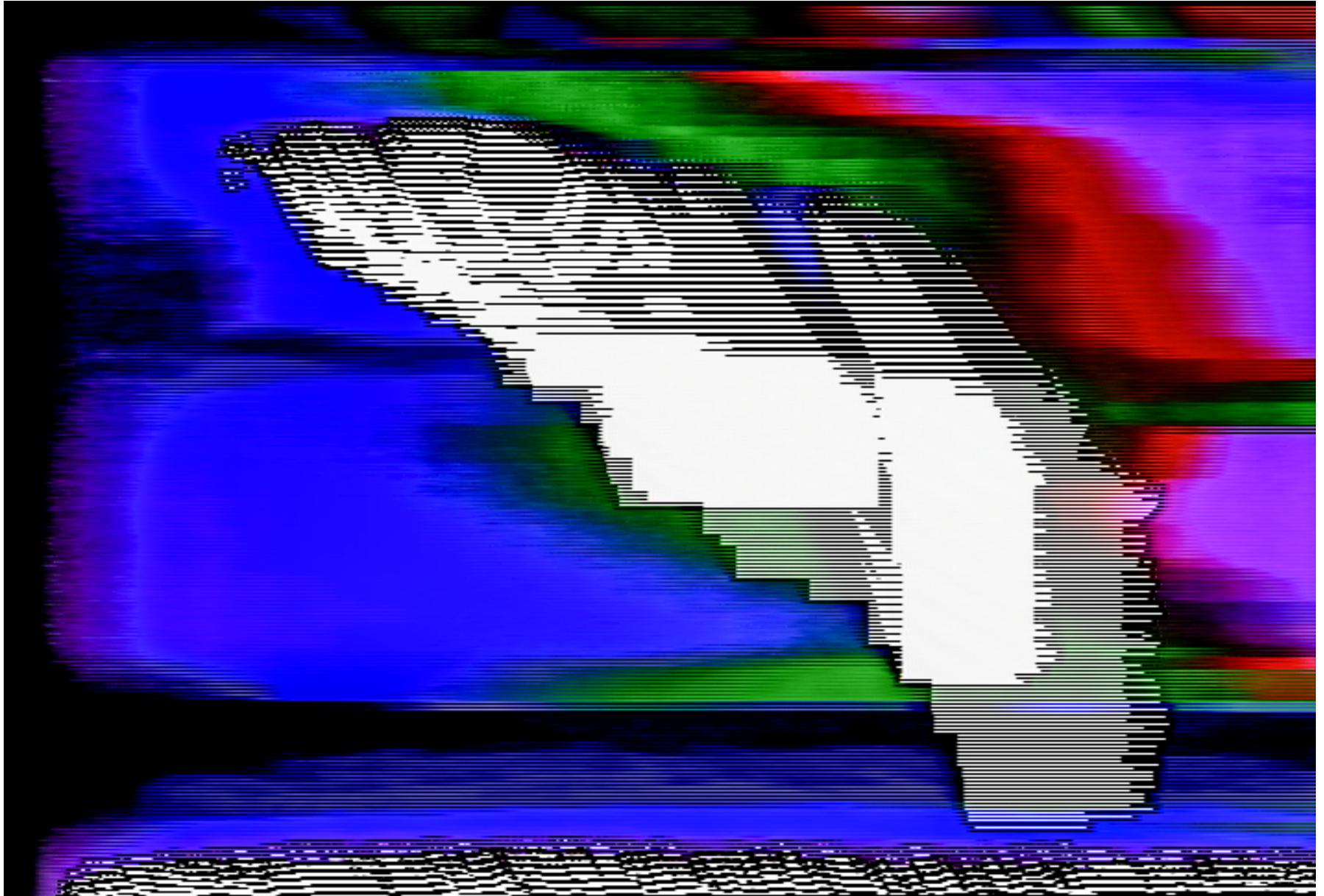




*Synth Self-Portrait*, 2018, single-channel video, 0:44 minutes







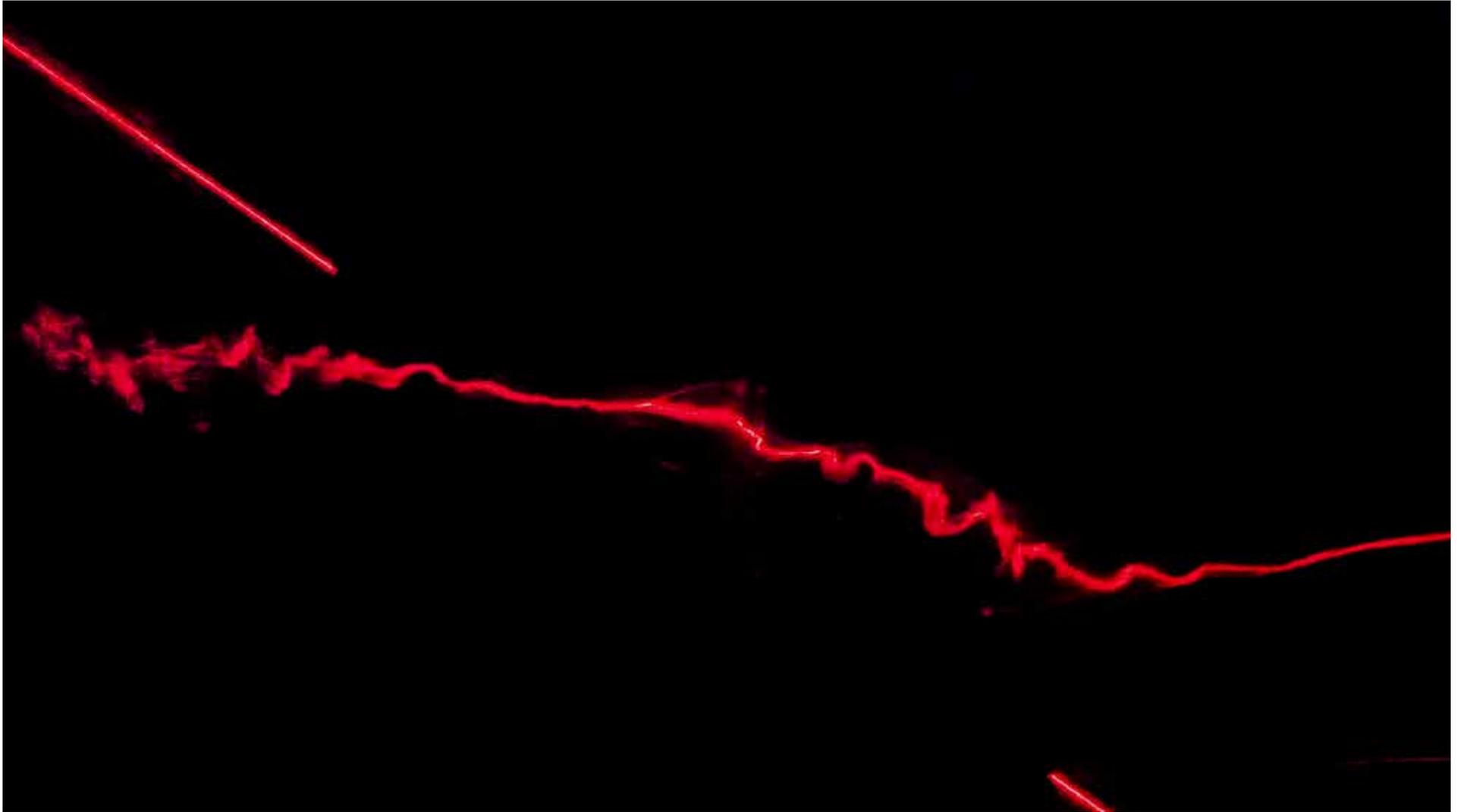


Installation view of *Triple Immersive COLOR*





*Scion Studies 2 Psilocybe cubensis Ecuador, 2019, stereo audio, 3:15 minutes*



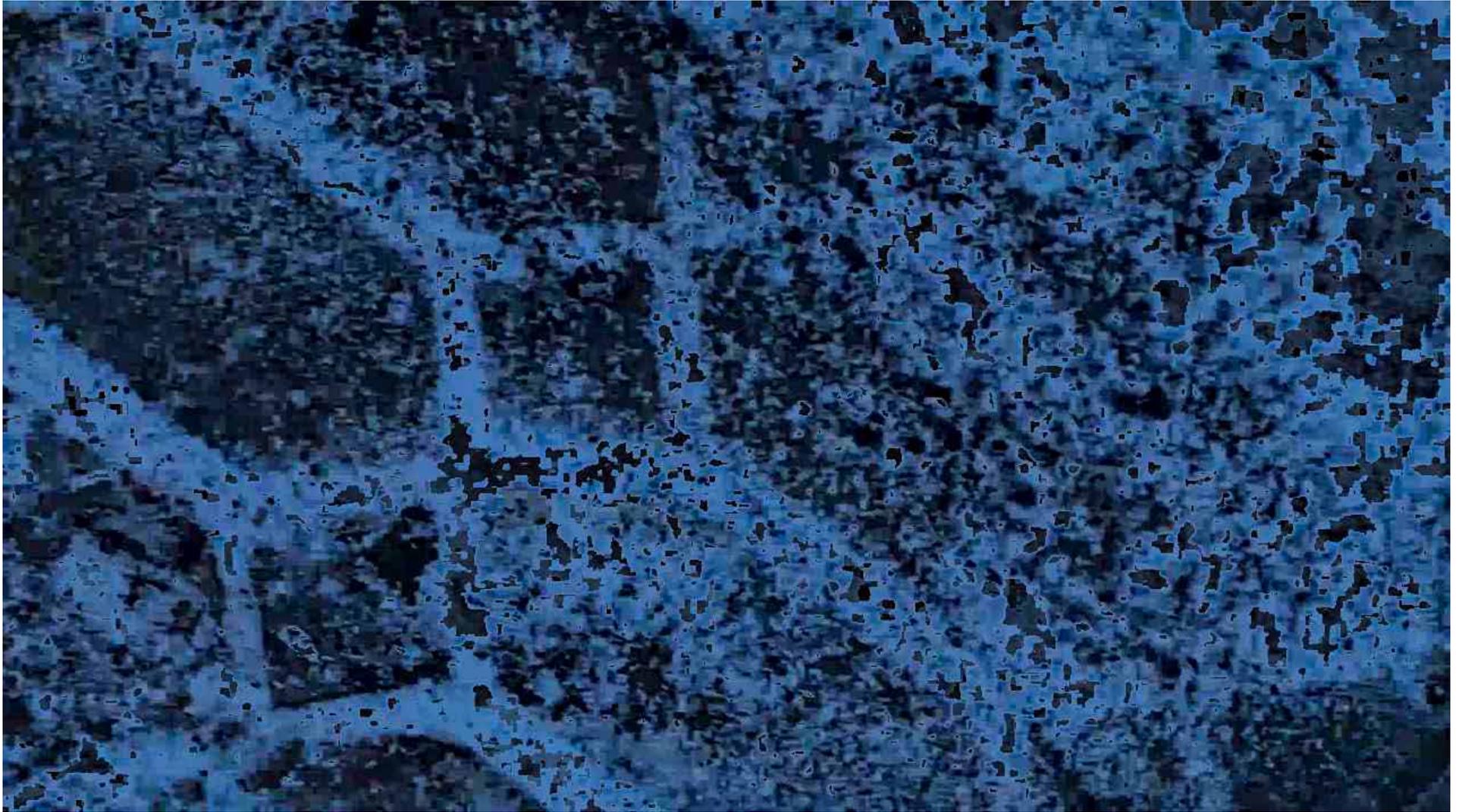


Screening of *THot Reds*, 2019, single-channel video, 1:49 minutes



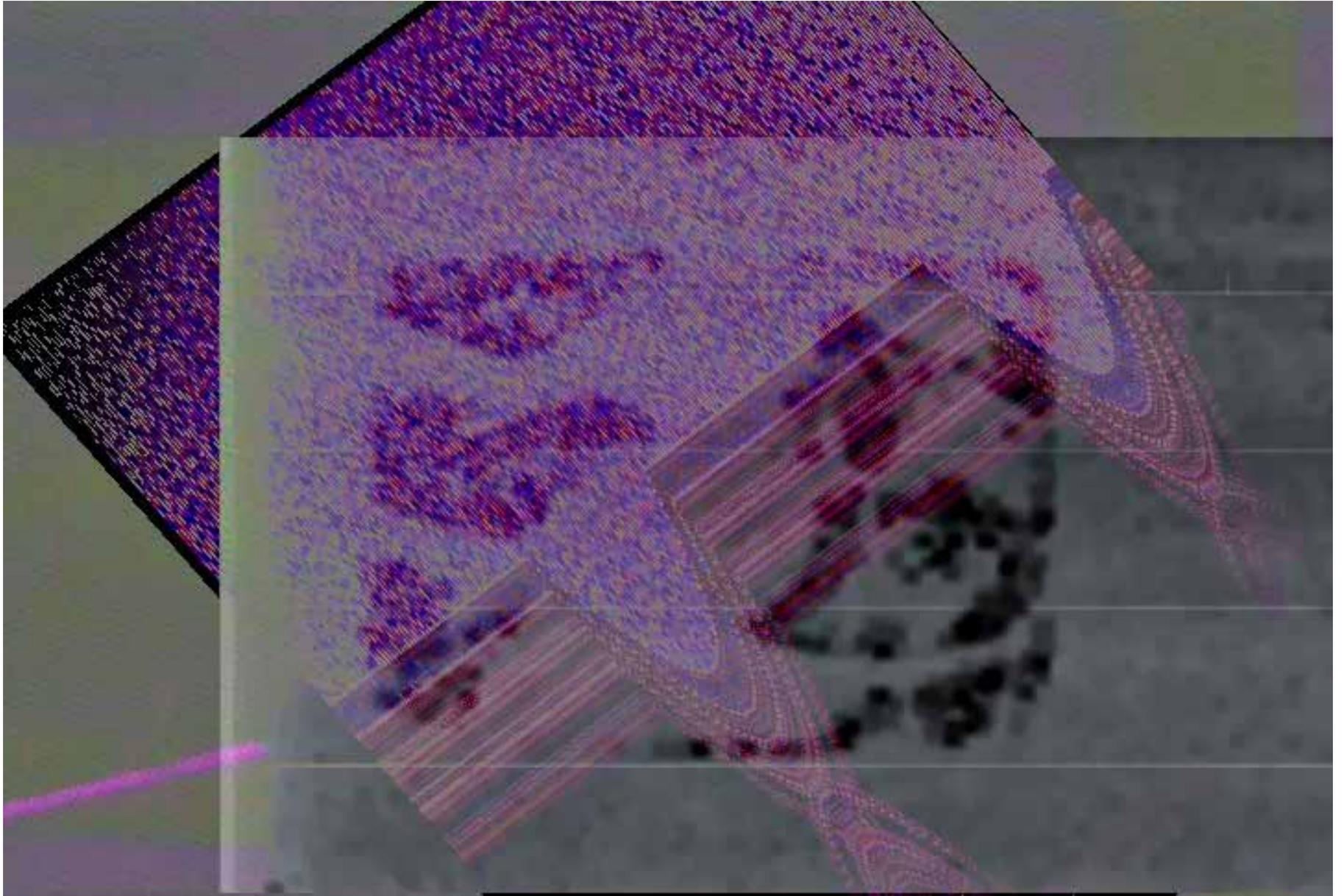


*Quad Staircase Rhodes*, 2019, single-channel video, 1:31 minutes



Sensitive Dueting (Honey, I Got Traps I Ain't Ev...







*Wound Maker (Be Wary of False Gauze!)*, 2019, sheet glass, one pound of salt, glue & binder clips, wood base: 19 x 6 inches, glass: 16 x 12 x 1 inches

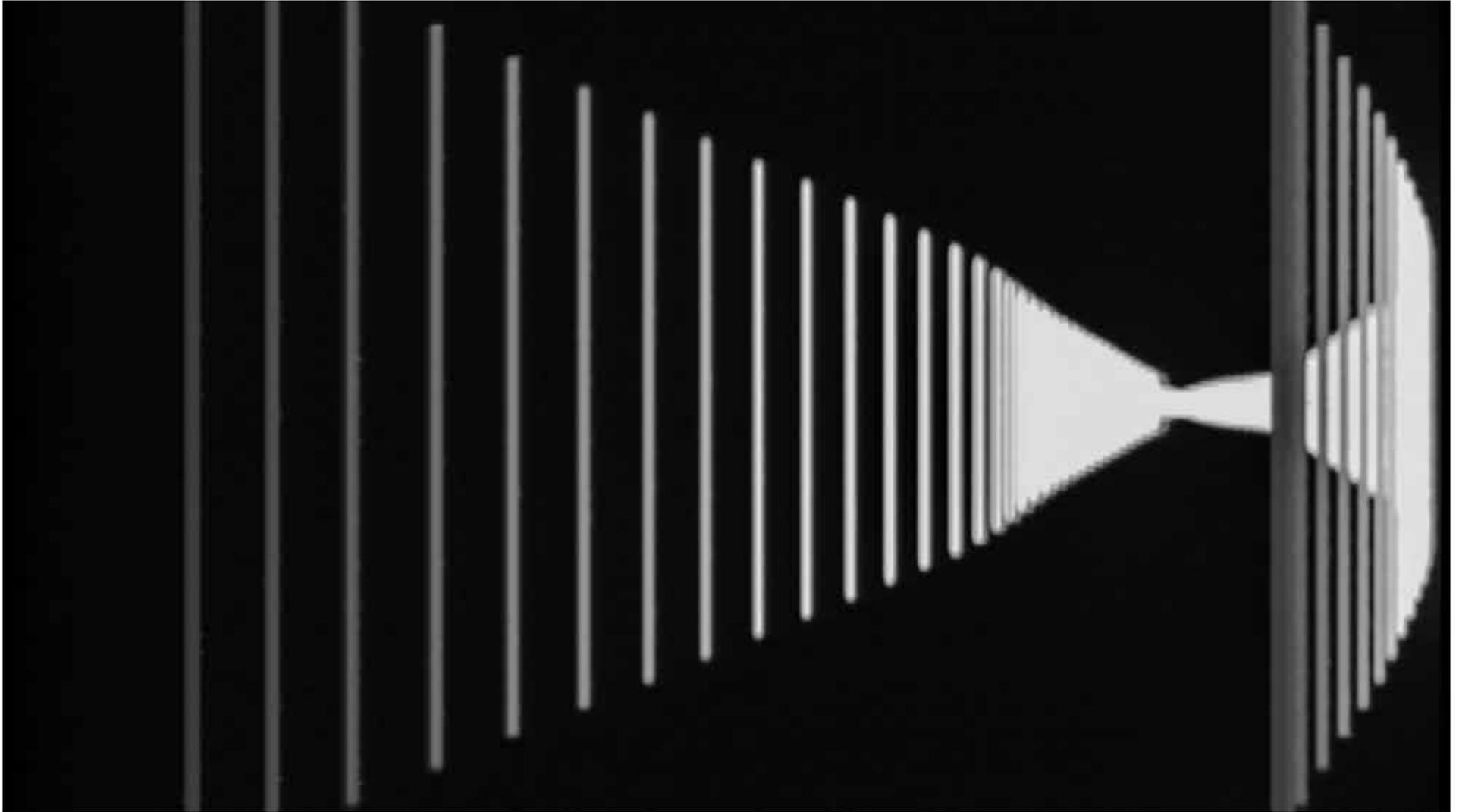


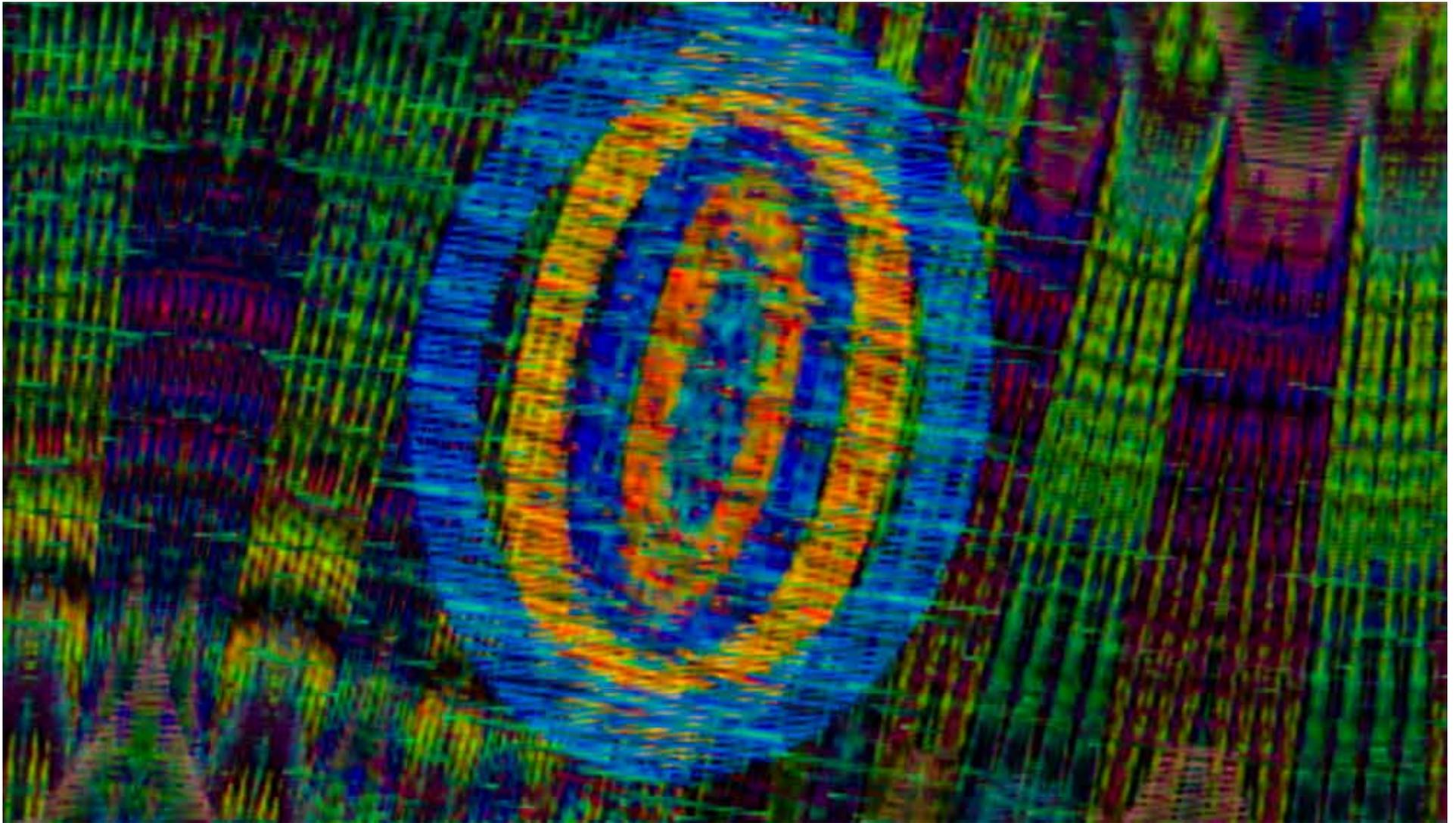


*Fragile Vessels*, 2019, video/sculpture/installation, size varies



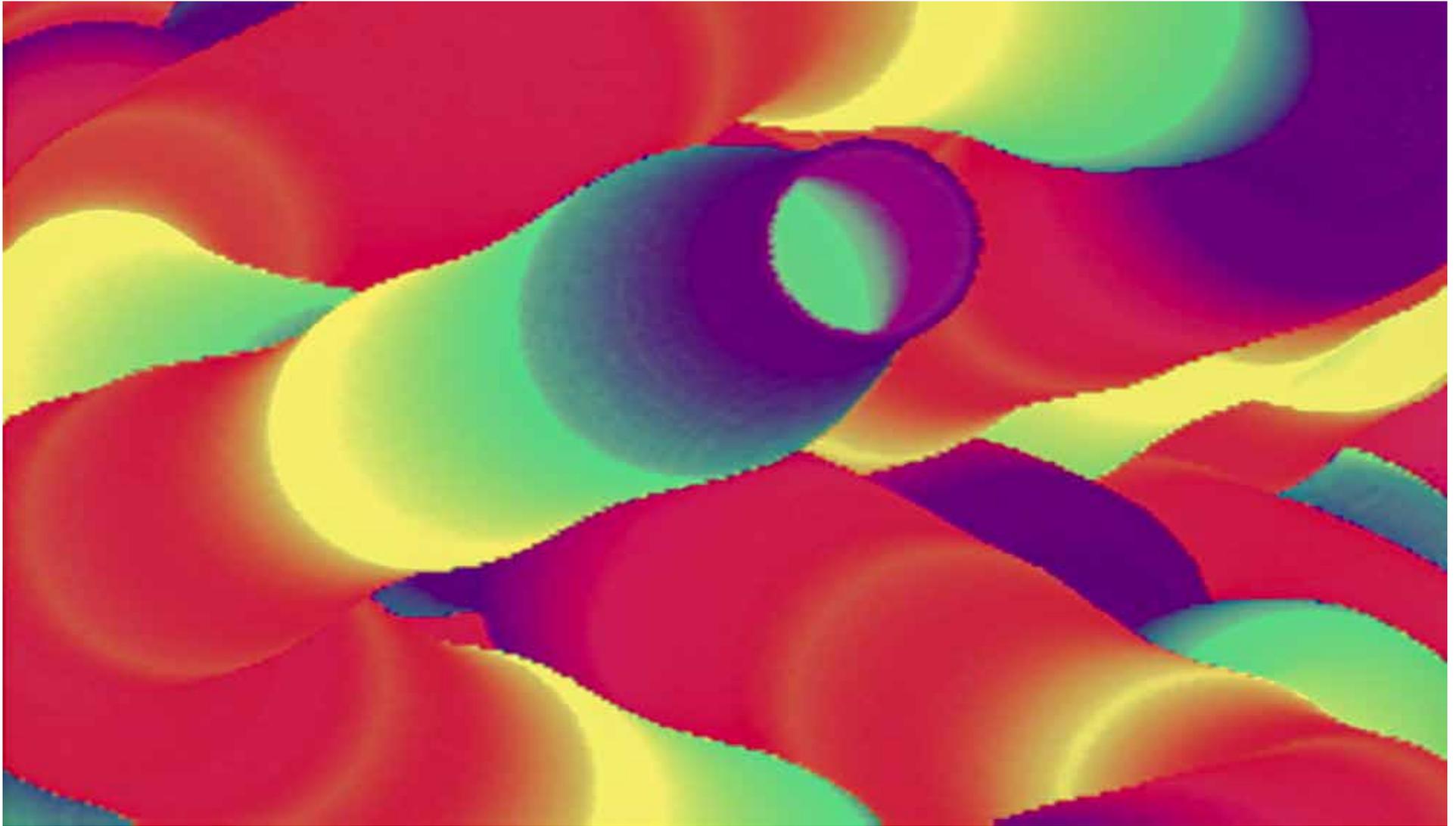




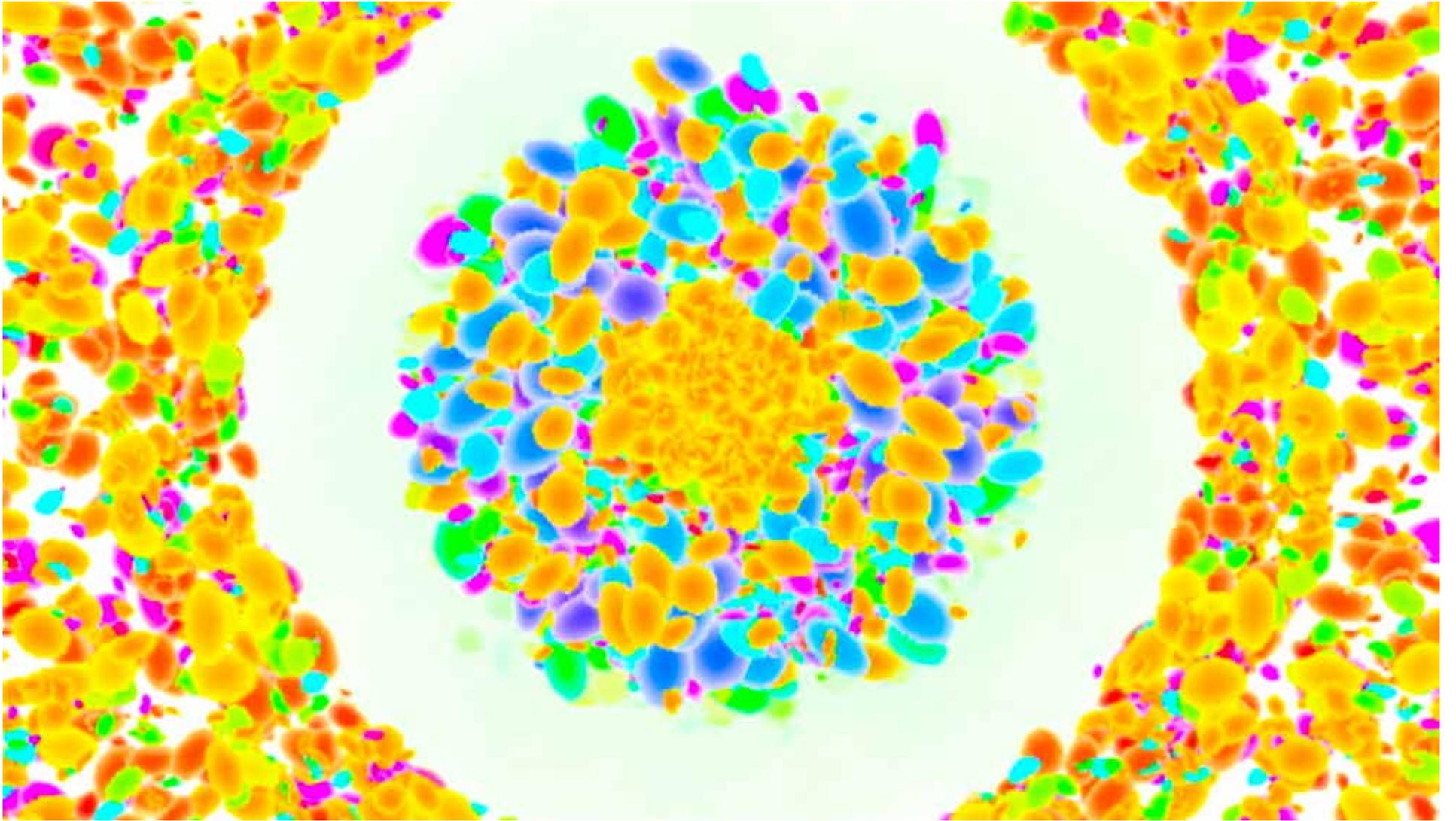


*More Than Two*, 2019, single-channel video, 1:52 minutes





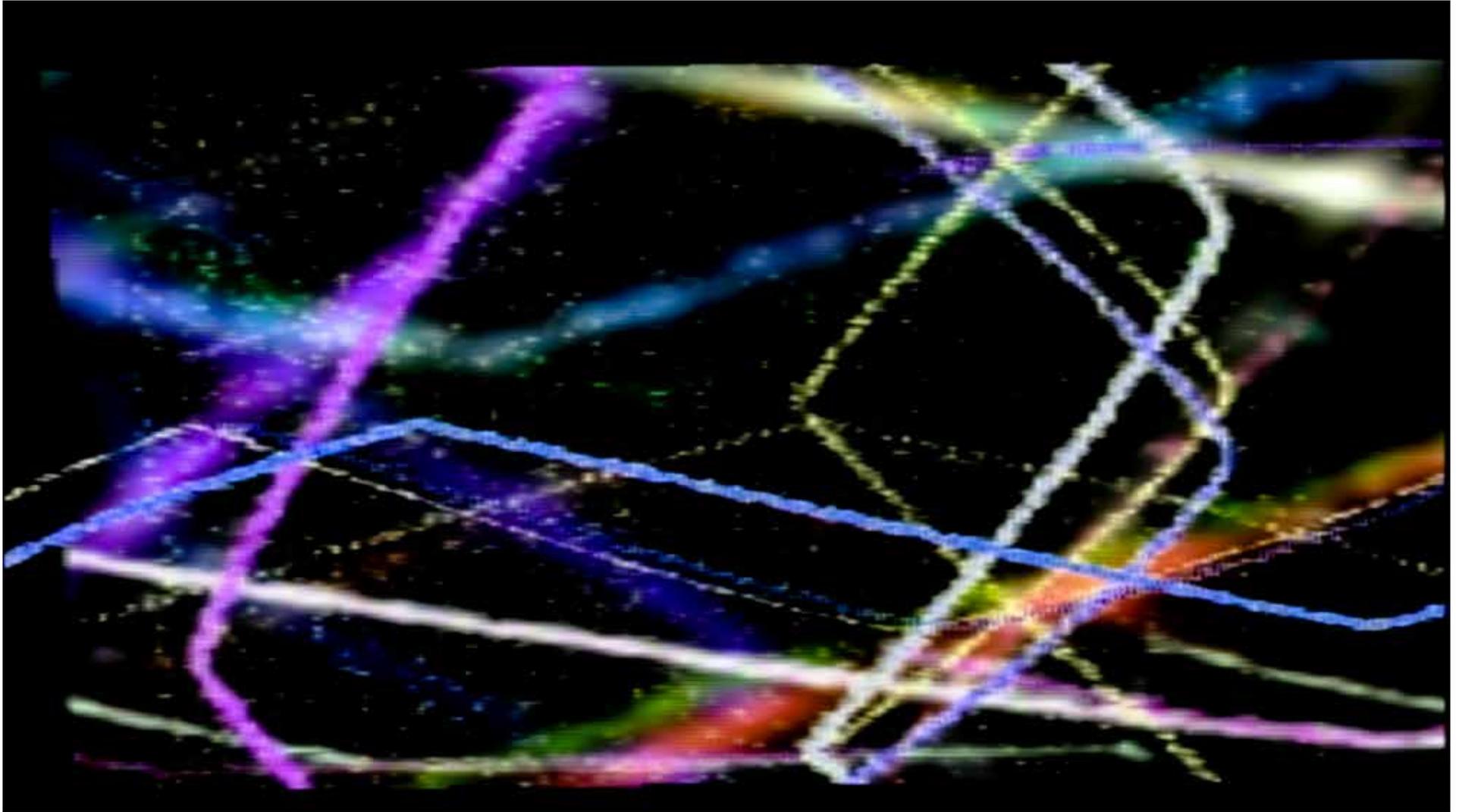
*Seeking*, 2019, single-channel video, 2:46 minutes



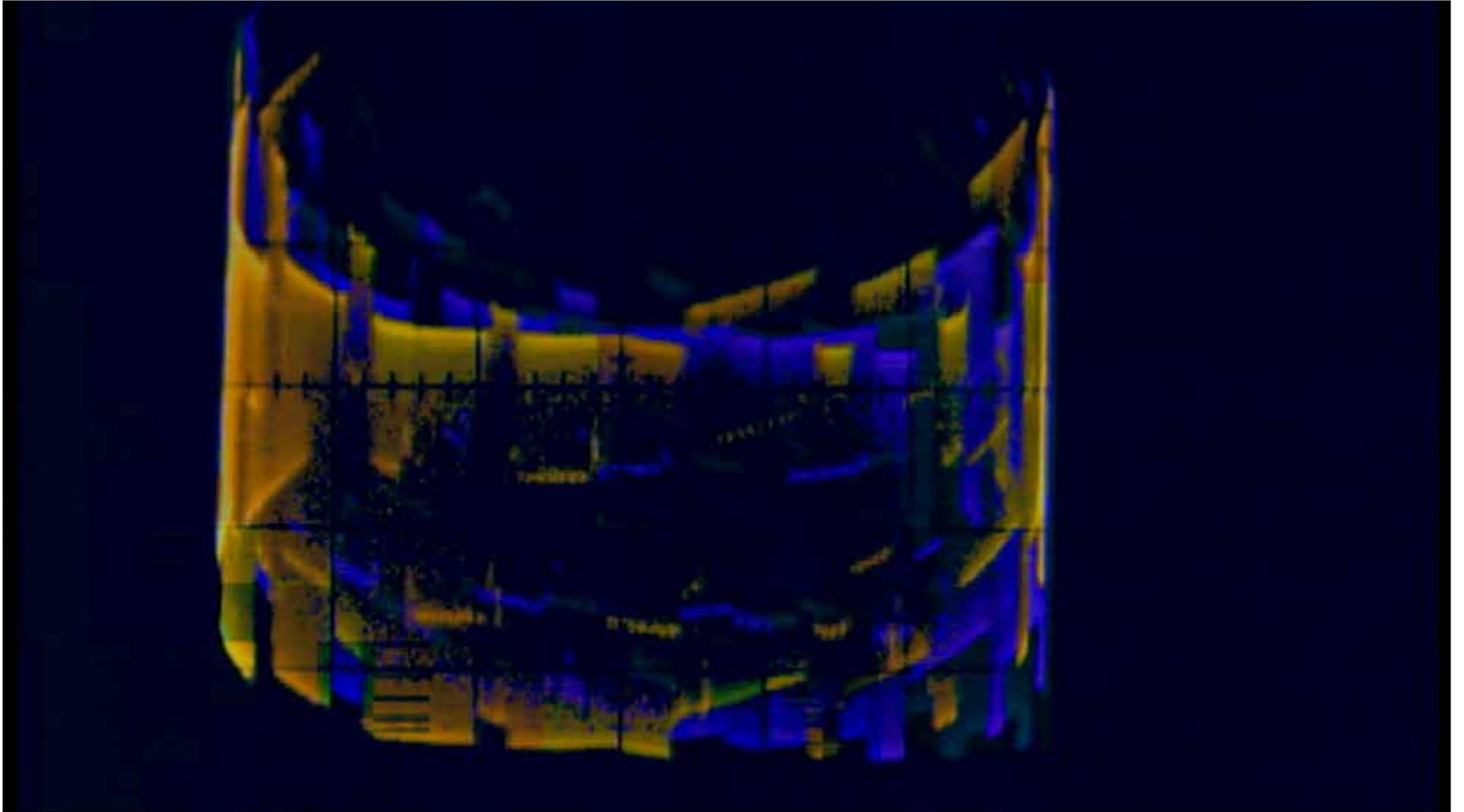


*Rectilinear*, 2019, single-channel video, 4:33 minutes



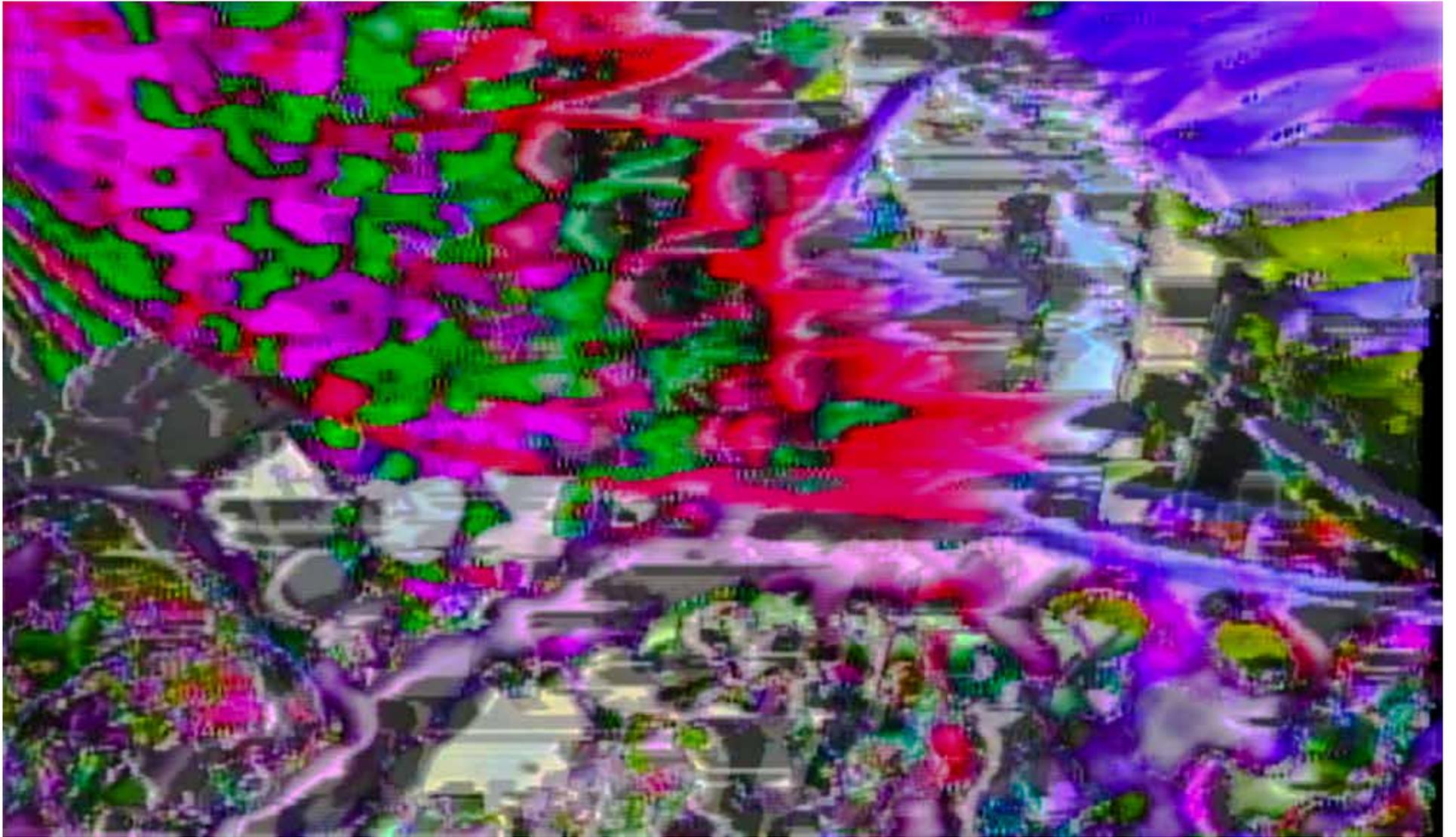


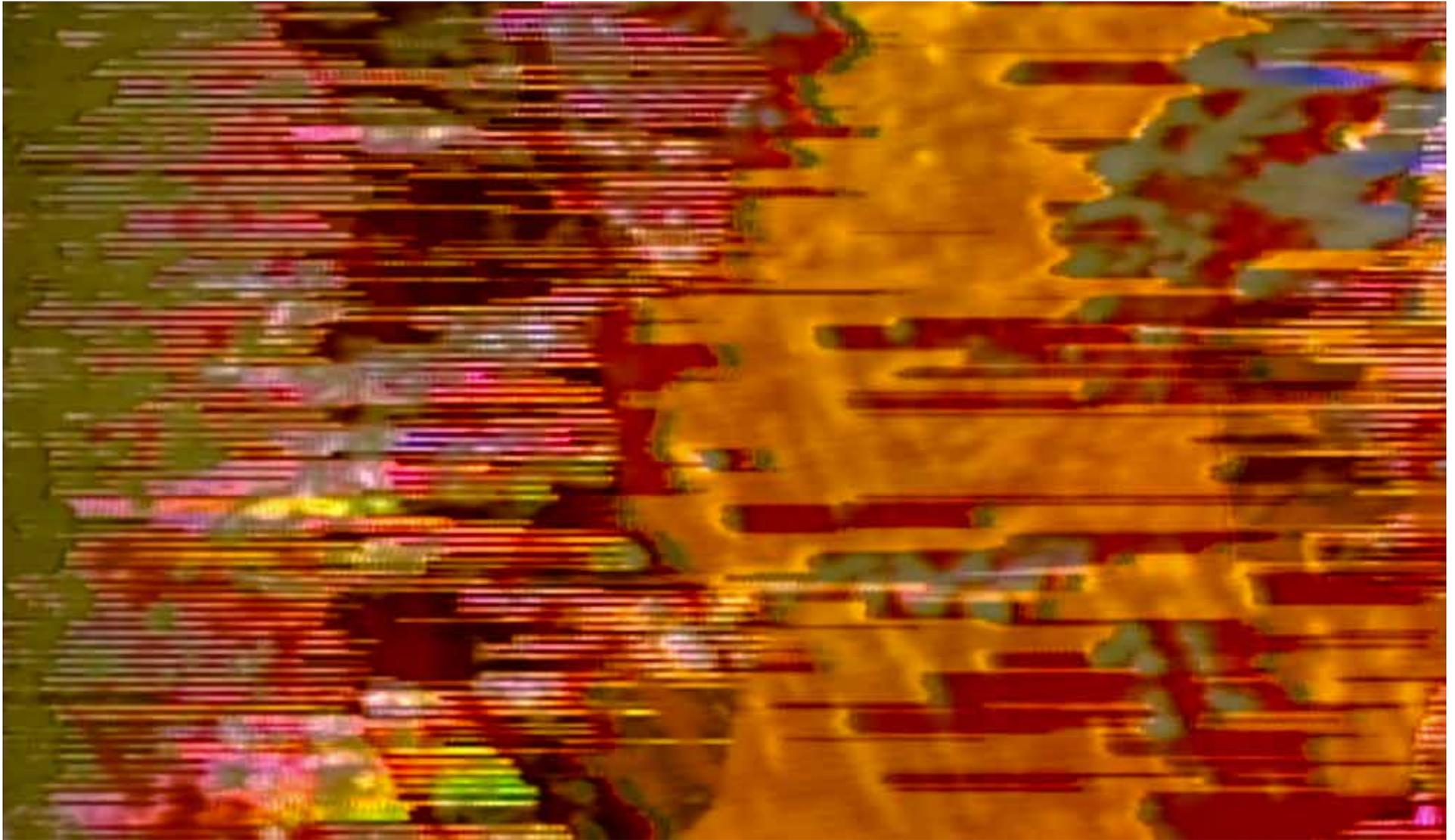
*Incoming Message (Dream Melody No. One)*, 2019, single-channel video, 5:33 minutes





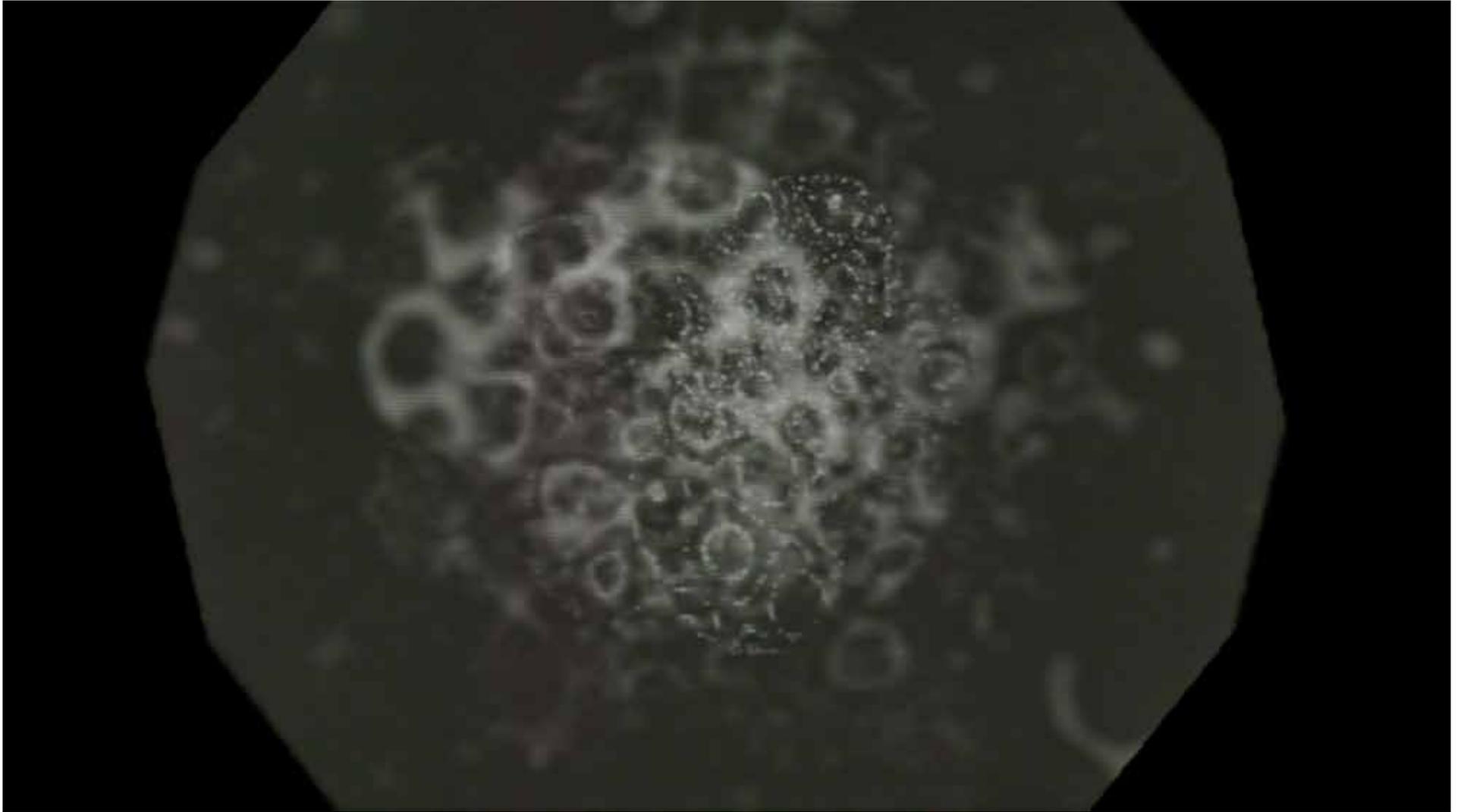
*Inside View of Mask*, 2019, single-channel video, 2:36 minutes





*Windowscreen Trees*, 2019, single-channel video, 4:07 minutes

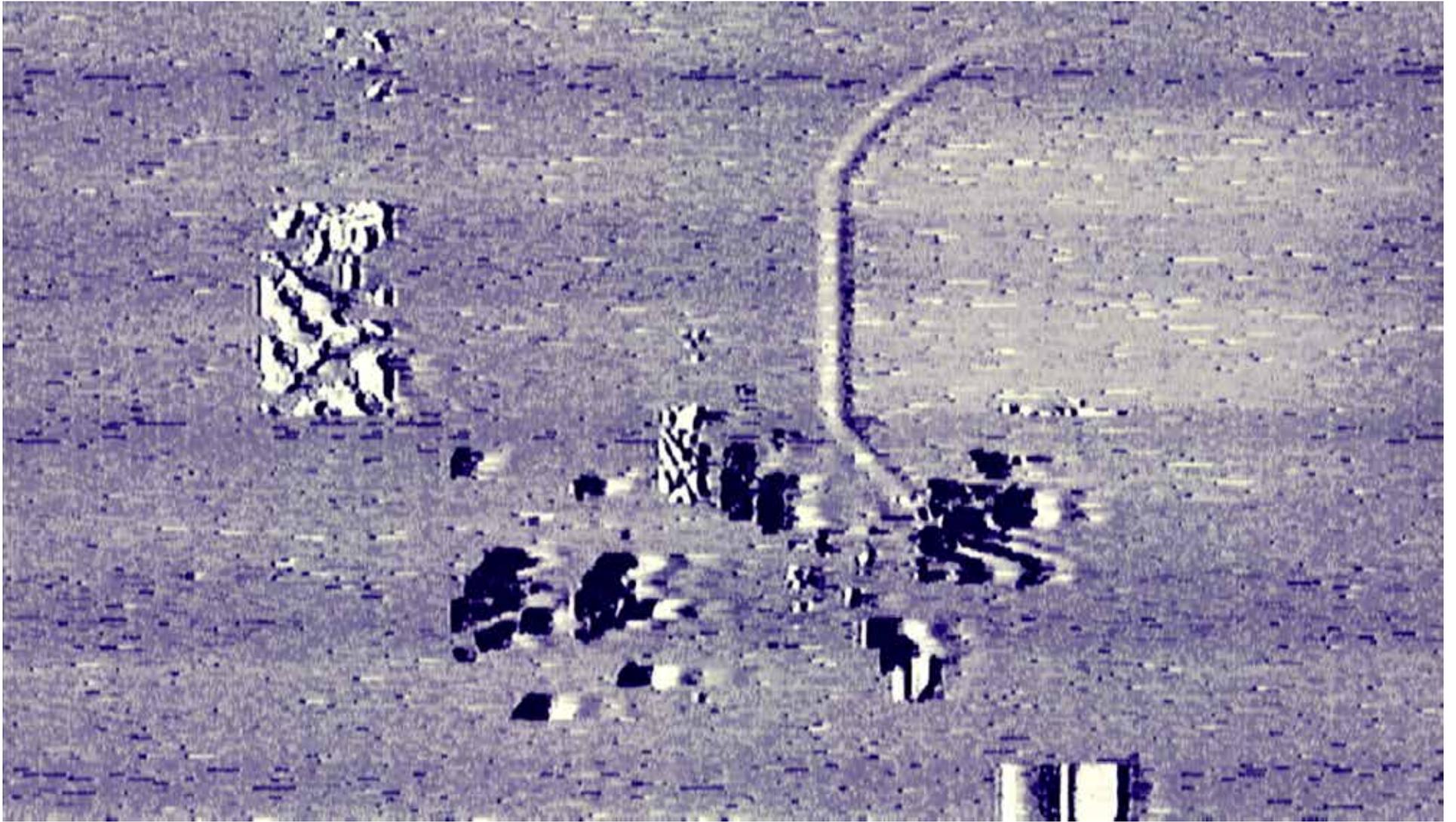




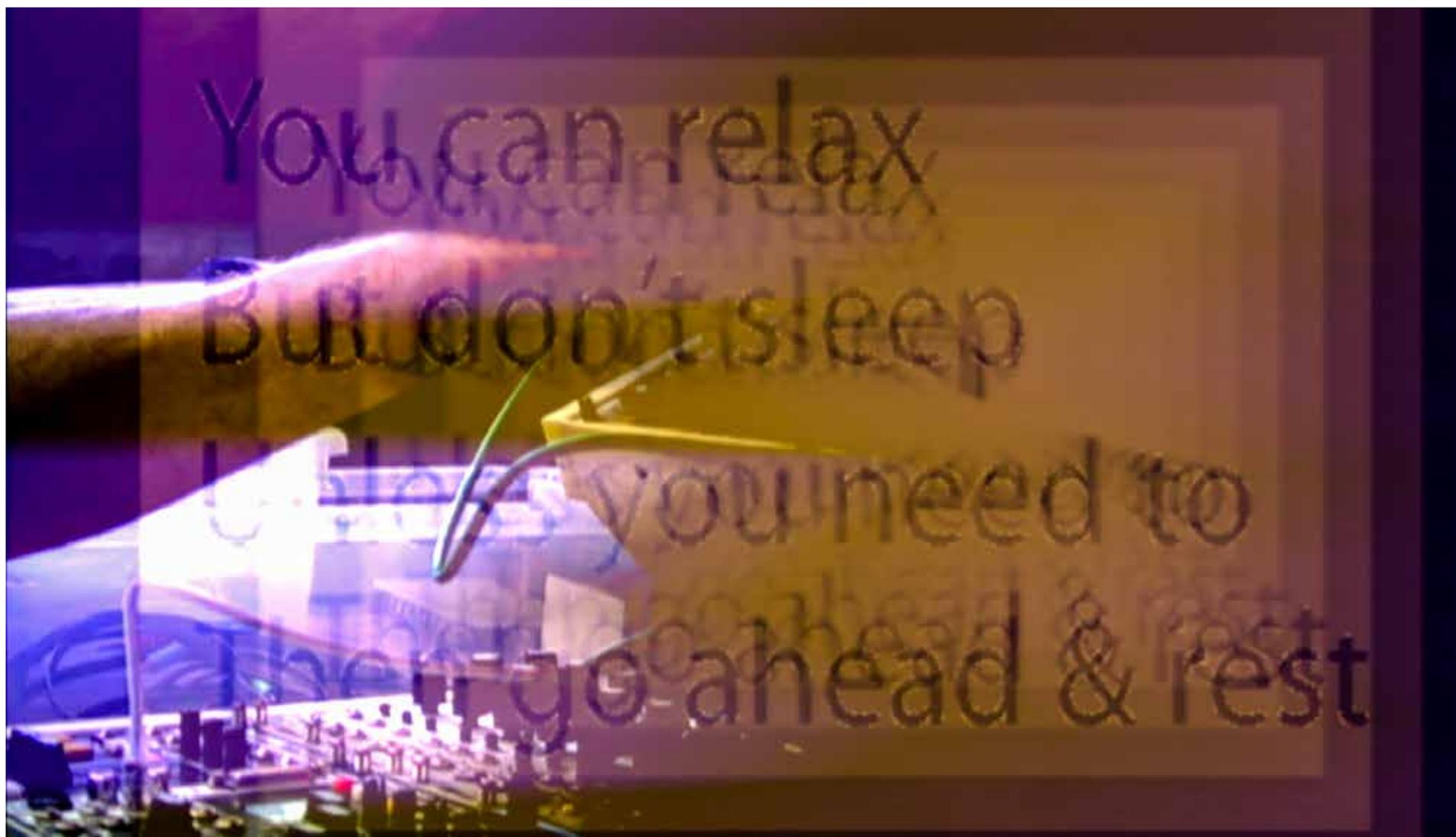
*Floodable Airlock*, 2019, single-channel video, 1:32 minutes

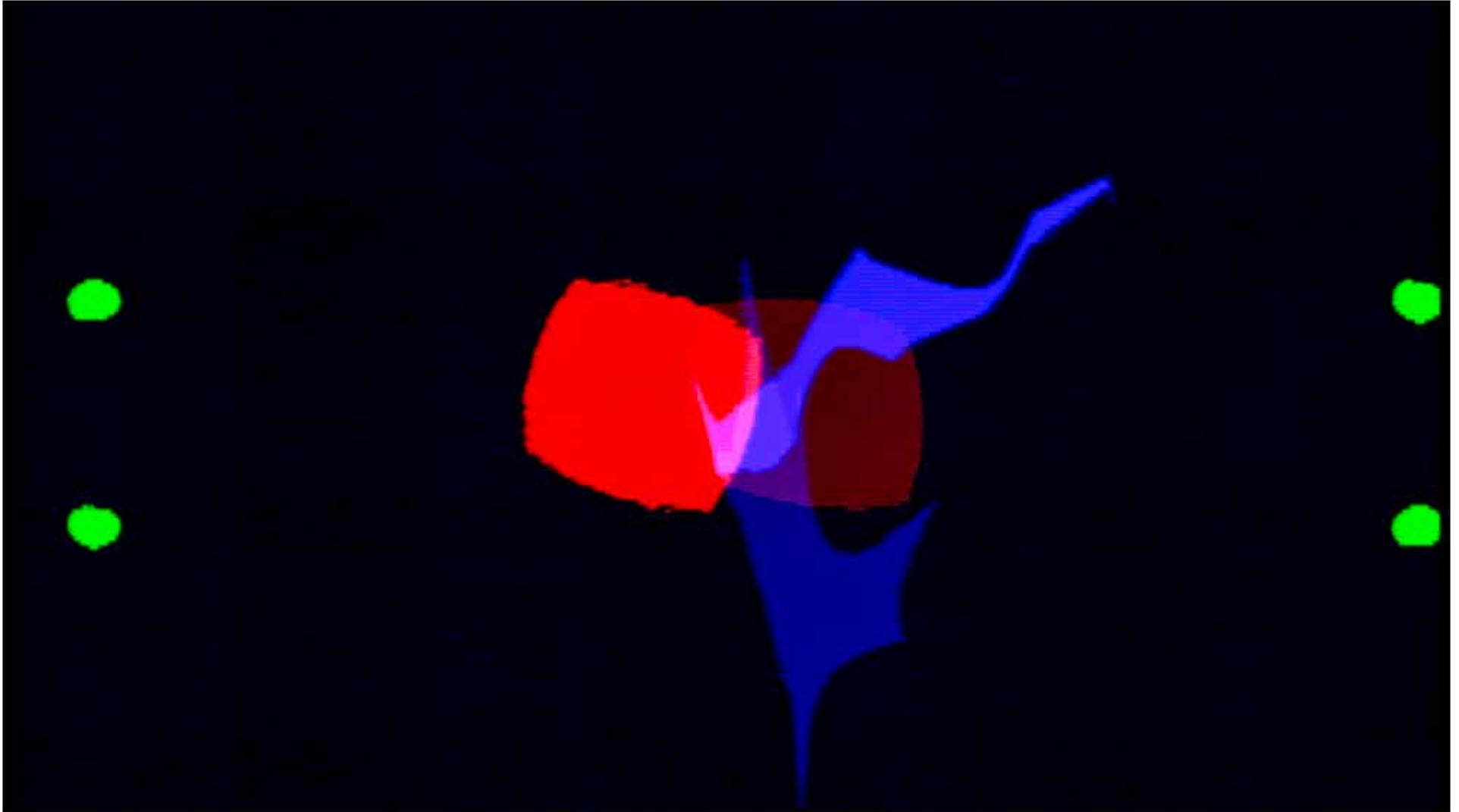










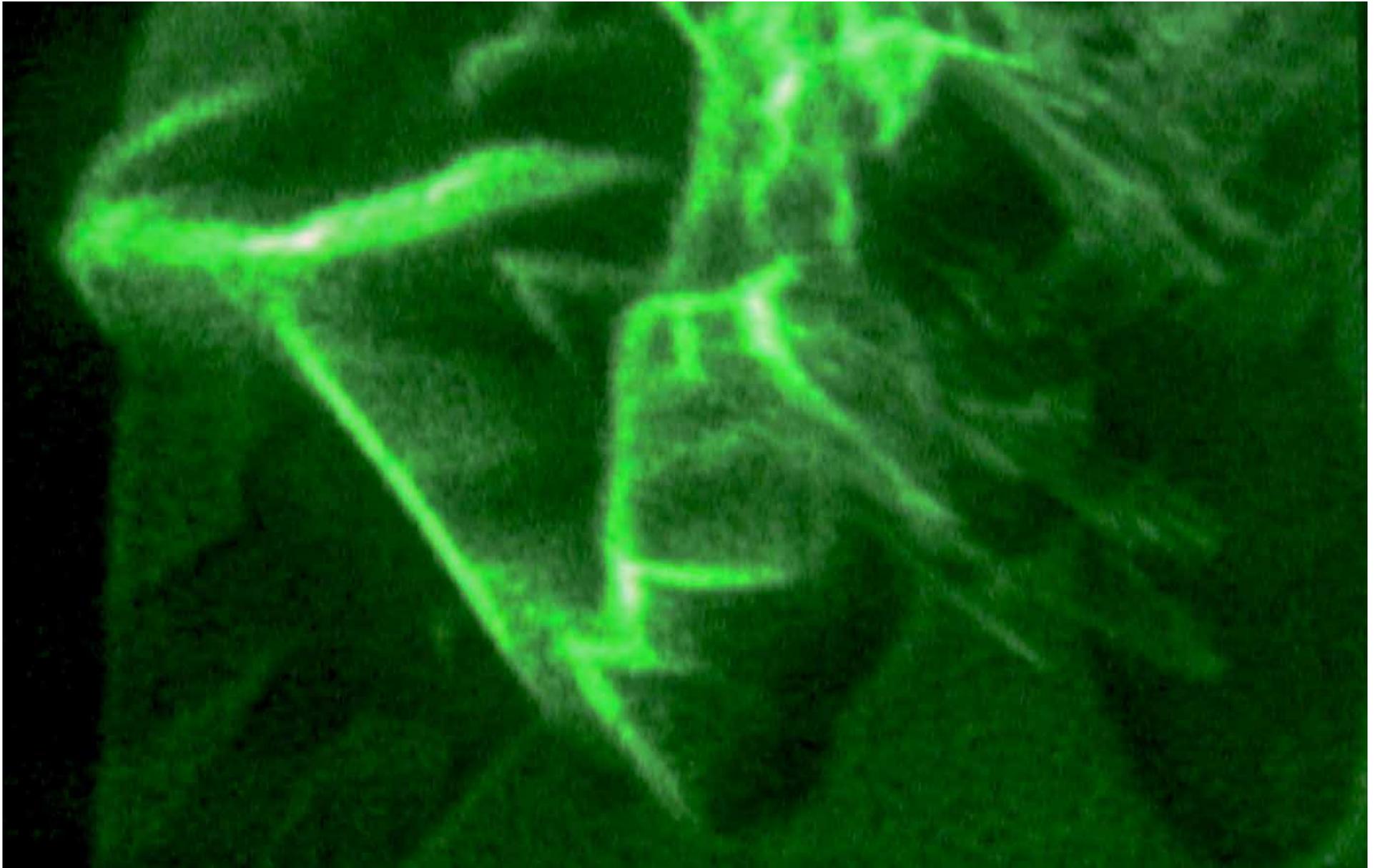


*Trip NaviShapes*, 2019, single-channel video, 0:31 minutes



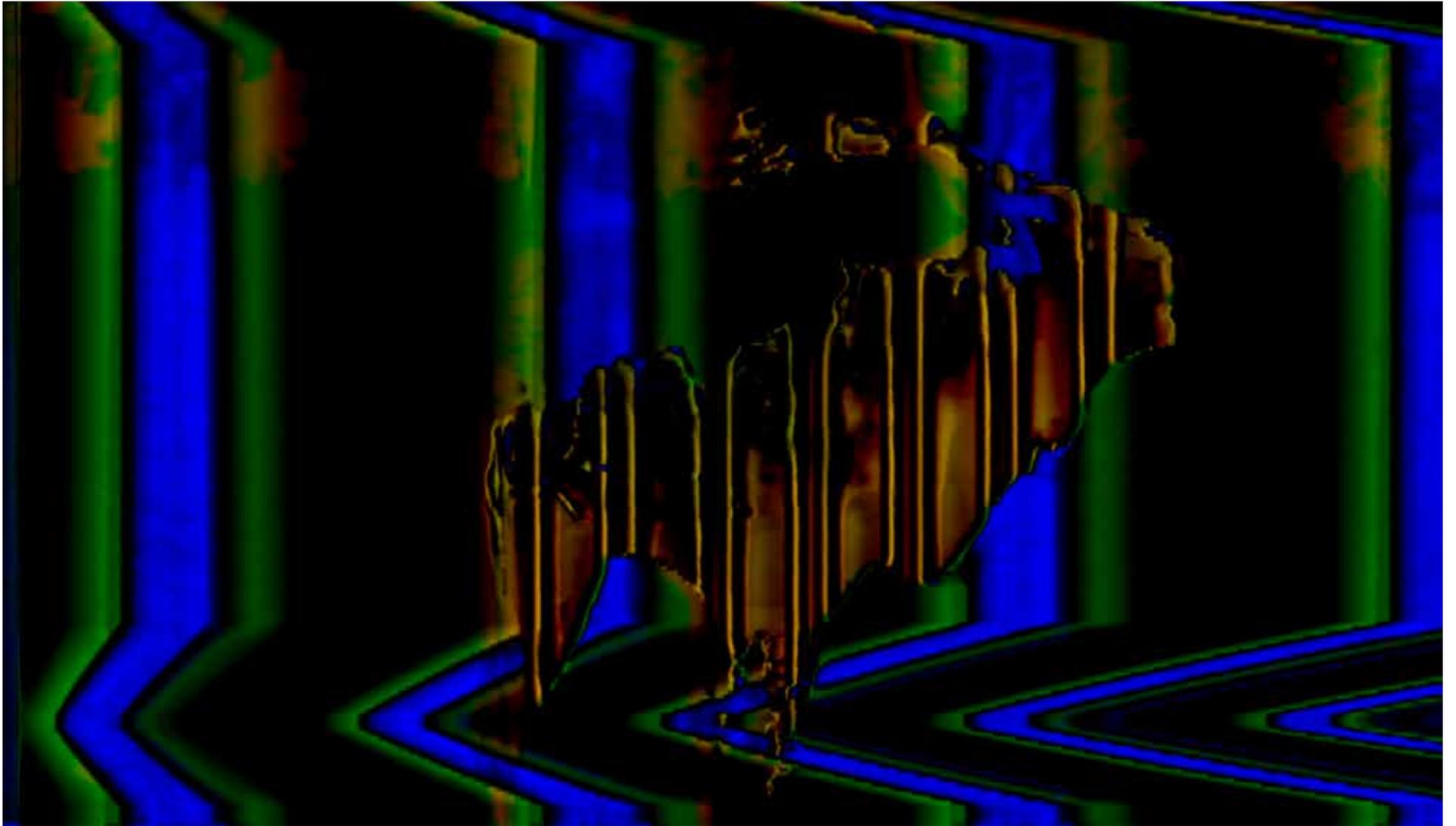


*Left Hand*, 2019, single-channel video, 4:37 minutes





*Snap*, 2019, seven-channel video, 2:32 minutes





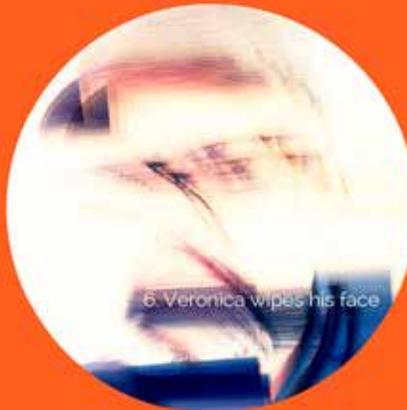
13 is taken down from the cross



This pamphlet serves as an introduction to a larger project where all fourteen stations of the cross are considered one by one in order. The selected images within are examples of the images from the completed work. This process served as a path of reflection during reconfiguration of the same base image via digital manipulation and was undertaken in the spirit of introspective consideration of the sufferings and insults that were endured during the passion.



## STATIONS OF THE CROSS



6. Veronica wipes his face

Prepared by Leslie Rollins in partial fulfillment of the requirements of ART 523 - 01



OF THE



STATIONS

1 is condemned to death

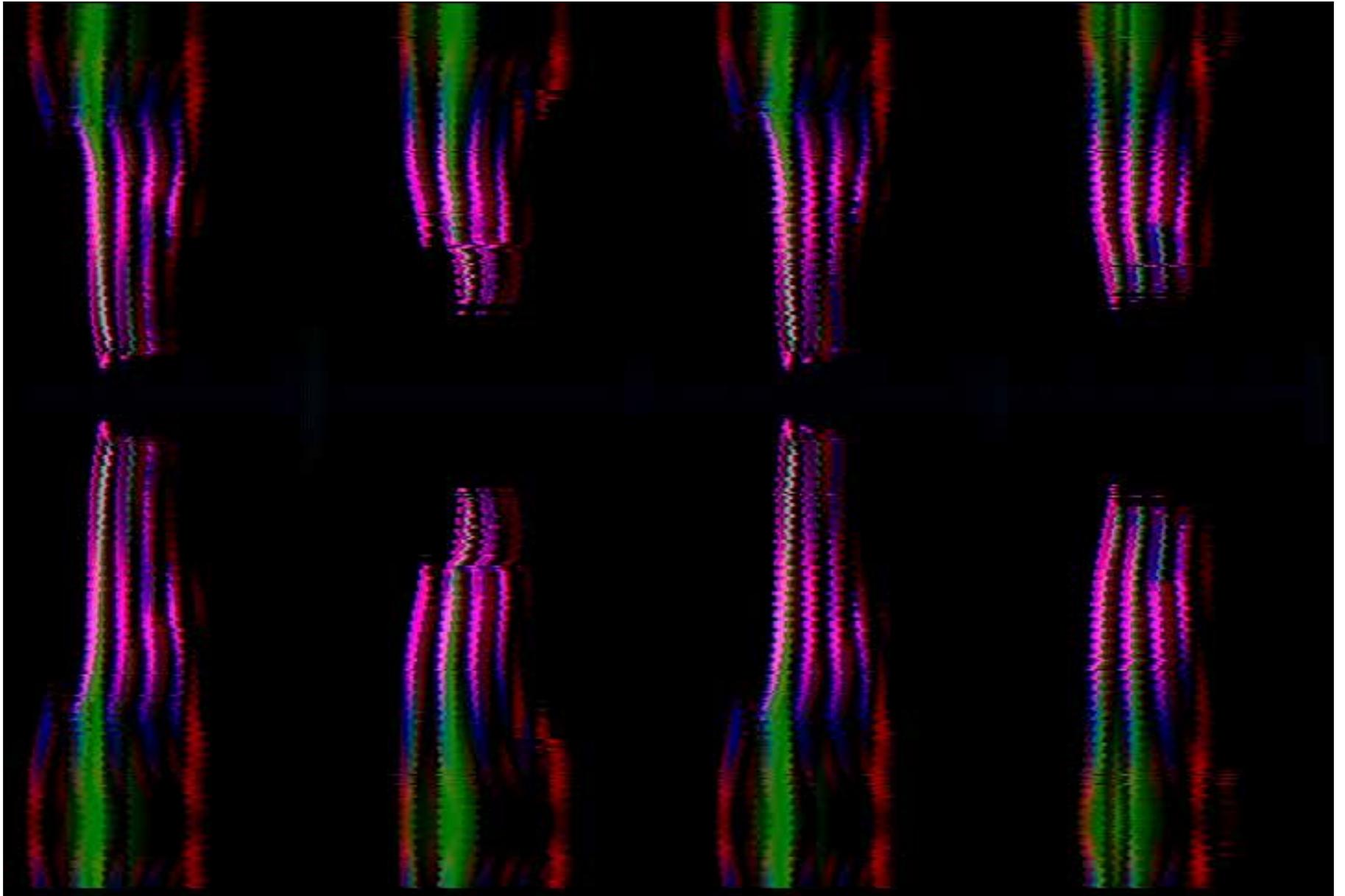
CROSS











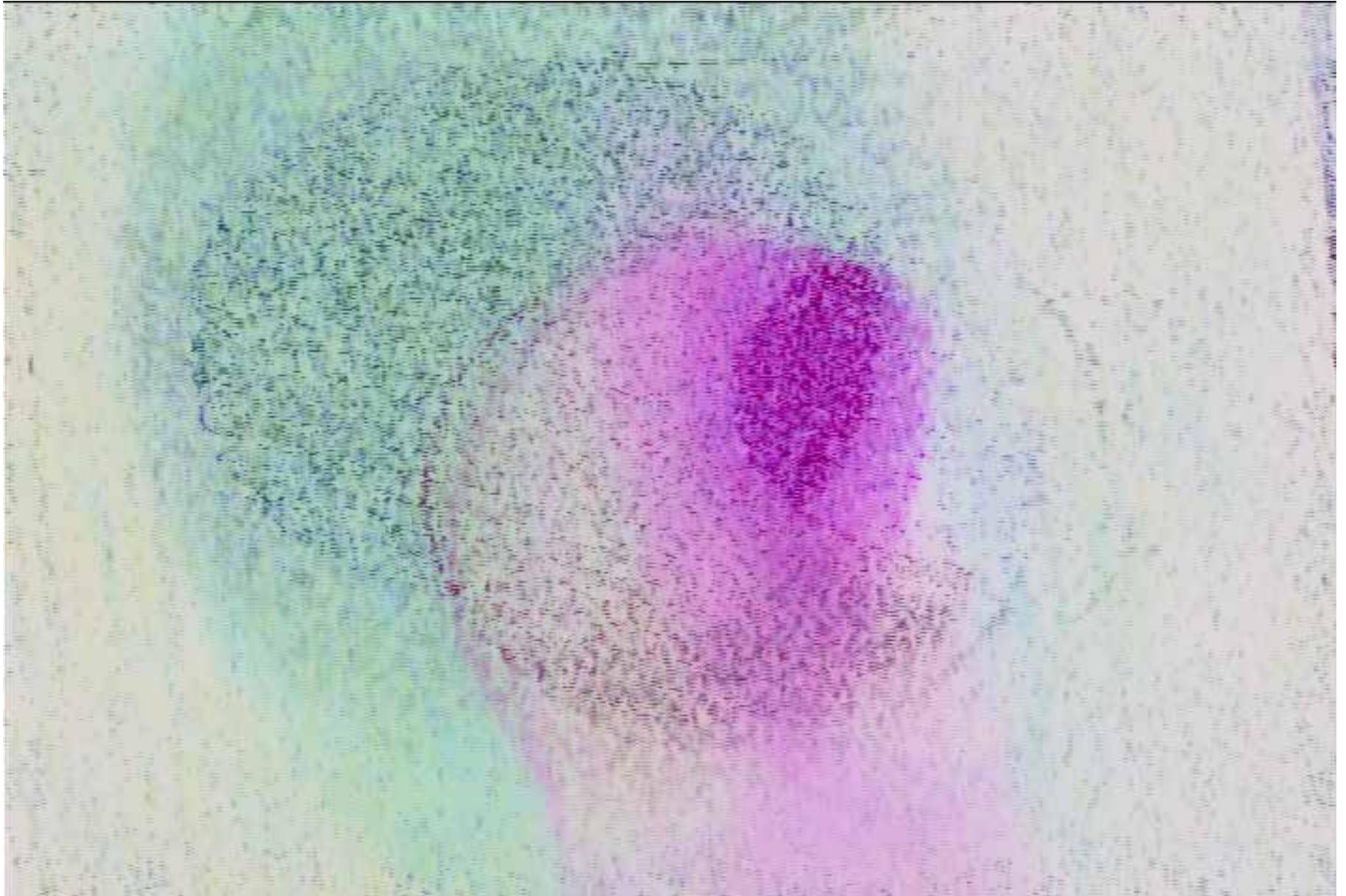
*Under Reach*, 2019, single-channel video, 0:36 minutes





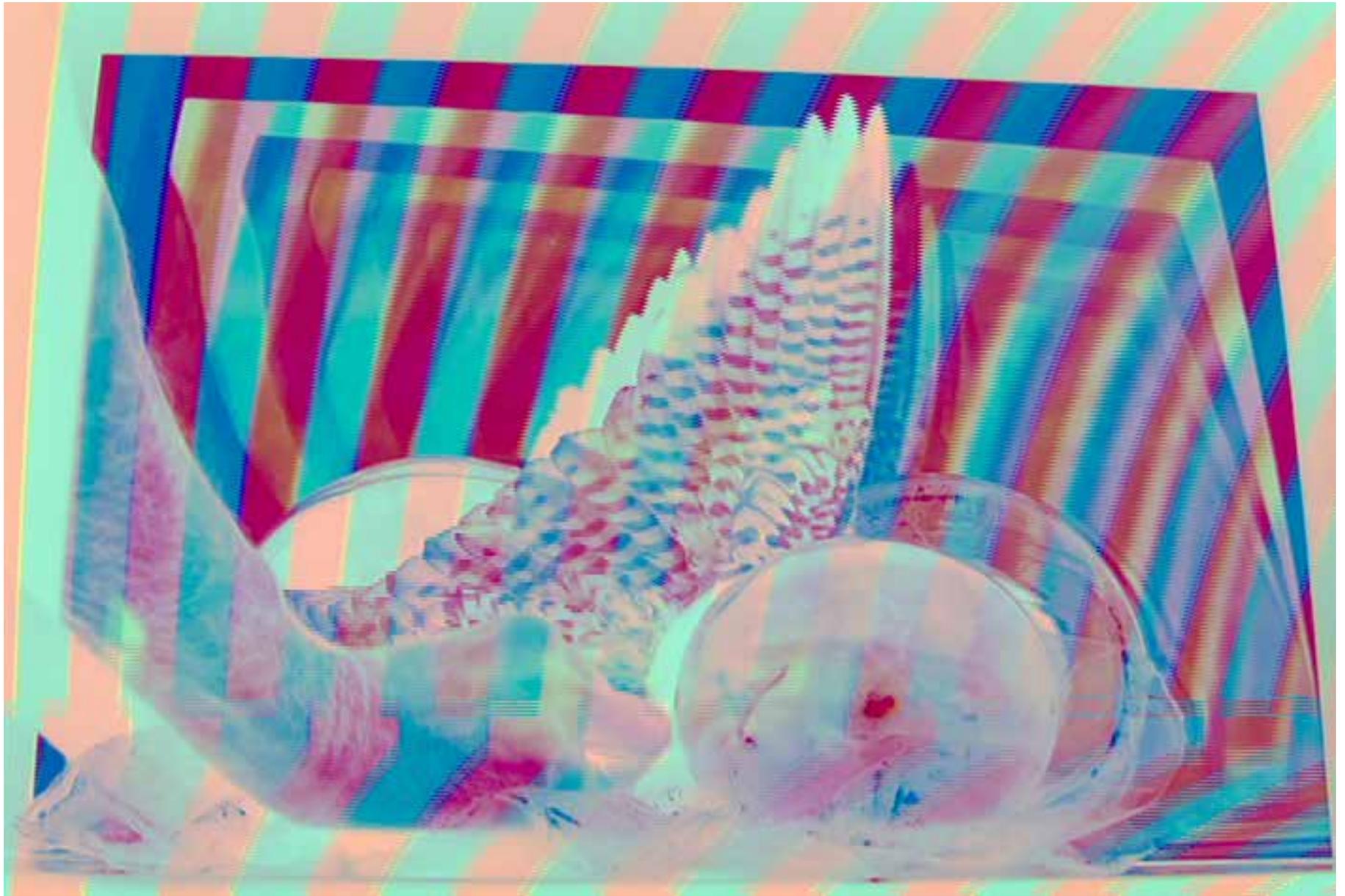
*Fortress Feedback*, 2019, single-channel video, 0:33 minutes





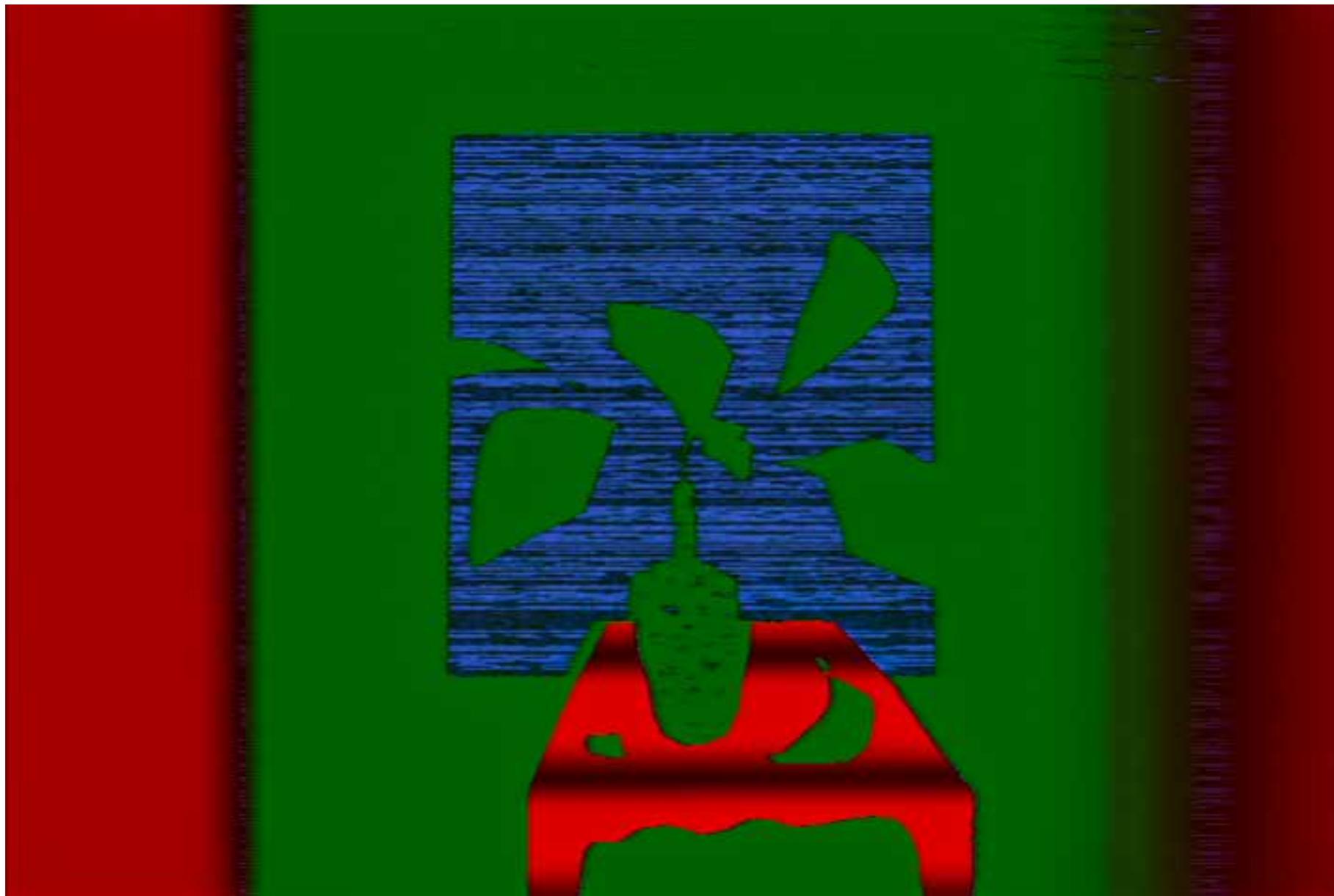
*Spheres Studies* (Animation), 2019, single-channel video, 0:35 minutes



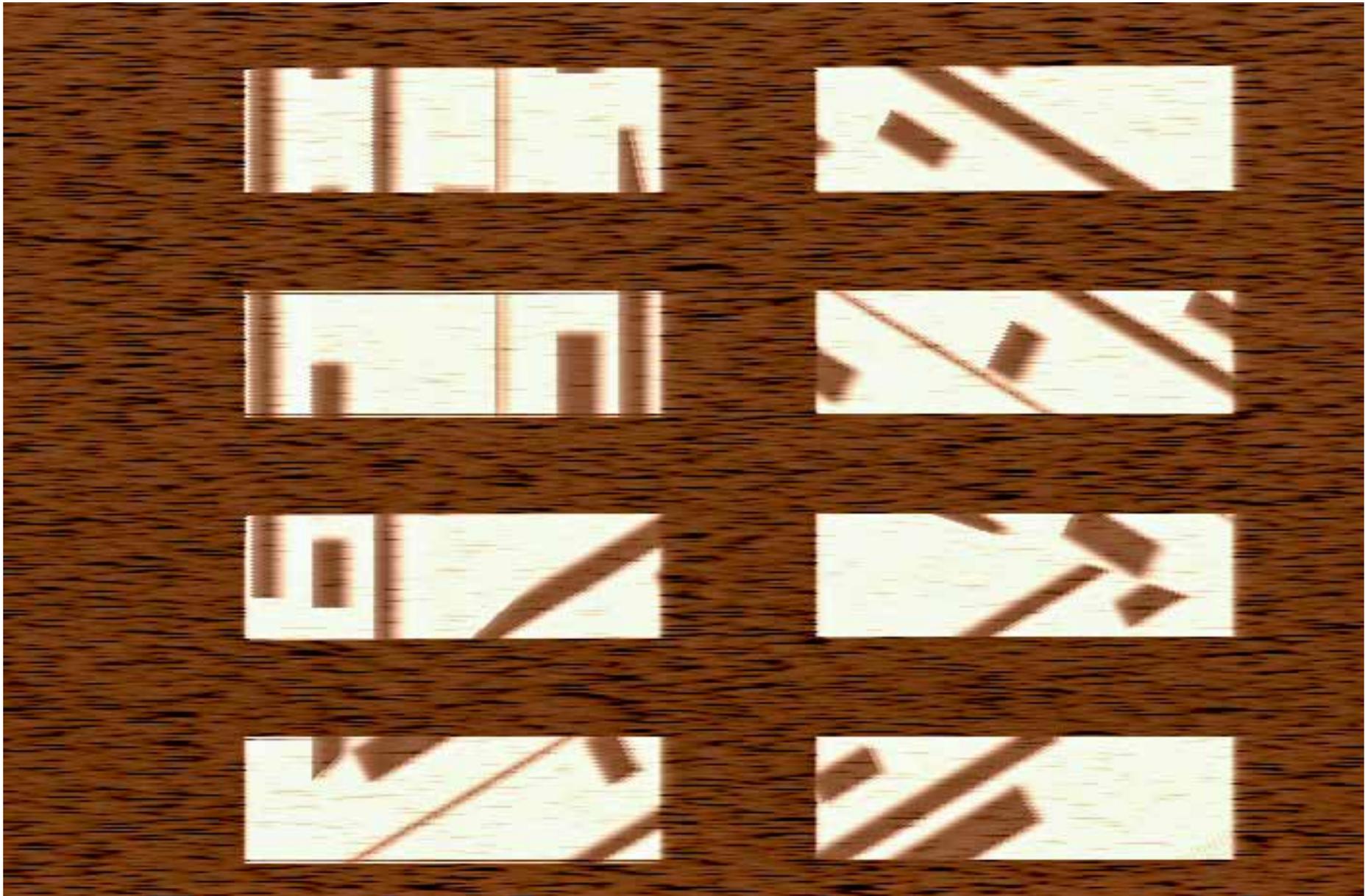


*Wing Ceremony*, 2019, two-channel video, 8:26 minutes





*HB IORT*, 2019, single-channel video, 0:30 minutes





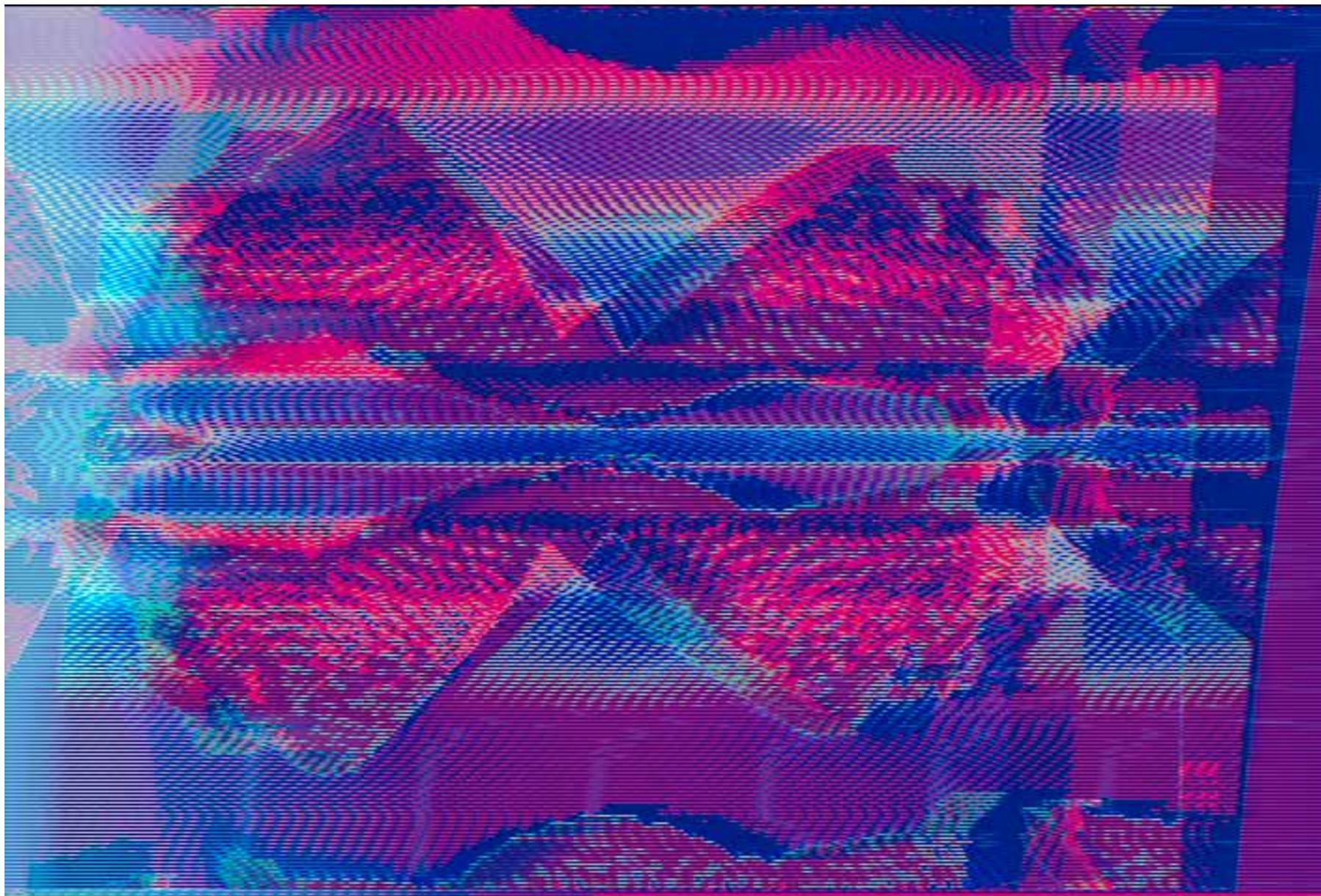
*Falcon First Flight*, 2019, installation, duration and measurements variable



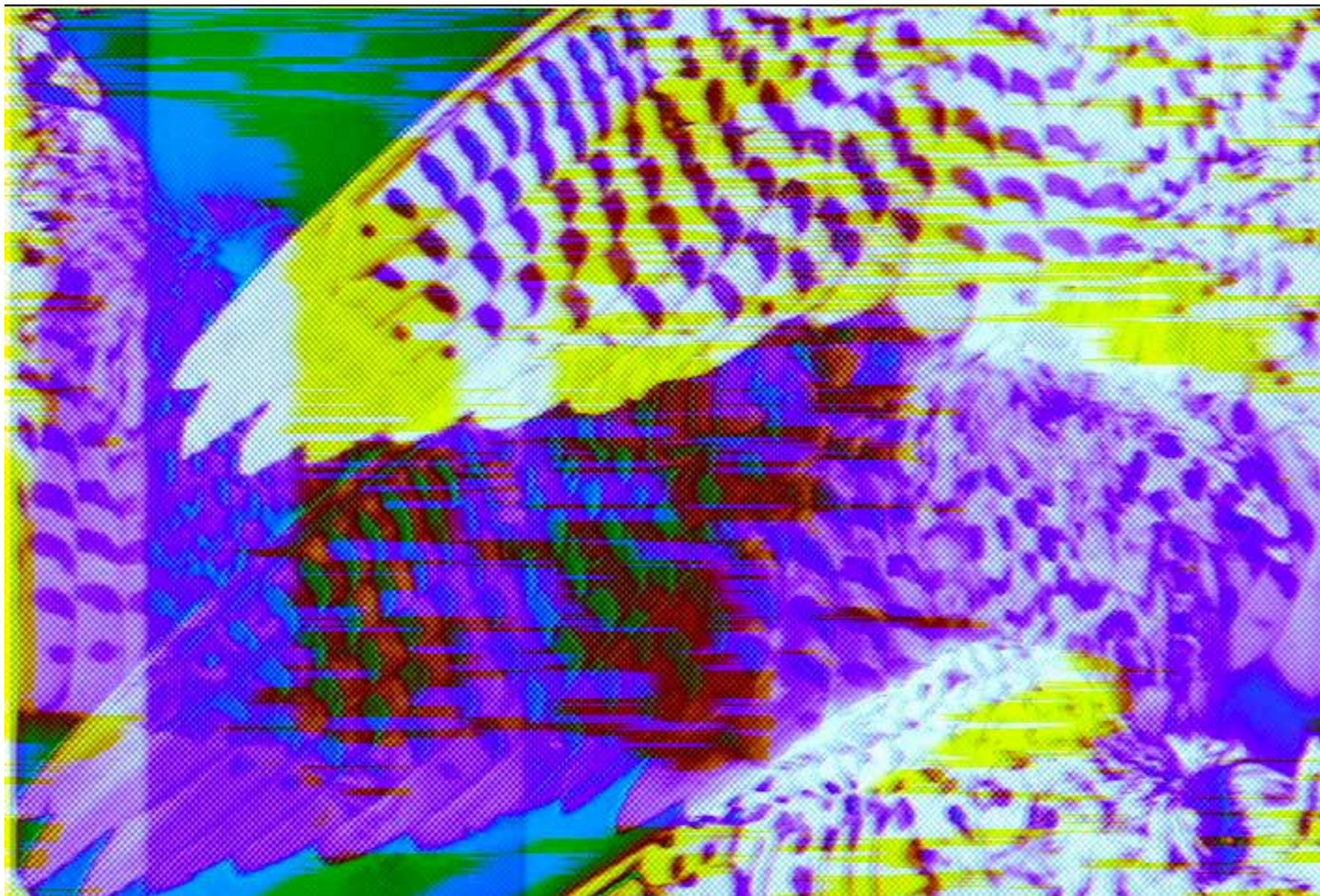


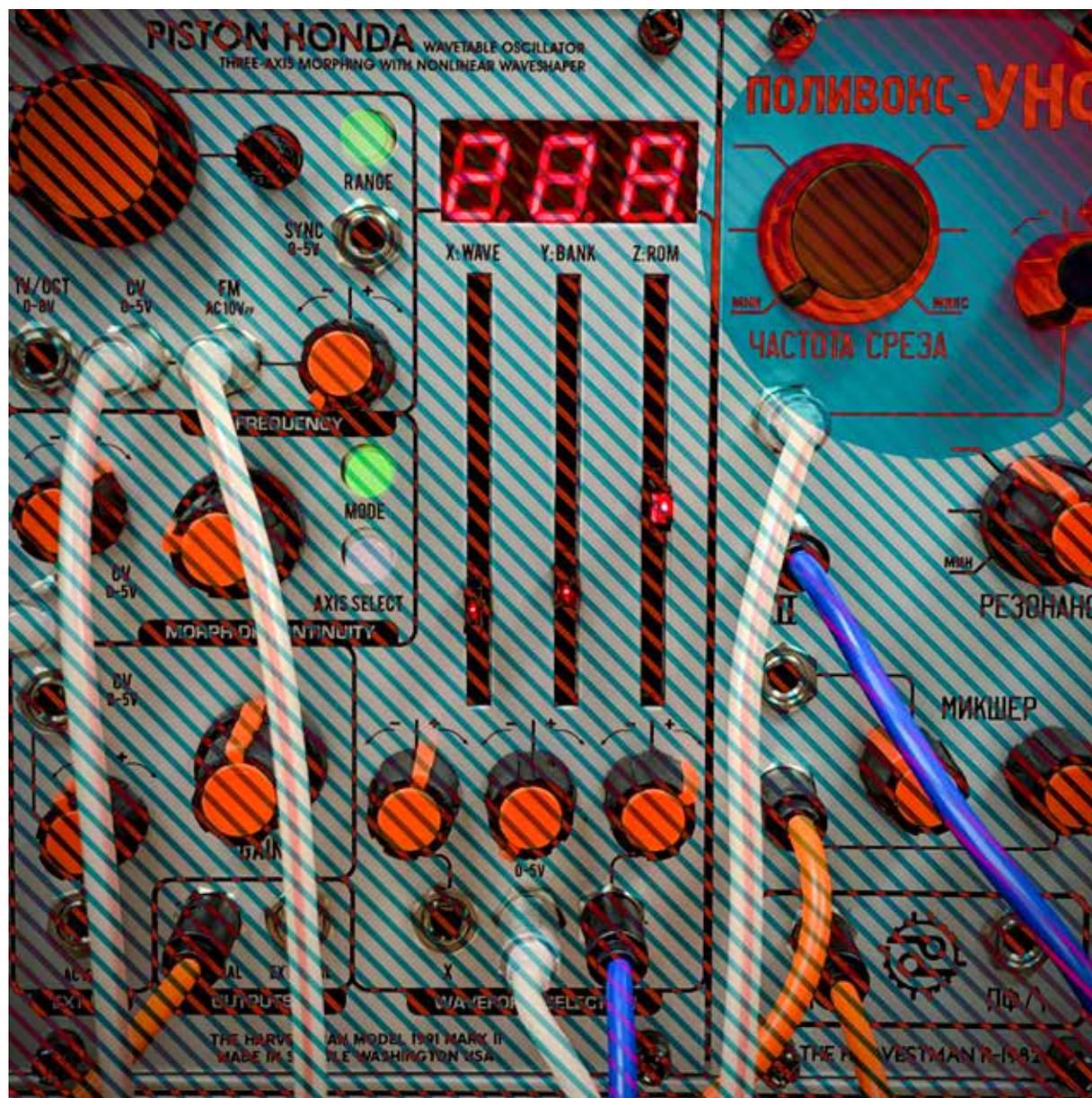
*Enforcement*, 2020, single-channel video, 6:02 minutes



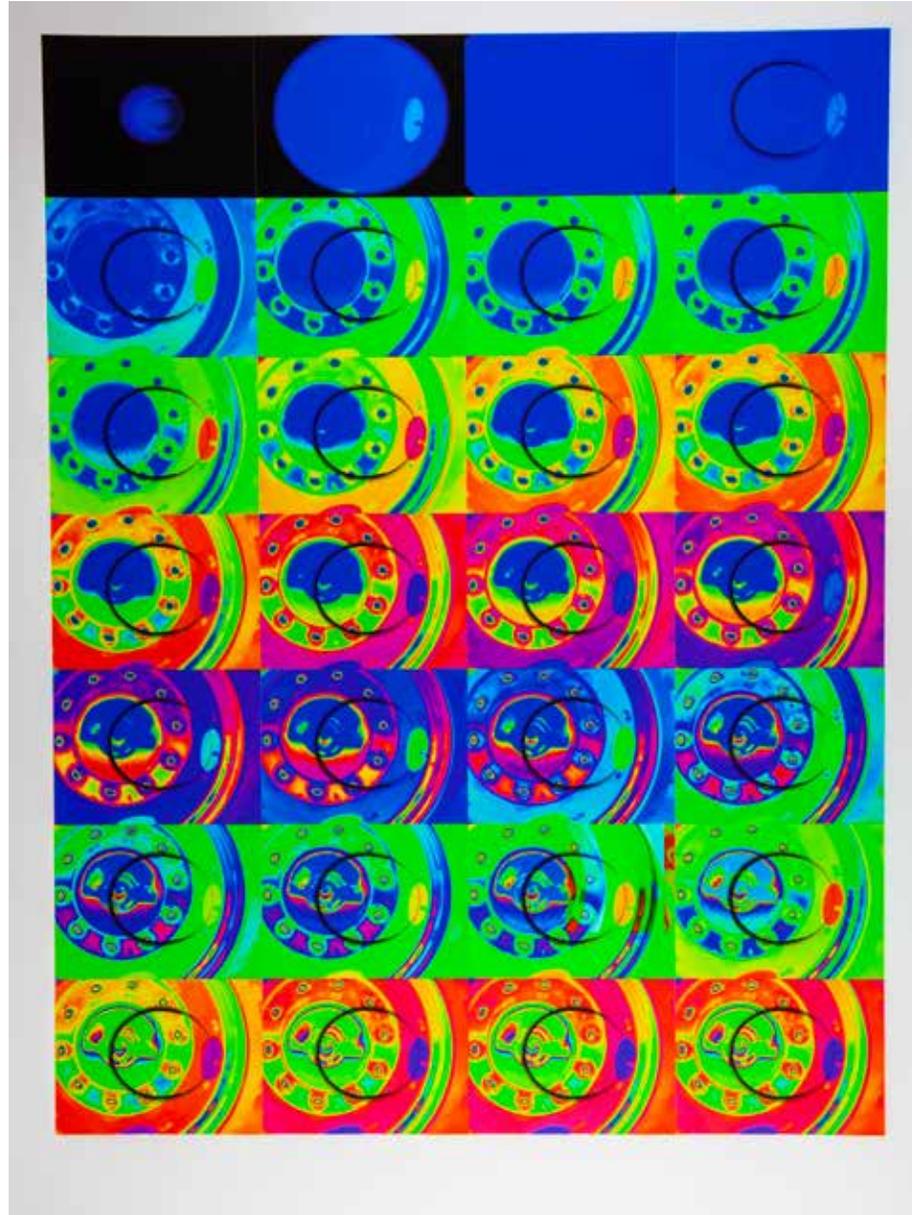


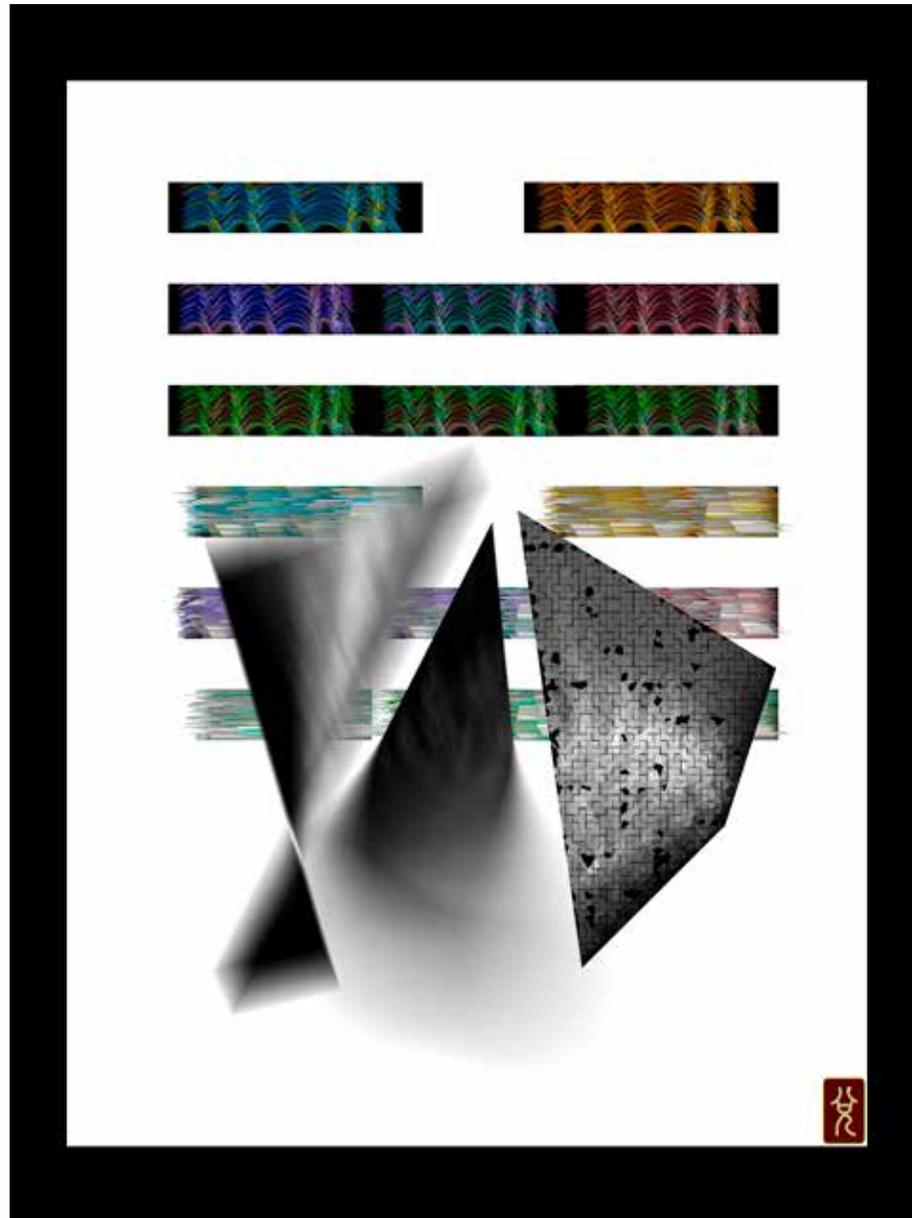
*Torn Wings*, 2020, single-channel video, 1:07 minutes





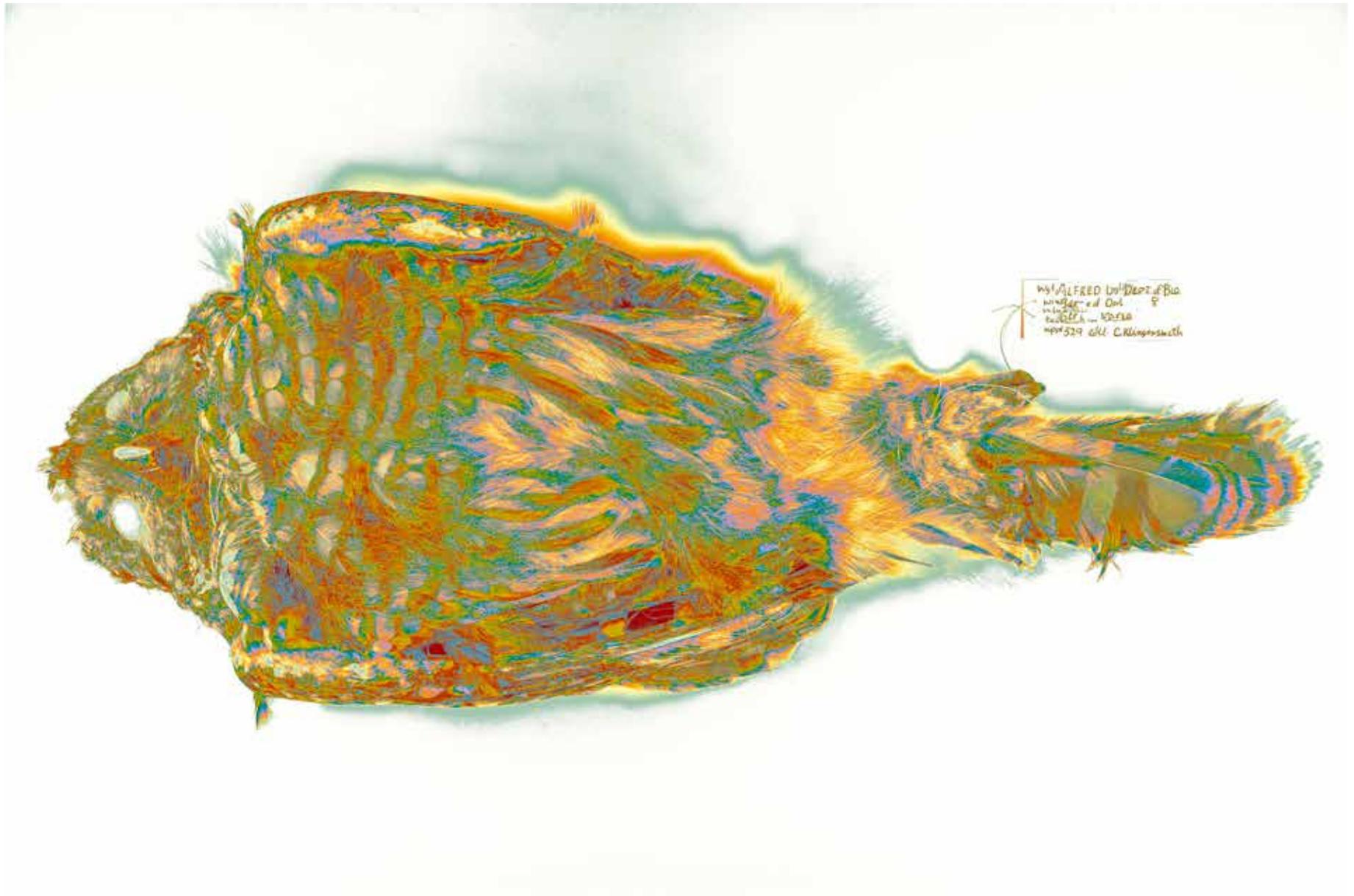
*Meandering Wavetable for Polivoks Filter, 2020, stereo audio, 5:51 minutes*





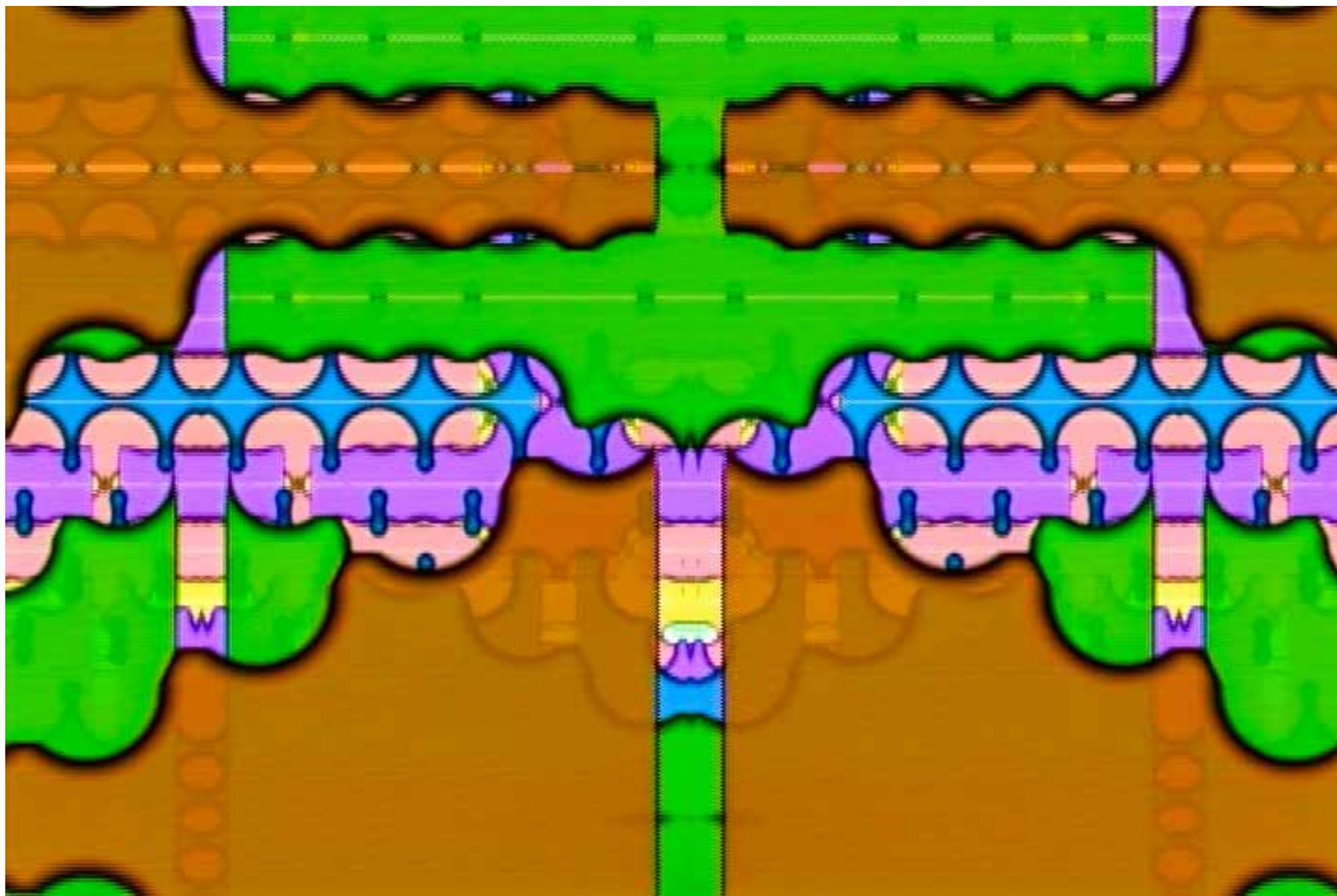
*I Ching Hexagram 58*, 2020, print, 18 x 22 inches





WALFRED B. Dept of Bio  
wonderful Owl  
wonderful - 1958  
1958-59 all C. Kingman

*Owl Tritone*, 2020, print, 18 x 22 inches







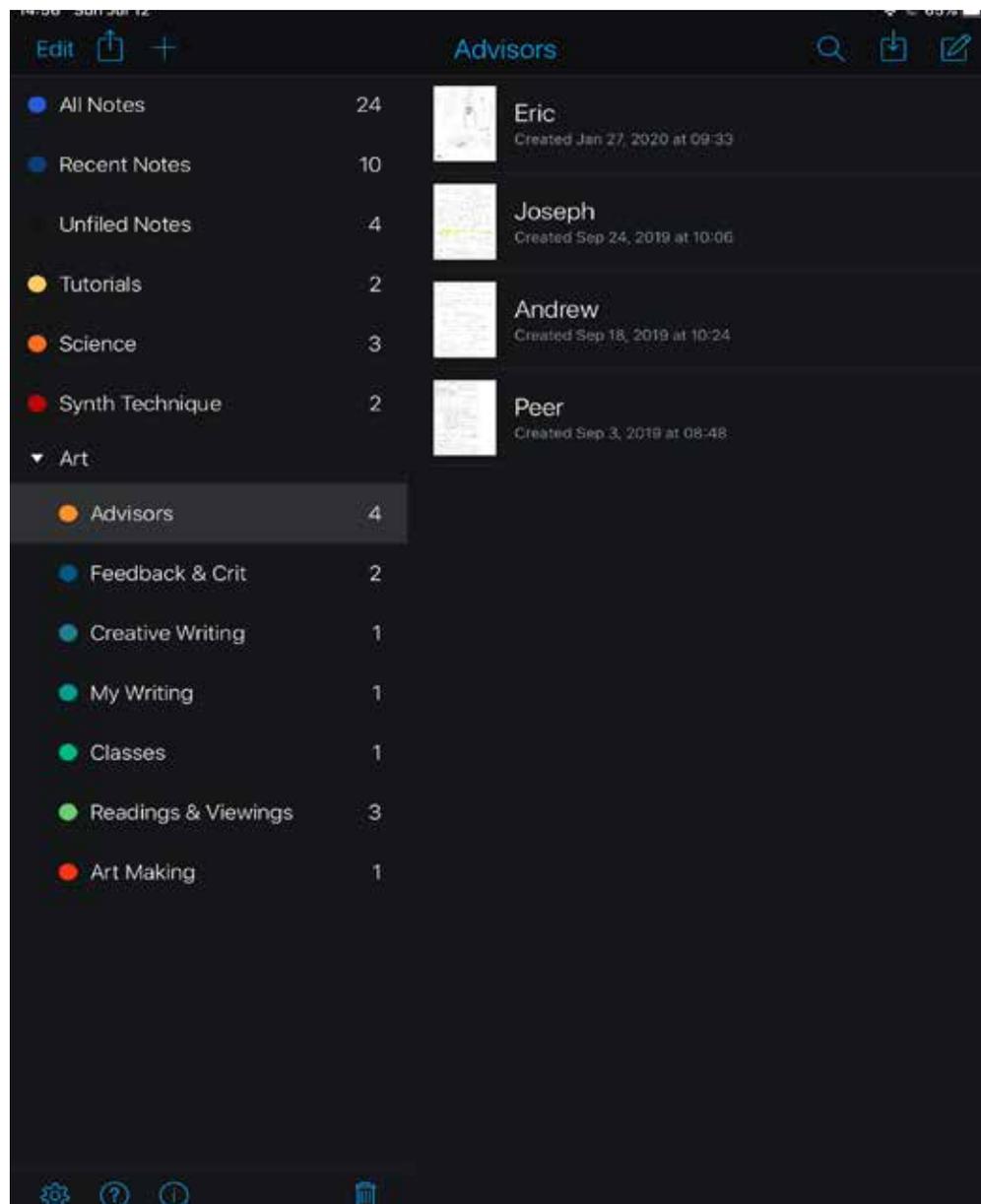
# Research Notes

# Research Notes

While I was in Alfred completing my MFA, I always had a paper notebook, an iPhone and/or an iPad, and often all three. I used them daily to capture details of my research and studies and to document my practice with photos and videos. I worked tirelessly to note the non-stop stream of useful information emanating from my professors' deep wells of knowledge of both process and history. My cohort never tapped the brakes in between classes, instead always game to compare notes and share ideas about artists and authors that connected in some way with our efforts.

That rich environment of active minds engaging in exploration and evolving discussion is something I love about being in school. I've missed its daily influence during the time I have been at home.

The following notes represent two of the buckets I frantically caught information in. The printed text files are from the Notes app on my phone, and the handwritten notes and drawings come from my iPad and Pencil and were captured in Notability (which I found up to almost every task I threw at it). The only missing repository of notes are my physical paper journals which I did not have time to fully scan for reproduction here; a task served by a future residency perhaps? Or, if you're really keen, come and visit and I'll let you browse the originals.



Screen view of Notability for ipad

Honda Repair at Don's Automotive  
Radiator  
Timing Belt  
Waterpump  
Valve cover Gasket  
Sparkplug holes have oil  
Tune up  
Oil Pressure switch dripping  
Oil change

\$1500

Alfred details

Free counseling services:  
Call Kim at: 607-877-2400  
Set up with Elainea (1/2 hour)

community bank  
serve u credit union  
steuben trust

Bill Stewart  
ceramic maintenance across from parking lot low brick building  
steps far from dock  
straight ahead

Eric works with Bill Stewart and helped with keys.

244 245 key code: 8 [REDACTED]

All my physical keys are for 5th floor, key card for Harder Hall exterior doors after midnight.

BMH 106 is room C

TSI Time Space Interface is where Brian's stuff is displayed

Andy hates texting but takes calls until 11PM

Will Contino 1 advisor, email him and let him know I'm here to arrange time to meet with him

Barb Latanzi 2 advisor

Contact Angie To to arrange TA

6 [REDACTED] Andy home

Wisc cell: 6 [REDACTED]

Endnote, Refworks, Zotero, Mandalay  
Art history guide, writing & citing  
Chicago Style most likely

How many kilns? 40-ish

What is the largest? 6 foot by 4 foot

Smallest? Tea cup

Overlook Merrell good winter boot. October they get their boots

Common Eia password:

[REDACTED]

Allegheny County Department of Health  
Belmont

Titers not immune

MMR

585-268-9250

Rose Areas of concern for me are:

- multiple stains on the carpet
- damaged surfaces on the counters
- non-functional condition of parts of both kitchen sink and tub/shower plumbing
- broken doors for kitchen cabinets and front room closet
- broken kitchen drawer
- nails and holes in the walls where things were previously hung
- edge of stove surface is peeling away near sink side
- is it possible to increase water temperature?

I value abstraction in my art as I experience it as an accepting space.

Zachery Taylor work study aid for EIA, deals with sign up sheets, and knows the equipment

Sign out 3-4 hour blocks on Mondays

Mark or Don for all computer issues

[REDACTED] department copy code

[REDACTED] student copy code

Anthony Gallow speakers

Academic reference programs:

Mandalay  
Zotero  
Endnote

John the librarian can answer jstor questions

yvonne spielmann

Society of Cinema and Media Studies conference, ask Andrew if we can go

Chris Moys Andrews

Vito Acconci  
Theme Song  
Come on

Coagula XP audio software  
Morgan Higby Flowers

Advanced Electronic Arts (Scheer)

Tuesday September 11:

Played Dawn Speer and discussed process. He felt a desire to move through and interactive space and we discussed the possibility of an environment with the field recording as a glue, and the perhaps the particular field sounds (cranes, frogs, geese, etc) and composed sounds could be triggered by a visitor's movement in the display space.

He mentioned local spot: Kettle Lake Bog

And also compared elements to Gary Hill's Tall Ships

Staff of Holmes auditorium: Evan Linz phone 607 871 2167

"Talking about music is like dancing about architecture"

Anderson's direction is varied and competent on the whole. But some of the slogans flashed on the rear screen projections ("Talking about music is like dancing about architecture") rush by so fast that the jokes are easily missed."

[PNLA] 1986 July 18, Philadelphia Daily News, A Sense of Laurie Anderson by Jonathon Takiff, [Review of "Home of the Brave" by Laurie Anderson], Page 43, Philadelphia, Pennsylvania. (NewsBank)

"Strictly considered, writing about music is as illogical as singing about economics. All the other arts can be talked about in the terms of ordinary life and experience. A poem, a statue, a painting or a play is a representation of somebody or something, and can be measurably described (the purely aesthetic values aside) by describing what it represents."

[NRSE] 1918 February 9, The New Republic, The Unseen World by H. K. M., Page 63, Vol. 14, The Republic Pub. Co. (Google Books gives an incorrect date of 1969. Quotation verified on microfilm)

[http://books.google.com/books?id=Q2ICAAAIAAJ&q=%22singing+about%22#search\\_anchor](http://books.google.com/books?id=Q2ICAAAIAAJ&q=%22singing+about%22#search_anchor)

PUBLIQuartet NYC, 9 years, Public Access program to commission new works Freedom and Faith new album featuring women composers. Forthcoming residency at The National Sawdust Factory, suspended from springs in NYC to avoid subway sounds

Jesse Montgomery (Smoke from Break Away)

Ella Fitzgerald A Tisket A Tasket

Jessica Meyer Getting to the Now, Years of Envy

Santa Familia Mind the Gap Von Bingen

Nina third movement technique notation marking: harmonic glissando. Use arrows/lines to indicate desired pitch directions.

Road trip with Rebekkah Palov to BASILICA SOUNDSCAPE 2018

Attended Community Spaces in The Underground panel

Gerald O'Grady hired Tony Conrad:  
<http://www.vasulka.org/archives/Artists4/O'Grady/general.pdf>

Jan Weistead University Milwaukee synth electronic lab:  
<https://uwm.edu/arts/directory/weistead-jan/>

New Media PHD programs:

Media Study PHD Buffalo:  
<https://mediastudy.buffalo.edu/programs/graduate/phd-in-media-study/>

DXArts Seattle, full ride PHD :  
<https://dxarts.washington.edu/dxarts-phd>

VCU Richmond Media, Art, & Text PHD:  
<https://matx.vcu.edu/>

RISDI and MICA supposedly have PHD programs?

RP:  
<http://www.arts.rpi.edu/pl/doctor-philosophy-electronic-arts>

Social Practice

Brett Hunter SDS Head. Social Practice contact

One site after another miwon kwon

Conversation pieces grant kester

Pablo Helgurea Education Socially Engaged Art

Creative Tome granting agency, & conference

Steve Lambert interactivity

Creative Art Ensemble

Eric Souther's recommendation: How Forrest Think an Anthropology of the Non Human

## Process Journal: Book the First

The assignment for William Contino's Work and Analysis class to create a 32 page 11 by 17 book/zine presented me with a number of challenges related to my technical experiences, or rather lack of experiences. The last time I used any sort of page layout software was in Page Maker, so things have changed quite a bit in the intervening years. Fortunately my experience using Premiere and Audition in the Adobe Creative Cloud Suite had at least partially acclimated me to some of the concepts, shortcuts, and views used across the applications. This was also the first time I had such easy access to a variety of printers and processes. It took several passes within the nested settings for the Toshiba printer. Something as simple as content orientation (landscape or portrait), and the finishing options for folding (short edge) and stapling (saddle stitch), took time to learn and apply.

For the actual process of gathering content for the book, I decided to capture aspects related to my daily ritual practices of honoring the spirits and directions. Having seen the results of Joseph Scheer's moth scans which utilize and special

scanner which allows for very precise scan depth, even at heights above the glass, encouraged me to work with scanning three dimensional objects using the new Epson scanners in the lab which were said to offer the same feature. They don't. William and Mark and I sat and wrestled with the settings, manual, and web searches to see if anyone had worked out how to get that feature to work...and we came up blank. So I settled on moving forward with the project without that capacity. I decided to scan at 1200 DPI as I knew I wanted to be able to print full page in high resolution. This decision meant longer times for scanning as I had 94 items (17.6 GB!) to account for. I spent over 12 hours during the lab part of the process carting containers of materials from my home alter spaces to my studio on the second floor, and then up to the 5th floor lab for scanning. I took the stairs during each trip and my step count and flights of stairs count were huge over those two days.

Once the materials were scanned in I set to work exploring parts of Photoshop I'd not really used before. I had vague recollections of a magic wand tool which would let me select parts of the images based on some sort of edge detection. I knew that the paper we were working on was white, and I

wanted certain object to seem to float on that white page. Many of the scans ended up with black as the background, which was fine for some of the layout I explored. I was interested in creating repeated patterns and shapes by copying, pasting, reversing, inverting, etc. Indesign was finicky about some of that and put the handles for moving things in weird spaces off the area of the page I was working in. The lesson I learned from this is to work on those variations in PS prior to working in ID. Another thing I learned when printing, was that my images sizes were so DPI large that it really slowed down the usability of the application and of the print process. Reducing them significantly to something like 75-240 DPI made things much snappier in terms of performance. Scan large, reduce smaller, then layout and print.

Class: Work and Analysis (Contino)  
Zine details:  
32 pages  
8 & 1/2 by 11 300 DPI  
To insert image:  
File, Place  
Point to image folder  
If enlarging do it in Photoshop, not Indesign  
To resize Right click, Fit, Fit Proportionally  
View, display performance, high quality  
File, Package - full resolution archive of everything into single folder  
09/04/18  
Visiting Artist Videofreak  
Alan Riley  
2010-2012 EIA MFA grad  
Allen-Riley.com  
Book: Finite & Infinite Games, FLKR & Slack inspired by the book  
Augmenting Human Intellect DC Engelbort  
ubu web site is useful resource: Check out Aspen Magazine  
To print book to iba:  
File Print Booklet  
Type two up saddle stitch  
Print blank printer spreads checked  
Print settings iba  
Setup  
Orientation horizontal  
Page position centered  
Page setup  
iba  
Ledger 11x17

Orientation horizontal  
Printer  
Print 2 sided  
Layout  
Short edge binding  
Finishing  
Stapling  
Saddle stitch landscape  
Setup/preview pages in order  
File  
Automate  
Window  
Actions  
Clear all  
New action  
Name  
Record  
File open  
Click on 1  
Image  
Image size  
Resample checked  
Resolution  
240  
Save as  
Select new folder  
File  
Close  
Stop button  
File automate  
Batch  
Source folder  
Check all boxes  
Destination  
Folder  
9/18  
Watched these four films:

Interval Peter Greenaway  
Belly of An Architect  
Street of Crocodiles Quay Brothers Bruno Schultz  
Decodings Michael Wallin  
Ralph Gibson Equivalence Photo Book  
Filmmakers Takahiko Iimura

Time based (Deutsch)  
Gail is taking the class with us. Her husband Jonathan teaches in ceramics.  
Nino, Junior.  
Stockhausen How Time Passes  
Lucifer stopped time  
Unfiled Time Structure  
Multi layers  
Sirius, electronic, voice, trumpet  
Temporal, frequency, layers, & time.  
Pierre Schaefer Reduced Listening, don't hear the instruments, don't name it.  
Acousmatic music, from Socrates hiding behind a curtain  
Pierre Henry, Luc Ferrari Cinema for The Ears, ambiguities of the sound. Not directly narrative.  
Keith Rowe AMM  
Boulez vs Cage: book by Michael Nyman  
Time and tone in music  
Andrew calls his work electro dynamic drawing  
Paul DeMarinis  
Which Fluxus person said "any sound goes with any image"  
9/19 :  
"The eye may be said to owe its existence to light, which calls forth, as it were, a sense that is akin to itself; the eye, in short, is formed with reference to light, to be fit for the action of light; the light it contains corresponding with the light without."  
Johann Wolfgang von Goethe

Index DVD  
Phillip Jeffrey's Wall Coverings Owner donated the fabric printer and is coming in October. Andrew asked me to make a print for him.

Chase Anger Unger dance teacher might be up for sound collaboration  
Also folk inclined music person  
Print and Video for experimentation  
After effects or premiere full Rez exports of stills  
Screen capture in moc  
Hsini-Des Photography adjunct teaching lighting and into social practice

Relational Aesthetics  
Post Studio

Song Delay Joan Jonas

X&Y components of audio & video  
Audio Amplitude & Frequency  
Video Chroma & Luma

Mark's recommendations :

Bergen & keaney swamps

Chimney Bluffs

Zoar valley

The Ledges:

Stay right by Big Dipper, 1/4 ledges in right, curve is start of ledges, cross bridge, parking lot on left gravel pit, walk back in creek, creek diverges head west

One degree of freedom

Reeves BFK paper Walter Wright

Maple shows less grain  
Cherry shows more  
Oak shows most

Xuan paper

Intaglio etching engraving below the surface, ink pushed below surface and pulled out by damp paper- polymer plate, film positive process. Replaces photo gravure and is less toxic

Woodblock is relief printing

Planographic is lithography, oil and water doesn't mix, all takes place on same surface

Stencil or screen printing, earliest type of printing on caves in Spain & France

Digital Prints:

Super high res to obtain highest quality

Lowest res from video 640x480 for statue mouths

Star three ply paper

Cloud Dragon Paper

Turn printer on  
For print use tiff, or RAW

For video work in SRGB, compresses highlights and shadows

Best color space for printing Adobe RGB

Photoshop:

-Edit color settings set to Adobe RGB  
-document profile, Edit convert to profile needed  
-each printer has a profile  
-each paper has a profile  
ALWAYS US "CONVERT TO PROFILE"

Monitor brightness setting to all but three filled

Interpolate to make image bigger, paper is 24 inches wide, make image 20 inches wide (2 inches blank on either side)

300 DPI Resample smaller or larger image to chosen resolution, bicubic, nearest neighbor

When ready to print:

Watercolor Canon 6400, Museum Etching paper  
Print settings, put in correct paper size, manage custom sizes, add one, double click title and name width by height, user define, fine watercolor Canon, 24 x 34, ok, Layout, color matching ColorSync automatic, save  
Color handling printer manages color, perceptual (continuous tone) selected  
Hi print, ok, print, ok

Scheer Epson scanning:

Monitor three bars

Check PS for scanner software  
Layer, Info, History open  
Panel options

Turn scanner on  
Open Epson Scan 2

Scan settings: photograph for most things  
Scanner glass  
Document type: reflective  
Resolution: 300 final output, small object to blow up higher rez  
Color management: color control, 2.2  
Colorsync: Epson standard  
Scan quality: high  
Target: Adobe RGB  
Image format: tiff  
48 bit color highest rez

Advanced settings:  
Unsharp mask: middle (means sharpening)  
Color restoration: off  
Backlit correction: off  
Descreening: off (deals w/ halftones) can create moire by layering screens  
Dust removal: off

Preview:  
Use Advance settings, detailed adjustments  
Color balance: (good to correct weird colors)  
Gray balance intensity: (correct cast)  
Tone correction: curves (don't throw any information away) slight s curve to improve contrast  
Histogram: stretch out tones

Resolution: 22x30 print should be around 100MB, scan a bit more than you want to print, 44"x7-8 feet from a GB file

Crop to just what wanted scanned

Print in 8 bit shows no difference from 16 bit according to Joseph

Black paper behind scanned paper will prevent bleed through in scan

Scheer halftone laser print.

Important photo in Lightroom to transform to best black and white possible. Get most range of tones.

Export TIFF 300 dpi

Open in PS adjust image size to block size

Convert to grayscale, discard color layers.

Image mode bitmap, 300 dpi, halftone screen.

Frequency (lines per inch)

85 lpi with elliptical dots

Laser cuts whatever is black. Turn into negative by inverting with cmd i

Color separation

Resize for black

Separate colors, select color range choose gray, hold shift key down to get other colors, high fuzziness, copy paste

Layer merge visible

Image mode grayscale, don't merge

Flatten image both colors, save to desk top, discard

Use history to see other layers

Image mode 8 bit

Clean up and darken image, curves middle boots a lot, clean again

Make into halftone

85 lines, round or elliptical, 45 degrees (change degree for each layer) invert and

save

Some thing for next layer, change angle

For my block:  
Red cut 65 100, second pass 50 100  
Black 65 100, second pass 50 100

Stucki is dithered halftone

I just thought  
What a genius  
I just thought  
Vaguely Jesus

Intaglio process

8 bit

Grayscale

Size to plate

Black down to 80%

Cmd m

Curve 80

Cmd oc v  
Duplicate same layer

Soft light

Flatten image

Curves back to 80

Add

Canvas , white , move up, 12 "

18 point font name

Flatten

Save new name

I'm a practical creative dancer.

Polymer print

Turn on and warm up

Push & turn to turn on

Run 2-3 exposures to warm up

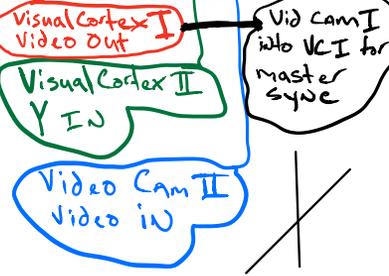
Expose 120 seconds (Vacuum @ .008)

Wash 55 seconds

Dry 660 seconds

Post exposure 3 x 120 seconds

2 cam, 2 VC TBC setup:



Immersive gallery details

speaker setup:  
Right = back left 1/r  
Middle = front 1/r  
Left = back right 1/r

projector:  
1280x720

Hanging and finishing prints:

Tips from Joseph

Measure half inch on all sides, put screw in wall, magnet on paper to screw.

Eye level 62 inches, print centered

Sandpaper 120 for removing unwanted marks.

Melanie Bonajo Furniture Bondage

Things to get in Alfred

- passports
- pillow
- green blanket
- heaters
- checkbox
- LZX
- boxes

Plant feet when moving. Don't walk it. Move both directions.

Test Patterns (2018) Victoria Keddle

Bosquet's first band. Playing with tech at his time. "What was the electricity like? Let's go in there."

Phenomenology: philosophy of consciousness

Hermeneutics: philosophical inquiry into how we make interpretations

VALIE EXPORT

out + ab + an + zu [up + down + on + off]  
1968/2004  
expanded movie  
performance drawing  
dimensions variable 150 x 200 cm (60 x 79 in) or 190 x 270 cm (75 x 107 in)  
duration variable (8-00 minutes for this reenactment)

This piece originally included film and its projection onto a sheet of paper where viewers were invited to draw on the surface of the paper while the film played. In my research I was unable to find any video references to view how it may have looked, nor any photos or descriptions of how it was installed or precise information on how participants interacted with it while drawing. Instead I have two stills from the film, and two completed drawings for reference to inform my reenactment. In preparation for the reenactment I utilized photographic source images of stills from EXPORT's black and white film slicing them together frame-by-frame to create an eight-minute video which may be similar in look and feel to EXPORT's film. This video will be projected in the Sound Studio using a video projector and, in the reenactment, I will play the role of participant/viewer by drawing on the paper during the projection.

EXPORT describes the film:

"The viewer, whose participation in the production of the film is essential, uses the writing implement to add to what is covered on the celluloid. In the end, what you see in the white projected square are the lines and symbols of the reproduced reproduction." (1)

"Thus the drawing, created during the projection of the film and originating through the action of the participant, becomes the actual film." (2)

Speaking of the drawing EXPORT states that it is:

"the culmination so to speak ... The areas on the celluloid that are painted over are, in a way, supplemented with a drawing; in other words, anyone who dares to go up to the canvas and draw will end up with a completely individual, unique film." (3)

1. 1. VALIE EXPORT, in Split-Reality: VALIE EXPORT, exhibition catalog

Museum Moderner Kunst Stiftung Ludwig, Vienna, April 25 - June 15, 1997 (Vienna, New York: Springer, 1997), 64.  
2. 2. Brigitte Reutner, in VALIE EXPORT - Drawings, in VALIE EXPORT Time and CounterTime, Naitter König, Köln; Bilingual edition (April 30, 2011), 216.  
3. 3. Sylvia Szely, EXPORT LEXIKON, Chronologie der bewegten Bilder bei VALIE EXPORT. (Vienna: Sonderzahl Verlag, 2007), 202.

Mikela

Blast 150 \$54.99

Performance 60 \$44.99

\$39.99

ECO Auto \$5

xfinity my account

Sand molds for glass

4% benzonite to sand

Water conservatively as needed to dampen

Salt 16 x 13

Mirror bubble 13 x 7

Blue glass 6 x 6

I got really carried away and engaged in this process and created multiple screens out of glass. Some of them were unmitigated disasters but I kept pressing on. I plan on showing my findings with demonstrations of up to three screens if time allows. Here they are in my order of preference (meaning if I can only share one, it'll be the first one):

Wound Maker (Be Wary of False Gauze!)  
sheet glass, one pound of salt, glue, & binder clips  
16 inches by 13 inches  
Projection (either front or rear)

This one was so mean to me! I worked on this idea for a week. Originally starting with olive oil-soaked paper (which turns the paper translucent) and burnishing salt into the surface of the paper. I couldn't get enough of the salt to adhere and stay on the paper though. I then hit on the idea of wedging a layer of salt between to panes of glass. This proved tricky in other ways, not least of which is the fragility of the panes I have access to. I broke six pieces total trying to do this (and managed to cut my fingers, which made things more challenging), including the final one I'm presenting. It cracked at the last minute in an unexpected way, when the salt expanded after gluing the two panels together. The pressure and movement of the salt while the glue dried induced the long horizontal crack on one side. Either side can be projected on but I will demonstrate it in a rear projection capacity, projecting on the cracked side to create the image on the other side. As it is structurally damaged, heavy, and potentially dangerous, I will hand hold this screen during the demonstration.

Phase Space  
Blown glass, with hand-mirrored surfacing  
Dimensions variable, approximately 13 inches by 7 inches  
Rear projection

I love how this looks and behaves and creating it has had many new ideas for creating an installation. In creating and titling the work, I considered Manuel

Delanda's ideas of molecular interactions generating at singular points in space which can expand, via energetic possibilities, into specific forms. This is further expanded in the way that the image fills the form from within and then bends it around the exterior surface really excites me.

Blue Ear for White Cubes  
Cast glass  
6 inches by 6 inches  
Rear Projection

The angle of the cast glass form, and the concave circle meet to create a nearly holographic dimensionality when viewed from certain angles from the front side.

Solid Works in McMahon lab

Rhino

Google sketch up

Fusion 360

David Greene  
greene@alfred.edu

Issues w/ Marble Index:

Using RGB signal chain input from camera to Visual Cortex through to Marble Index:  
-Opacity CH. A main knob, & Opacity VC knob both have intermittent shorts (firmly pressing knobs in/down triggers shorting behavior)  
-Individually CH. A, CH. B, & Background do not fully block out with RGB color knobs fully counter clockwise & associated Mix switches engaged in upper position.

Salted glass screen dimensions  
Wood base: 19x6  
Glass: 16x12x1

Arted credits needed for last year:

Work & Analysis Joseph Scheer  
Joe out September 10th  
September 17th we present  
Presentation on two examples on how an artist uses text with images, web, book, article, interview, installation, interactive media, etc.  
Critique ideas and present to each other.

**Consequences of reflection from a planar surface**  
The image is equidistant from mirror  
- image is either upright, not inverted  
- image is virtual, not a real image  
- virtual means that light rays do not actually intersect at the location of the image  
- image can't be projected or diminished

**Refraction through planar surfaces**  
- keep rays as close to the axis (paraxial) rays close to optical axis, make small angles w/ it  
- object distance - s  
- image distance - s'  
 $\sin \theta \approx \theta \approx \tan \theta \approx \theta \approx \theta$   
 $n_1 \tan \theta_1 \approx n_2 \tan \theta_2$   
 $n_1 \frac{y}{s} = n_2 \frac{y}{s'} \rightarrow s' = \frac{n_2}{n_1} s$

total internal reflection, part of Snell's law  
- higher index = slower movement of light, lower index = faster movement

**CURVED SURFACES**  
- telescopes / curved mirrors (chromatic aberration occurs in lenses)  
- curve shapes - ellipsoids (inside), paraboloid (outside)  
- hyperboloid (outside)  
- spherical mirrors most common, double of spherical  
- Cartesian ovoid spherical surfaces  
- 1st order / Gaussian optics  
 $\sin \phi = \frac{\phi}{s} + \frac{\phi}{s'}$   
 $\cos \phi = 1$  → getting smaller

Lecture 09/04/19

Sign convention s, s', R  
object distance s > 0 for real obj, s < 0 virtual  
image distance s' > 0 for real, s' < 0 virtual  
Radius of curvature R > 0 if C is to right (convex), R < 0 if C is to left (concave)  
Focal length f > 0 - concave surface, f < 0 - convex

**convex mirror**  
virtual image  
 $\frac{1}{s} + \frac{1}{s'} = -\frac{2}{R} = \frac{1}{f}$   
 $\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$

**concave**  
 $d + 2\phi = d'$   
 $d = 2\phi - d'$   
 $d + d' = 2\phi$   
 $\frac{1}{s} + \frac{1}{s'} = \frac{2}{R} = \frac{1}{f}$

converging or diverging mirror  
focal point - 1/2 radius of surface

image point or image object  
- real  
- inverted  
- diminished

$\left(\frac{1}{78} + \frac{1}{23.5}\right)^{-1} = 18\text{cm}$   
+78  
+23.5  
+19.5

$\left|\frac{h_o}{s}\right| = \left|\frac{h_i}{s'}\right|$  lateral magnification  
 $m = \frac{h_i}{h_o} = -\frac{s'}{s}$   
- Snow White & 7 Dwarves

**Refraction through spherical surface**  
N1 > N2, does Snell's law  
N1 θ1 = N2 θ2  
φ + θ1 = d  
φ + θ2 = d'  
θ1 = d - φ  
θ2 = d' - φ

R → ∞  
Radius goes to infinity eventually behaves like flat surface i.e. planar

9/9/19 Spherical mirrors:  $\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$   $f = \frac{R}{2}$   
 Spherical refraction:  $\frac{n_1}{s} + \frac{n_2}{s'} = \frac{n_2 - n_1}{R}$

This lens: Lens = different material than what it's sitting in. Double refraction from  $n_1$  into  $n_2$  & back into  $n_1$ .

Thickness of lens =  $T = S_1'$   
 Let  $T \rightarrow O \rightarrow S_2 = -S_1'$   
 first surface:  $\frac{n_1}{s_1} + \frac{n_2}{s_1'} = \frac{n_2 - n_1}{R_1}$   
 second surface:  $\frac{n_2}{s_2} + \frac{n_1}{s_2'} = \frac{n_1 - n_2}{R_2}$   
 $s_2 = s_1'$   
 $\frac{n_1}{s_1} + \frac{n_2}{s_1'} + \frac{n_2}{s_1'} + \frac{n_1}{s_2'} = \frac{n_2 - n_1}{R_1} + \frac{n_1 - n_2}{R_2}$   
 $\frac{n_1}{s_1} + \frac{n_1}{s_2'} = \frac{n_2 - n_1}{R_1} - \frac{n_2 - n_1}{R_2}$   
 This Lenses:  $\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$   
 $f = \frac{R_1 R_2}{(n_2 - n_1)(R_2 - R_1)}$   
 FZO - converging  
 FKO - diverging

combination of thin lenses in series  
 in contact:  
 $\frac{1}{s} + \frac{1}{s'} = \frac{1}{f_1} + \frac{1}{f_2} = \frac{1}{f}$   
 $S_2 = -S_1'$   
 $\frac{1}{s_2} = -\frac{1}{s_1'} = \frac{1}{s_1} - \frac{1}{f_1}$   
 $\frac{1}{s} + \frac{1}{s_1} - \frac{1}{f_1} + \frac{1}{s_2} = \frac{1}{f_2}$   
 $\frac{1}{s} + \frac{1}{s_1} + \frac{1}{s_2} = \frac{1}{f_1} + \frac{1}{f_2} = \frac{1}{f}$   
 Generally:  $\frac{1}{f} = \sum \frac{1}{f_i}$  (all lenses in contact)

cap model using resistor capacitor in series

2-9  $\frac{1}{100 \text{ cm}} + \frac{1}{10 \text{ cm}} = \frac{1}{f}$   
 $f = 40 \text{ cm}$   
 $s_1 = f_1 = 100 \text{ cm}$   
 $s_1' = \frac{f_1 s_1}{s_1 - f_1} = \frac{100 \cdot 100}{100 - 10} = 111.1 \text{ cm}$   
 $s_2 = -s_1' = -111.1 \text{ cm}$   
 $s_2' = \frac{f_2 s_2}{s_2 - f_2} = \frac{10 \cdot (-111.1)}{-111.1 - 10} = 9.09 \text{ cm}$

2-11  $\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$   
 $\frac{1}{15 \text{ cm}} + \frac{1}{s'} = \frac{1}{15 \text{ cm}}$   
 $s' = -15 \text{ cm}$   
 $m = \frac{s'}{s} = \frac{-15}{15} = -1$   
 $\frac{1}{3}$  (fish looks bigger)

clear (less magnification) effect

$s = 7.5 \text{ cm}$   
 $R = 15 \text{ cm}$   
 $n_1 = 1, n_2 = 1.5$   
 $s' = 6.4 \text{ cm}$   
 $m = \frac{s'}{s} = \frac{6.4}{7.5} = 0.85$

9/11/19 optical instrumentation. camera, optic fiber, display extra aperture, prisms, computational photography.

aperture:  $\emptyset$  and spacing, centered on axis aspect for letting a certain cone of rays through.  
 - limits extent of the rays that can be processed by system  
 - done physically by blocking rays outside the edge of the aperture  
 - pupils: telescopes, camera

By opening = more light  
 small opening = less light  
 closing down aperture knocks out least paraxial rays

opening allows brighter images  
 - lens can be Aperture if object is close to lens  
 - Entrance pupil of a system = limiting aperture on way in  
 - Exit pupil what system looks like from inside system  
 - Exit pupil should be sized for human pupil where it will view from

Field stops - control the field of view by limiting the solid angle from the object that makes it into the system  
 - how large or how far the object can be - also done w/ a ring physically  
 - vignetting - dropping off intensity on edge of field of view. good systems do this crisply.

blurring is called aberrations  
 6 types: Two categories  
 Chromatic (color) aberration  
 monochromatic (single color) aberration

index of refraction  $n(\lambda) \rightarrow f(\lambda) \Rightarrow$  use mirrors to overcome

spherical aberration - less paraxial rays focus to different points because sine

bluest part in bundle of rays, lots of light are coming through all different parts of the lens, most affected further away from axis

coma: makes things fuzzy, depends on  $\theta^2 \cos \theta$   
 Astigmatism: points become lines (of lens)  
 curvature of field:  $h^2, r^2 \cos \theta$   
 Distorted:  $h^3, r \cos \theta$

chromatic aberration: useful purposes  
 Prisms: diffraction gratings  
 diffraction gratings: change of angle of the rays

7/16/19 Prisms: Dispersion (spread in deviation)  
 - wavelength changes through material. frequency does not.  
 dispersion  $\frac{dn}{dn}$   
 $n(\lambda) = A + \frac{B}{\lambda^2} + \frac{C}{\lambda^4} + \dots = A + \frac{B}{\lambda^2}$

$D = \frac{2B}{\lambda^3}$

Fraunhofer Lines:

| Line       | $\lambda$ (nm) | wavenumber | wavelength |
|------------|----------------|------------|------------|
| F (blue)   | 486.1          | 1.5286     | 1.7328     |
| D (yellow) | 589.2          | 1.5230     | 1.7205     |
| C (red)    | 656.3          | 1.5205     | 1.7076     |

Dispersive power:  $\Delta = \frac{dn}{dn} = \frac{n_F - n_C}{n_D - 1}$

Rayleigh's criterion:  $\Delta \theta = \frac{1}{2}$   
 $(\Delta \lambda) \approx \frac{\lambda}{2} \frac{dn}{dn}$

Porro Prism  
 - inverts two flips  
 - inverts inversions  
 - aberration can be mitigated

pinhole camera  
 - tiny hole, every point is linked to one point on film  
 - must long time for long exposure

Here camera smaller lens  
 more light spreads out on other side  
 - adding converging lens, which gathers more light  
 - will be smaller of sharpness, but now must choose  $s'$  wisely  
 - intensity of film/sensor  $\propto \frac{1}{s'^2}$   
 - depth of field depends on focal length (aperture)  
 - relative aperture:  $A = \frac{f}{D}$   
 Intensity  $\propto \frac{1}{f^2} \frac{D^2}{A^2} \propto \frac{1}{f^2} \frac{f^2}{A^2} = \frac{1}{A^2}$

F-Stop (speed of film)  
 - less of 4cm focal length  
 - aperture = 2cm  
 $A = \frac{4}{2} = 2$  called f/2 aperture  
 DART = f/stop/sec

Total exposure of film is  $\frac{1}{m^2} \frac{1}{(m^2)} (s)$  (intensity)  
 if  $\frac{1}{8}$  works for f/2 aperture  
 if you want to use f/4 aperture (bigger & muddy)  
 need to shorten exp time  $\frac{1}{16}$   
 twice the aperture size = quad energy

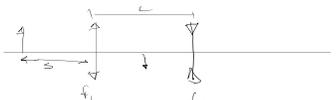
The depth of Field

Depth of field given by near point to far point  $s_2 - s_1$   
 - DOF is  $2Ad s_0 (s_0 - f) f^2$   
 $f^4 - A^2 D^2 s_0^2$   
 $d = \text{"diameter of the circle of confusion"}$   
 $= \text{acceptable diameter of the size of the blurring.}$

9/18/19 (simple magnifier / magnifying glass)

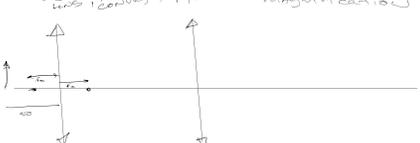
$\tan \alpha \approx \frac{h}{25\text{cm}}$   
 $\tan \alpha \approx \frac{h_i}{s_i} = \frac{h}{s}$   
 Angular magnification  $M = \frac{d\theta}{d\theta_0} = \frac{h/s}{h/25\text{cm}} = \frac{25\text{cm}}{s}$   
 If you want image pushed to infinity:  $\frac{1}{s} + \frac{1}{s'} = \frac{1}{f} \rightarrow s' = \infty$   
 For comfortable viewing:  $s = 25\text{cm} \rightarrow s' = \frac{25\text{cm}}{M} \rightarrow M = \frac{25\text{cm}}{s}$

---

Fixing chromatic aberration, 2 lenses  
 Dual focal point  


$\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2} = \frac{L}{f_1 f_2}$  works for final images @  $s' = -\infty$   
 measuring  $s, s', f$  relative to 1st lens  
 using lens maker equation:  $\frac{1}{f} = (n-1) \left( \frac{1}{R_1} - \frac{1}{R_2} \right)$   
 chromatic aberration fixed by changing length between lenses

focal length of lens index of refraction = less chromatic aberration  
**TAYLOR SERIES CONFUSION**  
 Lenses put  $\frac{1}{2}$  way apart from their focal length average.

de-magnification  $\rightarrow$  piece acting like magnification  


$L = f_0 - f_e = 16\text{cm}$  in many telescopes  
 Numerical Aperture N.A. - invariant of optical system  
 $\propto \sin \alpha$   
 Depth of focus decreases w/ greater Numerical Aperture

Telescopes: Refractors & Reflectors  
 Refractors: Keplerian (astronomical) 2 positive (converging) lenses - virtual image flipped/inverted  
 - catadioptric - both lenses & mirrors

Galilei (negative ocular) upright  
 - eyepiece diverging? converging lenses  


Angular Mag  $M = \frac{\alpha'}{\alpha} = -\frac{f_0}{f_e}$   
 Length  $L = f_0 + f_e$   
 objects are distant so numbers drop off to 0? math is simpler  
**Buses are two telescopes**  
 Newtonian Cassegrain geometries for directing light in the eye

9/23/19: Telescope geometries  
 Fizee - refraction take @ 45 deg, good for multiple stars  
 Reflectors - some large ones have edges where you can sit w/ w/

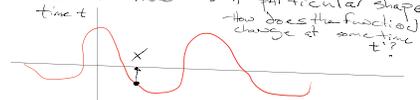


schmidt/cassegrain is common refracting/reflecting  


Double hyperbolic Cassegrain  $\rightarrow$  Ritchey-Chrétien (also for interferometry)  
 $L = f_0 + f_e$   
 $M = -\frac{f_0}{f_e}$

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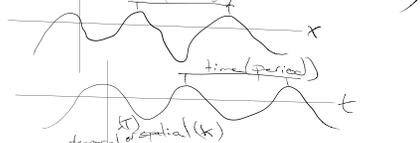
**WAVES** what is a wave?  
 - disturbance of stuffs  
 what kind of waves are there?  
 - specific mediums  
 - Transverse (can be made in liquid)  
 - Longitudinal (sound waves, compression in air)  
 Travelling waves:  
 - consider function of the form:  
 $y = f(x - vt)$  - any periodic function  
 $\sin(x - vt)$   
 $\exp(x - vt)$   
 $(x + vt)$

Travelling waves:  
 at a particular instance in time the function has a particular shape  
 how does the function change at some time  $t$ ?  


- There is some point  $x'$  that will definitely have the same function value @ time  $t'$  as the value  $f(x - vt)$  @  $x, t$   
 - if  $(x - vt = (x' - vt'))$ , then  $f(x - vt) = f(x' - vt')$   
 $x' = x - vt + vt' = x + v\Delta t$

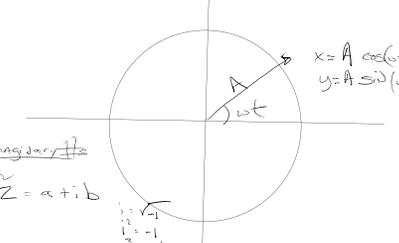
- all travelling waves must have this form  $y = f(x - vt)$   
 differentiate w.r.t.  $x$  & time  
 $\frac{\partial y}{\partial x} = f'(x - vt)$   $\frac{\partial (x - vt)}{\partial x} = f'(x - vt)$

**WAVE EQUATION**  
 $\frac{\partial^2 y}{\partial x^2} = \frac{1}{v^2} \frac{\partial^2 y}{\partial t^2}$

sin function:  $\sin(\theta + 2\pi) = \sin(\theta)$   
 angle has radians or no units  
 phase shift  
 this is all around a circle  
 dimensionless (no units)  
 wavelength: period of wave  


angular frequency of oscillations  
 of waves travelling by per/unit of time is the frequency  
 $\frac{1}{T} =$  how many units go by per/unit of time  
 for all waves:  $v = f\lambda$

Exponential function (most useful/easier than sin/cos)  
 Phasors (rotating vectors AC circuits)  
 sin/cos - generated by rotation  
 - complex numbers



$x = A \cos(\omega t)$   
 $y = A \sin(\omega t)$

imaginary axis  
 $\tilde{z} = a + ib$   
 $\tilde{z}^* = a - ib = |\tilde{z}| e^{-i\theta}$   
 $\tilde{z} \tilde{z}^* = (a + ib)(a - ib) = a^2 + b^2 = |\tilde{z}|^2 e^{i\theta} e^{-i\theta} = |\tilde{z}|^2$   
 If  $A \sin(kx - \omega t)$  sine wave  
 &  $B \cos(kx - \omega t)$  cosine  
 are waves, then  $C e^{i(kx - \omega t)}$  is too.  
 waves are made of sines & cosines  
 - linear diff equation  
 - superpositional  
 - hyperbolic functions don't oscillate  
 - phase relationships in waves  
 If there were an oscillation that looked like  $e^{i(kx - \omega t)}$  but was a little bit dead in its oscillation we can represent it as  $D e^{i(kx - \omega t + \phi)}$   
 $\phi$  works in both time & space  
 sin = vertical piece  
 cos = horizontal piece  
 travelling in time and  $x$

Euler's formula:  $e^{i\theta} = \cos \theta + i \sin \theta$   
 magnitude  
 9/25/19 General waves:  $y = f(x - vt) \cdot \sin(k(x - vt))$   
 $\omega = \frac{d\omega}{dt}$   $k = \frac{2\pi}{\lambda}$   $\omega = \frac{2\pi}{T}$   $f = \frac{1}{T}$   $f(x - vt)$   
 $v = \frac{\omega}{k}$   $\lambda = \frac{v}{f}$   $T = \frac{1}{f}$   $\omega = 2\pi f$   $\frac{\partial y}{\partial x} = -k f(x - vt)$   $\frac{\partial y}{\partial t} = \omega f(x - vt)$

complex variables:  $\tilde{z} = a + ib = |\tilde{z}| e^{i\theta} = |\tilde{z}| (\cos \theta + i \sin \theta)$   
**REAL/IMAGINARY OSCILLATIONS**  
 $\tilde{z}^* = a - ib = |\tilde{z}| e^{-i\theta}$   
 $\tilde{z} \tilde{z}^* = (a + ib)(a - ib) = a^2 + b^2 = |\tilde{z}|^2 e^{i\theta} e^{-i\theta} = |\tilde{z}|^2$   
 If  $A \sin(kx - \omega t)$  sine wave  
 &  $B \cos(kx - \omega t)$  cosine  
 are waves, then  $C e^{i(kx - \omega t)}$  is too.  
 waves are made of sines & cosines  
 - linear diff equation  
 - superpositional  
 - hyperbolic functions don't oscillate  
 - phase relationships in waves  
 If there were an oscillation that looked like  $e^{i(kx - \omega t)}$  but was a little bit dead in its oscillation we can represent it as  $D e^{i(kx - \omega t + \phi)}$   
 $\phi$  works in both time & space  
 sin = vertical piece  
 cos = horizontal piece  
 travelling in time and  $x$

If we can write a wave travelling along +x direction  $\vec{\psi} = A e^{i(kx - \omega t)}$   
 how could we rep a wave travelling along -x direction  $B e^{i(kx + \omega t)}$

-z direction  $C e^{i(kz + \omega t)}$   
 along vector  $\vec{k}$  pointing  $k_x \hat{x} + k_y \hat{y} + k_z \hat{z}$   
 $D e^{i(\vec{k} \cdot \vec{r} - \omega t)}$

spherical vs. cylindrical vs. cartesian coord. systems  
 $= D e^{i(k_x x + k_y y + k_z z - \omega t)}$  4 dimensions

same for all observers:  
 $(\Delta x)^2 + (\Delta y)^2 + (\Delta z)^2 - (\Delta t)^2$   
 invariant interval

09/30/11 EM WAVES:  
 $\nabla \cdot \vec{E} = \frac{\rho}{\epsilon_0}$   $\frac{\partial \rho}{\partial t} = -\nabla \cdot \vec{j}$  appear decoupled but according to Faraday's law if charge happens is magnetic field then change happens in electric field (e. v. wave)  
 $\nabla \times \vec{B} = \mu_0 \vec{j} + \mu_0 \epsilon_0 \nabla \times \vec{E}$  waves couple something  
 $\vec{E} = c \vec{B} \rightarrow \vec{E}_0 = c \vec{B}_0$   
 $\vec{E}(\vec{r}, t) = \vec{E}_0 e^{i(\vec{k} \cdot \vec{r} - \omega t)}$   
 $\vec{B}(\vec{r}, t) = \vec{B}_0 e^{i(\vec{k} \cdot \vec{r} - \omega t)}$

(waves in free space)  $\vec{S} = \frac{1}{\mu_0} \vec{E} \times \vec{B}$   
 Poynting Vector (pts)

polarization of EM wave follows direction of wave  $\vec{E}$   
 magnitude of poynting vector is = to the intensity (ie power/area) = energy/area time  
 $S = \vec{E} \cdot \vec{B} = \frac{1}{\mu_0} E^2$   
 energy density (energy/Volume) length/time  
 $u_E = \frac{1}{2} \epsilon_0 E^2$   
 $u_B = \frac{1}{2} \frac{1}{\mu_0} B^2 = \frac{1}{2} \frac{1}{\mu_0} \frac{E^2}{c^2}$   
 $u = u_E + u_B = \epsilon_0 \frac{1}{2} E^2$

if waves are sin/cos, time avg of energy density in wave  
 $\langle u \rangle = \frac{1}{2} \epsilon_0 E_0^2$   
 Brightness experience = intensity not amplitude

3 Geometries of waves:  
 1) Plane waves:  $\vec{\psi} = A e^{i(\vec{k} \cdot \vec{r} - \omega t)}$  - always  
 $\nabla^2 \psi = \frac{\partial^2 \psi}{\partial x^2} + \frac{\partial^2 \psi}{\partial y^2} + \frac{\partial^2 \psi}{\partial z^2} = -\frac{1}{v^2} \frac{\partial^2 \psi}{\partial t^2}$

2) Spherical Waves (point sources):  $\vec{\psi} = \frac{A}{r} e^{i(kr - \omega t)}$   
 3) cylindrical waves (line sources):  $\vec{\psi} = \frac{A}{\sqrt{r}} e^{i(kr - \omega t)}$

two waves add together when they are in the same place (time): **SUPERPOSITION**

Two sources  $E_1 = E_0 e^{i(k_1 x - \omega t + \phi)}$   
 Two speakers same side  
 $E_2 = E_0 e^{i(k_2 x - \omega t + \phi)}$  (same color waves, or same freq  $\omega$ )  
 $E = E_1 + E_2 = E_0 e^{i(k_1 x - \omega t)} + E_0 e^{i(k_2 x - \omega t)}$   
 $E = E_0 [e^{i(k_1 x - \omega t)} + e^{i(k_2 x - \omega t)}]$   
 $E = 2 E_0 \cos(\frac{\Delta k x}{2}) e^{i(k_{avg} x - \omega t)}$   
 $\Delta k = k_2 - k_1$   
 $E = 2 E_0 \cos(\frac{\Delta k x}{2}) e^{i(k_{avg} x - \omega t)}$   
 Law of cosines  
 $E_0^2 = E_{01}^2 + E_{02}^2 + 2 E_{01} E_{02} \cos(\Delta \phi)$

Three blue one brown videos

10/2/19 SUPERPOSITION: Two sources oscillation in time  
 In phase, amplitudes add because vectors are aligned  
 Intensity is proportional to wave<sup>2</sup>  
 taking a random walk  $\sqrt{N}$  as big as shift  
 Random phases  $\rightarrow$  amplitude  $\sim \sqrt{N} \times$  as shift big

Standing waves  
 wave travelling to the left reflects off surface  $x=0$   
 phase shift from reflection off surface  
 reflected wave  
 incident wave  
 Standing wave  
 nodes  
 antinodes  
 Phase of reflected wave (cos wave)  $E_{02} e^{i(k_2 x - \omega t)}$   
 Phase of incident wave (sin wave)  $E_{01} e^{i(k_1 x - \omega t)}$   
 Phase of standing wave (cos wave)  $E_{01} e^{i(k_1 x - \omega t)}$   
 Phase of standing wave (sin wave)  $E_{01} e^{i(k_1 x - \omega t)}$

$E = E_0 e^{i(kx - \omega t)}$   
 if  $\phi_R = \pi$ :  
 $e^{i\pi} = -1 \rightarrow e^{i\pi} (e^{i\pi}) = -1$   
 $e^{-i\pi} = -1$

when  $kx = n\pi \rightarrow x = n\frac{\lambda}{2} \rightarrow$  ZERO AMPLITUDE  
 1st harmonic is full wave  
 nodes  $\frac{\lambda}{2}$  wavelength apart

node

node/ANTINODE is the structure of STANDING WAVES.

Instrument: guitar  
 fixed area space  
 string length

Beats:  
 $E_1 = E_0 e^{i(k_1 x - \omega_1 t)}$   $E_2 = E_0 e^{i(k_2 x - \omega_2 t)}$   
 440 432 - 436 Avg.  
 8 Difference  
 4 group Freq  
 hear 8 beats every second

Phase velocity & group velocity  
 Animation

10/23/19  
 medium  
 film  
 substrate  
 $\delta = \delta_{p1} + \delta_{p2} - \delta_{p3}$  if  $n_2 < n_1$ , phase is inverted  
 $\delta_{p1} = \frac{2\pi}{\lambda} d$   
 what can be done if a film (multi-l) is inverted  
 equiv. to phase shift of  $\pi$   
 $(-1)^j e^{i\pi} = e^{i\pi} = -1$   
 reflecting blue light (450nm) if the film is of index 1.5, what thickness can you use?  
 light has to go somewhere.  
 can't block on both sides if using reflection

Ellipsometry

10/28/19 Interferometry  
 Michelson Interferometer  
 Recall that for interfering beams, the intensity of one beam  
 $I = I_1 + I_2 + 2\sqrt{I_1 I_2} \cos \delta$   
 $\delta = \delta_{p1} + \delta_{p2}$   
 $\delta = \frac{2\pi}{\lambda} \Delta r$   
 $\Delta r = 0$  - no inversions or double inversion  
 $\uparrow$  - single relative inversion  
 wavefront division - double slit  
 amplitude division - thin film  
 Michelson Interferometer - finding the other actually not (slit coherent slanted in accuracy)  
 never saw any effect of other  
 - measure to these spectral lines  
 - candle, index of refraction  
 - measure gas dispersion  
 how beam splitters work - every bounce inverts  
 relative phase shift of  $\pi$  between two beams

$l_1 = A + 2B_1 + C$   
 $l_2 = A + 2B_2 + C$   
 $\Delta l = l_2 - l_1 = 2(B_2 - B_1)$   
 let  $B_2 - B_1 = D \rightarrow \Delta l = 2D$   
 For normal incidence  
 path length - phase shift  
 $\Delta r = 2D \sqrt{1 + \sin^2 \theta} \rightarrow 2D \sqrt{1 + \sin^2 \theta}$   
 $\delta_{p1} = \frac{2\pi}{\lambda} 2D \cos \theta$   
 cone of light at optical axis creates concentric circles  
 Destructive Interference requires  
 $\delta = (2m+1)\pi$  (but neg in pattern)  
 $(\frac{2\pi}{\lambda} 2D \cos \theta) = (2m+1)\pi$   
 Accurate phase shift?  
 $\frac{2\pi}{\lambda} 2D \cos \theta = 2m\pi \rightarrow 2D \cos \theta = m\lambda$

Edge is first fringe, moving in order is ward  
 max value of  $m$  in pattern  
 $m_{max} = 1$   
 $m_{max} = 2$   
 Fringes move in and disappear in the center.  
 - measure index of ref. of a gas (beam through slits)

wavelength is how far you need to change difference in distance  
 - close spectral lines  
 sodium yellow (D line) 2 spectral lines right next to each other (this system can resolve)

ribbar can show "rust rings" (AM) "Evening Exodous" (PM)  
 - ribs show spiral pattern  
 - why is ontogeny significant? - Birds are dinosaurs  
 - most events in birds' evolutionary history  
 - what is a bird  
 - bird nomenclature - 10k, no. of species  
 - in many species - 10k, no. of species

Bird/Anatomy/Physiology:  
 Feathers: details during later activity  
 unique to birds

Skeleton: (humerus) - major wing bone, inside the bird  
 - Bone is not yellow, elbow inside bird  
 - near humerus, Bone is the wrist

Glycogen: fused, short tailbone

Furcula: wishbone, flight/breathing  
 Coracoid: front, part of shoulder, leg/thick flight flight  
 requires stout girdle to work against

Connects to: Sternum - carina (keel)

Flying is a huge driver of evolutionary coevolution  
 Breast muscle is the largest concentration of muscle in a bird

Trochanteral canal  
 2 bones canal  
 located on each side, lever to humerus  
 Pectoral is super coracoid muscles  
 coracoid is pivot point

Bones have hollow chambers in body struts  
 - diving birds have denser bones

skull (human) (birds two layers)  
 - birds exp. rapid growth as young  
 - grow faster to adult size faster than any other vertebrate

start cuts - grow low-quality feathers (bones to be replaced later)  
 - young bird, only 1 sticking layer of bone of brain use  
 - skulling, wet back of head, push feathers to see through skin, to see bone structure

Musculature  
 - supracoracoides (rise wing)  
 - Pectoralis (fly wing down)  
 - Pectoralis (fly wing down)  
 - Deltoid - rowing motion, right wing outward & forward

09/05/19 Uropygial gland (Green Gland)  
 - simple, under back dove tail modified sweat gland, produces oil/wax to coat feathers  
 - H<sub>2</sub>O proof UV protection, delays mechanical wear

affected - partly developed compared to mammals  
 - water air passages for small passages of tube pores, character of ptilagium  
 - H<sub>2</sub>O proof UV protection, delays mechanical wear  
 - H<sub>2</sub>O proof UV protection, delays mechanical wear  
 - H<sub>2</sub>O proof UV protection, delays mechanical wear

can see w/ spectrum, polarized light (H<sub>2</sub>O vertical)  
 - make certain cryptochromes that help "see" magnetic fields  
 - high flicker threshold, image refreshes more often (seen in fast, navigation is better)  
 - compensating reflexes to hold head + still (parasympathetic?)

Vision - A nictitating membrane protects the eye (can provide underwater protection)  
 - Am. Dipper (freshwater) lives in streams (wets its feathers) ... Songbird (dry out water then)

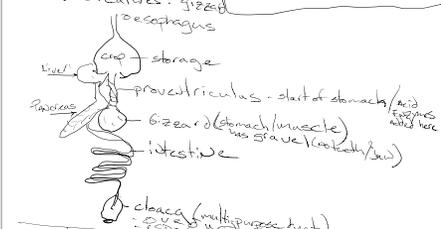
Somatosensory (sense of touch)  
 - centered around tongue, beak (Am. Woodcock)  
 - Pectoral bristles - Pectoral (night hawk)  
 - Pectoral bristles - Pectoral (night hawk)

Falconiformes: Diurnal birds of prey  
 - falcons (5 in N. Am.)

kestrel  
 - Merlin  
 - Peregrine  
 - Gyrfalcon  
 - Butte hawks  
 - Red tail/shawler  
 - Accipiters - Forest hawks, hunt birds  
 - Sharp-shinned  
 - Cooper's  
 - Golden-crowned  
 - Red-shouldered  
 - Sharp-shinned  
 - Cooper's  
 - Golden-crowned  
 - Red-shouldered  
 - Sharp-shinned  
 - Cooper's  
 - Golden-crowned  
 - Red-shouldered

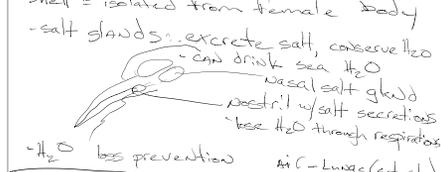
Callio: RS Hawk  
 RT Hawk  
 B. Eagle  
 Am Kestrel

9/10/19 Anatomy II Physiology  
 - Digestive System Takes up most space  
 - short  
 - simple  
 - notable features: gizzard  
 - crop  
 - proventriculus - start of stomach/acid storage  
 - gizzard (stomach/insecte) - has gravel (keels/shell)  
 - intestine  
 - cloaca (multi-purpose but) - excretes + lays eggs



start track  
 - fruit/seed: really for start to produce  
 - mammals would crush seeds in chewing, birds pass seeds to start what is eaten  
 - Geese (herbivore, larger system, symbiosis / mechanical)

Excretory system: - weak by itself  
 - urea acid is produced - get rid of nitrogen (cell waste)  
 - precipitates, saves H<sub>2</sub>O - simple kidneys (no bladder)  
 - not toxic in egg  
 - white part of quail, birds don't pee  
 - metabolically costly  
 - shell is isolated from female body



circulatory  
 - 4 chambered heart, uses pumps more blood  
 - larger proportionates than us  
 - high speed muscles  
 - Rest @ rest: 115 bpm  
 - large, unclotted flux: 670 bpm

respiratory  
 - most efficient respiratory system in the animal world  
 - CO<sub>2</sub> demands for flight are extremely high

lungs is series of air sacs  
 - some single, some in pair  
 - Mammals: have tidal flow respiratory system  
 - lungs: blind sacs  
 - leaves in less optimal air (low O<sub>2</sub>)

Birds have a flow through system  
 - is - all the way to back - through lungs & out - sort of like fish

Accipiters: Ducks, Geese, Swans  
 - diving/dabbling ducks  
 - swans: mourning dove  
 - Gt Owl  
 - Barred Owl  
 - E. Screech Owl  
 - Whip-poor-will

9/12/19 - air sacs are fluid film, no muscles in them, flight muscles are what squeeze the sacs (mammals use diaphragm)  
 - spring loaded furcula (stabilizes) pumps air  
 - involuntary twitch when at flight  
 - air sacs can be used as cooling mechanism  
 - liquid to gas wicks heat (birds don't sweat)  
 - air sacs in skull as shock absorbers (soften ground)  
 - protects brain in for diving

Foster Lake Bird Banding  
 - Early Falconiformes have done it 200 years  
 - method for songbirds  
 - 50's rocket wets (for shorebirds)  
 - shotgun wets exist

12m/36ft L, 3m/10ft H Japanese Origin  
 - visit wet every 20-40 minutes  
 - risks involved, birds can die, Federal Permit required, pass 2 w/ training course  
 - centralized DB for tracking (USGS managed)

Process to band (with population)  
 - hard to estimate population from banding  
 - migratory patterns  
 - such as Geese 20-3000 capturing  
 - song birds less than 2000  
 - monitoring avian population

MAPS  
 - Protocol (Band) in season  
 - were doing it w/ w/ migration  
 - create holes in vegetation for wets  
 - Bird in hand

species, sex, age (hatch year?)  
 - color's - ID species  
 - ID GROUND N. Am Birds (Pyle Guide)  
 - wing length

ea - 4 sizes  
 - migrating birds need FAT - visible deposits (air sac) (wax) - to (wing) by furcula  
 - molt faster wear  
 - skulling  
 - wing efforts

9/17/19 Quiz 3

|                      |                 |
|----------------------|-----------------|
| Sight                | Sounds          |
| A - Whippoorwill     | - Mourning Dove |
| B - Barred Owl       | - Barred Owl    |
| C - N. Screech Owl   | - G. Horned Owl |
| D - Great Horned Owl | - Whippoorwill  |

Reproduction  
 Male - Testes develop only during the breeding season (increase x300x size)

Day Length Pituitary (LH)  
 FSH - Follicle Stimulating  
 LH - Luteinizing

Other triggers: Rainfall (Temp, Rainfall, green vegetation, insects)  
 Tended to increase w/ food availability

Seasonal timing of biological events = Phenology  
 Physiological Mismatch  
 Shift from climate change

- colonial birds breed in dense groups
- information center, observe other's successes
- no sex cells mature @ high body temp?
- manual testes not inside body (less space) better together
- "bumpy" testes
- Sexual prohormone (less smell) term unless inside of testes only

Female: evolution to save weight, lose 1/2 fat

- alk - nutrients (Embryo food)
- Shell - protection/gas exchange
- Light Albumen - protection (shell/thermal insulation)
- Dense Albumen
- Chalaza - suspends embryo (not resting on edge)
- Blatoblastom - early embryo (group of cells)
- Shell - calcium carbonate, press allow gas exchange
- Eggs are dynamic too many pores = too many CO2 embryos w/ shell to grow bodies
- shell thin for more gas exchange
- BP - blood patch (female)

9/19/19 Physiology III

- Easier for migration, stored fats, testosterone not beneficial
- Incubation - BP (usually in females, but can be unlighted curve - stored in incubation/uterus)
- "tight filters" but - "insource" egg flush from nest early - synchronous vs. asynchronous likely
- drag of rope in open areas - not birds can lay an egg/day
- chicks peep through cracks to incubation with full clutch
- show on back legs which
- eggs hatched by adult in time - signal cues (alarm)
- ALTRICIOUS VS. PRECOXIOUS - precocious young for parents' maintenance
- chicks hatched with eyes
- chicks hatched with eyes

- useless legs
- no need to fly
- needs eating time
- parents must eat high quality food
- less of behavior (bright colors) are favorite
- membrane sequesters fecal sacs for removal from nest
- fledge the nest (0-20% w/ parents learning)
- resident birds
- semiterrestrial 6-7 years
- annual hormonal changes (3) 1 for eggs 1 for carefree
- exact calls "in here"
- alarm and trouble
- requires exp investment energy
- incubation period 10-14 days
- parents must eat high quality food
- caterpillars are favorite
- membrane sequesters fecal sacs for removal from nest
- fledge the nest (0-20% w/ parents learning)
- resident birds
- semiterrestrial 6-7 years
- annual hormonal changes (3) 1 for eggs 1 for carefree

Galliformes: Pheasants, grouse, quails, turkeys

- Ruffed Grouse (Dorming) NW birds
- Wild Turkey - hawked w/ stick
- Virginia Rail
- Sora
- Killdeer

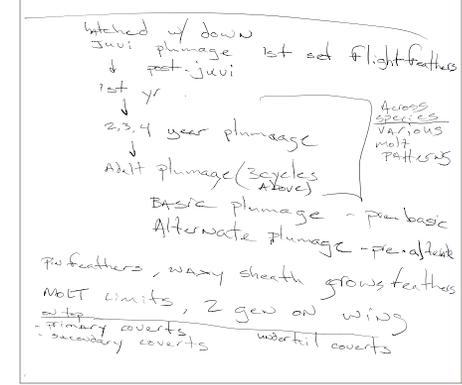
9/24/19 Ecosystem Services: needs provided for humans

conservation paper: last day of classes Dec 6 final cap Draft: Nov 16

- MOLT: Feather molt - replacing feathers
- feather molt, abrasion, salt water
- molt feathers for slight insulation
- molt doesn't interfere w/ breeding or migration
- molt: pre-alternate - prebasic

3 standard patterns  
 Cuckoo - pre basic molt, 1 complete molt/yr  
 Tanager - pre basic molt - pre-alternate molt  
 Redstart - two complete (flight feathers) molts

Flight feathers: primaries, secondaries, scapulars/tertaries  
 Tail feathers - rectrices



Feather wear: Edges Primaries  
 Tail - abrasion common  
 Striped birds wear the most  
 post-triangular - juv.  
 blunt-tipped - adult  
 Hormone driven  
 - goes inside out on Primaries  
 Alula (10th primary)  
 emarginated #6 (Flycatcher)  
 - alternate plumage signals quality

9/25/19 MOLT CONT:  
 "Eclipse" Plumage / ducks lose/replace feathers  
 - alternate plumage is early  
 - asynchronous during molt, all primaries replaced at once, no flying  
 - need to be safe from predators (leave brush)  
 - need high protein to do (insects/fish)  
 Sanducks (anseriformes from Anseridae sub)  
 - all divers, winter - eese (not breed) migrants  
 - Scoters, Auququen  
 - Eiders  
 - long tail duck (red) habitat is brackish  
 - sea duck group  
 - where do they breed? (transmitters/gps)  
 - feeding out, decays  
 - ducks fly 60,000mi

- Pocket NET (mosses)
- Bal-chatri trap (Rondside hawk trap)
- Starlings/Pigeons on tether tied to pole

Gruiformes: cranes  
 Stone Riverella (thunder peacock)  
 N America 2 world 15  
 Whooping 6" (tallest N. American Bird)  
 Intertidal Crane Foundation  
 Operant Migration

- RT Hummingbird
- B Kingfisher
- Downy Pileated
- E Wood-Pewee

8/5/19 Systematics:  
 - Represents diversification of life forms (A pattern, not process/evolution)  
 - show as a phylogenetic tree  
 - Bird relations are represented by systematics  
 - how built: mostly through Homologies  
 - BUT convergence is common and Homologies structures used to compare w/ ispectly - primitive character to emerge w/ synapomorphy - convergent character

1 to back, 3 in front  
 2 front, 2 back  
 Parallel speciation is problematic / convergent  
 The development of similar traits is unrelated lineages (parallel speciation)  
 - convergence weaker systematics based on taxonomic characters  
 - so they are based on DNA patterns  
 - systematics are a dynamic field  
 - Clements checklist updates  
 Aves by systematics yearly  
 Lumping - two species into one  
 Splitting - opposites  
 Don - sometimes confirms, sometimes surprise's

Narrow - view of DNA  
 Window gets bigger ea year  
 Biogeography can explain how patterns emerge  
 - Systematic reveal patterns via natural selection process  
 Avifauna: Geo location for species  
 Neartic = N. America  
 Neotropical = S. America

ICE AGES  
 Species emerging = speciation  
 Glacial refugia vs. Postglacial expansion  
 split ranges through changes in environment  
 isolation genetically, no gaps

Charadriiformes: Shorebirds  
 - few breed in NV  
 - Arctic breeders may swing through  
 - Gulls, terns - breed around here  
 10/4/19 systematics cont:  
 Biogeography as driver of speciation  
 Lorransian Ice sheet (most recent glacial)  
 - isolation + no breeding after  
 - how long does refugia take? (post-glacial speciation)  
 - post-glacial range expansion forms species  
 - Imoco, different sub-species of Dark-eyed  
 species v. subspecies  
 - breed w/ viable offspring  
 - group of interbreeding natural pops that are reproductively isolated from other groups

Biologically most important: SPECIES  
Every other division is a scheme for easier classifications for US

Zoned: - Geographically  
- Reproductively (behavior)  
- Physiological

subgroups in species are sometimes recognized as subspecies

group of natural pop w/ local adaptations that are geographically isolated from other groups having unique taxonomic characteristics often local adaptations

fox sparrows: 5 - rumped/staped

Geographic (or clinal) variation  
Form of species that exhibit gradual taxonomic differences over a geographic area, due to environmental heterogeneity

- Cliff Swallow
- Horned Lark

Bergmann's rule:  
order species of larger size are found in colder environments (generally higher altitudes or more polar latitudes)

larger makes volume increase faster for surface area. More volume w/ less surface area - lose heat less quickly

Wt. function of volume (cubes)  
bases are 2-dimensional (a cross section) (squared)

Bird Topography & Feathers

CLAY-COLORED SPARROW HEAD

01/17/19 Foraging & Feeding

the classic approach

foraging guilds: group sharing feeding preferences regardless of taxonomy. Better classification system than beaks above.

- carnivores: hook bill, talons (amblyops (chilodryx))
- strike, carnivore body, prescriptive feet
- granivores: conical bill, tough tongue, rack head to crack seeds
- omnivores: conical bill, tough tongue, rack head to crack seeds
- salivary insectivores - kingbird
- partially insectivorous
- aerial insectivores - swallows (hard to catching)
- insectivores - nuthatch (pick up insects)
- bark gleaner - forgetful to bottom of tree

Why use foraging guilds?

- group by ecological function, not taxonomy
- Guilds are then used to study ecological processes

eg. Insect deposition study

- moving nutrients from water source to terrestrial place
- mixed species foraging flocks
- chickadee, nuthatch, downy woodpecker
- group eyes for predators outweighs competition

number of "Dees" (more) higher threat

other species know chickadee language

Birds are sensitive to NET energy profit

Benefits - Energy, nutrition

Costs - Exposed to predators (weather)

- risk for accidents
- spreading energy
- Energy for time used in searching
- manipulating food (also predator risk)

possible: getting food is not worth it

- whats eaten during day will determine if they survive the night
- Zero energy in winter

Foraging models are designed to help understand foraging decisions

Egs.: Central place foraging theory  
nest vs. forage placement  
patch selection theory  
Fat/Liver storage  
John Maynard Smith - Fat - protein

01/22/19 Foraging & Feeding

Foraging Strategies: different models explaining decisions

com. Energy Foraging choices in winter

- Blue jays: store food in caches
- Crows: cache through burrows
- Woodpeckers: cache in tree trunks
- Starlings: cache in mud
- Robins: cache in birdhouses
- House wrens: cache in mud
- Song sparrows: cache in mud
- House finches: cache in mud
- House finches: cache in mud
- House finches: cache in mud

small 4-5 groups critical separated from large flocks

- Eat all day but energy vs gamble on higher energy reward
- Eat as healthy as larger group members
- unhealthy needed embs

Marginal value theorem (MVT)

- foraging energetically costly
- evolution favors adaptive foraging/food
- economic strategy to balance
- decreasing resource

MVT is an optimality model, there's

a point at which it's not worth anymore.

Evidence: giving up density (GUD)

- seed/sand mixed in known volume in bowl. Time goes on, feeding seeds declines. Eventually G.U.
- Indicator of Habitat Quality
- lower GUD = higher Habitat Quality

Food caching - hoarding for future

- not common in birds, shrikes do it
- Accor woodpeckers do it. 15-20 individuals in a group sharing an oak tree granary, and have oak trees take 1 bird 24 hrs to drill hole. generation holes. Harvest in fall. Drill in winter? Lead of seed accords. Drilling - oddities: hurt trees - Hake bark.
- oddities: stuffed in, pinterates, needles, flowers
- not focused on insect inside necessarily

Stringiformes: Owls

- tube shaped eyeballs
- scleral boxes larger retina & brain contacts
- can't move eyes but head can to 270°

caprimulgiformes: Nightjars (night hawks)

- Rictal bristles

01/24/19 Flight

Evolution

Hypothesis:

- Aereal model: From gliders to flyers
- feather s for insulation led to gliding
- Curgorial: running, hopping, wing beating
- running - assist hops w/ wing beating
- Foraging birds: ambush predators, ambush hunting from elevated places

- As like these can be explored in embryonic stages studies

- included rumpwings: wings help run up steep inclines. (magasittid incline running)

Forces acting on a flying bird

1. weight: of bird
2. Lift: overcomes weight to keep bird aloft
3. Drag: resistance due to friction between air & bird
4. Thrust: overcomes drag? maintains forward movement

wings

GB. Heron - 5 lbs (from office paper)

B. Jay - 3oz (less than small apple)

Chickadee - 1/2 oz (< 2 quarters)

Ruby T. Hum - 3/4 (4 inches)

minimize weight.

Lift - Wing is an airfoil

- creates neg pressure above
- pos pressure below

MAXIMIZE lift

Drag - influenced by body shape & surface, streamlined form reduces drag

minimize drag

Feathers even out irregularities & smooth things out? reduce drag (no insulation)

Thrust: Generated w/ wing downstroke (power stroke)

- upstroke (recovery stroke)
- (exception is in hummingbird)

downstroke adjust wing, articulate wing to maximize drag

upstroke

USE DRAG TO SLOW & LAND

angle wings, body, tail

stalling, killed lift too many vortices

FALL/CRASH

increase drag w/ killing lift.

primary vortices

Alula (thumb)

- also sleep, makes of attack, stalling
- acts as second winglet delays creation of vortices prevent stalling
- like front of leading edge of plane

Alt. types of flight

- 1) Formation flying, geese, cranes, pelicans, some ducks
- take advantage of vortices
- slot into free lift w/ compound
- wing to vortices

01/24/19 Flight

1) formation flying

2) soaring

3) hovering

soaring - using thermal lift

- air rises w/ warming of earth from sun
- connected w/ clouds
- similar to sky w/ clouds
- rising air near mountains



Forrest Service has standard methods in print.

11/19/19 Bird banding - good for survival estimates

- territory mapping
- productivity
- dispersal

Telemetry (VHF)

- estimate survival
- determine habitat selection
- estimate dispersal
- estimate productivity
- estimate nest success
- limited range
- battery life v. weight
- logistics

Satellite-based telemetry (GPS)

- limits
- high cost (6000\$ for one transmitter)
- high weight, large size
- GPS Transmitters
- limits
- high cost
- weigh (battery)
- Data download
- manual CB
- automatic (BB + extra weight)
- call towers emerging for pings
- Geolocators (Requires recapture to work)
- small battery, memory, light sensor, clock
- estimates: weight, date by light sensor
- estimate by length of day

light-weight, long-life, manual avialated people

only useful for breeding populations

relatively low cost (\$60-70 ea)

low acc, but high quality data

Piciformes: Woodpeckers

- Zygodactyl
- cavity nesters
- unique beak & rectrices

Passeriformes (tail feathers)

- Hallux (thumb for perching)
- superior learners

- cardinal
- towhee
- WT sparrow
- Bobolink

Baudillard "Procession of the Simulacrum"

Fleusser Sara Henbacher

- newspaper writer
- and academic readers
- says media is important
- Zeligsky "Fleusser's Radio"
- 9:00am Wed. TD in Science Vid class

Peer timeline:

- undergrad @ Binghamton
- 1970: Cinema Department of Longfellow, Ken Jacobs, & Ralph Bakshi
- 1976: ETC program's coord. writer
- limits of thinking film practice (essay)
- Bill's first exhibit of base tapes
- 1975: Graduate studies, multi study program Bk
- Venetian, Polgaris, Tracy, Central Bk, Memphis
- Gerald O'Grady
- taught film, succeeding Memphis, followed by Peter Weibel
- 1987: Head of video Arts, Alfred
- hired by Harold Soodgrass (stud by Jim Jarmusch)
- 1997: Founded IFA of Joseph Scher, & Jessica Sklar

Gary Hill multi-channel (92/11)

is worth checking for documentation

Maya Deren book

- Michaelson says she is Eisenstein
- most significant in color
- Maya's father psychological, she resisted being labelled a Surrealist, was considered artist important for post-war, as post-war
- Artist Native in Industrial Culture

Artist wearing many hats, influences

Markus Brakhage (Poet)

Michaelson (lead of NYU PhD)

contemporary of Jerry O'Grady (MBUF)

controversy of rise of simulation

film studies is 20 yrs ahead of what happens in art. Hills Frampton

10/29/19

Jerry O'Grady: Anthology

- Sharitt's 2 projectors
- Hollis
- Autobiog in film conference (B)
- James Blue - March Doc
- MLK DC
- formal cutting v. fluidity
- website, died @ 46, interviews w/ Pauloli, dealing w/ non-actors

Relational, formal qualities

Rouff → Five cuts

Documentary "coverage"

- actual material
- cut away options

Uasulka - Books

- about video
- had tools

Pages as temporality

- Pattern, break

plays w/ scale

synth pattern as examples

- parallel
- postage stamp overlay

post Photoshop

- electronic
- vs. visual environment
- how the eye has been trained

approach my electronic images as Chinese cooking

Mike Kelly Catholic notes

- collector of cultural images
- he put them in "shoeboxes"
- sci-fi, Am. Hist.
- collecting
- pick 2 surrealist
- lay out what combos spoke to him
- STRANGE combos
- redraw, reprint, buy

Thematics leap, no intrinsic logic, Don't go together but

they do!

computers DAILY

- multiple windows
- screens
- common to see more than one thing at once

LEV MANEUVICH

- IDing, medieval before photo, single univ. print
- Heaven Hell Allegories, multi-image form
- single - rational print
- computers bringing us back to multiplicities

O'Grady Lecture MOMA

- "open circuits"
- TV programs, medium
- James Paul
- has PDF
- "New TV public/private art" book

Hollis talks about dreams

Buf. Heads, O'Grady, JAPANESE

personal, social, institutional Interview

- radical commitment to individual experience

ZKM as monastery to protect culture

Sherry Hocking wrote about

Jerry & Sherry's mother would share notes on Buf Cath dioceses

Viola (Louisiana Doc)

- studied mystics
- something of the cross

Digital Humanities

- T.C. McLaughlin (daughter)
- books & films (Museum, Gandhi's #2 guy)

10/5/19 MOMA curator, 1930s

"modern art" in Russia, after printing, more media based.

close photo & cinema for MOMA

from the start

64' - no photo cinema programs other than Hollywood

74' - abex into minimalism

medman "science of media"

- an update of "understanding media"

current issue of "October" journal

MIT, Avelle Michaelson, snow

issue dedicated to her

Book "Preparing for the future"

- collection of her articles
- about New Am. Cinema 60s
- 40 years
- PAUL: discussion between her & Ken Jacobs

Ralf Bode, Dressed to Kill, cinematographer

critic, artist, Michaelson

- John Cage Book "collected letters"
- see what he was doing

NYT article NAM June @

TATE, Book by John Haywood

- helped start EIAA at Fred

Distro Intermix, VDB

Digital Humanities =

- Academics going digital
- what are new libraries?
- media is a part of it

Hollis - media includes all codes

### Difference

sounds that are sounds, vs. music

12/03/19 sounds - response, parameters  
 already listening as a parameter  
 had create in video show in the box  
 Tom Gunning U. Chicago  
 'cinema of attraction'  
 presentational vs. representational  
 corporeal embodied knowledge

WWI mass death, leads to consideration of technology  
 - human exhaustion  
 Cinema, by virtue of tech to make it, has a unique voice here.  
 (param movies take too)

Phonogic (intensity of shot/situation)

Peer: The scene is changing. This medium has scholarship its not had before.

Cultural conversation is shifting. What the future of the medium is.

Kittler German theorist  
 Typewriter changed the world  
 "Electric culture is a new world" McLuhan

Braklage Sound Magazine  
"Seeing Time" book

12/12/19 special post crit/ret:remot

Everything Relates.

Limiting thematically  
Things that don't have equal weight are given equal weight

Presenting of work  
- store in all windows  
- what is important?

- ID it, stand by it

- How do I process information?

- Show that.  
CLARITY

- what's taking a

Ted Morgan:  
 Alfred aesthetic  
 - heaping everything on & call it cross-disciplinary

single channel examples

Lincoln Center small theatres  
 - Maya Deren Theater Auth. Film Archives  
 - Bard/Lightworks  
 semiotics of screening  
 - chairs  
 - light (fade down)  
 - material plays  
 - light (fade out)  
 - people know how to respond to this  
 - takes us out of white cube & places us in cinema  
 - walk-by culture of white box challenge  
 - snowgrass glass box

install SOUND SITTING  
- CURTAIN IN FRONT OF DOOR

"ART for Adults" = Drinks  
- metamorphic series context  
- elements suggest space

DMX  
Peer - exhibition schedule

→ timed to fade down - play piece - fade up

Sit down viewing vs distribution (DVD)

- EDITORIALS

Anda Wisby Critical Cinema

Text:  
 - ACCONCI  
 - ANDERSON  
 - BURROUGHS  
 - JON GIOINO (cynical hysteria)  
 - read poems  
 - played recordings  
 - also read the poem live  
 - sync prints  
 - dial a poet  
 - mail art  
 - warhol's sleep  
 - actor  
 - sync prints  
 → new book out

camera/setup/dispositif

NAMING  
OLD/NEW WINE/BOTTLES  
synthesizer doesn't say enough

- what is the process? module? NAME?

- live camera is unusual now.  
 what is it called?  
SYSTEM  
 - machine vision  
 - industrial tech

Vocabulary

- what are they called?  
 - vocab as corrective to the conversation's direction

Brecht: Take on ideology indirectly

- polyvocal conversation

mechanism: **MATCHING**

Deleuze - Difference becoming Identity

vocab of sculpture in photo form

- indexical / (textura)

make sense in Electronics

general terms

Technical terms

- network = patch, node - object

- default 60fps, change bottom right

- loops continuously, can be 1-shot

**tab = op create dialog** use

- if colors don't connect
- TOP = video
- CHOP = control data (audio/audio)
- SOP = 3D objects, geometries
- MAT = materials for 3D objects
- DAT = osc, connect to other apps
- Custom = make own

click object = move box on right

Zoom in/out = middle scroll

**bottom of any object - display tab to display**

recommended video format: HAP - max speed

interpolate frames - makes stutter go away, good for playback

right-click file, info, resource use display

mix - composite, chroma key (handles limited)

- hue = chroma

Feedback - Transform (ctrl) - in main click text

- switchy between original movie etc.

looking for Target Top

Referencing is dragging / dropping

A mobile to avatar.

To go full screen

**OSMPS - window** camps are container

- last module to window (drag)

- window parameters
- monitor 1 (really 2) (osi)
- reduced desktop
- DPI scaling - native
- open sizing = fill
- turn borders off
- open as second window

Audio Oses are tied to frame rate

- scale object in max, **MATH** is touch

pause / SPACE bar (loop)

- bottom right + to make active
- white arrow shows up when clicking
- do text in box
- select chop reference
- contrast code is in Python

**Atmos Interact**

Transform - background - Alpha channel

Movie file out - Photomatix JPEG

**VIDEO OSC**

Audio OSC - Data

Chop to - Video - Transform Fill

consistent to choose color Fit Res

removes changes all same colored obj

Carillon Access Performing Arts:

How important data is in environmental studies (related to working in space)

- project boundaries often linked to political boundaries
- watersheds are natural boundaries
- spatial data shown as a map
- use data to com. message (LIDAR)
- DV software (Excel, Tableau) - based on excel
- GIS software (ArcGIS, QGIS) - open source

Spatial Data - Graphic Feature on a map + Attribute Table + Spatial Location

www2.erie.gov/gis - staff of 2 - no budget

H<sub>2</sub>O watershed based projects

- organic project boundary based on watershed divides
- study area doesn't abruptly end at political boundaries
- shows regional connectivity & context

7 steps to stellar DV:

- 1- data confidence (check data source given)
- 2- watershed context/analysis
- 3- choose appropriate vis display
- 4- eliminate clutter
- 5- focus attention where you want it
- 6- think like a designer
- 7- Tell a story

NTSC: Default still image size:

- 720 x 480 pixels
- PNG, JPEG, bmp, gif formats
- prefer -> send carry alpha channel

each file needs a corresponding thumbnail (stored in "thumb" folder)

- requires EXACT SAME NAME as image
- 128 x 96 pixels

creating new stills in PS:

WNEB 1978

- musical compared to send devices
- image compared to send devices
- image arrived @ w/o lens (white noise/slow background seen camera foreground)

**File of switching pairs in Steina's work:** Dualities? Phases.

"stipraps" - "messy" - "one camera keeps track of the other camera"

- seeing what your doing, moving kinetically, but watching visually.
- disoriented
- presence is surviving these machines "and NO, it is observing myself" Steina

I would like to mount myself on a turntable and see the world this way. Steina

- degradation of image is feedback, furthest degrades most, closest is clearest.

Transformations/objects

- image contained at the surface of a sphere
- surrounding space imprinted on an object
- the object doesn't need any pictorial information
- translation/transformation of physical senses
- whole gesture - act of seeing & feeling
- real-time
- imagery has a tendency to be self-organized by its own state/natural disposition
- object in space by reflection of light.
- PAIR/STEREOSCOPIC (like Steina's)

- separate the eyes for TV

"But now that God's shimmering bubbles, the celestial domes, have burst, who could have the power to create prosthetic husks around those who have been exposed?"

- Peter Sloterdijk

PineBoyPool Complex

I'm interested in the material at the point of execution.

What are my research aims?

What are my theoretical concerns?

What are the intentions of my making practice?

Personal philosophy as revealed through my research into vision, touch and desire for wonder. (P 102 Deviated Histories, Thi Phuong-Tâm Nguyen)

establish a connection between our making and the world around us

thaumaturge - a worker of wonder

The case for wonder.

Difference between vision and perception.

What is anamorphosis in video?

Intellectual thoughts can kill ideas.

Would my work benefit from storyboarding or other premeditated structure?

"The picking of the process is the element of control."

- Peer Bode

4 composers Peter Greenaway (Cage, Monk)

unified time structures  
chapter moment form  
time in things, instead of things  
in time  
- each sound moment to own  
time structure, people can follow.  
(Sirius)

chaos - XENAKIS  
crutch/fix chance

why this now?

- a set of Q's that  
chance answers

hierarchy = Higher  
Angels

shifting in AI

Artist, practice is the  
NUDGE

- overtaken window

Blokus

camera could pan to  
something SURPRISING

Hot signal in Scope

proc amp as tool

10/30/19

Pinhole Video (better out  
doors)

- copper / tin make hole (pin)
- sand burr - / buff
- Put where frequency was
- tape in places
- can make mult hole
- larger hole blurry
- smaller = sharper

10/6/19

setting up is how  
you get paid  
- initial forms by -

- picture of situation
- explain tech issue
- email
- Live discussion  
w/

Resolve  
the problem

- Fostick (walls can be  
built)
- convo w/ Sharon Eric
- # for materials
- ant. of time

- Felt to block light  
from Benys

Artist Books: Dieter Roth (pre desktop publishing)  
 - Fluxus  
 - contempt of Benyis Rochester  
 - 100's of artist books taught this method 70s-80s  
 - pedagogical  
 - artist practice should be handed down through family lineage  
 - taught Emil Schull  
 - carried a book of baking disasters for inspiration  
 - Desktop CPU options v. typewriter (copy camera)  
 - more parts (ALL EIGHT NOW!)  
 - color printing costly due to photo separations in darkroom  
 - total dark chemistry fussy, had to register  
 - print most of 70-80k of uncommon because of the pain of making  
 - JANSSENS was only art-history option for a while because of this  
 - dissenting opinions could be suppressed  
 - Desktop could affordably do short print runs (<500)  
 - Book as gracious, formal things v. ephemera  
 - 1st thing printed in western culture was text, not Gutenberg's bible

photocopy & silkscreening cheaper than etching/lithography  
 - woodblock affordable for propagandists  
 - zines, music, skating, surf, scams  
 - artists interested in hybrids about what is a book?  
 - early Alletello shoe/box/pamphlet script on box (dance lesson)  
 - UV Ultra - see through  
 - Expertise, access, equipment are what cost so much pre desktop publishing

---

10/22/19 IN-Design  
 File, New, Document  
 size:  
 ecom = 8 1/2 x 11 letter, gives 2 full pages out of a press sheet  
 Tabloid 12 x 18, 12.5 x 19 (made to fit 8.5x11)

- often charged by sheet when w/trim marks  
 primitive  
 - **press sheet** is the size of paper through the press  
 - massive size fits  
 - pricing = how many through press  
 options:  
 - picas - inches 8x11  
 - landscape  
 - facing shows what's next to each other (to see a bleed)  
 - margins default 1/2 inch  
 - bleed/bug - bleed needs to be 1/25 = 1/8" in larger than project  
 - gutter is center of facing pages  
 - bleed in gutter can cause issue  
 - bleed on top, bottom, left, & right  
 NOT INSIDE  
 - Red line notes, bleed line  
 - cuts at black line  
 - into @\_edge is not safe.

- getting critical keep @ least 1/2 inch away from margin.  
 - Add image & text  
 - document creates paths/links to folder of media  
 - image embed file, PLACE can choose mult@size  
 - Prep before ID, PS  
 - **Image size 10x16 300pi**  
 - Adobe RGB  
 - Image as close to final size as possible  
 - make optimized version  
 - ID ~~ctrl~~ cmd-shift scale image  
 - Text tool, Draw Box  
 - Placement on page  
 - guides in master sheets (top right)  
 - view display high quality  
 - work in Adobe RGB  
 - edit color settings

- **SAVE**  
 - **PACKAGE**  
 ↳ look for red/errors & fix

PAPER: Printing book here:  
 9400 mohawk Superfine  
 (3 - copies free) 17x12.5  
 80 lb ultra white (can glue bind)  
 100 lb white (slightly warmer) (too heavy to turn) (box set book)  
 Text weight - body of book  
 80lb text is diff. from 80lb cover  
 COVER: Front/Endpiece  
 postcards  
 posters

30 - photocopy  
 60 - book/text  
 80-100 - Artbooks  
 100-120 - Artbook-book

XUAN paper 27" or a meter  
 - we do all bind/wc perfect binder w/isp around

or stabfast binding  
 1/2 inch non-top, left, right  
 1.5 inch bottom

Print settings  
 - Size for paper (19x2.5)  
 - color matching Adobe RGB  
 - page setup: cut sheet  
 - paper hand: main  
 Art paper, heavy weight All paper  
 - Advanced 600 DPI  
 - 16 Bit  
 - ignore warning  
 - SAVE  
 - Images: Perceptual (better for photo)  
 after better for flat design

Printer load

- cut sheet  
 - 1st never on right  
 - vice edge to top & right  
 red lines  
 - close level & top  
 - Enter in type of paper  
 - Heavy wt. Art  
 - hit print on cpu

3 thesis adv. w/ EIA, and have 4th from outside  
 - 1 for thesis chair, 1 more than others  
 - 2, 3, 3  
 - 3, 3, 3  
 - 3, 3, 4

4cr. written thesis w/ Joseph  
 - wk & analysis 4 (16)

Reviews Dec 9 & 10th - 45 min  
 - outline of written thesis (page)  
 - can be bulleted list  
 - proposal for show; what & where

Kzhua Iriwa Li  
 (199000)

11/05/19

- screen - light behind  
 - RGB for mixing  
 - additive  
 monitors close to each other  
 Print: 3000 - # of color optical white  
 Adobe RGB 150 lines  
 2 for cm dot  
 all devices use on paper 200-300 dpi  
 - cm of k  
 - subtractive  
 - white of page  
 - no pure white paper  
 Adobe RGB 97.72%  
 RGB for printer  
 Bit depth = # of layers  
 - Paper is not a light surface

- Coatings Porcelain (clay/cats) <sup>calcium</sup>  
 - holds ink, shiny surface  
 - varnish to pop image, <sup>enhance</sup> output  
 - shiny surface can be desirable or not  
 - In neutral, magnesium added to remove acid (tree pulp paper has acid)  
 - cotton paper has no acid  
 glossy v. matte  
 ↳ blacks deeper see reflections more ↳ scatters light  
 - ink (intaglio black) is deepest  
 - litho, intaglio inkjet less so  
 - silkscreen (and wood) give great variety (enamel inks) but **CANCER**  
 UV ultra-Vellum-like  
 Translucent, can print w/ 9400 but results are soft

02/05/20 MYLES

- color - chemical / too contrasted harsh/obvious  
 Red/Blue/Black - richer  
 - medical imagery, understand what you're looking for, don't see what you're looking for  
 - snapping fingers is jarring (integrate) Pleasant  
 - other sounds (Beds)  
 ↳ not engaged w/ it, pushes toe away - wants to be drawn in. Repetitive doesn't shift or change like other sounds could  
 - composing it. Sound library  
 - camera reference can only go so far  
 - lots of things in the studio could be interesting & make one wonder why it's in here.  
 - not just referring back to self. Movies, theater self-referential. <sup>all for the viewer</sup>  
 - how to take tools outside of the studio

- Books/Prints collection of things from any subject, Easier  
 - Get beyond Phenomenon  
**REALLY DIVERSE CONTENT**  
 - what meanings in form for vessel?  
 - Filled w/ meanings? Engaging  
 - GRYHILL (BRUSH PAINTS) human faces, changes triggered by movement, changes are surprising & varied. Different IDs, put together brings sense & humanity. Jolted/Powerful surprising long lasting impressions  
 - what is my image vocab?  
 - 10 images that define me.  
 - Trust intuition: But follow up! Take feeling & try to figure out what it is. Let it trigger meanings.

- How to evoke similar feelings & meanings. what happens next?  
 - Find it & take it, extract it, manipulate it.  
 10/01/19 Eyes have it  
 Low-REZ, is there A WAY of increasing rez, Familiar  
 How is it a step forward  
 Easy/Quick (Reconsider) 10-steps back  
 - something that has more impact in Holmes (Redd)  
 - make images for the sounds, images all seem on the surface.  
 - whole new piece around

sound  
 - what is MASKING  
 - hide id (Masquerade)  
 - BECOME other Entity that the mask represents  
 - TRANSFORMATION  
 - Pre columbian, Oceanic, African  
 - intense, YOU ARE  
 - The person wearing mask becomes different  
 - TRY to INHABIT ENERGY, DON'T DECORATE IT  
 - where the psychic sound/SPACE can take you.

GET OBSESSED w/ SOMETHING  
 - GO CRAZY  
 - OBSESS OVER EVERY DETAIL  
 ELK  
 VLA, Socorro  
 Bosque Del Apache  
 NWF  
 closer, Blind Access  
 - Bernstein Funds Provost  
 - Divisional Funds Andrew

- Fly AIBQ  
 Socorro 1 1/2 hr drive  
 10/29/19  
 Light room  
 - export long edge  
 - 1/4 inch larger each dimension  
 - if image is 3x6 3 1/2 x 6 1/4  
 - make template in In-Design to A-states rec size  
 - manually insert crop  
 - Box - illustrator, vector  
 - Don/Eric  
 - cut & score?  
 - color fronts of live

T-shirts  
 H - add 1/8  
 W -  
 5x8  
 5.125 x 8.25 x 300  
 1/2 book  
 curves  
 Convert Adobe  
 RGB

keyboard cmd  
 - curves  
 - dodge burn  
 -  
 - Lightroom,  
 Lens correction  
 Remove  
 clarity - 10 - 30  
 5.1267 x 8.25  
 11/05/19 4 copies per  
 Press sheet (12)  
 100 pound text

or 80 pound cover  
 TAROT 120 pound cover  
 Bird wing Polymer  
 Plate (website  
 Elizabeth  
 Pellathy  
 12/03/19  
 cmd - 0 see All  
 lasso / Rubber  
 (2px) Stamp  
 (soft)  
 → (Drop opacity  
 to blend)

soften Edge shadows  
 40-57 opacity  
 Image  
 Adjust  
 Replace color  
 sample grey  
 → adjust lightness  
 eraser tool  
 (totally soft)  
 Flatten  
 Contrast curve  
 75 down

25 up  
 CONVERT ARGB  
 shift adds  
 opt delete  
 selection tool  
 lasso  
 copy & paste  
 Edit  
 TRANSF / WATP  
 01/29/20  
 Buffalo Zoo Bird of  
 prey  
 - Mohawk superfine

Ting glin  
 book @ grid display  
 - copy stand  
 - canon software  
 "Things often start  
 with a little quote."  
 - Joseph Scheer  
 01/30/20  
 Thesis writing  
 Ex Libris markings  
 2/6/20 Thesis Prep

720 x 486  
 75 DPI  
 4x5"  
 8x10 10x14  
 16x20"  
 2/12/20  
 Focus stacking  
 2/28/20  
 - How to print?  
 - Paper? - slow paper in  
 - size photo/print?

- Touch-up tips for PS  
 vs. LR  
 - Dinkuan's color process?  
 DUO-TONE / TRITONE  
 - my mid term time?  
 CAMERA RAW  
 image adjustment  
 curves  
 cmd + M  
 info open  
 Flattened image

ing - Adj - replace  
 color.  
 dropper - PART  
 - shift = Adj  
 - lightness  
 - Do multiple  
 A bit @  
 A time

---

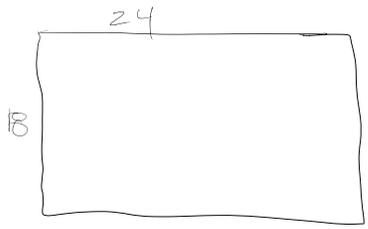
Brush  
 opacity, / 50

Digger brush  
 softened edge

---

- of a y scale  
 - discard  
 Duotone  
 - to tone  
 name  
 Chase  
 color  
 - play w/ chrome

- convert to  
 Adobe RGB  
 to print



MAY 7th final thesis  
 defense on Zoom  
 - Finish PDF to Joe  
 MAY 6th

Modular Video Synthesis  
 Voltage fluctuating over time

Signals are patched between outputs and inputs  
 These paths are not predetermined by normalization, file type, or signal protocol (as in software environments)  
 Signals can be traditional waveforms, CV from function generators, and video from a camera input

Video Frequency Ranges:  
 vertical frequency range (-30 Hz to -15kHz)

\*The question of how to playback and capture video using Blackmagic Intensity Shuttles comes up regularly so I'm documenting a working solution for future reference. Most recently the question was asked in this thread: <https://community.lzxindustries.net/t/blackmagic-intensity-shuttle-output-to-visual-cortex/1551?v=3375>

For playback of video from Mac, \*\*Syphon\*\* is what holds everything together for me. My current workflow is this:

\*\*Signal Culture Frame Buffer\*\* (version 4.0) to open and playback video file (This can be done numerous ways, with any app that can output to Syphon (Max/MSP/Jitter, etc). Frame Buffer is just what I happened to be using at this time).

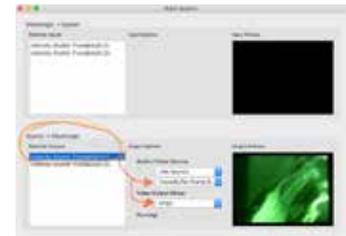
\* Select video file for playback by clicking on Video File and navigating to your existing video file  
 \* Select Settings, Video Input/Output:



Under LIVE VIDEO OUTPUTS turn on Syphon Output:



\*\*Black Syphon\*\* (version 4):  
 \* Under Syphon -> Blackmagic  
 \* Audio/Video Source, select FrameBuffer from dropdown  
 \* Video Output Mode, set to desired output, in my case NTSC:



OUTPUT from Mac to Visual Cortex on 1st Thunderbolt Blackmagic Intensity Shuttle:  
 Shuttle YPbPr outputs connected via RCA to LZX Visual Cortex YPbPr inputs

INPUT from Visual Cortex to Mac on 2nd Thunderbolt Blackmagic Intensity Shuttle:  
 Visual Cortex YPbPr outputs connected via RCA to Shuttle YPbPr inputs

Capture using software of your choice, Blackmagic Media Express, Premiere, Etc. Configure each Thunderbolt Intensity Shuttle within Blackmagic Desktop Video Setup.

NOTES: This has worked for me using 2011 MacPros and later. I have no firsthand experience with USB3 versions of the shuttles. My understanding is they can be troublesome to setup with certain chipsets. In the setup I describe above, things can sometimes finicky to setup, especially if the hardware has been recently configured differently. I find it helpful to reboot devices regularly while trying to bring each step in the chain online one at a time.

For additional information about running a dual setup, see this thread from Eric

Souther here:  
<https://www.facebook.com/groups/lzxindustries/permalink/814631635374825/>

Leslie Rollins and I got two Blackmagic shuttles to output from CPU into LZX and back to CPU for capture. You can do it all in MAX/MSP or Premiere and Blackmagic Media Express combo. The patch includes an xfade for feedback. (photo credit to Woody Vasulka)

You can play with the max patch here (granted 2 Blackmagic shuttles are needed):  
 App: [https://www.dropbox.com/s/0pzuuwb142n1k/BM\\_app.zip?dl=0](https://www.dropbox.com/s/0pzuuwb142n1k/BM_app.zip?dl=0)  
 Patch: <https://www.dropbox.com/s/a1vqoq4ic9r3u9/EightYES.maxpat.zip?dl=0>

Memory Palace: How to make, format, load, and use still images

#### LZX INDUSTRIES MEMORY PALACE STILL IMAGE LOADER INSTRUCTIONS

- (1) Still images are loaded from /stills/ntsc when Memory Palace is in NTSC mode, and from /stills/pal when Memory Palace is in PAL mode.
- (2) Images are organized in sets of up to 32 images. Each set has its own subfolder, located at /stills/<format><set name> on the SD card.
- (3) The native resolution for NTSC stills is 720x480. For PAL stills, it is 720x576.
- (4) Supported formats include JPG, PNG, BMP and GIF. Image formats should be ARGB 8-bit, RGB 8-bit or Grayscale 8-bit.
- (5) Thumbnails for each image should be created and stored in /stills/<format>/<set name>/thumb.
- (6) Thumbnail images should have the exact file name/format as the source image and have a resolution of 128x96.

Load still images on MP:

- Connect USB cable to MP and CPU
- On MP navigate to Enable USB Access
- MP Drive should appear on CPU desktop
- Navigate to Stills/NTSC
  - Each subfolder can contain up to 32 images
  - Each folder contains stills and a thumb subfolder
  - Stills default size 720x480 pixels
  - PNG, JPG, BMP, or GIF
  - PNG carry Alpha Channel
- Each file requires a corresponding thumbnail stored in the thumb folder
  - Each thumbnail must match the source image name EXACTLY
  - Thumbnails default size is 128x96 pixels
- Load images:
  - Drag folders or stills from CPU into MP default folders
  - Eject USB drive on CPU
    - Disable USB Access on MP
    - Unplug USB cable

Create still images for MP:

- Photoshop
  - New File
  - 720 width by 480 height (pixels)
  - Resolution doesn't matter

- Color Mode RGB
- Hi Create
- Can draw/create using any of PS tools
- Open existing images in a new window
  - Select L, copy it, and paste it back into new file
  - Can then adjust size and positioning as desired
- Save file as PNG (Alpha) or JPG (no Alpha)
  - Save into image folder
- Create corresponding thumbnail file
  - Image Menu
  - Image Size
    - Turn off width/height lock
    - 128 width by 96 height (pixels)
  - Save into thumb subfolder using EXACT same name as full-size file
- Alpha Channel workflow:
  - Carries transparency information with a 4th channel that can be used as a mask
  - Follow some steps above to set up new still image
    - Layer
    - Layer Mask
    - Reveal All
    - Looking at Layers will reveal original image + a plain white mask
      - Wherever black is drawn into the layer mask will make that part of the image transparent
      - Where white is drawn into the layer mask will make that part of the image appear
    - Can paste in other images, or draw gradients, etc. into layer mask
    - Make sure that the edges of the image are clearly contained in the alpha channel
  - Mask layer stores the Alpha transparency
  - Color information stores in RGB channels
  - DELETE background layer before exporting
  - File/Save AS/PNG

#### Maya Deren Headless Horseman

Her talk about voodoo, Haiti

Gary Hill Why things muddled up

Gregory Bateson cultural anthropologist  
Metalogues, metalanguage

Mise en scene Alice in Wonderland

Export 1992 "Postmodernism is dead Peer"

#### Exfat MBR not GUI for Windows/MAC

Holmes projector: 1200x1960 16x10

Humankind by Timothy Morton

Vibrant Matter by Jane Bennett

Mary K. Greer's Tarot Constellations: Patterns of Personal Destiny

Danna Haraway

Karen Barad

Peter Sloterdijk

Intersectionality

Working

Future Fiction

Speculative Realism, Fiction

#### Divisions

1. 0.625
2. 1.25
3. 1.875
4. 2.5

40

Apps to reinstall on Sufou:

Black Syphon:  
<https://vdmx.vidvox.net/blog/black-syphon>

Blackmagic Desktop Video:  
<https://www.blackmagicdesign.com/support/>

MPEG Streamclip:  
<http://www.squared5.com>

Photosounder:  
<https://photosounder.com/buy.php>

Samsung PortableSSD (1.6.0)  
<https://www.samsung.com/semiconductor/minisite/ssd/download/portable/>

Genki Software:  
<https://genkinstruments.com/software/>

SPEAR:  
<http://www.klingbeil.com/spear/downloads/>

Syphon Recorder:  
<http://syphon.v002.info/recorder/>

Syphoner  
<http://www.sigmaxis.ch/syphoner/>

ScreenCaptureSyphon  
<http://vch01f4-gp.ScreenCaptureSyphon/>

Toast 11 Titanium

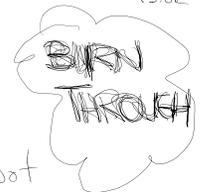
UCP 2.0.11  
<https://www.decimator.com/DOWNLOADS/DOWNLOADS.html>

WD Drive Utilities  
<https://support.wdc.com/downloads.aspx?cid=171>

Vizzable:  
<http://vizzable.zeal.co/download/>

These are all important  
because they are not important  
together they weigh more  
and I can't just brush them  
aside

don't fit  
do not fit  
they can't  
they cannot  
you shouldn't  
you should not  
smoked out, smoke it out, don't  
do not waste space use it all  
4P  
Be certain to finish. End it.  
With strength & will.  
Force of will.  
Love under will.  
Go whole hog,  
spit it out,  
spite, spirit, stop, start.



Tonight I will demo an Artist Talk.

- How many of you have heard an artist talk?

What are some elements of an Artist Talk?

- list elements:

Reason I'm demoing this for you is:

- if you become an artist you'll be asked to do this
- think about what you would include
- as you're listening pay attention to:
  - what have I not included that you've heard in other AT's?
  - what have I not included that you'd like to have heard that you'd

like to know about me, or another artist

What would be something that you would include if giving an artist talk about yourself?

At the end of this Artist talk we're going to talk about those questions, so listen to what I'm saying w/ them in mind.

Books Q: A) What are some benefits as an Artist of talking about your work?

B) What are disadvantages about HAVING to talk about your work?

C) What are similarities between AT & crit?

D) Like C, differences

Intro Self:

before Q&A: Tell them what I included for THEM.

what I thought would be interesting or useful to my audience

**Stitch Drawings in Photoshop**

24x24  
30x24

Scan to show deckled edges 400 DPI tiff

Open new canvas 30x24

Drag 4 scans onto canvas and rotate/place as needed

Rasterize

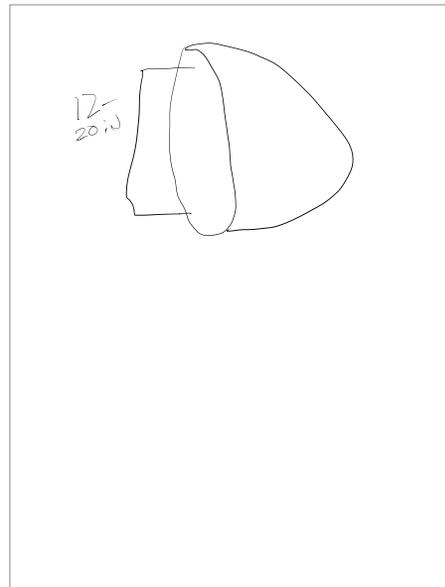
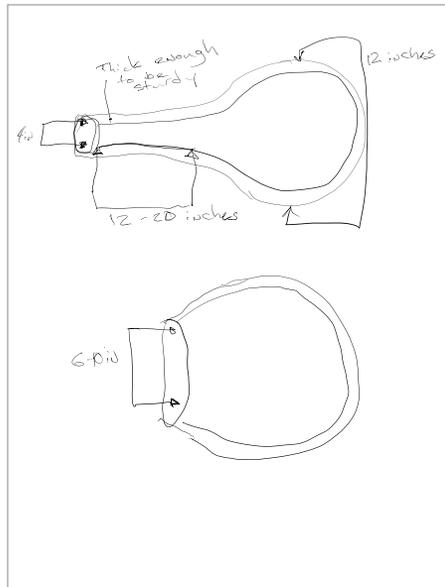
Blend mode difference, move slice to top layer, will show black when aligned well.

Save as tiff

Met BREWER  
diner  
vasulka: 1, 2, 3, 4

UZ. IRINA

@ FRESKO  
COLLECTIVE  
ORG



**Glue book binder**

1/2 hour in before to melt glue

3/4 of inch liquid glue

Two power on right side on

Clamp button to open close clamp, hit X button to open

Bend paper, pinch it, then open it to put air in it

Put in slot and hit X to close

Then align line with spine on far left side, measure cover sheet, find center, account for spine

Move dog on top to hold cover, make length longer and trim it, shim closest dog with heavy weight paper folded in half

Adjust thickness (cm)

Hit start, hold carefully

Alcohol cleans excess glue on left side track

## Touch Designer notes

To pull a parameter window out from a window to a higher window right click, open, and scroll out

Tab opens menu  
P shows parameter box

TOP: Video  
CHOP: Audio  
SOP:  
MAT: materials for 3D objects  
DAT: more complex data sets  
COMP: containers for other objects

Vector Geometries:  
COMP: 3 things needed: Geometry, pop Camera, & Light → RENDER →  
Movie file out

Light works with phong only for materials  
MAT: phong, drag drop image  
Click and hold to select finer or coarser increments

If you can't see anything try hitting H for home

Drawing/Line:  
MAT:  
Wireframe (drag/drop on geometry)  
Line: can be confusing

Photoshop: TD exports at 72 DPI (print quality is 300)  
Turn of resample, change to 300

Render: 1ft resolution 8000x8000 DPI = 26x26

To place new node within existing signal flow, right click, insert operator

Too add additional pieces of geometry:

COMP add geo  
Composite multiple things

Rotate Geometry (to animate)  
CODE: absTime.frame (hit enter) [applies frame rate to rotation (to slow use \* a decimal number) modulo % bounds min (0) max (360)]

(Blue)absTime.frame\*0.2%360

left right modulation use audio osc (-1 & 1)  
Translate x  
Drag channel 1 on top of number, (green) export chop

Anything with numbers, gray constant, blue expression, green,

Instancing W = wireframe P = points  
In geometry turn down detail

Inside geo turn on instancing

Change blue to green

Node: transform (scales/rotates object)

Sphere, Transform, Sop to

Turbosquid.com good for obj

To map OBJ:

Go into GEO, delete default geometry, drop in new OBJ, SOP Attribute Create,  
Compute Normals & Tangents on. Render/Display

Add texture to help wrap on model

Lights:

2 panel, geometry viewer, H to center

Xform - uniform scale (to get bigger)

Light - cone light

Copy paste for multiple lights

Shadows are expensive computationally

Instancing is in geometry sop:

Light  
Camera  
Geometry  
Render

Instancing needs numbers for XYZ. Assignment is about depth (z space)

Grid  
Viewer active hit W

To do it numerically (Transform for changing any geometry's aspects)

H homes the view

Green Sop to change blue to green, produces three values XYZ.

Drag to geo  
Plug in XYZ data

Geo xform allows rotation of view

Transform allows scaling of grid

Camera z space zoom out

Add noise sop after grid

Sphere, attribute create, texture

Noise, circle, CROSS (absTime.frame to animate noise) (channel names can be added 1,2,3 etc)

Line material or wireframe

Printing: use 7200 (24x24) Pro License only!!

If using transform, can preview: comp over background color, change 0 to 1

Cross:

Grid & Noise Supto

Two sets tx ty

Go to cross

Comp Slider (0 to 1) (use range to adapt)

Map

Blend geos Sequence Blend

In can move colors to node

Particles:  
Any geo can generate particle system

Trails

Feedback works on iterations  
Cross dissolve between original and modified

TD/PS digital printing  
24x24 = 7200x7200  
30x24 = 9000x7200 pixels

Watercolor paper  
Paper size, manage custom sizes, save

Files brought in, image, image size, uncheck resample, enter 300 DPI

TD printing:

Render, common, pixel res:

Movie file out, change type to image/tiff, hit recorder

For video, add to network:

Change to 4K 3840, or 1920x1080

Comp, add window, drag last file in chain onto it, opening size file, borders off, monitor 1 (full screen on recorder), open in separate window

Select all and hide render.

Record about a minute

INTRO: TRANSFORM

Geo light can render  
Hatch patterns, scanned in  
Images as texture  
Video

Sphere inside geo:  
Add geo att create compute normals, tangents. Run into texture

Phong, color map  
Textures tops, transform, colormap, absTime.frame, can tile/mirror inside transform  
Insert transform before and scale to get rid of white bars  
Phong options: normal map from lights/darks, bump scale, height map (luma values) displace vertices

Make own textures  
Ramp/gradient, animate (up resolution), animate phase, change period  
Composite

PARTICLES:  
Sphere inside geo, att create texture, small radius of sphere 0.1-ish  
Instancing  
Circle, Supto to grab data (Tx, Ty, Tz) render  
Radius of circle over time (audio osc cv) Math, change range (incoming/outgoing)  
Inside particles: birth, life expectancy, drag  
Changes might take awhile to propagate to you  
Forces can alter directions

2 view: geometry viewer

Slit Scan, ramp, time machine

Render to text3d to ramp to time

Clipping  
Geo, obj, clip, makes plane which can be adjusted to cut it

3 osc to math, chopts sop, create chan 1-3, add variance

Use oscilloscope data, for instancing

11/04/19

Data and CVS/XLS files in touch  
Drag & drop into TD comes in as DAT (pink)  
Time (dates) lock on right to scroll  
Separate data  
DAT Select, select rows by index, start 1 all down, select column by index (go toe 1) use only numbers  
Chops DAT to  
Graph: use Chop lookup, drag data to DAT select  
Lookup table needs to be some numerical range as dataset  
Chop Lookup, connect to bottom of lookup  
Timer, use constant and speed  
Constant outputs a number (0.5), adds number to frame rate  
Want this to go  
Through our index range (length of collection of numbers)  
Speed Limit type Loop (set min/max) plug this into top of lookup

Now use this data to do something interesting!

Change these numbers to sound  
Chop audio oscillator  
60 to 160 range  
Math (change range from one type to another)  
Min/max (check table data)  
Enter min/max into math range, and define range of osc too  
Tie data to other parameters:  
Turn viewer active, drag and drop where you want it to go

Visual part:

Camera/geo/light  
Grid in geo, w to see it  
Transform into plane 30 degrees  
Add noise  
Top att create compute normals  
Right click on thing you want to tie it to and right click, go out and box comes with yes  
Math, define range  
Render  
Start off low, and slowly get higher  
Math

Display data:  
Lookup table  
Text in chops or sops  
Drag lookup to text box  
To get rid of decimal: Math Round  
Clip allows you to cut edges  
Geo, in, att create, render

Bringing audio in:  
Other creatures in this world  
Drag audio snippets in  
Audio filter (default is low pass)  
Use bandpass  
Make sure you're hearing filter  
Chop analyze, function, sum (amplitude tracking)  
Math

Frog eggs  
Geometry  
Sphere  
Box, wireframe, divisions, noise  
Amplitude of chirping moves box  
Use for instancing  
Dat sop to  
Instance (many frog eggs)  
Bring in frog skin.jpg  
Another audio filter at different frequency  
If really jittery, before sending math, use LAG

Analyzing different types of things:  
Bring in video footage to analyze imagery  
To iso movement,  
Cache (stores images and creates delay) (set output index to far right, reverse of default)  
Set 4 frame separation from left and right  
Difference between two signals (the thing moving, frame difference) can increase  
difference increase frame store  
TOP monochrome  
Analyze (maximum, max gray values) camera in ceiling can track peoples movements in different quadrants  
Top to Data (RGB luma values)  
Math RGB

Performance:

Comp, slider

Math

Null object connect to anything you want slider to effect

Easy RGB color trick:

Specific color changes based on data, use constants in purple, choose colors, the use switch, blend between in switch index

Writing is a visual enclosure of nonvisual spaces and senses  
For the renaissance spatial perspective was essentially a filing system for visual data, at last they knew where to put everything and where to look for it once they had put it there.

<sup>(see rendering chain)</sup>  
TOP = Texture Operator  
CHOP = Channel Operator  
<sup>anything that is channel data</sup>  
- animation, input from devices, data channels, audio channels  
SOP = Surface Operator  
- 3D surface 3D data flowing through sops.  
MAT = Materials  
- for 3D surfaces  
DAT = Data Operators  
- text & table data  
- Python Scripts  
- Table (spreadsheet)  
- tab delimited, csv  
SOP Views:  
- Normals point out perpendicularly (90°) from the face of a polygon

- use to calculate lighting effects by the rendering engine  
- need to know which way you're facing to know how to light your geometry  
- Add normals . attribute create top (normals & targets)  
- if things look weird lit your geo might be missing normals  
- mesh = made of quads □  
- polygon = made of triangles Δ  
All SOPs are calculated aCPU  
60FPS means 60 frames to get all work done (cpu cooktime)  
Transform: Moving, Rotating, Scaling is 3D space  
- Normals are LOST by moving positions (grid → noise = no normals)  
- this affects light: go  
- Restore v/ attribute create (shift + #) = zooms to selected node  
absTime.seconds  
↳ time in sec for animation  
- mult by .0 to show

- FFX allows importing entire scene  
- lights, camera, animation, textures  
**Rendering**  
[COMP] - [BASE] - Like Basic  
TABS - 3D objects - building 3D scene  
- Folds - UI rendering create new  
- other - network  
- gives location in worldspace, where it sits in a scene  
Geometry allows for render  
- default as torus  
- inside node, can add input/output nodes  
- render tabs allow for placement of material  
Render Top: Renders 3D scene into 2D image  
File: Export Movie (Non-realtime for high demand)  
PBR MAT: Physically Based Rendering  
- needs Environment + Light (comp)  
Substance Top: (Realistic Textures)

**Pulling Video from Alienware PC**  
2-5 minutes of recording  
After geo in touch:  
Last purples in signal flow  
Select all of them, Render: common tab, fit resolution 1920 x 1080  
Add window object  
Drag and drop last purple to window  
Click Parameter top operator  
0 is screen for computer, 1 is atoms  
Opening size fill  
borders off  
open as separate window  
If screens are mirroring, hit cmd p and choose extend.  
Transform in signal flow, background color (for something other than black (alpha needs to be 1) over background color  
Composite: Render: On top  
Audio device out: Device output shogun inferno  
Should see audio bars on shogun

**Eric's Premiere for Digital Drawing**  
FX, right click, opacity, fade out at end  
P gives pen tool, draw points, give 3-5 seconds of black  
Fade in 3-4 seconds  
Effects controls, select text, change font  
Alpha Layering: stack them  
Select all layers and Nest to fade all at once  
File, Export Media:  
H264  
HQ 1080p h264 preset  
Change output name  
Video tab  
Output source should match  
Render max depth  
VBR2 Pass  
Target bit rates at 40  
Use max render quality

**Erin Hoffman's time:**  
11/13/19  
20:20 - 22:20  
Anthony assisted

### Live EboSuite

Establish in/out  
Midi track for video  
Master in Live as output  
  
Midi, Video in, double click or drag  
Video in:  
Enable stream to select input  
  
Select resolution High (1920x1080)  
  
Extended desktop: Master  
Eoutput onto master track  
New window  
Non full screen drop down: change to secondary (Mac 2)  
  
EFX for MIDI: all can be mapped  
  
External video uses HAP files  
Econvert with eclipse  
Video clips go into audio  
Live/camera video goes into MIDI  
Audiotrack can help loop clips with Warp mode, hit loop box , and save  
  
Listen to how they use SOUND: Vocoder  
Cecilia Condit NYT taught Palov  
Robert Ashley  
Vasulka Comlision  
Russian Duo (peer has clip)  
Gary Hill  
  
Audio in  
Eclipse  
Play clip  
  
Master double click  
Eoutput  
Secondary display  
Drag video to audio track  
HAP preferred, econverter can translate

To make whole video loop bottom right tab  
Warp,Loop/Save  
If it freaks out click tab again  
Other (far right tab) to get back to processes view

EFX:  
ISP has hidden possibilities, ebo studio or standard to select, then hit the same drop down for options  
  
Palov's presentation:  
  
Cmd M to enter MIDI mapping, assign to buttons, cmd m to exit mapping mode  
  
Track transform to scale clips  
  
Toggle Clip Device View or Shift+Tab to get to Warp Mode, Loop, Save  
  
AVF Batch Converter for HAP conversion  
  
Ableton preferences to remote MIDI on to map EFX

### Milo & Wizard

### TD MIDI Device, Performance setup

1920x1080  
  
MIDI Dialog, Device Mapper  
Device, create new mapping  
  
MIDI In  
  
Range is 0-127 for MIDI devices  
  
Select object after MIDI In (before Math) allows you to select parts of streams  
  
Can have multiple select objects  
  
Audio mixer use math to add sounds together  
  
Fade to black with Switch and/or Constant  
  
Cameras + Camera Blend allows for different views  
  
To grab images when working at print quality:  
Pause playback and move numbers  
Counter + Select  
Keyboard In, R, Counter, use number to increment file name  
  
Leap Motion uses Leap Motion Object  
Palm, Pinch, X, Y, are useful to map

### Tshirts book Inserts

UV Ultra on IBA

### Thoughts

I care about what you care about.  
Thank you for caring about what I care about.

A Pioneer and a Saxon walk into a valley ...

Just thinking about art makes me feel dirty.  
Complicit.  
I can enjoy making it.  
But it seems like a lot of effort of late.  
Hiding impotency.  
Waiting for kid-gloved treatment,  
Honors of the elderly man.  
While barely out of childhood's yearning grasp  
Not as fully grown.  
Not ready for prime time.  
But already well past that time.  
A time where differentiation could have mattered.  
Now seems very late in coming.  
Full.  
I don't want this to end but I can't take another.  
An other.

### Review needs

Outline thesis show (hope to show) : minimum of 1 page, bulleted list, what written thesis will be. Synopsis, main ideas and topics. Whose working with you, whose chair. Make 10 copies for faculty & distribute. Do not plan to discuss unless it's brought up.

Can have 4th person.

15-20 presentation of work (showing,talking). 20-25 discussion, 15 min faculty discussion.



- Refinement  
 - Too much in  
 soup  
 - More videos?  
 - make imagery  
 more concrete  
 in video  
 - more spatial  
 in sound  
 - James:  
 Diana Thater  
 Camille Roseathorne  
 Film makers

Andrew: IP considered too much work to implement - threat of removing feed show  
Prints  
 Fredrick Nelson post exhibits  
 Michael James McKean  
 - vignettes  
 tell a story but don't  
 hit over the head  
 - what form are  
 form? Each could  
 have a different  
 character  
 - what's the name

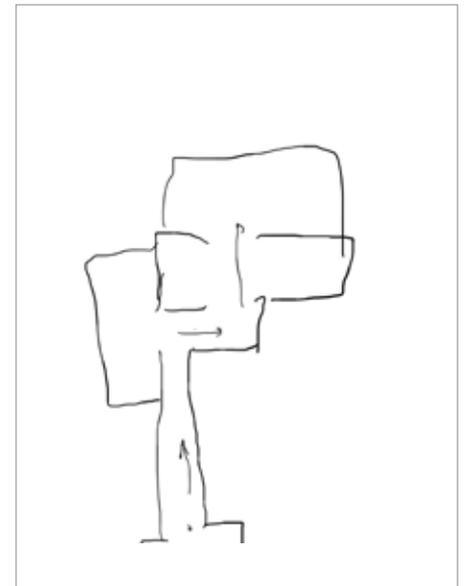
of the show?  
 - what is the  
 trajectory?  
 - Formality  
 of it all  
 - how things  
 get laid out?  
 - relationships  
 between objects, sounds,  
 images.  
 - curation  
 w/ is the thing, i thing  
 w/ other things

Art film Express - Premiere  
 Affinity - PS

Figure drawing 4:30 - 7:30

Simodgy

"What archetype is attempting to connect that can be facilitated through me for the highest good of all entities, animals, creatures, and people?"



Frankie's Painting Equation  
Total CM of painting x 8 for grad  
X 10 once graduated

The new code for releasing print jobs to Iba is █

- structures receive sources or information from signals that transmit information
- emitted in public space
- interference as new perception.
- performance & graphic logo
- part of Documenta X 1997

Thesis Defense  
or  
M-T <sup>Lunch</sup> 12:30-1:30 or 4:30-5:30  
After show

- mid semester crit just w/ committee
- still attend 1st year crit
- Around spring break

Thesis = work/Exhibitions

Thesis Report - Book

- MARK is point person for E-file NAMING cod ventials

MA 0 11  
drop dead for printed thesis

- Next week bring in 3 interesting items pay attention to how it starts & how it is organized
- 2 wks image & text

presentation

- 3 wks size of Thesis Report
- mid-term: Finish Thesis table of contents

Shivley "Goddess of nature"  
↳ I know ~~if~~ her

- Sarah 12 acolyte (Nancy - head of religious ards)
- James "Obsidian" Elf Rogue that thinks he's a dragon
- Shump (Lo) Half-Orc Ranger scooter (rat familiar)
- Thock - left-handed Low Ditch Keep Goldfeather - neutral
- Neuthra Goddess 1st lizard of smartility folk 20 ft tall - human & wavering
- Shassath - mother goddess FARSITE

Zivilan - major deity wisdom

**NORV** BRAVE 3 strong.

- Darklings wise
- twisted Fey creatures - stranger @ night
- 1 potion resiliency
- transportation circle
- conduit to summon devil but elf died
- Devils realm of 9-bells
- Shard of Air
- 106 celestial damage
- Sylvan - Letters Fey creatures

#355 - Sister Matilda A/Dead  
 Sister Bone  
 → infused like, magic  
 in it  
 - religion: Aerocrow 1st  
 worship: AKK, <sup>zack</sup> creature  
 minor <sup>guard</sup> <sup>protector</sup>  
 of Antonia (prison)  
 - princess of P. VINE  
 - Goddess ele. <sup>plague/air</sup>  
 WAR between <sup>Ma</sup> <sup>Acibin</sup>  
 worked over <sup>price</sup> <sup>EV</sup> <sup>Tail</sup>  
 control  
 "spear of mighty  
 wind" used to pierce  
 MAUCIBIN, broke weapon  
 = shards spread

through multi-verse  
 - AARAKOCRA have  
 only been on material  
 plane a few years  
 → good omens/luck  
 N.W.  
 - Find something  
<sup>shilver goddess of sarah</sup>  
 in nature, do  
 something to impede  
 it. Darklord  
 SARAGONIS - God  
 of Fire & Vengeance  
 - sacrifice / Arcade  
 origin of symbols

- ephemeral plane  
 - conjuration spell  
 & summoning  
 (demon to weapon)  
 - disadvantage  
 for 3hr on human  
 insight checks  
 1:22pm  
 Rhymans killed near  
 cell  
 iron hilt, handle  
 leather strap  
 pommel = ?  
 ARCANNA - enchantment  
 Rune  
 infernal origin

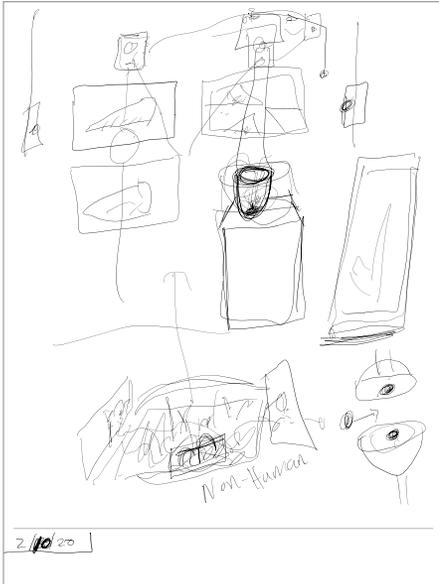
1200 XP  
 +2 silver  
 +10 silver  
 +5 silver found  
 Attachment w/  
 weapon necessary  
 to use it  
 - ritual burnings  
 primitive cults  
 pray to gods  
 body modification  
 to show devotion  
 - 9 swords w/ rune  
 1 key  
 1 key: Black Rod  
  
 infernal  
 magical  
 bindings

devote service  
 to SARAGONIS  
 Fox - Yugloth  
 - fickle friends  
 - notarius devils  
 - mercenary  
 & go between's  
 - Devil ( & mortal )  
 prisoner -  
 - thick gauze hand  
 Robe, blood red eyes  
 chains sound  
 - mythical tale  
 Humans see it as

history truth  
 - Azmodius god  
 of sin & 9 Hells  
 went to celestial  
 court to argue  
 about legality of  
 deals w/ mortals  
 as long as 3rd party  
 intervenes, upon  
 death could argue  
 @ celestial ct.  
 broken alchemist tools  
 Fishdyck: Dwarf  
 stitching on cuff  
 - looks like a forging hammer  
 pattern  
 city: morinthia

acolyte 150 yrs ago  
 - angry, possessed  
 - attacked burnt city  
 down  
 Priest of REARCS

Taking moving parts of a camera and reconfiguring them.



TD  
 Drop  
 MP4 video

comp  
 geo - cam - light

TOP  
 RENDER - 720 x 6  
 4320 x 480

crop  
 copy & paste 6x

---

- Framing & narrative is strong

- intro = strong abstract for all theoretical info w thesis

- "Art writing" - Eric's made he wishes he could write like I do w narrative

- Human Agency - reference from other writers, Artists.

Haraway, Jeddiah Pidy "After Nature"

→ changed since individual revolution (spiritual Resonance through Laws)

**Doug Clark Bio Tech**

Conservation biologists

Valuation utilization, ecosystem services, what do bits supply? Can be reductionary, economic.

Intrinsic value of birds for what they are. Our perception of them should have no bearing. Whether or not we are aware they have value. Giraffe in Africa doesn't impact my life, but it has intrinsic value that matters to me. Contribute to scopes around us.

**Gun-wrapped anfrafresnel**

**Diaries**

10/26/19  
14:24  
1

10/27/19  
11:37  
2

10/28/19  
11:53  
1

10/29/19  
6:33  
1

10/30/19  
10:01  
1

10/31/19  
9:20  
1

11/01/19  
14:58  
1

11/03/19  
12:26  
3

11/05/19  
7:10  
1

11/12/19  
6:55

1

11/24/19  
12:47  
1

11/28/19  
16:50  
1 + [redacted]

17:03  
1

20:24  
2

12/04/19  
9:45  
1

12/07/19  
16:32  
1

19:02  
1 & [redacted]

02/02/20  
12:31  
1 & [redacted]

**Thesis Show Tech**  
 15 ft Lamberts is goal for projectors

1800 - 2000 lumens

Media player  
 Short & normal

SP 890s 4000

LCD

40, 42

Plasma 720p  
 50"

Joe Scheer's Adobe Photoshop Tritone steps:

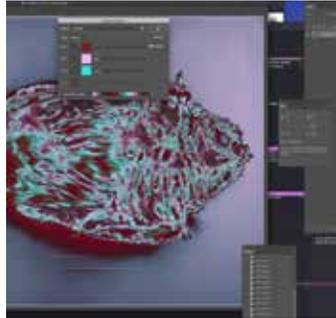
Flatten image

Convert to Grayscale, discard color information

Select Duotone, then Tritone option

Name chosen colors

Adjust curves:



Convert to Adobe RGB to print

Joe Scheer's How to stack RAW photos in Photoshop for focus:

File - Scripts - Load Images into Stack...

Browse to folder with files and select photos

Put check mark in "Attempt to Automatically Align Source Images"

Click OK

Select all Layers, Edit - Auto-Blend Layers - Stack Images

Place check mark in Seamless Tones and Colors

Command-shift-E combines all layers

Sharpen Un-Sharp Mask 85, radius 1, threshold 0

Save as TIFF

Print 24x36 with 2 inch border

Joe Scheer's DSLR/Copystand notes:

70-80mm for lens

1/30 - 1/15

F8 - f11

200

**Thesis book dimensions:**

Try both:

7.5 x 10.5

And

7.5 x 11.5

Could use Cougar Cover or White Mahawk 24"

Unpopular opinion: we should not be transitioning in-school learning to at-home learning during this time. Distance learning is one model of instruction—one that works for some students, for some families, for some teachers. But it does not work for everyone. And suddenly expecting it to work for everyone shows the extreme privilege of those making the decisions to expect all learning continue at home.

Yes, some families are gung-ho and ready to take on this challenge. The parents are staying home from work, already work from home, or are a stay-at-home parent. They have ample internet speed and device access to go around for all their children and the adults in the household trying to telecommute. The children are still motivated and focused enough to work somewhat independently so parents can still manage their work and household responsibilities while supporting learning.

But let's face it: that is NOT the case in the vast majority of American households.

Many older children are now caring for younger siblings as their parents continue having to work. Many families do not have access to one—let alone multiple—devices with reliable high-speed internet access. Many students are dealing with significant stress as they manage changes in their schedules, carrying the weight of adult worries, and navigate a world of social distance from friends. Even non-technology-based pockets sent home require support and supervision for students to complete (even if it's all mastered work—what K-12 student is actually ready to be responsible for their own learning?). Not to mention our students with significant disabilities who require hands-on, concrete learning opportunities who are being left out or forgotten during this time.

Additionally, teachers are not all ready to take on distance learning. Some have disabilities of their own that make this very difficult to navigate. Some are dealing with mental health needs due to this crisis. Some are caring for elderly and at-risk family members who need support. Some are trying to educate their own children who are home from school.

So you have students and families that are requesting work? Great. Work with your school/district to provide a list of parent resources. Encourage your district to send home optional packets for families who need non-technology-based resources. But no grades. No assessments. No "business as usual." Because this is NOT "usual." This is a global pandemic. Let's focus on that rather than promoting inequities that the institution of education already so ardently upholds.

Don't know if this came from or through here, but it's pretty sane, so I'll share, courtesy Alessandra Moctezuma:

Pedagogy in the time of an epidemic:

This is from Amy Young @ Pacific Lutheran and it's good advice for me and my colleagues:

1. Be kind to yourself and your students. Everyone is stressed, even if they're playing cool. That includes faculty. And that's OK.
2. Let's acknowledge that the quality of education will not be as good in alternative formats as it is in the pedagogical model we've actually planned for. That's OK as well—we're just trying to survive.
3. Do not read on best practices for distance learning. That's not the situation we're in. We're in triage. Distance learning, when planned, can be really excellent. That's not what this is. Do what you absolutely have to and ditch what you can. Thinking you can manage best practices in a day or a week will lead to feeling like you've failed.
4. You will not recreate your classroom, and you cannot hold yourself to that standard. Moving a class to a distance learning model in a day's time excludes the possibility of excellence. Give yourself a break.
5. Prioritize: what do students really need to know for the next few weeks? This is really difficult, and, once again, it means that the quality of teaching and learning will suffer. But these are not normal circumstances.
6. Stay in contact with students, and stay transparent. Talk to them about why you're prioritizing certain things or asking them to read or do certain things. Most of us do that in our face-to-face teaching anyway, and it improves student buy-in because they know content and delivery are purposeful.
7. Many universities have a considerable number of pedagogical experts on academic technology that we have only been dimly aware of until yesterday. Be kind to these colleagues. They are suddenly very stressed.
8. If you're making videos, student viewership drops off precipitously at five minutes. Make them capsule videos if you make them. And consider uploading to YouTube because it transcribes for you. Do not assume your audio is good enough or that students can understand without transcription. This is like using a

microphone at meetings—it doesn't matter if you don't need it; someone else does and they don't want to ask. At the same time, of course, think about intellectual property and what you're willing to release to a wide audience.

9. Make assignments lower or no stakes if you're using a new platform. Get students used to just using the platform. Then you can do something higher stakes. Do not ask students to do a high stakes exam or assignment on a new platform.

10. Be particularly kind to your graduating seniors. They're already panicking, and this isn't going to help. If you teach a class where they need to have completed something for certification, to apply to grad school, or whatever, figure out plan B. But talk to them. Radio silence, even if you're working, is not okay.

To setup BASH YouTube downloading in Terminal: <https://brew.sh/>

Run in terminal:

- 1: `/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install.sh)"`
- 2: `brew install youtube-dl`
- 3: To download youtube video: `youtube-dl --recurse-video mp4 PASTE YOUTUBE LINK HERE`



### Telework Plan and Agreement Form

This document is intended to ensure that both the supervisor and the employee have a clear, shared understanding of the employee's telework arrangement. Each telework arrangement is unique depending on the needs of the position, supervisor, and employee.

This telework agreement is not a contract of employment and does not provide any contractual rights to continued employment. It does not alter or supersede the terms of the existing employment relationship.

#### Employee Telework Information

|  |                     |
|--|---------------------|
| Employee Name:   | Leslie Rollins      |
| Job Title:   | 1st Sound Design    |
| Department:  | Expanded Media      |
| Supervisor:  | Andrew Deutch       |
| Arrangement requested by:  | Employee + Employer |
| Location where telework will be performed:                             | From his home       |
| Telework arrangement effective dates including start and ending dates: | B block Spring 2020 |

#### Job Duties and Reason for Request

The general expectation for a telework arrangement is that the employee will effectively accomplish their regular job duties, regardless of work location. Please describe how you think your job responsibilities are suited for telecommuting. Please explain the reason for requesting the need to work remotely.

Need continued support for class instruction, especially now that we are online.

#### Work Schedule and Location

| Day of Week | Work Hours | Work Location |
|-------------|------------|---------------|
| Sunday      |            |               |
| Monday      | 6-9        | home          |
| Tuesday     | 6-9        | home          |
| Wednesday   | 6-9        | home          |
| Thursday    |            |               |
| Friday      |            |               |
| Saturday    |            |               |

#### Employee/Supervisor Task Expectations

Work to be completed while telecommuting. Supervisor to check in with employee on daily/weekly basis to ensure work is being performed and employee is meeting expectations.

| Employee Defined Tasks   | Supervisor Defined Tasks  |
|--|---|
| Continued support and research for Sound Design. Including software demos. | Research into free software students can use at home. Online Zoom meetings with students. |

#### Telework Arrangement Modification

Alfred University reserves the right to cancel this temporary telework arrangement once updates are provided by State and Federal government regarding COVID-19 and the ability to return to regular business operations.

#### Equipment and Technology Access

The University will not provide desks, chairs, file cabinets, or other office related furniture. Employee should not purchase any equipment or furniture in connection with this telework arrangement.

The use of an employee's personal computer may be dependent on the technology and network connections used by the campus. Administration will determine which connection mechanism is appropriate based on operational need. Telecommuters using personal devices will receive instruction on how to access necessary programs. These must be tested before telecommuting can begin.

Minimal office supplies may be provided and should be requested during the telecommuter's in-office work period. Supplies will not be sent to the alternate work site. Any out-of-pocket expenses incurred for supplies, equipment, food, etc. will not be reimbursed.

The telecommuter must have an internet connection with bandwidth that is appropriate for conducting official business without disruption. The telecommuter is responsible to secure and pay for an internet connection. The University will not reimburse internet costs. The telecommuter is responsible for having a phone for all work-related calls during normal working hours and is expected to respond within 15 minutes to all electronic communications. If an employee does not have internet access and/or a computer at the alternate work site, the employer will not mandate telecommuting.

#### Additional details

#### Policies and Procedure Acknowledgement

|  |                   |
|--|-------------------|
| I have read and understand the University's Temporary Telecommuting Policy | Employee Initials |
|  | LR                |

#### Signatures

| Person To Sign      | Signature | Date    |
|---------------------|-----------|---------|
| Employee            |           | 3/27/20 |
| Supervisor          |           | 3/27/20 |
| Dean/Director       |           |         |
| Area Vice President |           |         |
| Human Resources     |           |         |

#### For HR Use Only:

Approved \_\_\_\_\_ Denied \_\_\_\_\_

#### Reason (if denied):

Empty box for reason if denied.

Office Use Only: Copy Distribution Employee Supervisor Dean/Director Vice President

#### UCO Application

Application Procedure: Applicants are required to submit their application online via <https://jobs.uco.edu/> and include:

- Cover letter
- CV
- Artist statement
- List of three references
- Teaching philosophy directed towards the integration of digital media in the art studio
- Unofficial copies of secondary and post secondary transcripts.

#### PDF or links to an accessible website

- 20 images of personal work or images/video clips (1-2 min in length)
- 20 images/video samples of student work
- Image list

Teaching Philosophy, paragraph three- give learning outcome for taking on corporate interests.

New pathways, new opportunities. How does new media exist in VR, Future media, AR

EIA Zoom Meeting:

[https://vvalart.com/?fbclid=IwAR14eavIPbvU\\_JR8Qe6gRRhGRw4T6bhn5UdbqMKC-dg0WSvCULNHt8DvZ1#espire](https://vvalart.com/?fbclid=IwAR14eavIPbvU_JR8Qe6gRRhGRw4T6bhn5UdbqMKC-dg0WSvCULNHt8DvZ1#espire)

May 6 1st year grads final crit, noon start, 1/2 hour each. Expected to attend all.

Present 15 minutes, general questions from big group for 15 minutes, then 1/2 hour with committee.

Practice sharing media in Zoom Practice and be prepared with what I show Logical ordering would be helpful. Share work & writing prior to official Zoom (PDF outline for them to follow along)

12-1 & 1-2 on Thursday Friday for second years

Reflections on my connection to indigenous traditions:

I watched all of them James. So great. Thank you for your curiosity about my engagement with indigenous understandings. I've not fully learned how to give full voice to my Potawatomi heritage as I've not been able to find a family record in the official tribal rolls. This seems to be a common occurrence in situations like my paternal grandmother who shed connections with anything not resembling what people considered proper "American" in the early 20th century. Her father was Filipino and mother reportedly as much as 50% Potawatomi. However, as a female lacking much cultural agency in polite society, much of my great grandmother's history eroded from her. Potawatomi lineage is traced matrilineally, so documents and records about her would be key to fully understanding my history. There are none as she was defined by her relationships with her husband who was also eager to pass for white. Without verifiable proof, I'm hesitant to fully claim space. However, my connection with the Potawatomi nation is lifelong as my father worked in Federal and State compensatory education for Title One support for schools scoring low in reading and math. His job saw him log over a million miles driving from school to school all across Michigan. He loved being behind the wheel of a car, and volunteered to visit the schools no one else wanted to because they were so far away. This territory outlined the contours of the Potawatomi bands throughout Michigan, and heavily focused on the Upper Peninsula. He also made certain that I participated with Potawatomi education and outreach programs all through grade school. I attended Northwest elementary school and at the time we were called the Northwest Indians. That name confused me and was one of the first experiences I had with overt cultural appropriation. In the small group of children who gathered with tribal teachers during monthly outreach educational programs, we talked a bit about our confusing feelings while gathering after school around a fire (Potawatomi literally means "Keepers of the Fire") and making fry bread on sticks we gathered.

All of that is to give you a sense of where many of the ideas in my artistic practice come from. I continue to explore and connect with as many teachings as possible and am grateful to be so geographically near the Pokagon Band of Potawatomi who are incredibly socially and culturally active and I look forward to the annual Kee-Boon-Mein-Kaa Pow. Wow with great anticipation. You can read more about it here if you are interested:

<http://www.pokagonband-min.gov/citizens/kee-boo-mein-kaa-pow-wow>

I immediately noticed your allying of First Nations with your email signature acknowledging Seneca history in Alfred and the surrounding areas. I never

thanked you for that but am doing so now. Thank you James.

I look forward to ANY additional links to indigenous artists creating in film, media, art. Please throw everything you have at me when you come across things.

Kindly,

Leslie Rollins

izzy (2009) MA SIGNIFICATION  
 Accumulation - hyper-representational  
 - mirror fragmentation, appropriated  
 passivity, cough, lipstick  
 - candle - single/dual  
 structure - grid, rectangles  
 windows, circles

---

YUNDA CYAN  
 don't know what we talk like use imagination to create self.  
 FIRE/ASH  
 - URBAN container for  
 fire - slow burn / personal care  
 spirit money? & recognition  
 connected invisible paper to video  
 - Traffic / repetitive pattern  
 - Bricks  
 - Location?

- hand held v. tripod  
 prints - woodcut  
 - ~~chicken~~ / Alien  
 Kiwi - can't fly (restoration)  
 don't know what we talk like use imagination to create self.  
 michael stream object edest.  
 reconstruction v. composition A B  
 - does order matter?  
 - visuals related to sounds?  
 - duration variations (start to big)  
 - see - oob - love the variation  
 skips, stutters, dissonance  
 up & down - very synthetic  
 options for samples / different  
 sounds?  
 - images 1/2 tone v. grid  
 - all vertical

- how do 1/2 tones interact  
 with bars? (over, under, through)  
 - curves & diagonals  
 - range dimensions as variability?  
 - do Algos construct

---

D. Zhu  
 CANDY - child's desert  
 \* buy happiness  
 feeling of candy  
 prefers soft to hard

---

Jenny  
 virtual surface / text work  
 interactive sound





---

Patoma: shared space  
 - sub-conscious image  
 - poor copy of physical space  
 - what space-time are we in  
 - imaginary boundary  
 - laws of perspective  
 - 'The space we see is time'

real objects, shared space,  
 perspective (different views)  
 programming compared  
 to capturing perspectives  
 Chère chambre  
 - labyrinthine  
 camera to flattened  
 scan processing - circuitry

---

Goa Zhuo

CV  
 Artist Statement  
 Cover Letter  
 References  
 Teaching Philosophy  
 Image List

Hey! It's Leslie. I'm back in Alfred tomorrow (Wednesday) with Lisa to move out of my apartment and studio. We're going to get ice cream around 5 pm here:  
 Dick and Cheryl's Big Dipper  
 21 S Main St, Alfred, NY 14804  
 We'd love to see you and say goodbye in person if possible so come out if you can. It's outside with space to practice social distancing! Yay!

Cancelled NYSEG:

TO DO:

Website needs Vimeo links and write ups completely redone for Student Time Based portion

Create new channel art for Youtube:

[https://support.google.com/youtubelabelsweb/29720037?hl\\_id=637283592332547758-93738392769#picker\\_channel\\_art&hl=en&ds=1](https://support.google.com/youtubelabelsweb/29720037?hl_id=637283592332547758-93738392769#picker_channel_art&hl=en&ds=1)

Create new Elio Header 2560x1440 Animated gif  
Create Elio Avatar 360x360 animated gif

Broadly speaking, aleatory can be referred to in several ways (each with specific aspects that are more in play for a particular definition) that are oftentimes called chance. Other words like indeterminacy are also used interchangeably by some.

In my particular area of interest, synthesis (both aural and visual), it is incredibly easy to be hemmed in by the cyclical nature of electricity with its polarized up/down swings. This is often turned into a sort of clock, or demarcation of periodicity. When clocks are given priority, a rigidity can easily form. So folks of my ilk seek to undermine that in some way and this is often accomplished by strategic deployment of indeterminate factors beyond our control. An extreme example of indeterminacy in this respect is noise, for example, white noise which is evenly distributed random energy across all frequencies. Different colors of noise are not as evenly distributed, and are useful because of that.

If you think of the sound of a hard rubber ball bouncing on a wooden tabletop surface, you can imagine how far apart the sound occurs based on how high you drop the ball. From a very high height (and assuming a perfect scenario where the angle of the ball's bouncing could be controlled to make it return to the exact spot on the table surface for you to hear) the ball would start off making a sound very infrequently. So much so, that each strike would sound out nearly singularly, and seemingly have no relation to the sound that came before or after it. That is until the strikes start happening in quicker succession. Once they begin to merge into a single sound (because the rapidity of successive bounces increases each time) your ears would no longer perceive the individual hits. You begin to perceive the collective bounces as a tone with pitch, and the pitch has frequency which you'd hear as starting out low and going higher and higher until it's out of your hearing range.

So in the example of the rubber ball, and a mathematical precision of describing its sound, a sort of rigidity can be observed. Given perfect experimental conditions, the ball will always bounce the same way and give the same results. Cool, but possibly a bit dull after years and years of formalizing this as how a ball SHOULD sound. Music and sound has these sort of root assumptions built in through social/cultural/political means. Indeterminacy is a methodology to de-privilege this formalizing tendency. What I know about your own practice shares a similar concept in the use of play to uncover hitherto unnoticed possibilities.

Adobe Creative Cloud Alfred Credentials

Login: [redacted]@gmail.com  
Password: [redacted]

You may already know all of this, but here's a few reasons's Kraftwerk is so pivotal not only in Electronic Integrated Art of the Alfred tradition, but how they laid the music production foundation to how ALL music is made today.

So this album from 1977 isn't necessarily Kraftwerk's best, but they are talking about Transhumanism years before it caught on in art & popular culture. Track 2 "Hall of Mirrors" & Track 3 "Showroom Dummies" are splendid examples. You can even hear the influence of early Punk in the song structure of "Showroom Dummies." Track 4 "Trance Europe Express" while not transhumanist in lyrical content, it literally created the music template for all hip-hop & rap that exists. That way of creating music defines ALL pop music production today. The electronic studio as a pop music machine starts with Kraftwerk and this song may be the Rosetta Stone for the world we live in today.

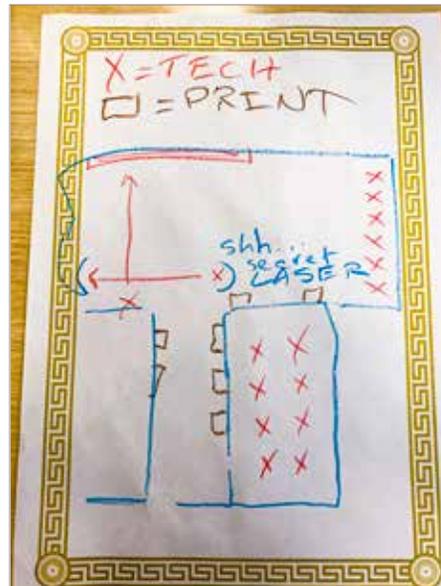
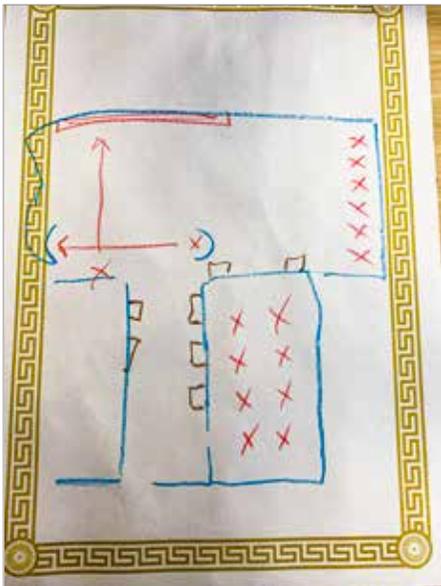
<https://open.spotify.com/album/0HHRVivBcnTepfeRVj52?si=MmFgJD9t0ZByjphBSkbbQ>

Early rap utilizing the template:

<https://open.spotify.com/track/3uy0jkMBQYVt80zK1x7s1sDy62q26TH0X90RD6uhD5w>

Probably my favorite re-rub of TEE:

[https://open.spotify.com/track/2C0AKU5exb39635cCWY7aie\\_c5wHDO-SY2e0g356mqw](https://open.spotify.com/track/2C0AKU5exb39635cCWY7aie_c5wHDO-SY2e0g356mqw)





# Embodied Research

# Embodied Research

Daily life during the MFA featured a staggering array of interactive opportunities. Each in-class participation (as a student or a teacher) took time and energy to consider the history and output of artists and makers, while sharing the technical details of how to work with and create within specific medias and traditions.

Ongoing studio visits with professors, fellow artists, and visiting scholars, yielded much factual information, as well as creative ideas, and philosophical considerations.

A steady stream of collaborative opportunities to work intra-disciplinarily with the student cohort in the School of Art and Design presented energizing and intriguing possibilities for performance, curation, and co-creation.

Access to regional world-class libraries, galleries, museums, performances, and facilities meant a constant flow of ideas gathered during travels to experience the richness of the surrounding geographies of the East Coast.

Abundant opportunities to explore and document the wilds of woods, geology, and waterways kept me centered and calmer than I likely would have been otherwise, as did my daily walks between my apartment and my studio space in Harder Hall.

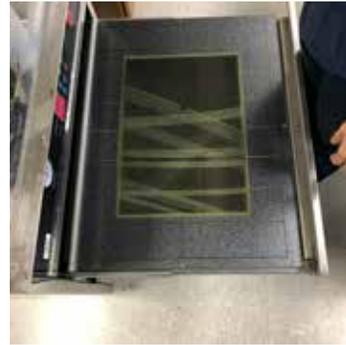
Minute changes in the seasons, with attendant shifts in flora and fauna, kept me ever-engaged and noting.

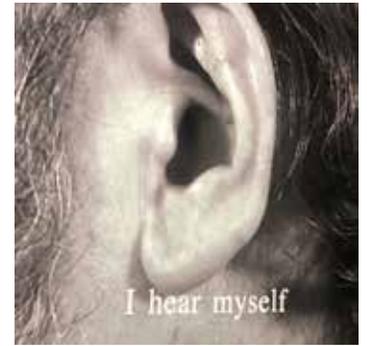
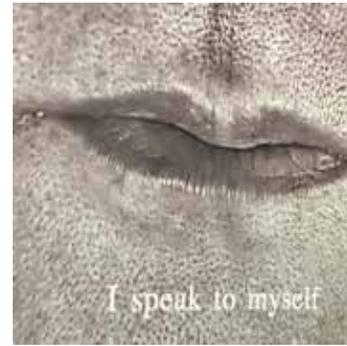
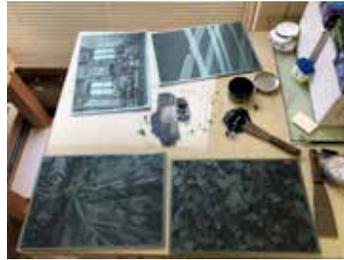
The common instrument in all of this is my body. My bodily experiences during these varieties of processes are somatically encoded for the long term. The following pages shares fragmentary documentation of some of my research.

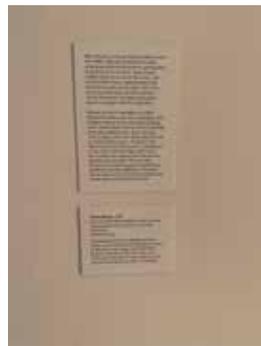
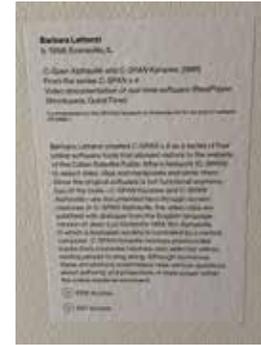
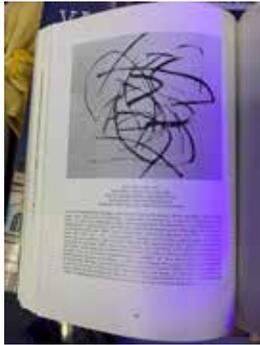
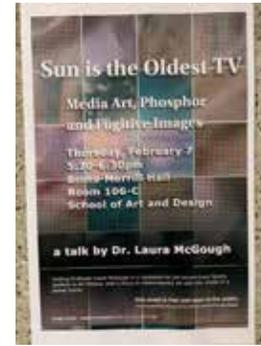


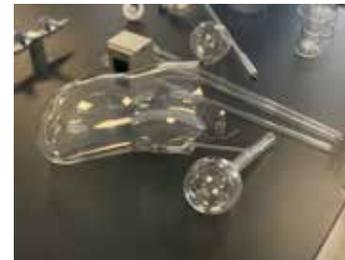
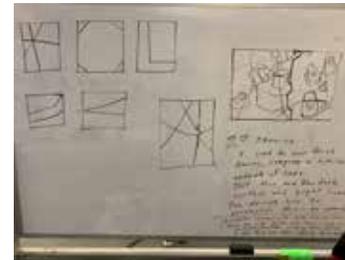
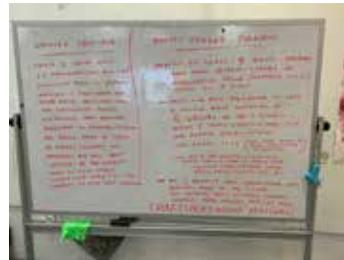
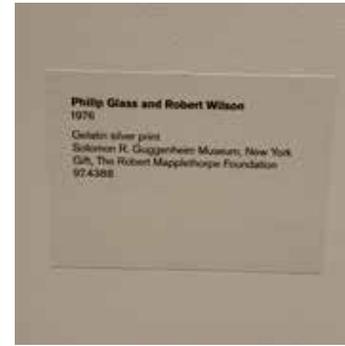
Studio visit with Dave Jones







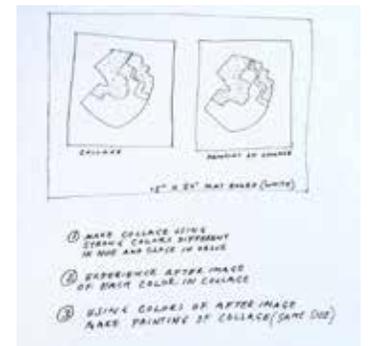
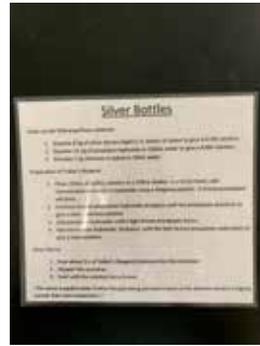
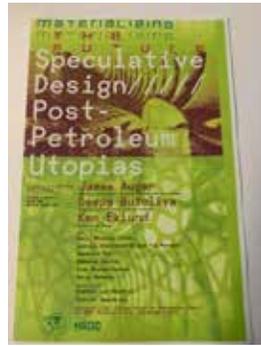




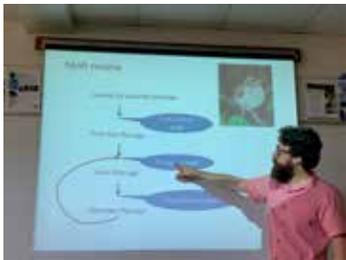
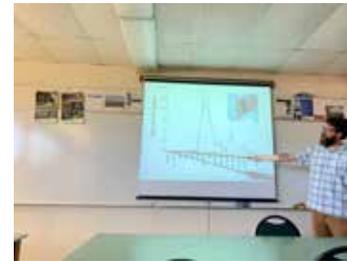


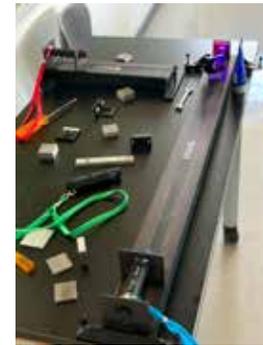
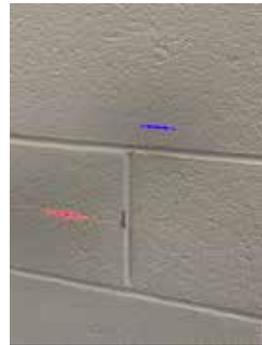
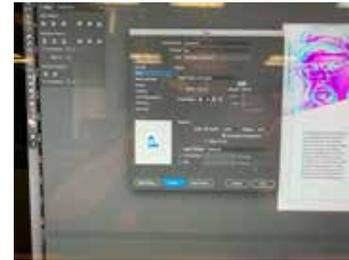
**MUSIC FOR A REVOLUTION**  
Scoop out one of your eyes 5 years from now and do the same with the other eye 5 years later.  
T.Kosugi





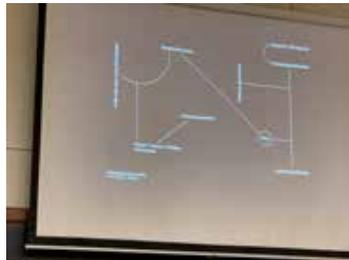
















# Tools

# Tools

My appetite for tools and “talking shop” seemingly knows no bounds. I have an endless enthusiasm for learning and using new gear—from both a technical and artistic standpoint. Often I have as much interest in finding out what a particular tool is capable of as I do in making new work.

I enjoy cataloging the possibilities found when using a tool in isolation—how it can be effectively used, how it can be undermined and “misused.”

The same questions become reinvigorated when asked again, but this time with multiple tools used collectively, in collaboration, in conflict, and in cahoots with other tools.

The more tools in use at once, the more varied the resultant phenomenon experienced might be.

My artistic practice is very much about my collaboration with tools to explore and document phenomenon encountered during live, real-time interactions.

What follows are a list of tools used during my MFA and a collection of related images.

“Large piles of fine electronic equipment do not necessarily have anything to do with music.”

– Max Neuhaus

| Type                  | Tool Maker                   | Tool                          | Description   | Qty |
|-----------------------|------------------------------|-------------------------------|---|-----|
| Eurorack audio module | 4ms Company                  | QCD                           | Quad voltage controlled Clock multiplier/divider                    | 1   |
|                       | 4ms Company                  | QCD Expander                  | QCD Expander  | 1   |
|                       | 4ms Company                  | Quad Pingable LFO             | QPLFO four pingable tri/ramp/saw LFOs                               | 1   |
|                       | 4ms Company                  | SISM                          | CV or audio attenuation, inverting, and shifting (DC offset), mixer | 1   |
|                       | ADDAC System                 | ADDAC207                      | Quad Intuitive Quantizer  | 1   |
|                       | ALM Busy Circuits            | ALM017 - Pamela's NEW Workout | Advanced Clock and Waves  | 1   |
|                       | Doepfer                      | A-132-2                       | Quad VCA  | 1   |
|                       | Doepfer                      | A-143-9                       | Voltage Controlled Quadrature LFO / VCO                             | 1   |
|                       | Doepfer                      | A-151                         | Quad Sequential Switch  | 1   |
|                       | Doepfer                      | A-196                         | Phase Locked Loop   | 1   |
|                       | Doepfer                      | A-118                         | Noise/Random  | 1   |
|                       | Doepfer                      | A-138a                        | Linear mixer  | 1   |
|                       | ERD                          | ERD/ERD vampiric edition      | Earth Return Distortion   | 1   |
|                       | ERD                          | ERD/SIR                       | Susceptible, Infected, Recovered viral computation unit             | 1   |
|                       | ERD                          | ERD/ERD                       | Earth Return Distortion   | 1   |
|                       | ERD                          | ERD/y                         | VC Geiger counter and radioactive random voltage source.            | 1   |
|                       | ERD                          | ERD/SIR re-issue (white)      | Susceptible, Infected, Recovered viral computation unit             | 1   |
|                       | ERD                          | ERD/WORM                      | Wormed speech synthesis   | 1   |
|                       | ERD                          | ERD/LICHT                     | Light to audio/CV   | 1   |
|                       | ERD                          | ERD/BREATH                    | VC heat and smoke   | 1   |
|                       | Erogenous Tones              | BLIP                          | RADAR Expander  | 1   |
|                       | Erogenous Tones              | RADAR                         | 8 Channel AD/AR LFO Envelope Generator                              | 1   |
|                       | Erogenous Tones              | LEVIT8                        | 8x Attenuator/Gain/Invert/DC-Offset/Mixer                           | 1   |
|                       | Erogenous Tones              | VC8                           | Octal Linear VCA  | 1   |
|                       | Erthenvar                    | Patch Chord v3                | 25 Oscillator Controlled Oscillators                                | 1   |
|                       | Expert Sleepers              | ES-8                          | USB Audio/CV Interface  | 1   |
|                       | Genki Instruments            | Wavefront                     | Wavering to CV converter  | 2   |
|                       | Industrial Music Electronics | Piston Honda mkII             | Wavetable Oscillator  | 1   |
|                       | Instruō                      | SCION                         | Biometric feedback to CV module                                     | 1   |
|                       | Intellijel                   | µJack                         | Headphone amp and stereo 1/4" outs                                  | 1   |
|                       | Intellijel                   | Dubmix Mini Expander          | VC Expander   | 1   |
|                       | Intellijel                   | Dr. Octature II               | LP filter with 8 phase-related outs / VCO / VCLFO                   | 1   |
|                       | Intellijel                   | Dubmix                        | 4 channel voltage controlled stereo mixer                           | 1   |
|                       | Intellijel                   | Dubmix Aux Expander           | Aux send expander   | 1   |
|                       | Laurentide SynthWorks        | VG2                           | Dual Passive Low-Pass Vactrol Gate                                  | 1   |
|                       | Make Noise                   | Function                      | Function generator  | 1   |
|                       | Make Noise                   | MATHS                         | Function generator  | 3   |
|                       | Make Noise                   | Wogglebug                     | Random voltage generator  | 1   |
|                       | Make Noise                   | QMMG                          | Quad Multimode Gate (Vactoral LPG)                                  | 1   |
|                       | Make Noise                   | Morphagene                    | Stereo tape and microsound module                                   | 1   |
|                       | Make Noise                   | Richter Wogglebug             | Complex Random Voltage system                                       | 1   |

| Type                  | Tool Maker             | Tool                   | Description  | Qty |
|-----------------------|------------------------|------------------------|--|-----|
| Eurorack audio module | Make Noise             | Erbe-Verb              | DSP Reverb   | 1   |
|                       | Make Noise             | Pressure Points        | Touch Controller / Manual Sequencer                                    | 3   |
|                       | Make Noise             | Brains                 | Pressure Points Sequence Expander                                      | 2   |
|                       | Make Noise             | Echophon               | Pitch-shifting echo by SoundHack                                       | 1   |
|                       | Make Noise             | Telharmonic            | Additive Synthesis Module  | 1   |
|                       | Make Noise             | Rene                   | Cartesian Sequence   | 2   |
|                       | Make Noise             | DPO                    | Complex waveform generator/Dual Oscillator                             | 1   |
|                       | Malekko Heavy Industry | Richter NoiseRing      | Analog Data Resonator Module   | 1   |
|                       | Malekko Heavy Industry | Borg 1                 | Low Pass Gate & Resonant Filter  | 1   |
|                       | Metasonix              | R-54 mk2               | Tube-based triode-pentode in Wien-bridge circuit for VCO/VCF functions | 1   |
|                       | Metasonix              | R-60 Midi-CV interface | Self-Tuning Midi to CV   | 1   |
|                       | MFB                    | SEQ-02                 | CV / Gate Sequencer  | 1   |
|                       | Modcan                 | Quad LFO               | Four independent LFOs  | 1   |
|                       | Modcan                 | Dual Delay             | Dual Delay   | 1   |
|                       | Mordax                 | DATA                   | Four channel oscilloscope  | 1   |
|                       | Music Thing Modular    | Turing Machine Mk II   | Random looping sequencer module  | 1   |
|                       | Music Thing Modular    | Radio Music            | Virtual Radio Playback (Sample Player)                                 | 1   |
|                       | Music Thing Modular    | Chord Organ            | Chord synthesis  | 1   |
|                       | Music Thing Modular    | Volts                  | Turing Machine 5-bit expander  | 1   |
|                       | Music Thing Modular    | Vactrol Mixer          | Turing Machine stereo expander   | 1   |
|                       | Music Thing Modular    | Spring                 | Spring tank reverb   | 1   |
|                       | Music Thing Modular    | Spring                 | Digital Spring reverb emulator   | 1   |
|                       | Music Thing Modular    | Pulses Mk II           | Turing Machine Gate Expander   | 1   |
|                       | Music Thing Modular    | Voltages               | Turing Machine clock expander  | 1   |
|                       | Music Thing Modular    | Mikrophonie            | Contact Mic  | 1   |
|                       | Music Thing Modular    | Magnetophon            | Mono cassette head / NAB equalized amplifier circuit                   | 1   |
|                       | Mutable instruments    | Rings                  | Resonator  | 1   |
|                       | Mutable instruments    | Links                  | Routing / utility module   | 1   |
|                       | Mutable instruments    | Elements               | Modal synthesizer  | 1   |
|                       | Mutable instruments    | Clouds                 | Texture synthesizer  | 1   |
|                       | Mutable instruments    | Peaks                  | Dual trigger to signal converter                                       | 2   |
|                       | Mutable instruments    | Kinks                  | Analog CV mangling utilities   | 1   |
|                       | Mutable instruments    | Shades                 | Mixing / offset utility  | 2   |
|                       | Mutable instruments    | Branches               | Dual Bernoulli gate  | 1   |
|                       | Mutable instruments    | Frames                 | Keyframer/mixer  | 1   |
|                       | Mutable instruments    | Warps                  | Meta-Modulator   | 1   |
|                       | Mystic Circuits        | ANA                    | Analog logic / CV arithmetics  | 1   |
|                       | Nonlinearcircuits      | Numberwang             | Gate generator   | 1   |
|                       | Nonlinearcircuits      | Wangernumb             | PLL/VCO/Divider/Random   | 1   |
|                       | Nonlinearcircuits      | Triple Sloth           | 6x slow chaotic modulation   | 1   |
|                       | Plan B                 | Model 15               | Complex VCO  | 1   |

| Type                  | Tool Maker                  | Tool                               | Description  | Qty                                      |   |
|-----------------------|-----------------------------|------------------------------------|--|--|---|
| Eurorack audio module | Random*Source               | Serge Stereo Mixer                 | 2 Channel stereo mixer with Aux In                 | 1  |   |
|                       | Random*Source               | Serge Wave Multipliers (VCM)       | Wave Multipliers                                   | 1  |   |
|                       | Random*Source               | Serge RING                         | Ring modulator                                     | 1  |   |
|                       | Random*Source               | Serge Variable Slope VCF           | Variable Slope filter                              | 1  |   |
|                       | Random*Source               | Serge New Timbral Oscillator (NTO) | Analog oscillator                                  | 1  |   |
|                       | Random*Source               | Serge NCOM                         | Divide by N Comparator (÷NCOM)                     | 1  |   |
|                       | Random*Source               | Serge Resonant Equalizer (EQ)      | Ten-band resonant filter                           | 1  |   |
|                       | Random*Source               | Serge Variable Q VCF               | Variable Resonance VCF                             | 1  |   |
|                       | Random*Source               | Serge Triple+ Waveshaper           | Wavefolder   | 1  |   |
|                       | Random*Source               | Serge SSG                          | Smooth & Stepped Generator                         | 1  |   |
|                       | Random*Source               | Serge DUSG MK2                     | Dual Universal Slope Generator                     | 1  |   |
|                       | Snazzy FX                   | Dreamboat                          | Dual Chaos Osc / Lfo                               | 1  |   |
|                       | Soundmachines               | BI1 brainterface                   | Human Brain to Eurorack Interface                  | 1  |   |
|                       | Steady State Fate           | Ultra-Random Analog                | Random Source                                      | 1  |   |
|                       | Steady State Fate           | Positronic Transient Gate          | Dual Vactrol cored Envelope Generator              | 1  |   |
|                       | STG Soundlabs               | Mankato Filter                     | 8-phase output 4-pole filter                       | 1  |   |
|                       | STG Soundlabs               | Envelope Generator                 | Dual-output EG and LFO                             | 1  |   |
|                       | Subconscious Communications | Model 52 Vampire                   | LFO/VCO Pair                                       | 1  |   |
|                       | Synthesis Technology        | E370                               | Quad Morphing VCO                                  | 1  |   |
|                       | Synthesis Technology        | E440                               | Discrete OTA VCF                                   | 1  |   |
|                       | Synthesis Technology        | E102                               | Quad Temporal Shifter                              | 1  |   |
|                       | Thonk                       | AT-AT-AT                           | 3 Channel Passive Attenuator                       | 2  |   |
|                       | Toppobrillo                 | Sport Modulator                    | Dual Lag and Hold Device                           | 1  |   |
|                       | Tubbutec                    | µTune                              | Microtonal Quantizer, Scale editor, MIDI interface | 1  |   |
|                       | WMD                         | Synchrodyne Expand                 | Synchrodyne Expander                               | 1  |   |
|                       | WMD                         | Synchrodyne                        | VCO + PLL + SC Filter                              | 1  |   |
|                       | Xaoc Devices                | Zadar                              | 1973 Quadruple Envelope Generator                  | 1  |   |
|                       | Eurorack video module       | BPMC                               | Fluxus Duo   | Analog Glitch Video Effects Processor    | 1 |
|                       |                             | brownshoesonly                     | Video Grip   | Joystick Module                          | 1 |
|                       |                             | brownshoesonly                     | hexadirectional crossfader                         | Complex crossfader                       | 1 |
|                       |                             | brownshoesonly                     | Triple Video LFO                                   | 3 discrete, skew LFOs                    | 1 |
|                       |                             | brownshoesonly                     | SCANNER  | 4 input video rate interpolating scanner | 1 |
|                       |                             | brownshoesonly                     | Triple Summing Amp                                 | 3 channel summing/attenuverting mixer    | 1 |
| brownshoesonly        |                             | Video Mix                          | Quad Video Attenuator Mixer                        | 1  |   |
| brownshoesonly        |                             | Video Soup                         | VC VCA Mixer                                       | 1  |   |
| Dave Jones Design     |                             | MVIP                               | (Mini Video Image Processor)                       | 1  |   |
| Dave Jones Design     |                             | O'Tool Plus                        | Oscilloscope and Audio tools                       | 1  |   |
| Dave Jones Design     |                             | Core                               | Video Genlock Synchronizer                         | 1  |   |
| Dave Jones Design     |                             | VO-1                               | Video Oscillator                                   | 3  |   |
| Dave Jones Design     |                             | OA-3                               | Output amp   | 1  |   |
| Dave Jones Design     |                             | VX-1                               | Jones to LZX / LZX to Jones converter              | 1  |   |

| <b>Type</b>           | <b>Tool Maker</b>      | <b>Tool</b>                  | <b>Description</b>  | <b>Qty</b> |
|-----------------------|------------------------|------------------------------|---|------------|
| Eurorack video module | Erogenous Tones        | Structure                    | OpenGL GLSL Visual Generator Module                                     | 1          |
|                       | Lone Vidiot Creations  | SolaChromatron               | Colorizing Video Solarizer  | 1          |
|                       | LZX Industries         | Video Logic                  | Boolean logic and inversion   | 1          |
|                       | LZX Industries         | Visual Cortex                | Sync, input and output, mixing, compositing, waveform, shape generation | 2          |
|                       | LZX Industries         | Navigator                    | Linear Position & Rotation Processor                                    | 3          |
|                       | LZX Industries         | Shapechanger                 | Linear Geometric Processor  | 3          |
|                       | LZX Industries         | Doorway                      | Linear Keyer  | 4          |
|                       | LZX Industries         | Sensory Translator           | 5 Channel Audio Envelope Follower                                       | 3          |
|                       | LZX Industries         | Mapper                       | Polar-to-Cartesian Colorizer  | 2          |
|                       | LZX Industries         | Passage                      | Triple Arithmetic Processor   | 4          |
|                       | LZX Industries         | Prismatic Ray                | Voltage Controlled Oscillator   | 6          |
|                       | LZX Industries         | Cadet I Sync Generator       | NTSC/PAL sync generator for video synthesis systems                     | 1          |
|                       | LZX Industries         | Cadet IV Dual Ramp Generator | Dual Waveform Generator   | 1          |
|                       | LZX Industries         | Cyclops                      | Laser Display Interface   | 1          |
|                       | LZX Industries         | Staircase                    | Frequency Multiplier  | 4          |
|                       | LZX Industries         | Color Chords                 | Additive Layer Priority Mixer   | 3          |
|                       | LZX Industries         | Curtain                      | Edge Processor  | 4          |
|                       | LZX Industries         | Bridge                       | Multiple, fader, mixer, inversion                                       | 4          |
|                       | LZX Industries         | Liquid TV                    | Video Display & Preview Driver  | 1          |
|                       | LZX Industries         | War of the Ants              | Zener diode avalanche noise generator                                   | 1          |
|                       | LZX Industries         | Marble Index                 | 3 Channel Alpha RGB Compositor  | 3          |
|                       | LZX Industries         | Polar Fringe                 | Linear Chroma Key Generator   | 2          |
|                       | LZX Industries         | Pendulum                     | Dual Animator   | 3          |
|                       | LZX Industries         | Arch                         | Nonlinear Functions   | 2          |
|                       | LZX Industries         | Castle 000 ADC               | Analog to Digital Converter   | 1          |
|                       | LZX Industries         | Castle 001 DAC               | Digital to Analog Converter   | 1          |
|                       | LZX Industries         | Castle 010 Clock VCO         | Clock VCO   | 1          |
|                       | LZX Industries         | Castle 011 Shift Register    | Shift Register  | 1          |
|                       | LZX Industries         | Castle 100 Multi Gate        | Multi-Logic Gate  | 1          |
|                       | LZX Industries         | Castle 101 Quad Gate         | Quad Gate   | 1          |
|                       | LZX Industries         | Castle 110 Counter           | Counter   | 1          |
|                       | LZX Industries         | Castle 111 D Flip Flops      | D Flip Flops  | 1          |
|                       | LZX Industries         | Memory Palace                | 32-bit ARGB Frame Store & Digital Video Effects Processor               | 1          |
|                       | LZX Industries         | Escher Sketch                | Stylus Pad Controller   | 1          |
|                       | LZX Industries         | Diver                        | Waveform Visualizer   | 1          |
|                       | LZX Industries         | Fortress                     | 3-Bit Computational Graphics System                                     | 1          |
|                       | LZX Industries         | Topogram                     | Linear Sequential Key Generator   | 1          |
|                       | Malekko Heavy Industry | AD/LFO-V                     | 6 envelopes and low frequency oscillators                               | 1          |
|                       | Reverse Landfill       | Triple Function Generator    | Triple Sandin Function Generator / 3 channel video colorizer / shaper   | 2          |

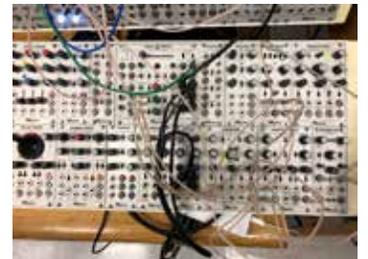
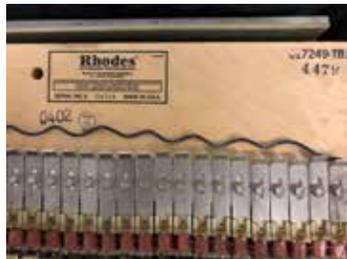
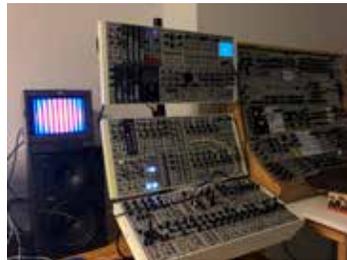
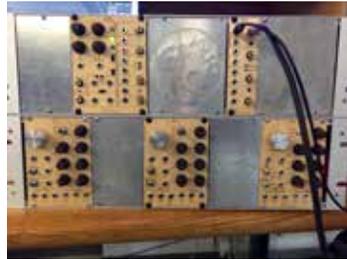
| <b>Type</b>     | <b>Tool Maker</b> | <b>Tool</b>                  | <b>Description</b>   | <b>Qty</b> |
|-----------------|-------------------|------------------------------|--|------------|
| Audio Interface | Universal Audio   | Apollo x8                    | Thunderbolt recording interface/preamp                                 | 1          |
|                 | Universal Audio   | Apollo Twin MK II (Quad)     | Thunderbolt recording interface/preamp                                 | 1          |
|                 | Universal Audio   | UAD2 Satellite (Quad)        | Thunderbolt DSP  | 1          |
| Camera          | Canon             | HV20                         | HDV Video Camera   | 2          |
|                 | Canon             | EOS 5D Mark II               | DSLR   | 1          |
|                 | Ikegami           | ICD-48                       | Digital B/W camera   | 1          |
|                 | Sony              | DCR-TRV310                   | Digital8 video camera  | 1          |
|                 | CrazyFire         | HD-SDI 1080P                 | CCTV Mini Camera 2.8-12mm Manual Varifocal Lens                        | 1          |
|                 | Panasonic         | HC-VX981K                    | 4K Ultra HD Video Camera Camcorder                                     | 1          |
| Computer        | Apple             | Mac Pro (Late 2013)          | macOS Mojave 10.14.6   | 2          |
|                 | Apple             | MacBook Pro Retina 2012      | macOS Mojave 10.14.6   | 1          |
|                 | Apple             | MacBook Pro Retina 2015      | macOS Mojave 10.14.6   | 1          |
|                 | Apple             | iPhone XS Max                | Camera/Recorder  | 1          |
|                 | Apple             | iPad 6th Gen                 | Tablet computer  | 1          |
| Converter       | Blackmagicedesign | Mini Converter SDI to Analog | 3G-SDI converter   | 1          |
|                 | Blackmagicedesign | Mini Converter Analog to SDI | 3G-SDI converter   | 2          |
|                 | Blackmagicedesign | MD-HX                        | HDMI/SDI Cross Converter   | 3          |
|                 | Blackmagicedesign | Mini Converter UpDownCross   | Video standards converter  | 1          |
| Copystand       | Bencher           | Copymate II                  | Fluorescent copystand  | 1          |
| Drum Machine    | Roland            | TR-909                       | Drum machine   | 1          |
|                 | Roland            | TR-707                       | Drum machine   | 1          |
| DVD Player      | Samsung           | DVD-VR375                    | DVD recorder & VCR   | 1          |
| Effect Pedal    | Eventide          | H9                           | Harmonizer Effects Pedal   | 1          |
| Electric Piano  | Fender            | Rhodes                       | 73 Suitcase Electric Piano   | 1          |
| Headphones      | Audio-Technica    | ATH-M50xDG                   | Studio Monitor Headphones  | 1          |
|                 | Audio-Technica    | ATH-M40x                     | Studio Monitor Headphones  | 1          |
|                 | Sennheiser        | HD25-1 II                    | Closed-Back Headphones   | 1          |
| ina             | GRM Tools         | GRM Tools 3.7.4              | Electroacoustic audio tools  | 1          |
| Laser           | Laser Show System | RGB Laser                    | CV controlled RGB laser  | 1          |
| Lens            | Canon             | 70-80mm                      | Lens   | 1          |
| Microphone      | Audio-Technica    | DR-140                       | Cardioid Dynamic Vocal Mic   | 1          |
|                 | DPA               | 4060-BM                      | Frequency matched stereo pair of 4060-BM omnidirectional microphones   | 1          |
|                 | JrF               | coil pick-ups                | Stereo pair  | 1          |
|                 | JrF               | c-series contact microphones | Stereo pair  | 1          |
|                 | JrF               | d-series hydrophones         | Stereo pair  | 1          |
|                 | Sennheiser        | MKH 20-P48                   | Omni-directional RF condenser microphone                               | 1          |
|                 | Sennheiser        | Ambeo Headset                | Binaural Recording Headphones  | 1          |
|                 | Telinga           | Pro Universal MK2 Parabola   | 22" clear parabolic dish   | 1          |
|                 | Ableton           | Push 2                       | Pad Controller and Control Surface for Ableton Live                    | 1          |
|                 | DJ TechTools      | Midi Fighter 3D              | Motion tracking of tilt, pan, and rotation, accelerometer data to midi | 1          |
|                 | DJ TechTools      | Midi Fighter Twister         | MIDI controller  | 1          |

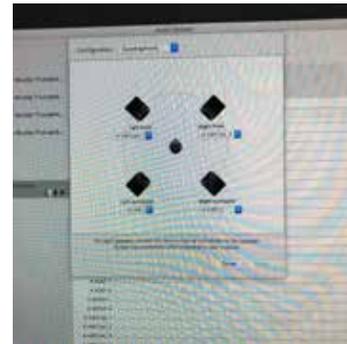
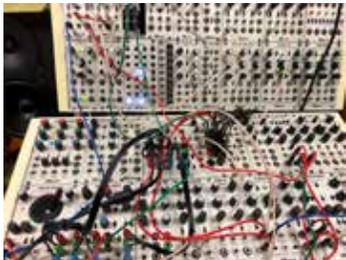
| <b>Type</b>     | <b>Tool Maker</b>  | <b>Tool</b>            | <b>Description</b>                                  | <b>Qty</b> |
|-----------------|--------------------|------------------------|---|------------|
| MIDI Controller | Genki Instruments  | Wave                   | Bluetooth/CV ring to control sound with motion      | 2          |
|                 | KOMA Elektronik    | Kommander              | Dual infrared X-Y motion controller                 | 1          |
|                 | Ultraleap          | Leap Motion Controller | Optical hand tracking module                        | 1          |
| Mixer           | Panasonic          | WJ-AVE5                | Digital AV Mixer                                    | 1          |
|                 | Pioneer            | DVD-V7400              | DVD player  | 6          |
|                 | Roland             | V-4                    | 4-channel Video Mixer                               | 1          |
|                 | Videonics          | MXProDV                | Digital video mixer                                 | 1          |
|                 | Panasonic          | WJ-MX50                | Video Mixer   | 1          |
| Monitor         | Sony               | PVM-2950Q              | 29" color monitor                                   | 1          |
|                 | Tektronix          | 620                    | CRT based X-Y monitor                               | 1          |
| Plotter         | Evil Mad Scientist | AxiDraw SE/A3          | X/Y plotter   | 1          |
| Projector       | BENQ               | W1100                  | DLP video projector                                 | 1          |
| Recorder        | Sound Devices      | 702                    | Portable Digital Audio Recorder                     | 1          |
|                 | Tascam             | Portastudio 424        | Cassette four track audio recorder                  | 1          |
| Sampler         | Akai               | MPC2000XL              | MIDI Production Center & Sampler                    | 1          |
| Software        | Ableton            | Live 10                | Digital audio workstation                           | 1          |
|                 | Adobe              | Creative Cloud Suite   | Creative Cloud                                      | 1          |
|                 | Apogee             | MetaRecorder           | Audio recording                                     | 1          |
|                 | Audacity           | Audacity 2             | Digital audio workstation                           | 1          |
|                 | Blackmagicdesign   | Desktop Video 11.5.1   | Capture and playback                                | 1          |
|                 | Cockos             | Reaper 6               | Digital audio workstation                           | 1          |
|                 | Cycling ,74        | Max/MSP/Jitter 8       | Visual programming language                         | 1          |
|                 | Derivative         | TouchDesigner          | Node based visual programming language              | 1          |
|                 | EboStudio          | EboSuite               | Audio and visual production suite                   | 1          |
|                 | garageCube         | MadMapper 3.7          | Video and light mapping                             | 1          |
|                 | Genki Instruments  | Softwave               | Mapping software for Wave ring                      | 1          |
|                 | Kris Collins       | Decim8                 | Photographic digital data-mashing                   | 1          |
|                 | Lightricks Ltd     | Enlight Photofox       | Photo Effects & Filters Studio                      | 1          |
|                 | Michael Klingbeil  | SPEAR 0.8.0            | Sinusoidal Partial Editing Analysis and Resynthesis | 1          |
|                 | Michel Rouzic      | Photosounder 1.10.1    | Image-based sound editor/synthesizer/processor      | 1          |
|                 | Morpholio          | Trace                  | CAD   | 1          |
|                 | Pixite Inc         | Matter                 | 3D effects  | 1          |
|                 | Pixite Inc         | Tangent                | Geometric shape generator                           | 1          |
|                 | Rainbow            | H6X8 8-48mm            | TV Zoom lens  | 1          |
|                 | Rasmus Ekman       | Coagula                | Industrial Strength Color-Note Organ                | 1          |
|                 | Rasmus Ekman       | GranuLab               | Granular synthesizer                                | 1          |
|                 | Roxio              | Toast 11 Titanium      | DVD authoring, disc burning                         | 1          |
|                 | Samer Azzam        | ProCam 7               | Manual Camera + RAW                                 | 1          |
|                 | Savage             | Procreate              | Digital illustration                                | 1          |
|                 | SIGMASIX           | Syphoner 1.4           | Syphon video interface                              | 1          |

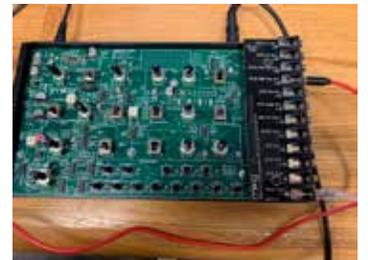
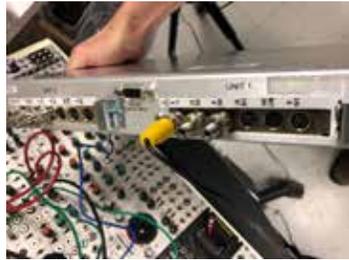
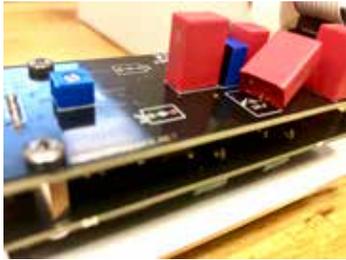
| Type            | Tool Maker       | Tool                     | Description   | Qty                             |   |
|-----------------|------------------|--------------------------|---|---------------------------------|---|
| Software        | Signal Culture   | Frame Buffer             | Infinitely repeat frames within keyed areas using realtime video processing | 1                               |   |
|                 | Signal Culture   | Maelstrom                | Realtime keying and pixel sorting within digital feedback processing        | 1                               |   |
|                 | Signal Culture   | SSSScan                  | Realtime buffered slitscan  | 1                               |   |
|                 | Signal Culture   | Re:Trace                 | Map and redraw realtime video into new pixel geometries in 3D space         | 1                               |   |
|                 | Signal Culture   | V-Mass                   | Map video to 3D models and morph in realtime                                | 1                               |   |
|                 | Signal Culture   | Interstream              | Realtime Datamoshing engine for live and pre-recorded sources               | 1                               |   |
|                 | Signal Culture   | Signals                  | Control voltage style manipulation for MIDI and OSC                         | 1                               |   |
|                 | Signal Culture   | Video Mixer              | Realtime crossfade, keyer and composite mixer for Syphon enabled apps       | 1                               |   |
|                 | Signal Culture   | Weaver                   | Interweave textures across multiple video luminance maps                    | 1                               |   |
|                 | Squared 5        | MPEG Streamclip          | Video converter, player, editor   | 1                               |   |
|                 | Tayasui          | Sketches Pro             | Digital illustration  | 1                               |   |
|                 | TECHLIFE         | ScreenCaptureSyphon 1.26 | Syphon sharing  | 1                               |   |
|                 | TopHatch         | Concepts                 | Digital illustration  | 1                               |   |
|                 | VIDVOX           | Black Syphon r4          | Send and receive video streams to and from Blackmagic Design                | 1                               |   |
|                 | VIDVOX           | Syphon Recorder 18       | Record video in realtime from any Syphon-enabled application                | 1                               |   |
|                 | Zeal             | VIZZable2                | Video manipulation and performance  | 1                               |   |
|                 | Speakers         | Mackie                   | HR824   | Stereo Studio Monitors          | 1 |
|                 |                  | Dave Jones Design        | DVDplay-6N  | DVD player synchronizer         | 1 |
|                 | Synchronizer     | Clavia                   | Nord Modular  | Virtual modular DSP synthesizer | 1 |
|                 |                  | Clavia                   | Nord Modular G2X  | Virtual modular DSP synthesizer | 1 |
| Synthesizer     | Korg             | Poly 800                 | 8-Voice hybrid polyphonic synthesizer                                       | 1                               |   |
|                 | Oberheim         | Two Voice Pro            | Analogue Synthesizer  | 1                               |   |
|                 | Oberheim         | Matrix 6                 | 6-Voice hybrid polyphonic synthesizer                                       | 1                               |   |
|                 | Roland           | Alpha Juno 2             | 6-Voice analog polyphonic synthesizer                                       | 1                               |   |
|                 | Moog             | Werkstatt-Ø1             | Analog synthesizer  | 1                               |   |
|                 | Blackmagicdesign | Intensity Shuttle        | Thunderbolt Video Data Transfer   | 2                               |   |
| Video Interface |                  |                          |   |                                 |   |

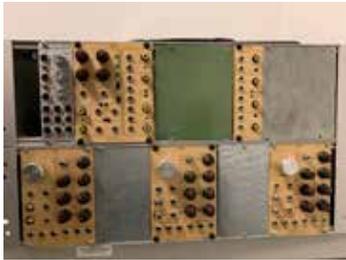
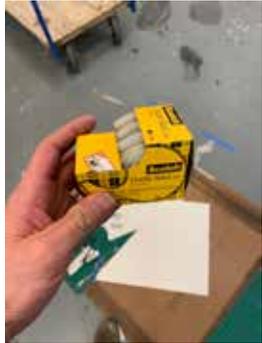


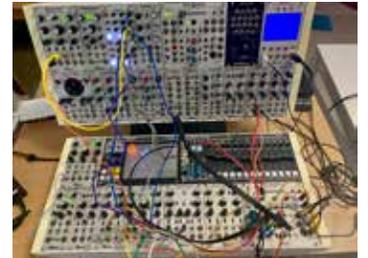
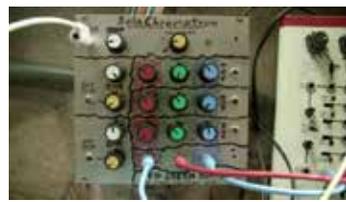
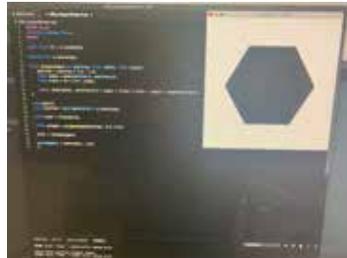
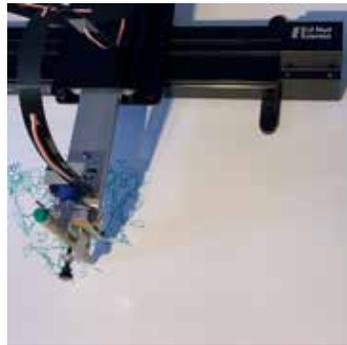
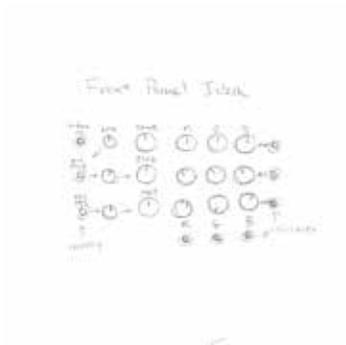
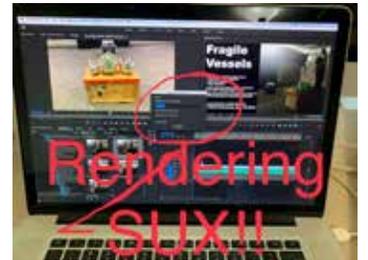
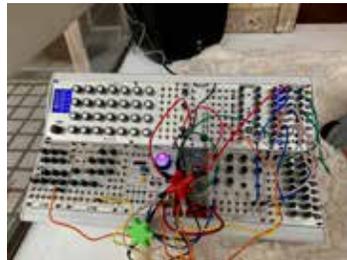
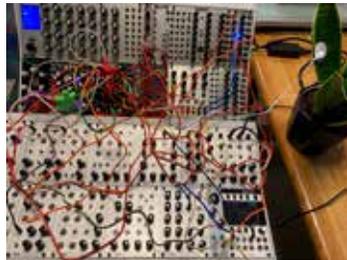
Video synthesizer in Harder Hall studio, 2019

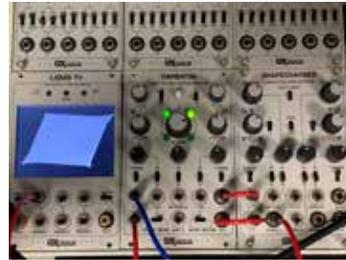
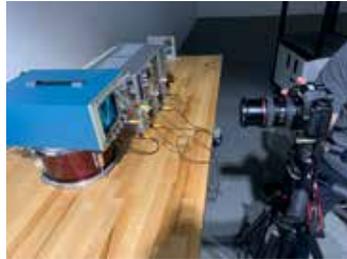
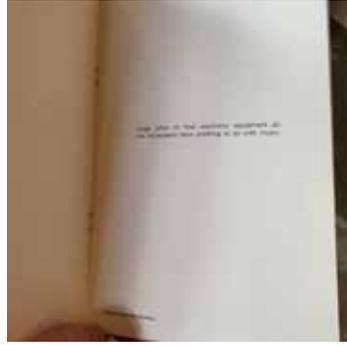
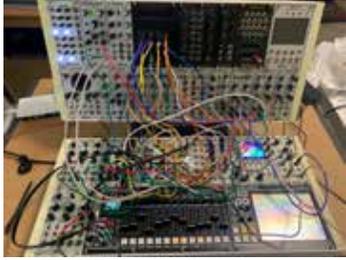


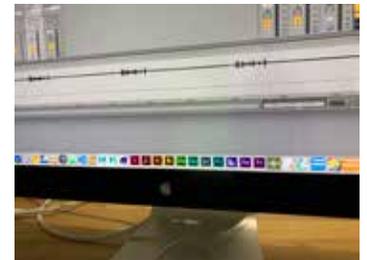
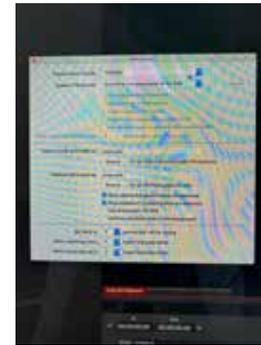
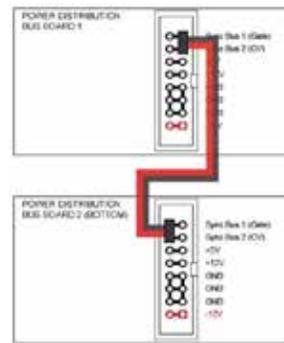


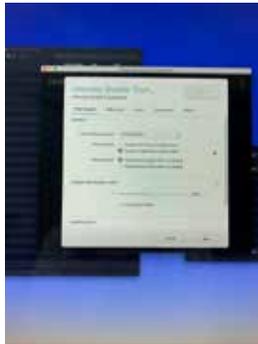












If you can afford a truck,  
you can afford a Synthesizer



If you can afford a Tesla Cybertruck,  
you can afford a video synthesizer

