

The Digital Gap: Distance as the Condition for Meaning in Contemporary Image Systems

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Abstract

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This thesis introduces the concept of the digital gap, via the utilization of the software TouchDesigner, to illustrate the distance between human perception and the computational systems that produce and process images in contemporary visual culture. The project argues that this interstice is a malleable condition for meaning to emerge in the current media-driven environment, and is discussed across four sections: the aesthetic, technical, systemic, and political. This creative work draws on theorists Jacques Ranciere, Vilém Flusser, Alexander Galloway, Wendy Chun, and Claude Shannon, and the artistic compositions of Sarah Sze and Trevor Paglen, to examine how images function as inputs and outputs of structured, programmable, and opaque systems, rather than pure representations. A collection of real-time, audio-reactive visual experiments built in TouchDesigner operationalizes and materializes the digital gap by producing images that resist interpretation and highlight the digital and mechanical processes that shape perception. As machine vision and digital mediation increasingly structure what can be seen and known, meaning becomes contingent, unstable, and actively constructed within the gap, independent of human governance. The thesis concludes with a mandate to recognize and consciously engage with the external systems that shape perception, and to employ the digital gap as a site of ethical interpretation within contemporary visual culture.

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Introduction

The concept that organizes this project is termed the *digital gap*, which has four distinct branches. This visual lacuna signals the distance that emerges between human perception and the computational systems that increasingly produce, process, and circulate images. The digital gap continues to be defined, augmented, and ever-expansive. The objective is not to restrain or close the aperture between seeing and knowing, but to better understand how that gap is produced, managed, and resisted. Through an examination of various image systems and the development of an approach to make that distance perceptible through analysis and creative practice, this thesis offers an innovative strategy using the software TouchDesigner, for exploring the dynamic relationship between external visual input, internal interpretation, and output of meaning. This work assembles multiple concepts with key binary juxtapositions: human vs. machine interaction, free will vs. machinic management, production vs. consumption, image vs. viewer, and intentionality vs. stochastic process.

Four branches that arise from this interaction and help explain the contemporary visual systems that produce multiple forms of distance or gaps are the *aesthetic*, *technical*, *systemic*, and *political*. The paper is structured around these four interstices. Each chapter addresses a gap, engages with relevant theoreticians or artists, and concludes with my digital work made in TouchDesigner that demonstrates and articulates these gaps and concepts. Expert contributors include Jacques Rancière, a philosopher of aesthetics and perception; Vilém Flusser, a media scholar of technical image production; Alexander R. Galloway, a professor of Media, Culture, and Communication at New York University, who has written on digital interfaces and software; and artists Trevor Paglen and Sarah Sze, whose practices explore machine vision and non-linear meaning.

Through a series of real-time visual works built in the TouchDesigner system, I construct and operationalize these gaps through feedback, compression, and temporal manipulation to materialize the distance between image and viewer. Rather than illustrating the gaps conceptually, my work enacts them, making computational mediation materially legible. My work through TouchDesigner exposes the normally hidden networks of machine vision and situates them at the center of the production, perception, and interpretation of images. I approach machine image-making as a process that can be reinterpreted and reenacted to generate innovative forms of perception and understanding, which introduces a distance between what is seen and how it is produced. This distance is the critical condition for the creation of meaning in contemporary, computational visual culture.

Sound functions as a structuring force in my TouchDesigner work. The visuals are audio-reactive, driven by compositions created specifically for this project. My music pushes the temporal unfolding of the images by modulating parameters such as distortion, feedback, and degradation through rhythm, amplitude, timbre, and tone. This reciprocity presents an additional layer of visual instability, and this dissonance creates new meaning through sonic variation. The images degrade, shift, and disrupt in real time, collapsing distinctions between visual and sonic media while revealing both as interdependent components within a shared computational system.

I drew inspiration from glitch art and glitch theory, which aim to reveal the hidden technical and ideological structures beneath an image through methods such as distortion, compression, frame manipulation, and pixelation, collectively known as “data moshing.”¹ Major contributors to this project include glitch pioneer Michael Betancourt and new media artist

¹ Rosa Menkman, *The Glitch Moment(um)* (Amsterdam: Institute of Network Cultures, 2011), 11.

Sabato Visconti—both of whom I have worked with directly—as well as Rosa Menkman, author of *The Glitch Moment(um)*.²

² *Ibid*

A System of Mediated Perception: TouchDesigner

TouchDesigner is a node-based visual programming software interface developed by the company Derivative, and designed for real-time image processing, interactive media, and generative audiovisual systems. Breaking from the linear timelines familiar in digital audio workstations (DAWs) or video editing software like Final Cut Pro or Adobe Photoshop, TouchDesigner functions through multiple networks of interconnected operators: **TOPs** (texture) for images and video, **CHOPs** (channel) for signals and data, **COMPs** (components) for geometry and structuring the networks, **SOP** (surface operators) for 3D design, **MAT** for rendering 3D objects, and **DATS** for more structured data integration. My visual work primarily engages **TOPs**, **CHOPs**, and **COMPs**.

When linked together, these operators form networks in which images or videos continuously process streams of transformation, feedback, and modulation in real time. Emerging from earlier software environments used in live visual performances, such as projections, spatial mapping, and video jockey culture, TouchDesigner reflects an evolutionary shift in digital media representation toward system-based image production. It inherits aspects of modular synthesis, in which different systems are connected to create unique outcomes, early computer graphics, and cybernetic themes, such as noise, feedback, and prediction. TouchDesigner generates meaning through dynamic relationships, interactions, and flow rather than stable forms.

TouchDesigner is particularly suited for researching contemporary viscosity. We are currently enveloped by a media environment structured by algorithmic processing, surveillance systems, and machine vision, where images operate to be seen by humans, but to be analyzed, transformed, and acted upon by computational systems. TouchDesigner allows one to work

directly within this “new visual regime,” in which images function as inputs to a system governed by parameters, feedback loops, and real-time data, rather than purely as representations. The software not only produces images, but models how images perform culturally as dynamic, operational entities embedded in networks of extraction, measurement, and control. By building various systems to produce an array of work, TouchDesigner shifts from a creative tool to a conceptual framework to materialize the digital gap between human perception and machinic vision. In contemporary digital systems, meaning no longer resides in visual content, but appears in the structured gaps between computation, perception, and power structures. My visual work shows these gaps while refusing to resolve them.

See Appendix B, Fig. 5-11, for photographs of the TouchDesigner system.

See Appendix C, Fig. 18, for a sped-up screen recording of how to construct a system.

The Aesthetic Gap

On a recent trip to Denver, I visited the Denver Art Museum (DAM), where I discovered an especially extraordinary multimedia exhibit by 2003 MacArthur Fellow Sarah Sze, titled *Sleepers* (1997). **See Appendix A, Fig. 1.** The piece is a sprawling six-channel video installation composed of paper, tape, thread, wire, 300 paper fragments, printed images, and other ordinary objects. Sze dubs the work a sculpture, and it is arranged into improvised networks that spread across the room, projecting the paper's negative space onto the back wall. The art appears as a constellation of small, fragile structures, as if unfinished and caught mid-creation. The piece resists any clear hierarchy or focal points, and the viewer's attention moves across countless components, tracing connections between material, image, and space. By transforming mundane objects into a complex system that evokes scientific models or diagrams, *Sleepers* represents

perception itself, and stages a tension between order and instability, exposing how meaning emerges not from a single image but from the fragile relationship between the viewer and the disparate parts.

In a 2026 interview with *The Guardian*, Sze states, “I want there to be this experience where you are teetering all the time – you’re disoriented, and then you orient yourself, and then you’re disoriented again. A work of art is finished when everything teeters. I want this idea of the perfect tension, where everything is on a tightrope.”¹ Sze breaks the expectation that works of art should present a clear image or function to claim a centralized meaning; instead, she produces a fragmented visual field that forces the viewer to navigate gaps between images and systems.

These gaps echo the perceptual and interpretive space investigated in this thesis, where the distance between viewer and system is the moment when meaning is nuanced and personal. Similar to my work in TouchDesigner, Sze’s installations are networks of nodes that may have meaning as individual components but, once connected, create something entirely different, resisting collective interpretation. She constructs images that resist coherence. *Sleepers* embeds instability within its formal organization of fragmentation, layering, and the continual deferral of visual resolution, thereby disrupting the possibility of a unified understanding. Sze creates this aesthetic gap through the tension in the image’s formal construction, where meaning is structurally withheld.

The fragmented perceptual condition produced by *Sleepers* reveals a space between what is seen and what can be immediately understood. Rather than presenting a coherent image that establishes meaning, the installation suspends interpretation and distributes attention across scattered planes. How the viewer moves through dispersed imagery that resists a single meaning

¹ Veronica Esposito, “Artist Sarah Sze: ‘A Work of Art Is Finished When Everything Teeters,’” *The Guardian*, February 3, 2026, <https://www.theguardian.com/artanddesign/2026/feb/03/sarah-sze-artist-new-exhibition-feel-free>.

points to a broader theoretical inquiry: how can images suspend interpretation rather than enable analysis? This kind of visual delay can be understood through Jacques Rancière's concept of the "pensive image," which describes images that interrupt narrative clarity and hold the viewer in a state of contemplative uncertainty.

Jacques Rancière explores the pensive image in *The Emancipated Spectator* (2008). According to Rancière, pensiveness is a sign of the modern aesthetic regime of looking, and a mode in which images and descriptions suspend clear meaning. A pensive image is known to stop action and resists narrative resolution, refusing to function as evidence of an event. Rather than being stagnant, pensiveness operates as an active disruption that blocks traditional forms of storytelling through images. From this perspective, Rancière explicitly challenges Roland Barthes's "studium" and "punctum" argument relayed in his famous *Camera Lucida* (1980).² The pensive image forstalls and complicates both studium (social meaning) and punctum (personal meaning). Whereas Barthes treats punctum as a site of meaning that pierces the viewer through excess of detail, Rancière reconfigures this dynamic, stating that pensiveness is not about a hidden meaning waiting to be revealed and decoded, but about "interrupting the relationship between narration and expression."³

Rancière advances another angle to describe the classical logic of what images are for: to serve an action, to support description in narrative, and to clarify or intensify events. Barthes would relate these same concepts to Romantic narrative methods in literature, the "having been there" effect. Rancière states that modern aesthetics inverts the idea that images are meant to support narrative by saying, "the logic of visibility no longer arrives to supplement action. It arrives to suspend it — or rather to duplicate it."⁴ From a modern perspective, images are not

² Jacques Rancière, *The Emancipated Spectator*, trans. Gregory Elliott (London: Verso, 2009), 110, 123-124.

³ Jacques Rancière, *The Emancipated Spectator*, 127.

⁴ *Ibid*

meant to move the story forward but to be adjacent to it. Hence, conclusions are “put in suspense.” In a familiar academic turn, Rancière uses Flaubert’s *Madame Bovary* as an example of this perspective, in which each moment in the book is punctuated by visual details: melting snow on an umbrella, an insect on a leaf, sunlight on water. He states that these are not symbols that represent love, explain love, or symbolize emotion—they just *are*. Here, description functions to invade narration rather than structure it.⁵

Moving to new media and video art, particularly in the 1980s, Rancière makes an enticing distinction between film and video. Unlike film, which organizes images into discrete frames, video generates images through an electronic signal. As he notes, “strictly speaking, there is no instant in time in which we can say that the video image exists.”⁶ Images, especially digital ones, are not fixed to a stable frame, but are continuously emergent.

Video, for Rancière, introduces a new condition in which images can be endlessly manipulated and calculated. He raises concerns among certain artists and academic fields about the nature of meaning and interpretation through this medium. If they co-occur, it leads to a polarity in how video was received and understood: either a perfect tool for controlling and shaping images or as a medium that risks flattening depth and eliminating the necessary pause for reflection. Suspension does not disappear, but becomes more difficult to locate within the dynamic signal of video rather than within the stillness of a static image.

Rancière maintains that electronic images, such as video, can still sustain pensiveness: “the electronic form...becomes a theatre of memory,”⁷ a space in which images stage and reorganize the past. Video is a place where memory is performed, and “a machine for transforming the represented into representative, the support into subject, the document into

⁵ *Ibid*

⁶ Jacques Rancière, *The Emancipated Spectator*, 130.

⁷ Jacques Rancière, *The Emancipated Spectator*, 132.

monument.” Rather than destabilizing the image, video opens a new area in which memory, material, and meaning are actively created.

He then explains the double meaning of a “screen,” a concept that produces intimacy as well as separation, and resonates with Alexander R. Galloway’s interface theory, a premise that will be addressed later in this paper. Rancière perceives the screen as a dual structure, functioning as a surface for manifestation where images are made visible to an observer, and an opaque interior that interrupts and resists full recognition. This ambiguity is not a limitation, but the condition through which pensiveness can emerge. The screen both shows and separates, establishing distance as a necessity of interpretation. Rancière further clarifies the interplay between images and the screen: “Pensiveness of the image is the distance between two presences.”⁸ The distance, the gap, produces thought, unease, memory, and affect. In this way, images become not only archival objects but sources of knowledge and memory. They are simultaneously mental spaces and sensorium. Pensiveness is not reinforced by stillness, contemplation, or technical medium-specificity. It is a designed distance and an interruption of form.

Rancière and Sze agree that meaning emerges through the distance between the viewer and the image. My project reinforces this distance by refusing narrative clarity, thereby producing the opportunity for pensiveness. To achieve this, I digitally recreate the network structure of Sze’s *Sleepers* and input my own video material. The result is a constantly shifting grid of screens and interfaces dispersed across a white field. This system does not simply represent the gap, but operationalizes it by fragmenting the visual plane and preventing the resolution of a coherent whole. The work interrupts recognition and forces attention without closure. Pensiveness emerges across the network and through the viewer’s inability to grasp what

⁸ *Ibid*

is seen. Like Sze, the images disperse across a field; like Rancière, the image is enigmatic in nature, narrative, and meaning. Through this resistance of clarity, the suspension and distance are designed, computed, and enforced through my systems.

See Appendix C, Fig. 12, for my work.

The Technical Gap

While working with digital imaging platforms, whether TouchDesigner, Adobe, or simply a phone photograph or screenshot, I am forced to confront a basic question of what images are, when produced by a machine. In software environments, such as TouchDesigner, which uses real-time generative systems to produce visuals, images do not appear from a direct encounter with the world, but from a chain of operations, such as code, sensors, algorithms, and interfaces that translate reality into programmable signals. While the image on the screen may resemble the world, it is a result of a technical process that approximates, compresses, and reconstructs input information before the output is created. The visual becomes less a representation of reality and more a product of a system. This realization is echoed in Vilém Flusser's *Towards a Philosophy of Photography* (1984), where he argues that modern photographs are “technical images” produced by “apparatuses” that encode the world according to the programs built into them.

Similar to Rancière's electronic form, discussed in the Aesthetic Gap chapter, Flusser develops the concept of the technical image in *Towards a Philosophy of Photography*. This distinction is important to my arguments regarding machine vision, images made for machines and by machines, and the technical mediation of reality. For Flusser, photographs are not neutral or objective representations because they are produced by apparatuses, such as cameras, that

combine optical, chemical, mechanical, or electronic systems that structure how images, or what he calls concepts, originate.⁹ While a painting is understood by the viewer as a representation, a photograph conveys a sense of presence, which removes the need to decode the image for symbols. Because images are linked to physical phenomena, such as rays of light, they appear to be reality. However, this is an illusion. Flusser claims that technical images are treated as transparent windows onto the world, but they are, in fact, structured by the programs and opaque operations of apparatuses that draw the window shade to a close.

This poses a critical problem for Flusser: When we interpret images as windows into reality, we mistake programmed outputs for the world itself. Technical images are therefore symbolic, not objective. As he writes, “metacodes of texts...signify texts, not the world out there. The imagination that produces them involves the ability to transcode concepts from texts into images when we observe them, we see concepts—encoded in a new way—of the world out there.”¹⁰

What does it mean that technical images encode concepts? If technical images are produced by apparatuses with built-in programming that operate in line with scientific theories, chemical knowledge, mathematical calculation, and cultural aesthetics, Flusser proposes that technical images are both conceptual and textural. When a photograph is created, it does not merely capture an event or the world, but executes a program or blueprint in which concepts are embedded in the apparatus and output as an image. When we look at photographs, we see concepts, symbols, or ideas encoded visually. We are not seeing the world; apparatuses translate concepts about the world, hence, Flusser’s claim that technical images are metacodes of texts.

⁹ Vilém Flusser, *Towards a Philosophy of Photography*, trans. Anthony Mathews (London: Reaktion Books, 2000), 14, 17.

¹⁰ Vilém Flusser, *Towards a Philosophy of Photography*, 11.

In contrast to traditional depictions, such as paintings, which Flusser refers to as “prehistoric images” (“posthistoric images” are technical images),¹¹ the painter deliberately engages with, incorporates, and composes symbols in their work. The painter actively translates mental states and interprets them onto canvas. With photography, however, the human disappears behind the machine and the apparatus, which obscures the processes of mediation. For Flusser, this occlusion can make technical images both powerful and potentially dangerous.

Because technical images appear to be objective representations of reality, viewers accept them as evidence rather than as constructed outputs of machine processes. The power of technical images that Vilém Flusser identifies marks a shift: We now encounter a world of images whose underlying operations remain hidden. What appears as reality is, in fact, the product of calculation, programmatic structure, and computational logic.

Embracing Flusser’s concept of how technical images obscure their underlying operations, I experiment with ways this opacity can be utilized, tested, and exposed through visual systems. Using found footage from the Internet Archive and YouTube, I layered multiple videos that interact with and manipulate one another through movement, producing an artistic interpretation and visually compelling melting or dripping effect that reveals and degrades the inner workings of machine processing. The inputs consist of a series of videos, and the output becomes abstract and amorphous. While meaning may reside in each individual image, when combined they form a system that produces a chaotic, fever-dream concept of the world. Rather than producing technical images with a video recorder or a camera, I generate visuals by constructing my own conceptual system that yields unpredictable results and reveals structures beneath the image.

See Appendix C, Fig. 13, for my work.

¹¹ Vilém Flusser, 14.

The Systemic Gap

If technical images are produced by apparatuses, as Flusser argues, then the interface becomes the site where those instruments meet human perception. Interfaces present themselves as neutral surfaces but are, in fact, structured systems that organize how the world appears in response to user interaction. These displays translate inputs into outputs through computational functions, becoming the mechanisms that structure perception.

This basic logic of transformation, in which data enters a system and emerges as a processed result, extends beyond computation. In *The Interface Effect* (2012), Alexander Galloway cites renowned media scholar Wendy Chun, who proposes that “software is a functional analog to ideology.”¹² While Galloway concurs, he advances the discussion by interrogating what it means for software to be analog. He argues that software harbors ideology as well as structurally resembles the way ideology organizes experience and reality.

Like Rancière, who describes the artistic and intellectual anxieties of video, Galloway breaks down a persistent tension within new media: It is understood as a means to cut through ideology or as one that intensifies it, thereby becoming a tool of control. To clarify his tenet that ideology is procedural, Galloway again turns to Chun’s claim that software mediates the processes of ideology, and breaks down “function” as an adaptive term used across various disciplines. In computer science, a function is a block of code, and in mathematics, it is a rule that maps inputs to outputs. Similarly, ideology operates through this transformation. It not only represents beliefs but is, in fact, a process that transforms inputs into structured outputs, organizing and reconfiguring how and what information is received and understood.

¹² Alexander R. Galloway, *The Interface Effect* (Cambridge, MA: Polity Press, 2012), 55.

This theoretical framework is directly represented in my visual work. In TouchDesigner, any media input to the system undergoes programmed transformations that produce outputs that are visibly altered by the system's logic. The project models ideology as a functional process, not something embedded within the images, but something enacted through their transformation. My work makes this operation visible and exposes how meaning is produced through strict, structured, and opaque mediation. As Wendy Chun writes, “What is software if not the very effort of making something explicit, or making something intangible visible, while at the same time rendering the visible (such as the machine) invisible?”¹³ Image clarity is conditioned by the degree to which the system successfully conceals its own operations.

Galloway further develops his argument of technological ideology as a procedural, structural paradigm. He compares the modular structures of software and ideology, and emphasizes that this juncture operates through form, rather than content. Software, he argues, is abstract, symbolic, logical, and mathematical, functioning as a simulation of reality. Ideology, similarly, is not only a set of beliefs but also a structure that organizes perception, represents lived experience, and mediates our understanding of reality. Both software and ideology operate as technologies of simulation.

Diving deeper into this comparison, Galloway invokes Louis Althusser, who draws upon Marx, and describes ideology as a structure that mediates the relationship between individuals and their conditions of existence. Ideology produces a spurious reality, and Galloway suggests that both ideology and software function through spatially augmented realities, which he calls a “projection across a gap.”¹⁴ There are as many projections as there are gaps, and they “abound in such systems.”¹⁵ Gaps appear between individuals and the conditions that shape them, between

¹³ Wendy Hui Kyong Chun. “On Software, or the Persistence of Visual Knowledge.” *Grey Room* 18, p. 44.

¹⁴ Alexander R. Galloway, *The Interface Effect*, 56.

¹⁵ *Ibid*

machine processes and their representations, and between reality and its simulation. In both ideology and software, meaning is created through separation. The gap is a necessary condition of its operation, and the negative space provides this meaning and clarity.

Simulation is a crucial point in Galloway's argument. He notes how software is perfect for mathematical modeling, a legitimate, imitative representation of real-world phenomena, and the projection of space, sight, and sound. However, he writes, "The material distance or falsity of that simulation is first seen as a flaw, then resolved as insignificant."¹⁶ This is precisely how ideology operates. We acknowledge that software is a simulation, yet we treat the gap between simulation and reality as inconsequential, and in that process, we accept it as reality itself, a dynamic that reflects Jean Baudrillard's concepts of "simulacra" and "hyperreality."¹⁷ In this way, software and interfaces are not neutral but function as projection mechanisms that bridge gaps, translate inputs into outputs, and manage the relationship between representations and reality.

To summarize Galloway's argument, software and ideology share a formal structure as both operate as functions with inputs, transformations, and outputs. Software and ideology approximate reality, and both traverse a gap between the material and the representational, which is neutralized through smoothness and efficiency. Interfaces are ideological by structure. Accordingly, ideology is not only belief but programmable architectures that establish what we consider common sense and logically discerned analyses.

Galloway's analysis of software and interfaces, paired with his critique of Wendy Chun, reshaped how I understood my project. Initially, I was deeply preoccupied with the specific content chosen for the systems I built in TouchDesigner. The imagery I selected carried intellectual, cultural, and ethical stakes that I felt unequipped to fully address in the limited time

¹⁶ *Ibid*

¹⁷ Jean Baudrillard, *Simulacra and Simulation*, trans. Sheila Faria Glaser (Ann Arbor: University of Michigan Press, 1994).

allocated to a semester project. This concern shifted once I began to consider the system more carefully. At first, TouchDesigner was primarily a means to an end, a neutral tool for producing art. Then I realized that the images or videos I input into the system became less central than the structure through which they were processed and used. This awakening aligned with the principles of systems and information theory: Meaning shifts from the content of the message to the structure of the system through which it travels and the efficiency with which it travels.

Claude Shannon's foundational work, *A Mathematical Theory of Communication* (1948), reframed communication as a system composed of a sender, a channel, and a receiver, in which the primary concern is not the meaning of the message but the efficient transmission of signals. Information is thus stripped of semiotic content and reduced to measurable units, such as bits (0,1). Meaning effectively emerges from the system's structure and performance.¹⁸

Galloway paralleled this logic with digital interfaces, arguing that the image or content displayed matters less than the underlying layers, protocols, operations, and relations that structure how information is processed, disseminated, and encountered. This understanding directly informs my work in TouchDesigner, where the specific images I input are ancillary to the system that modulates, distorts, and circulates them. My work operates less for representation and more as an enactment of a system in which meaning arises from interaction, interference, and transformation.

I began to notice a pattern in the stream of disparate images I instinctively employed during the development process: footage of weapons testing, grainy archival clips of women wrestling, fashion photo shoots, people dancing, religious rituals, time lapsed flower blooms, distant landscapes, building demolitions, and endless social media feeds. The images oscillate

¹⁸ Claude E. Shannon, "A Mathematical Theory of Communication," *Bell System Technical Journal* 27, no. 3 (1948): 379–423, 379.

between the absurd and the banal. Although the specific content became secondary to the system's operation, the selections nonetheless reflect the vast flow of contemporary visual culture and reveal the graphic environments through which they spread and circulate. Moreover, I wanted the content in my works to resemble the aesthetic of that circulation: late-night cable TV, the compulsive urge to doomscroll, or the surreal quality of dreams, the domains where one scene gives way to another in a disoriented yet seamless fashion, with never-resolved narratives. This endless flow of images renders them inherently replaceable and ultimately meaningless. The imagery does not anchor meaning, but generates, participates in, and contributes to continuous, inconsequential output.

See Appendix C, Figs. 14 & 15, for my work.

The Political Gap

I recently attended an artist lecture by photographer Trevor Paglen at the San Francisco Museum of Modern Art. He is a MacArthur Genius Fellow and a recipient of the 2026 LG Guggenheim Award, and is preparing for the May release of a new book, *How to See Like a Machine: Images After AI*. The talk offered a glimpse into Paglen's practice and his thoughts on the invisible forces that structure and control contemporary life, as well as their implications for our rapidly changing visual world.

Paglen's work has long influenced my thinking about machine vision, and his perspective provides a crucial bridge between this thesis's concerns and its artistic manifestations. In his retrospective book, *Sites Unseen* (2018), the first chapter, titled "Invisible Images and Impossible Objects," focuses on his photography of covert operation locales that exist in plain sight, yet remain occluded by landscape and infrastructure. Using telephoto lenses, Paglen photographs

seemingly simple, benign structures, at times up to 60 miles away. These facilities are, in fact, sites of state violence and secrecy, including black ops installations and weapons testing zones. The photographs are blurred, compressed, and difficult to decipher, often rendering shallow buildings dissolving into the surrounding horizon. **See Appendix A, Fig. 2-4.**

Like the other theories and artists we've discussed, the embedded ambiguity is not a limitation but the central condition of his work. Paglen creates a visual and cognitive gap in which the viewer cannot fully determine what is being represented, and subjective meaning emerges through this tension. Paglen follows Galloway's interpretation of Althusser's Marxist theory of space, where understanding is constrained by spatial and political conditions. Thus, image legibility is shaped by the organization of space and the mechanisms by which state or bureaucratic power dictates visibility.

In a 2011 interview with the publication *October*, Paglen acknowledged the problem of representing what we cannot fully grasp, "Most of the time...I don't know exactly what I'm looking at, photographing, or researching. So I quickly end up in situations where the question is: How do I point to, engage with, and represent something that I don't quite understand?"¹⁹ This query personally resonated as I formulated the objectives for this thesis: How does one materialize the gap and represent the space between the viewer and the system?

Building on this uncertainty, my work adopts a similar resistance to clarity, producing images that refrain from interpretation rather than resolving it. Paglen writes that his photographs are "useless as evidence."²⁰ Yet, that very lack of utility redirects attention away from what an image is supposed to prove. This conceptualization anchors my project. Within the systems I

¹⁹ Julian Stallabrass, "Negative Dialectics in the Google Era: An Interview with Trevor Paglen," *October* 138 (Fall 2011): 3–14, 10.

²⁰ John P. Jacob and Luke Skrebowski, eds., *Trevor Paglen: Sites Unseen* (Washington, DC: Smithsonian American Art Museum; London: D Giles Ltd., 2018), 35.

built in TouchDesigner, the photographs or videos do not function as proof, documentation, or revelation. Instead, they become unstable, fragmented, layered, and processed through computational operations that exceed immediate human legibility. In this sense, the image does not deliver meaning but displaces it, forcing the viewer into the gap of perception. Interpretation does not unfold in the traditional narrative sense, where a depiction is decoded, but emerges through the image's failure to divulge information.

By refusing to confirm what is seen, my work foregrounds the limits of vision itself, aligning with Paglen's notion of turning the image away from evidence and toward the conditions that produce and frame visibility. Focusing attention on these structures exposes a gap that is both perceptual and political. Paglen reveals that state apparatuses operate by producing spaces where knowledge and looking are structurally limited. My work intensifies this condition in which seeing and knowing no longer align. Images do not resolve this gap but sustain it, suspend it in potential, and make observation an act of creative tension rather than a result of automatic recognition and knowing. Classifications of absolute realism surrender to infinite imagination.

This divergence between visibility and knowledge does not remain confined to the secret political structures that Paglen maps. Distance becomes more pronounced in the domain of machine vision, where the gap is no longer a condition imposed on human perception but is embedded in the image itself. If Paglen's photographs illustrate that what we observe cannot be fully known, machine vision extends this condition by showing that images are not made to be seen at all, but function as data and signals within systems that process and act without requiring human interpretation. The gap widens the relationship between human vision and engineered perception. Paglen approaches the mechanized operation of images by posing the question: What

does a drone see? Citing artist Harun Farocki's concept of "operational images," Paglen proclaims Farocki as a pioneer in the recognition that image-making machines, such as drones, were "poised to inaugurate a new visual regime," where images operate within technical systems as instruments of analysis and control outside human spectators.²¹

Building on this insight, Paglen argues that we are now fully inside the visual regime that operational images anticipated. Whereas Farocki's examples of drone footage were produced by machines for human interpretation, Paglen identifies our contemporary shift to images being increasingly made by machines for machines. Images no longer function as representations to be looked at, but as components of technical systems that do not require human observation. Within these systems, vision operates autonomously and invisibly, marking an ontological break in what an image actually is. Machine vision produces a world in which visibility is no longer tied to perception but to robotic operation. Executing decisions, extracting data, and structuring reality no longer require human legibility.

This raises the question: If contemporary vision is increasingly mediated through machinic systems, from drone feeds on the news, Ring cameras on porches, digital maps, and the data-driven interfaces that track and surveil our habits and behaviors, what could it mean to replicate what they capture? Rather than treating machine vision as an external object of interpretation and critique, I wanted to approach algorithmic image recognition as method that could be duplicated, simulated, and translated.

By using visual overlays similar to those employed in machine-based image detection known as "blob tracking," my work produces imagery that resembles this vision. Blob tracking reduces the image to movement, contrast, speed, targets, and zones of detection, stripping away

²¹ Trevor Paglen, "Operational Images," *e-flux Journal*, no. 59 (November 2014), <https://www.e-flux.com/journal/59/61130/operational-images/>.

much of the human interpretive process and reconstituting vision as calculation. It also deliberately obscures what a human might try to comprehend, as the tracking obfuscates the image. My blob-tracking work is not a perfect reproduction of machine vision, but an experiment in perceptual processes as they circulate through a recursive feedback loop, from human to machine to human.

Throughout this method, I reflected on what an image looks like when it is first interpreted by a machine and then translated back into a form available to human perception. What emerges is a feedback system in which seeing is filtered, abstracted, and transformed across different modes of vision. My work demonstrates that contemporary visibility is shaped by systems and destabilizes the assumption that seeing is knowing. It further suggests that vision is a mediated process, contingent upon the relationship between human perception and computational interpretation.

See Appendix C, Fig 16 & 17, for my work.

The After-Image

This thesis argues that contemporary visual culture is defined by distance and ambiguity rather than clarity. The Digital Gap refers to the growing separation between human perception and the computational systems that produce, process, and act on images. This interstice is a profound opportunity and condition through which meaning can emerge, rather than a distance where meaning is lost.

In itself, the gap is neutral, but remains susceptible to manipulation and bias depending on the systems and power structures that deploy and govern it. We have discussed four gaps: the aesthetic, technical, systemic, and political. I have traced how the lacuna between image and

interpretation operates differently across these four dimensions, and how they distinctly yield unique strata of meaning and visual experience.

Having drawn on the aesthetic expertise of Jacques Rancière and Sarah Sze, we examined the levels of perception and demonstrated that meaning evolves from the suspension and distribution of attention across visual fields rather than occurring instantaneously. In the technical production, Vilém Flusser revealed that images are not direct representations of the world but encoded outputs by apparatuses, structured by programs that translate concepts into visual form. At the systems level, Alexander Galloway, Wendy Chun, and Claude Shannon showed that perception is shaped not by content, but by the structures that process and circulate information, as interfaces and software function analogously to ideology. At the political level, Trevor Paglen and Harun Farocki illustrated the degree to which visibility is structured by governmental power, as images increasingly operate under the rules of machine vision that no longer rely on human interpretation.

In this paper, the digital gap is both described and visually portrayed. My image-based work and musical compositions contributed to and extended arguments about the structures of projection, translation, and meaning by illustrating this gap through experiential and creative processes. By constructing various systems in TouchDesigner, I produced images that resist durable interpretation and degrade under observation. My artistic research has shown that technical systems invert the traditional logic of visibility; attention produces entropy rather than clarity. The image no longer serves as evidence or pure representation, but as a site where the limits of perception are made visible.

The conditions of visibility continue to transform at an accelerated rate, far exceeding existing frameworks. As machine vision systems become more autonomous and ubiquitous,

images increasingly operate outside the domain of human perception and function through data within technical systems. Numerous questions extend beyond the scope of this thesis and warrant further study. If meaning occurs in the gap between viewer and image, and does not contain a singular message, where does shared meaning and consensual truth reside? Is resistance to power structures that shape perception possible? What happens to the human sensorium under continuous technological mediation? How are memory, history, or truth transformed when visibility is no longer tied to human experience, but to machinic processes?

If meaning emerges in the gap between observer and image and is easily manipulable, then shared meaning can no longer be commonly recognized or stable. Consensual understanding shifts from transferable, dependable wisdom to a fleeting convergence temporarily coordinated, contingent, and biased. The proliferation of technical and machine-made images alters what we see, and changes how meaning is produced and circulated.

How can we resist the forces that manipulate the gaps? I propose four strategies. One form of opposition is opacity. If power operates by determining which subjects are visible and knowable, then the process of becoming partially unreadable through noise, distortion, compression, and ambiguity disrupts and disables that external control.

Another resistance mechanism is misalignment, which exposes the gap between human perception and computational interpretation. Producing images or systems that resist easy analysis by algorithms and machine logic reveals and dismantles the system's authority.

Temporal disruption, proposed by glitch theory, is another critical subversion. By slowing, delaying, or destabilizing the immediacy, engagement, and smoothness that perceptual systems rely on, the continuity they depend upon becomes fractured. The systems' power, rooted in efficiency, begins to collapse.

This project is grounded in the fourth intervention, which is restructuring the conditions of perception itself. By altering how images behave—degrading under attention, glitching, compressing legibility, and refusing to reward the act of looking—the work inverts the extractive logic of attention and repositions the viewer as an implicated participant, rather than a passive receiver. We cannot escape the systems that aim to change our perception, but we can resist by modulating their operations, making their structures visible, and rendering their authority less absolute.

When confronting the risk posed by continuous technological mediation of the human sensorium and cognition, we find that these processes are continually reorganized, and perception becomes filtered and prestructured. What one sees and hears is preshaped by interfaces, software, algorithms, and machine operations: The encountered world is curated and externally designed. We rely on cameras that see, sensors that detect, and algorithms that recognize, rather than vision and interpretation residing in the body and mind. Human sense becomes entangled with machine rationality, producing a hybrid, cyborg perceptual field. Truth and reality become blurred.

One of the most commonly experienced effects of technological filtering is the growing desensitization and compression of attention. Constant streams of mediated input flatten differences between events and images. Sensorium and mentation adapt to speed, repetition, and overload, often at the expense of depth, duration, and sustained engagement.

Technological conditioning generates interpretive dependency. The circumstances under which things become visible, audible, or legible are increasingly beyond human control and governed by technical systems that reorganize autonomy at the level of sensation itself.

These risks to cognition and sensorium extend to memory, history, and truth. Memory shifts from a cerebral function to data that is exported, stored, indexed, and retrieved by digital devices. What is remembered is no longer defined by personal significance but by what systems capture, process, store, and make accessible. History also becomes less shaped by academic and objective interpretation and more through a dataset assembled from patterns, correlations, and archives. Similarly, truth is inferred through prediction systems, shifting from an epistemological concern to an operational one that prioritizes what is most efficient within the system rather than corresponding to lived experience. Personal understanding and discernment become sacrificed.

My artistic experiments demonstrated how quickly perception and meaning break down when images are subjected to computational logic. What emerges from this work is a heightened awareness of the processes that structure visibility. If images operate through opaque, programmatic systems, they may not consolidate collective belief so much as fragment it, destabilizing the very circumstances under which meaning can be commonly held. My image-based work functions to expose the mechanisms by which meaning is constructed, disrupted, and negotiated. The gap is where the spatial and temporal organization of that production becomes visible.

The task is to become attentive to the systems that produce and modulate what appears as reality. What becomes incumbent upon us is to consciously dwell within this digital gap and regain sovereignty over personal interpretation and meaning. If images no longer guarantee meaning, and perception is increasingly structured by technical systems, then responsibility returns to the viewer as an active negotiator of what is seen, felt, and believed. It is imperative to develop and heighten awareness of truth as mediated, judgment as shaped, and perception as guided by external processes. To recognize the digital gap is to identify it as an opportunity to

participate in what we see and attend to, and to understand the ways images and systems speak on our behalf. Resistance to the dominant influence of external systems is actively technical, aesthetic, political, and introspective, requiring us to slow down perception, question immediacy, and confront the impulse to resolve ambiguity too quickly. Distance must become the site of ethical engagement, responsible discernment, and principled interpretation, where meaning is consciously cultivated.

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Appendix A: Artists

Fig 1. [Sarah Sze Sleepers](#)

Fig 2. Trevor Paglen, *CLOUD #603 Watershed*, 2019, dye sublimation print, 48" × 60" (121.9 cm × 152.4 cm), Edition of 5 + 2 AP ©



Fig 3. Trevor Paglen, *CLOUD #135 Hough Lines*, 2019, dye sublimation print, 48" × 65" (121.9 cm × 165.1 cm), Edition of 5 + 2 AP ©



Fig 4. Trevor Paglen, *CLOUD #865 Hough Circle Transform*, 2019, dye sublimation print, 60" × 48" (152.4 cm × 121.9 cm), Edition of 5 + 2 AP ©



Appendix B: System and Process Documentation

Fig 5. Full system in TouchDesigner



Fig 6. Control 1, Operations on channels

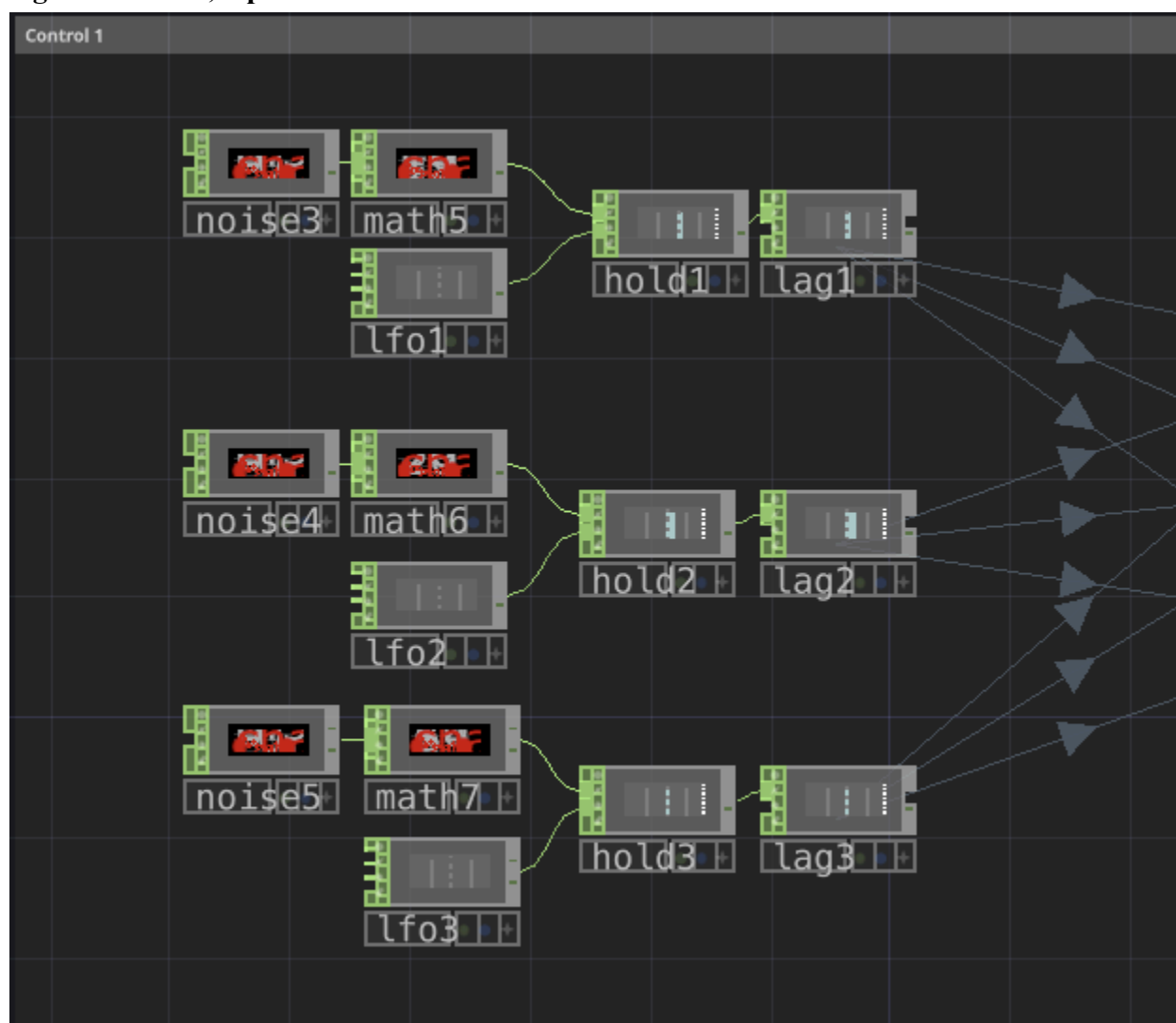


Fig 7. Control 2, LFO's generate waves and movement in real-time



Fig 8 & 9. Creates lines.

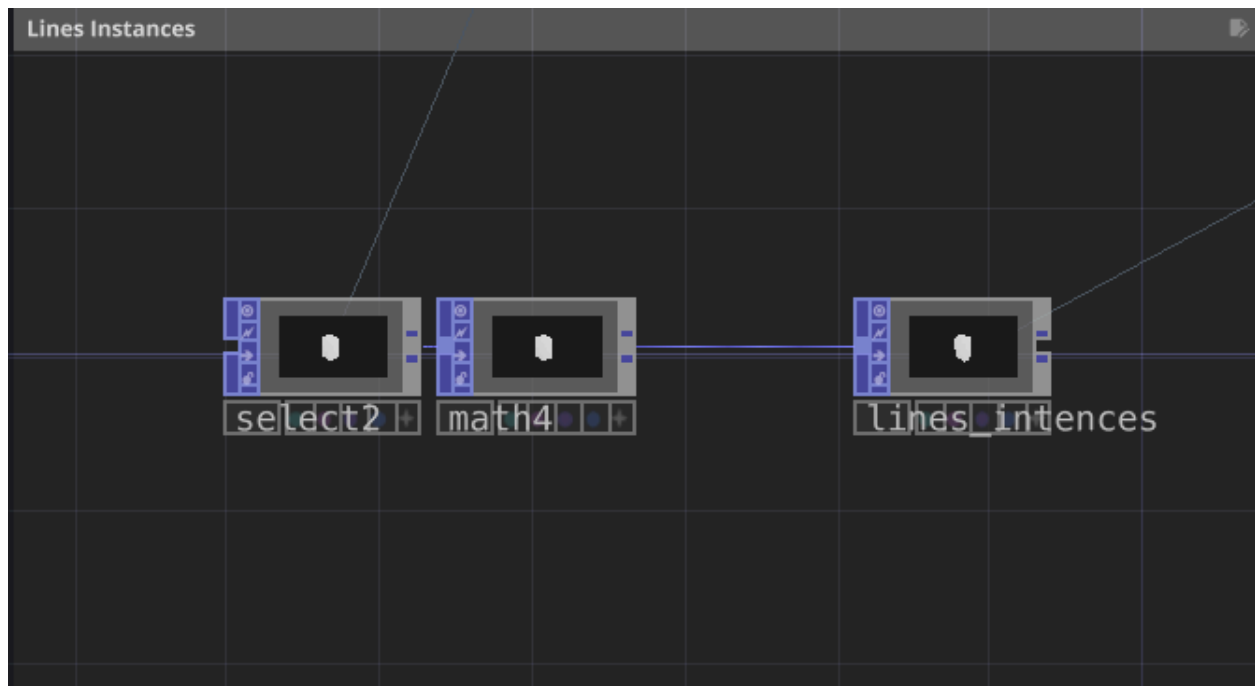
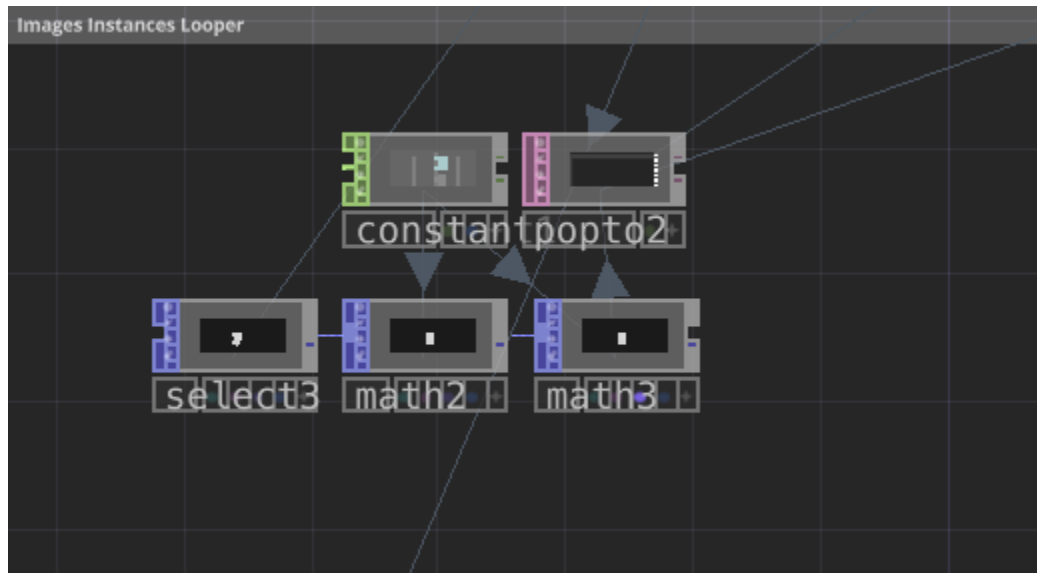


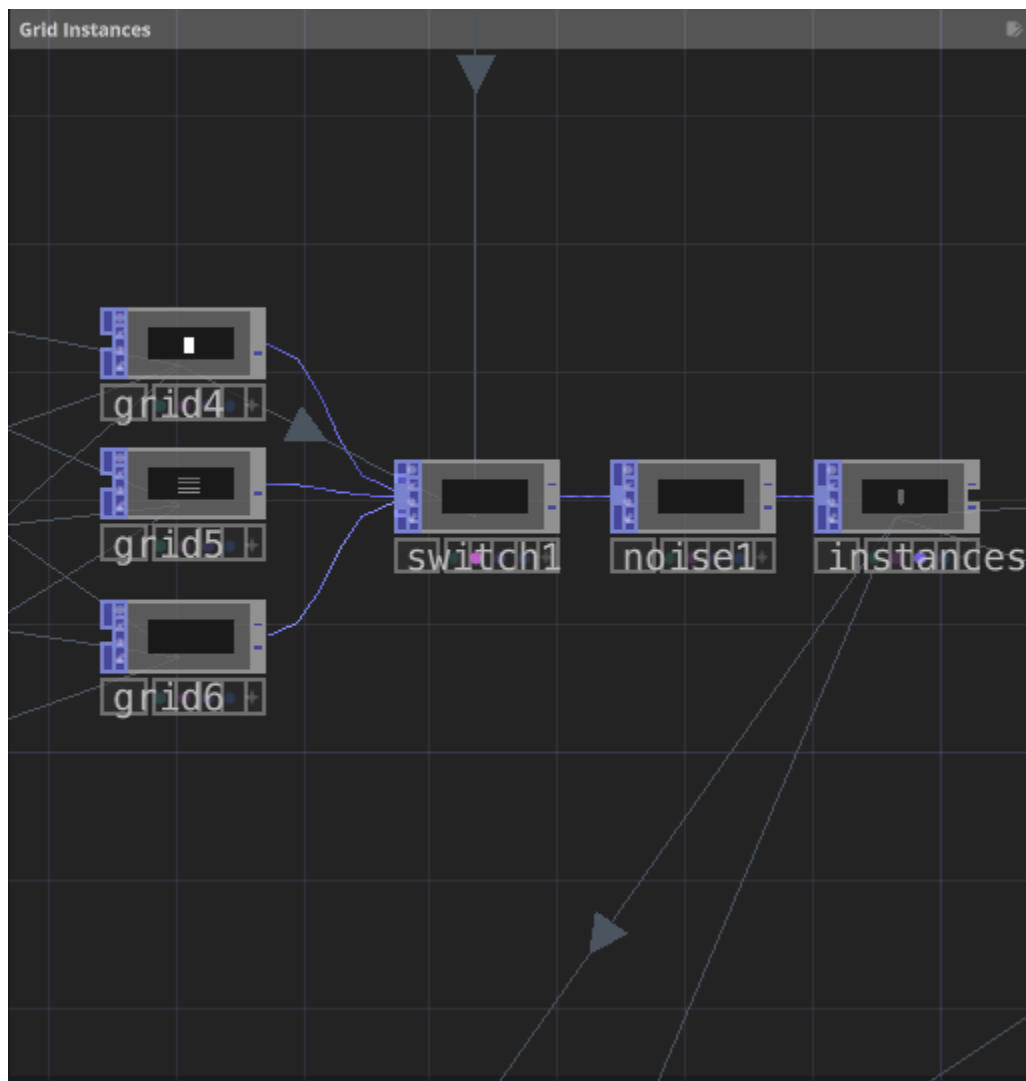
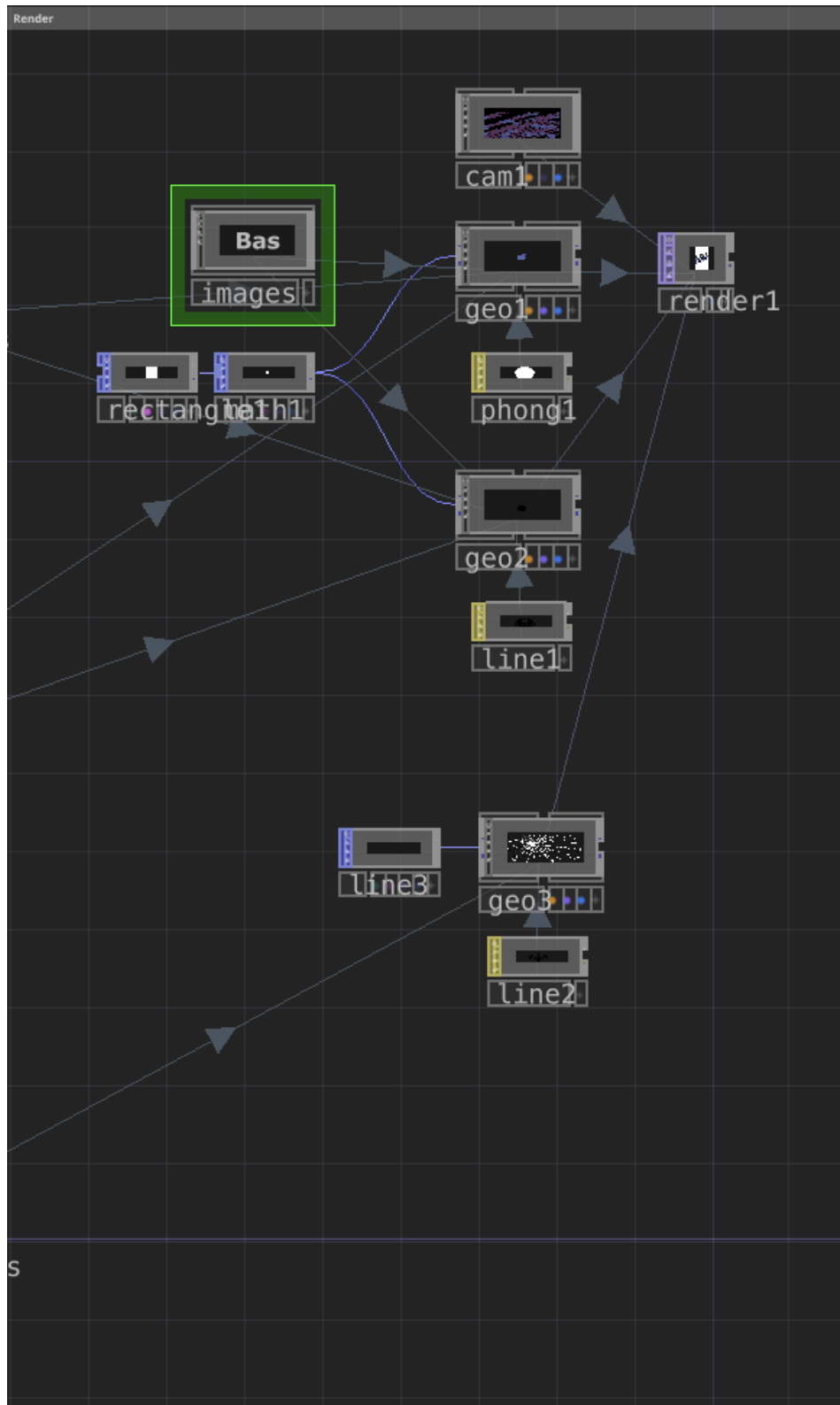
Fig 10. Creating the grids

Fig 11. Final Render (Bas/images node is where the video is input)



Appendix C: My Work

Fig 12. [IMAGE INSTANCING](#)

Fig 13. [DRIP/DOOMSCROLL](#)

Fig 14. [DATA MOSH \(LIVE\)](#)

Fig 15. [DOOMSCROLL 2](#)

Fig 16. [BLOB TRACKING](#)

Fig 17. [WE R DATA NOW \(LIVE\)](#)

Fig 18. [BUILDING A SYSTEM IN TOUCHDESIGNER](#) (200% speed)