Unfolding Time: A Projective Model for the Moving Image

by

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Abstract

Humanity's desire to record events happening in time has spawned a lineage of moving-image transcription systems, from early cinematographs to contemporary digital camcorder equipment. These technologies have arisen, however, amongst a setting of concentrated discourse surrounding the nature of what it means to exist as a durational being, also happening in time. This thesis will argue that the depiction of events as captured by these technologies is constricting, limited to conveying a strict sequencing of moments through a narrow spatial window, and so wholly inadequate to reflect a nuanced dialogue. I propose a new visual model, one that can assist in conceptualizing the complexity of concurrent remembering, perceiving, and anticipating.

Through a combination of my research into existing discourses and the creation of new models of reading the moving image, I have come to the *fold* (with deep indebtedness to the thinkers and writers who have proffered this model) as an aesthetic structure capable of *visualizing*, or diagramming, some of the afore-mentioned strata of complexity resistant to the hegemony of linear temporality.

To model the fold, I centrally engage the act of reading the moving image, as a definitive temporal act. I redirect the movement and orientation of the eye as it spans the moving image, to make way for new methods of reading, thinking, and being. Digital manipulation and merging of moving video images comprises the material for these models.

Finally, this thesis will examine popular practices of how durational events are recorded, stored, shared in the digital environment, and subsequent implications for the writing of historical narrative, where vast and dispersed authorship can contribute to the emergence of conversant modes of being: potential for redemption in the chaotic.

Thesis Supervisor: Ute Meta Bauer
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Introduction

I am an artist and researcher who produces material works in order to comprehend the most ineffable mental practices of daily life, drawing upon study in a wide range of disciplines working in complement to my productive practice. I study and make things so that I can better understand how we move through our lives, and how we create patterns to explain to ourselves, and others, the experience of living. I will discuss in this thesis, and through a series of artworks, one key component of such patterns: the projection of the passage of time, more specifically the flow of time, the shape of *now,* and their relation to the self.

In order to address the complexity of such structures, I will in this thesis do three things: one, outline a frame of reference for the processes of creating time in historicization

and narrativity, both their development through objects (vehicles for, and repositories for, material-based temporality) and across disparate disciplines (including neuroscience, philosophy, quantum mechanics, history, and cinema) and cultures (including Christianity, Judaism, Buddhism, Hinduism, and the beliefs of an Bolivian community known as the Aymara); two, find a form to diagram the complexity of temporal experience through a series of video works, and three, apply these conclusions to the digital archive of time-based media and speculate on their possible implications for the future of historical narrative.

As part of this thesis, I will present a new projective model for *visualizing* temporal experience to reflect my finding. This new

model will use the moving image as a primary site for how temporality is read, and will deconstruct and reorder how this "reading" takes place. The term "cognitive mapping" is an apt descriptor for some of these processes, especially those with a strictly neural basis. By "cognitive mapping" (coined first by psychologist Edward C. Tolman in 1948, in his paper "Cognitive Maps of Mice and Men"[1]), I refer to the practice of inscribing a *visual diagram of meaning*, or explanation, onto perceptual data gleaned from the environment one inhabits. As an artist engaged with understanding how meaning is assigned to experience, such processes are of the utmost importance. I believe that this is an apt model from which to explore how a subject uses mental, visual models to navigate the temporal environment. In other words, how do we place ourselves in time, how do we project these beliefs into our tools for recording experience, and how does this transcription, subsequently, come to affect our cognitive models? How do we use time-based media as a map to help us think out philosophical problems of temporality and navigating our position between the past, present and future? The flow of time operates as an explicatory foundation underlying the myriad of other narratives that are spun out of the accumulation of sensory data. Time is the definitive abstraction, meaning that the material of time and its movement is expressed through many, if not all, of the other modes of thinking and transcription that must take place

to comprehend the nature of living.

The specific material I've focused on working with for these inquiries is digital video and time-based media, in a variety of realized iterations including physical installation and web-based distribution. The digital camcorder, either as a stand-alone device or embedded within other technologies such as mobile phones, is the most prevalent tool in the world today for the depiction of time-based events. Its ubiquity as a tool for describing these events underscores the wide-spread acceptance by disparate peoples of the technology, as a functioning impression of the passage of time or, at the very least, as a successfully mimicry of the mental machinations by which we process temporality and being. To understand digital video is to understand how humans project themselves into time, producing a multitude of possible selves. Digital video is in the unique position of being able to be edited, transformed, and manipulated much more quickly, than any other time-based media – ideally, manipulated *out* of the linear, ordered-sequence-of-moments currently dictated by the video form, inherited as it is from the cinematographic – and *into* a disparate form which can potentially hew more closely to more conversant, or more informed, methods of experiencing moments. These wrinkles will be of integral importance as I reach my conclusive projected model of temporality: a play between fold and surface, between the linear and the spatial. The very immateriality of digital video, its occupation of an environment generated by an unseen apparatus, are integral to my use of the tool as

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1. Edward Tolman. "Cognitive Maps in Mice and Men." First published in The Psychology Review, 55(4), 189-208.

a index of cognitive model of thought.

In creating projective models in time-based media, I offer a visual approximation, or conceptual diagram, for the modes of being I propose. I contend that such models are integral to understand these concepts. Now, we can begin to image it: what would a moving image look like, if it were informed by an entirely different way of thinking about time, stories, and influence?
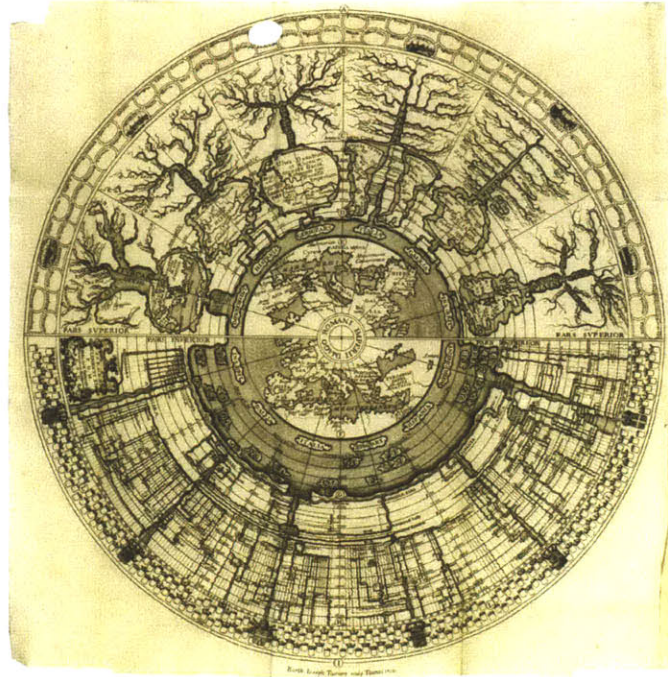
Methodologies

This thesis operates via two corresponding platforms that make up one inquiry into the nature of temporal being, oriented around questioning the framework of "now." One platform is this written component. The other is an art practice, which is what I'm demarking as my series of produced artworks. The written component is a researched investigation into myriad vehicles of representation, projection, and construction of temporal being as produced by various modes of knowledge production. These include literature, historiography, philosophy, physics, neuroscience, and some nodes of spirituality with a focus on Hinduism and Buddhism. The theoretical locus of these disparate bodies of inquiry, and the purpose of this thesis, is to proffer a thorough exploration of the "now" and to contribute a new model for projective thought of how the self dissolves into temporality at the complex and multifaceted moment called "now."

A note here on some of the schemas I intend to access for my inquiry, especially those pertaining to recent advancements in cognition and neuroscience, and quantum physics. Most of the research I discuss in this thesis is new, and at the forefront of its respective field. As such, some of these findings are contradictory, or controvertible. Much is made in the collective imaginary over the potential of new findings in the hard sciences to influence how we understand day-to-day living. This is especially evident in the neurosciences, concerning their potential to redefine the way the workings of the brain are understood, especially areas of spatial and temporal processing and memory

function. Such findings are socially perceived as having significant implications for the fields of art, architecture, and cinema, accompanied by current headlines such as "Scientists Claim Brain Memory Code Cracked"[12] as though understanding the mechanics of how neural encoding takes place were equivalent to grasping the nuanced entirety of what it means to remember. From a recent article in *Intelligent Life Magazine,* a subsidiary of *The Economist:*

> [In] 2009 that over half the [brain-scan] studies used faulty methods that were guaranteed to shift the results in favour of the correlations they had been looking for between mental activity and blips in parts of the brain. It's worth bearing this in mind the next time you read about a brain-scan study which purportedly reveals how and why we do what we do.[3]

This public trust of the hard sciences can be traced back to an Enlightenment assertion over the irrefutability of logically determined findings and the linearity of scientific progression and advancement, a frame of mind on which MIT, the Institute that hosts my research, was founded. Within such an institutional context, the arts are often maligned to the fringes of influence. I operate from an optimistic point of view, that artists and scientists can potentially coalesce around a shared space of wonder and curiosity, and that their respective pursuits can be mutually influential and timely, often overlapping forms

of inquisition and research. The fluidity of exploratory impetus between these modules of knowledge cannot be overstated, which is why I chose to include such a wide array of disciplinary research in my work. They all proffer a different kind of truth rooted in similar objectives, with myself, the artist/researcher as key point of convergence in this thesis, which I posit as a cohesive thought. My own positioning with respect to the diverse fields I access in my research, and furthermore my own position with respect to the work I produce, is of utmost importance for orienting both myself and the reader as this thesis unfolds. As mentioned earlier in this thesis, my accession of these disparate bodies of knowledge must operate as a survey, touching upon nodes of engaging correspondence or illuminating divergence. I endeavor to coalesce knowledge not around a field of research or within disciplinary silos, but rather around a question, the findings of which inform how I conceptualize and construct my art works. I produce videos, projected installations, drawings, and sculptural works in the same line of inquiry as the written thesis. In both I attempt to form a new model of thought, or apparatus for imaginative beholding. This is how my art practice functions in tandem with my written work: both build a new framework for *thinking out* aberrant shapes of projected temporality.

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2. *NewsWise* March 9, 2012.
3. Anthony Gottlieb. "Neurons vs Free Will." *Intelligent Life Magazine,* March/April 2012.

The main body of works that accompany this thesis followed such a trajectory: after having done much of the research that went into the first two parts of this thesis, I embarked on creating a series of videos that I hoped would help me to visualize a form of time, one that would reflect some of the opinions and findings I'd gleaned in my studies. Luckily, this is precisely what happened: in one video piece in particular (the original Dymaxion Map video, which I will discuss at great length towards the end of this thesis) I found a particular set of shapes and angles that allowed me to blend anticipatory images, past moments, and present perception into a single comprehensive image, presenting a totality of information wholly different from the linear mode of one-moment-after-another, the form I've attempted to deconstruct throughout this entire process. Conversely, I gather findings from the process of making, just as I do the process of researching. New and unexpected connections, illuminating correlations, and sometimes fascinating accidents happen in the actual making of work that I never would have been able to reach through research or writing alone. These new findings then dictate the subsequent research that I pursue, then I make more new work, and the cycle continues.

Implicit in this research is an interrogation into the role of artistic research, and how this research operates within a productive art context. I do not consider the research I conduct to be explicitly "artistic" in itself and I do not consider the research to be an artistic or creative performance. Rather, I posit myself centrally as an inquisitor into, ultimately, the nature of self, and by 'self' I mean the definition of being as it is partially determined by our positioning and orientation in time – where and how do we define our memories and anticipations, the space that surrounds us and the time that flows through us? Is the experience of the self meeting the flow of time adequately described by current forms of time-based media Where are the boundaries of the self in relation to temporal being? Does the self pass through time, or does time flow via the conduit of the self? Can the flow of time be imagined as a different shape, perhaps even a material object?

My work functions as a new space for thinking, a novel arrangement of components whose positions and relationships have the potential for activating new nodes of mental activity, ultimately (ideally) leading to new knowledge. Novel, creative projections can lead to new models for imagining, either in the individual or the wider collective. If disseminated widely enough, these models can become part of the culture, or hegemonic social instruction, inherent in a group's cultural production. We know them as mythical legends, mathematical models, scientific theories, admired works of art, or religious traditions. These are structures for grasping knowledge and projecting formulas for moving through existence, what Jimena Canales in "Desired Machines: Cinema and the World in Its Own Image" calls "what *could* be … the fantastical."[4]

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4. Jimena Canales. "Desired Machines: Cinema and the World in Its Own Image." *Science in Context* 24(3), 329–359 (2011). Copyright Cambridge University Press.

This is how my work can function: as a new articulation for existing.

Material of Ontology

At this point I would like to touch upon the need for material in addition to this written thesis. The need for a model through which to think out these correlations is of the utmost importance. This is what how I hope my work can function: as a new articulation for existing. Heidegger discussed such a role in *The Question Concerning Technology*:

> Bringing-forth brings hither out of concealment forth into unconcealment. Bringing-forth comes to pass only insofar as something concealed comes into unconcealment. This coming rests and moves freely within what we call revealing [das Entbergen]. What has the essence of technology to do with revealing? The answer: everything. For every bringing-forth is grounded in revealing. ....[5]

As demonstrated by my brief taxonomies of collective beholdings of time, such social imaginaries come to pass *through a material*. We've seen it happen with language, the clock, newspapers, novels, and films. All of these media have shaped how the public conceives an abstract narrative, in which individual participation is necessary to carry out the functions of collectivity.

Mark Hansen, in his book *Philosphy After New Media*, asserts that time-based media has been engineered to imitate the "natural" perceptual workings of the human machine: that cameras mimic the speed and temporal inscription of normative processes. In other words, perhaps more honest to our goals here, is to recognize that camera-produced images are themselves the product of a body, just as perception is. Hansen discusses how time-based media has, with advancing technology, begun to subvert and expand that original function, by having the capacity to show or depict events that are usually invisible to the human eye, especially in the notion of 'slowing down' time: "Video (and particularly digital video) has been invested with the task of expanding our experiential grasp of the complex embodiment of temporal perception."[6]

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5. Martin Heidegger. *The Question Concerning Technology*. New York: Harper Torchbooks 1982. 11-12.

6. Mark Hansen. *New Philosophy for New Media*. Cambridge: MIT Press, 2004. 237.

The following chapters will explore a number of distinctive geometries that have been
ascribed to temporal experience, tendered by a spectrum of inquisitive disciplines. I wish
to be fully equipped with a range of possibilities when describing the shapes I use to
thinking about the passage of time and the diffusion of experience, including anticipating,
perceiving, and remembering.The transcription of temporal experience through images,
tools, signs, and texts can say much about the systems of logic behind such transcripts.
These technical, or material modes of finding and/or keeping time reveals the apparatus
of projective thought behind it, so I find it necessary to delineate the history of these
transcriptions in my effort to draw a conversant and informed picture of temporality. I will
trace a lineage of technical, temporal demarcation machinations, from the textual, to the
mechanical/plastic, to the figural and finally the digital (which itself operates as a meta-
figural, with the accumulation of figures through a lateral collective participation in the
social imaginary).

I also must underscore that these studies are undertaken in order to assist myself in the
creation of artworks and contribute to my own comprehension of time, duration, and the
composition of moments as a unit of time, and so must by necessity be decontextualized
from their wider disciplines.
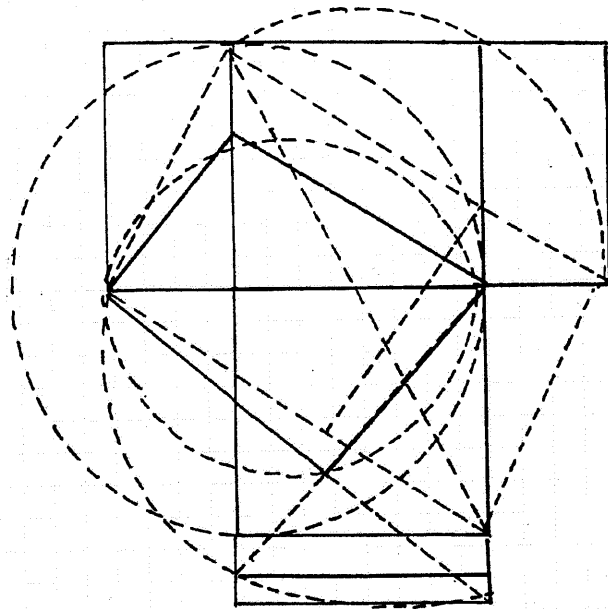
SECTION I: ESTABLISHING SCHEMATA

1. The Individual: The Textual

The field of linguistics has demarcated language into multiple components that work together to transmit meaning. These components are, put simply, the sign (the thing to which a word refers) and the signifier (the spoken or written word doing the referring). Signifiers, the very material of language, are time-based: "the signifier ... represents a span, measurable in a single dimension; it is a line. ... auditory signifiers have at their command only the dimension of time."[7] Textual language, in other words, forces time into a linear pattern: a flow, likened to a logical line. Structural linguist Ferdinand De Sausure noted that "the sign evokes a desire for the nearing of the thing it replaces. At the same time, however, the sign puts presence on hold, creating distance. The effect of the sign is one of time and space."[8]

The study of semantic positioning can further help us to understand how the self, subject, or Ego is determined by their contextual proximity to notions of temporality. "The crucial point is

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7. Ferdinand de Saussure. *Course in General Linguistics.* Trans. by W. Baskin. New York: McGraw-Hill, 1966. 70.
8. Marcel Cobussen. "Music is a Text."

that future and past are inherently deictic semantic categories; you have to know the position of Ego (i.e., when the relevant speaker's present is) to be able to calculate the time reference of a future."[9] This is an early structure for the demarcation of being, and will form the foundation of temporality for generations to come. I will ultimately, in this paper, discuss the eventual dissolution of this formula: first, by examining its limitations (specifically, that the primary shortcoming of a linguistic model for understanding temporal experience is its static focus: a being, rather than a becoming), and second, by outlining succeeding models of conception and attempting to ascribe to them an aesthetic vocabulary.

The Individual: The Mechanical

The next great leap in our history of technical delineations of time, is mechanical, with the prominent placement of a large clockface in European monasteries following the fall of the Roman Empire. The monasteries represented order, discipline and logic in medieval European society, a world fraught with violence and disease. The bells rung by monks in monasteries to mark the hours of the day heralded a modern, abstract mathematical organization of time. "The clock, not the steam engine, is the key machine of the modern industrial age. ... the division of hours into minutes and minutes into seconds became common: it was this abstract framework of divided time that became more and more the point of reference for both action and thought."[10]

2. The Social: The Mechanical

The influence of clockwork continued to mold the shape of human interactions on a broad scale. With the advent of train travel, different locations over a large area needed to be perfectly coordinated in their respective ideas of time. Not only did the people of Cambridge need to understand when "twelve o'clock" was, and what "one hour" meant, but they needed to know that their conceptions of "twelve o'clock" and "hour" were exactly the same as those in New York, so that the trains running between would be smoothly coordinated. Anything less would invite disaster. "Nowhere else had the question of time been posed in a more pressing manner than in the vast network of railroads of the United States ... the North American railroads' [decided in] April 1883 ... to synchronize all their clocks by zones ... blocking out huge swaths from "Intercolonial Time" in the East to "Pacific Time" in the West."[11]

9. Rafael E. Núñeza and Eve Sweetserb, "With the Future Behind Them: Convergent Evidence from Aymara Language and Gesture in the Crosslinguistic Comparison of Spatial Construals of Time," *Cognitive Science 30* (2006): 1–49.

10. Lewis Mumford. *Technics & Civilization*. New York: Harbinger, 1963. 14.

11. Peter Galison. *Einstein's Clocks, Poincare's Maps: Empires of Time*. New York: W.W. Norton and Company, 2003. 99.

The Social: The Textual

In the same way that the mechanical transcription of time expanded from the individual object to a social framework, the textual transcription likewise grew, dispersing itself from the single unit of the individual to the mass collective, first in a progression from the demarcation of time-based communication (speech to writing), to the abstracting and aligning of huge groups of people via the newspaper, and the novel. These texts were especially influential on the series of mass consensualizations through which systems of organization and social compacts are achieved, and they have had an incredible impact on how we conceptualize our roles in the social structure, especially as members of much larger structures such as the nation-state.

> These forms provided the technical means for 'representing' the kind of imagined community that is the nation. ... It is clearly a device for the presentation of simultaneity in 'homogeneous, empty time' or a complex gloss upon the word 'meanwhile.' ... The idea of a sociological organism moving calendrically through homogeneous, empty time is a precise analogue of the idea of the nation, which also is conceived as a solid community moving steadily down (or up) history.[12]

So, we can see that both the textual, and mechanical means of delineating the idea of "now" have exerted influence on the social imagination. In this manner of thinking, we can begin to examine the influence of the figural through the history of depicting the figure, especially the artistic practices of painting, photography and cinema.

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3. The Figural and the Dissolution of the Semantic

> Painting, photography, video, and cinema have long proved resistant to models of description and explanation derived from classical semiology. The electronic and digital arts are rapidly engendering new strategies of creation and simulation, and of spatial and temporal ordering, that linguistic philosophies are ill-equipped to understand. In the physics of language, semiology represents Newtonian mechanics and we already inhabit an increasingly dynamic and nonlinear discursive universe. Conceptually, the sign describes a thing; it must be replaced by a "becoming." Provisionally, I recommend the figural.[13]

The development of constant and temporal becoming evolved into a linearity in parallel with the advancement of a linguistic understanding of the flow of time. With this development

12. Benedict Anderson. *Imagined Communities: Reflections on the Origin and Spread of Nationalism.* London: Verso, 1983. 26.
13. D.N. Rodowick. "Reading the Figural." *Camera Obscura.* Durham & London: Duke University Press. September 1990.
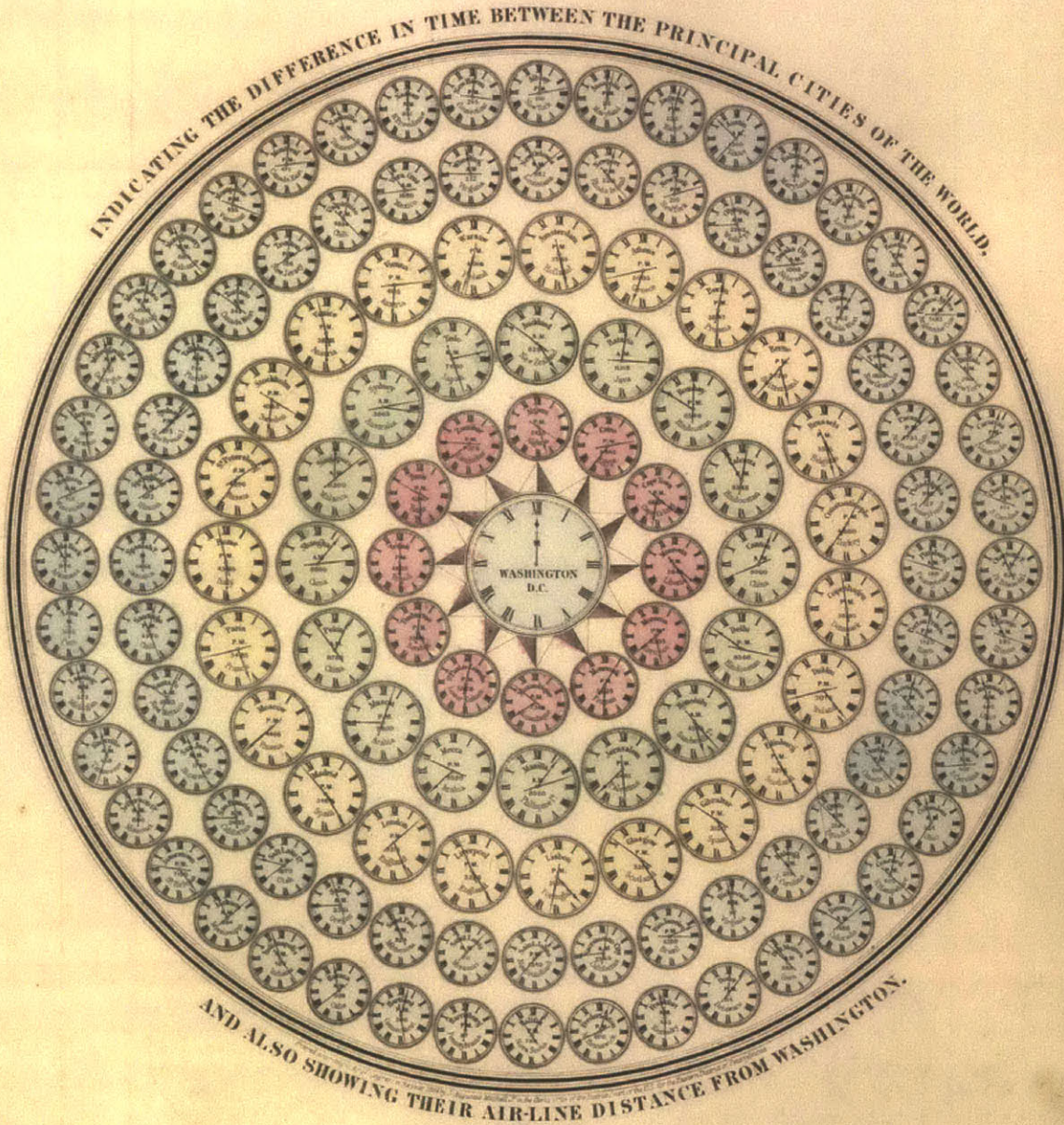
"A Time Table (Mitchell's New General Atlas)" 1883
Table showing timezones of various global cities in relation to
Washington D.C., USA. Differing colors denote spatial proportions
between Europe, Asia and Africa.

came a straightforward construction of history. Now, with this onset of digital dissemination of information, composed of data taking place across both space and time, and even further with the amassing of these moving images into archives that occupy, again, both space and time, we are entering into a popular construction of temporal experience that is far more complex, and more continuously reconstructing, than anything that came before it.

Not too long after this latest development came the onset of photography. The earliest photographs had a clear and recognizable relationship to perceptual experience, in their role as documentation of events in order to transmit information to viewers. The onset of photography supplanted realism in painting, going so far as to force the entire genre to redefine its role in relation to the pure representation of images, manifesting in the groundbreaking first non-realistic aesthetics of Cubism. Some of the greatest works of Cubism coincided with the rising popularity of photography, with (for example) Pablo Picasso painting *Les Demoiselles d'Avignon* (1907) a scant six years after Kodak's introduction of the Brownie (1901), the world's first consumer snapshot camera.

The photograph became the new standard for accuracy and legitimacy, due in no small part to the tendency of humans to privilege the sense of sight for the gathering of information. The imagery of a photograph mimics the visual organization of reality in its demarcation of light, the fundamental component of sight; likening a photograph to "what actually happened" or "what is" is an easy ontological step to take. In addition, the data contained in a photograph is far quicker to attain than, say, a painting, which can take months or years to fully realize.

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The development of consumer photography is a key moment in thinking about trajectories of becoming, as the ability to photography one's self, family, and surroundings is an integral moment of collapse between what is, and what will have been. For the first time, masses of people had access to a tool that would produce an image that could be accessed at a later point in time, and more people could control the image of them selves through time, an egalitarian dispersion of the long tradition of portraiture in wealthy classes.

Soon after the development of photography came its close cousin, cinema, a technological tool that uncovers reams of information about how humans structure their view of the world. Very early cinema, for example, was perceived to be so lifelike that onlookers felt physically threatened by the imagery. The Lumiere brothers, two pioneering French filmmakers, projected a short clip, *L'Arrivee d'un train a La Ciotat* (Arrival of A Train), to guests in a café in 1896 and were met with a rowdy reaction: "Suddenly a train appeared. Women cried out with terror. Men threw themselves to one side to avoid being run over. It was panic."[14]

Not only was early cinema equated with being reality itself, rather than the mere transmission of reality granted to photography, but the popular cinematic form of narrative storytelling began to

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14. Georges Reyes "Chez les LumieÁre"

delineate the experience of moments. This was undertaken not just in a sequential way, with one moment following another, but through the structure of narrative that implies a causal and logical relationship between moments. Narrative implies, not only that time flows in a linear fashion, but that it must flow in this fashion as this is the only shape of time that is logical. This delivery of moments is older than cinema itself, having its roots much further back:

> During the Counter-Reformation the use of left to right sequential images was increasingly employed for political, pedagogical, and religious aims: viewers throughout the Holy Roman Empire were exposed to the sequential images of the twelve Stations of the Cross as the favored technique for depicting the story of the Passion of Christ across time (Kittler 2010). By 1610 Galileo could assume that a simple depiction of sequences involving a diagrammatic circle and asterisks on either side of it would be "read" as a depiction of movement.[15]

This began to manipulate the way that people perceive time, but further, history itself:

> ...the protagonists' actions drive a chronological narrative marked by the dialectical unfolding of events from causes, according to a logic of "rational intervals" – the beginning of an image or sequence unfolds in continuity from the ones that precede it. ... This notion of chronological time conforms precisely with a linear and teleological conception of history.[16]

This cinematic influence on history has been deeply felt, spread through entire populations and histories: "The narrative structure of this historical surmounting of the 'ghostly' ... is seen in the intensification of narrative synchrony as a graphically visible position in space: 'to grasp the most elusive course of pure historical time and fix it through unmediated contemplation.'"[17] Andrei Ujica, a Russian filmmaker, has noted that "the prevailing artistic medium of an age has always had a determining influence on history. This is clearly the case in the Modern European Age. It has been influenced by theater, from Shakespeare to Schiller, and then by the novel, until Tolstoy. We know that the twentieth century is filmic."[18]

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15. Jimena Canales. "Desired Machines: Cinema and the World in Its Own Image."
16. D.N. Rodowick. *Reading the Figural, or, Philosophy After the New Media.* Durham & London: Duke University Press, 2001. 174.
17. Homi Bhabha. "Dissemination: Time, Narrative, and the Margins of the Modern Nation." *The Location of Culture.* New York: Routledge, 1994. 205.
18. "Andrei Ujica and the Montage of History." Harvard Film Archive Calendar for October 2011.

Cinematic and videographic images, i.e. figural images, exert an enormous influence not only on the construction of history and nation, but of the self. D.N. Rodowick describes Kracauer's history: "the materal of the photographic image as a key component of self-realization through the comprehension of experience: "photographic media help us overcome our abstractedness by familiarizing us with "this earth which is our habitat" (gabriel marcel); they help us think through things ... [and] make it much easier for us to incorporate the transient phenomena of the outer world." Mark Hansen, a philosopher out of Duke University, has written extensively on the moving image and these relationships.

> The video image embodies the transition between images formerly possible only through
> the human perceptual apparatus ... Electronic machines - video recorders, televisions,
> and networked computers - are indelibly "linked to our historical sense of time," to the
> "extensive time" of lived experience.[19]

I believe that the captured moving image – in particular digital video – is a key ontological material in the 'thinking-through' of these concepts. There has been an incredibly rich and varied history of the philosophy of cinema, and its relationships to memory and the dual acts of living and perception, including work done by Gilles Delueze and Henri Bergson. Much of this history has been focused on delineating the moving image's relationship to the perceptive tools of the mind.

The role of video not only as a point of illumination for the consideration of the self as an affect of time, by also as a training ground for the new accumulation of self through the accrual of substance, will be discussed in much greater detail later in this paper.

The frenzied accumulation of these modes of imagining one's self – textual, mechanical, and figural – in our collective experience of the contemporary has led to a what I believe may be a burgeoning complexity in current trajectories of becoming, which will be discussed (and possibly overturned) in detail. Before we can begin to contemplate how these forms have altered the shape of time, we must first consider the longer genealogy of time-shapes throughout disparate methodologies of thought and inquiry.

19. Mark Hansen. *New Philosophy for New Media*. Cambridge: MIT Press, 2004. 237.
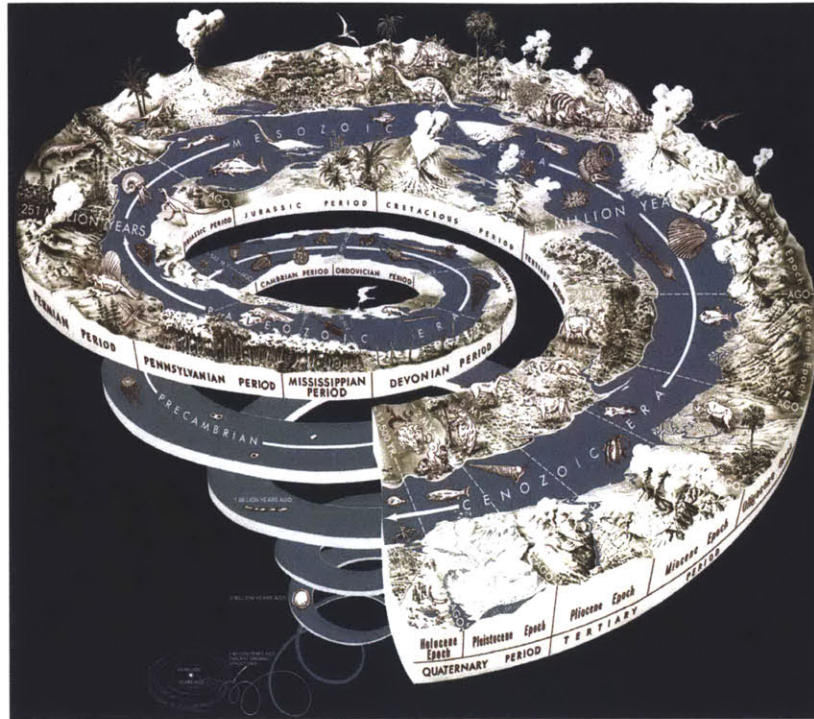
Part II: Geometries

There are a multitude of disciplinary constructs regarding the processes by which the self encounters the massive unknowns of time. Some of the ontological apparatus produced exhibit similar structures, and by these parallels we can begin to search for a cross-cultural, cross-disciplinary body of material for universal methods of imaginary beholding. It is more often the case, however, that disparate disciplines of thought produce systems of cognitive mapping that are completely at odds with one another. I find these pockets of dissimilarity to be useful and illuminating, as these are the areas from which we can begin to build a platform for how to think a mode of contemporary existence heretofore unseen and unencountered.

"Time is the substance from which I am made. Time is a river which carries me along, but I am the river; it is a tiger that devours me, but I am the tiger; it is a fire that consumes me, but I am the fire."

Jorge Luis Borges, *A New Refutation of Time* (1946)

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1. Imagined Time | Neuropsychiatry | 22

Neurology and neuroscience are rich with fascinating nodes of the plastic and the textual, where visceral flesh meets ephemeral thought, where subject meets object. It is the seat of the mind, the locus for crafting the shape of now. Memories (their materiality, location, and operation), mental projections of movement and spatial orientation, all perceptual senses and their respective functions, and hand-eye coordination are just some of the mental processes involved in the continual refashioning of time, and the arc of becoming that lies between moments, what Hansen calls the "multiscalar hierarchy of temporal registers that underlies the flow of time."[20] David Eagleman, a neuroscientist working out of the Baylor College of Medicine in Texas, has done extensive research on the brain's sense of time and its orientation to the self.

> Because different types of sensory information (hearing, seeing, touch, and so on) are processed at different speeds by different neural architectures, your brain faces an enormous challenge: what is the best story that can be constructed about the outside world? The days of thinking of time as a river—evenly flowing, always advancing—are over. Time perception, just like vision, is a construction of the brain.[21]

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20. Ibid. 249.

Eagleman studies the mutually influential relationship between time and the operation of memory, and notes that "time and memory are so tightly intertwined that they may be impossible to tease apart."[22]

> Time and memory are tightly linked. In a critical situation, … your brain may lay down memories in a way that makes them "stick" better. Upon replay, the higher density of data would make the event appear to last longer. This may be why time seems to speed up as you age: you develop more compressed representations of events, and the memories to be read out are correspondingly impoverished.[23]

Not only is the neurological sense of time tightly linked to how we project ourselves into the past but, crucially for our purposes here, the brain's sense of the past is based on the spontaneous creation of patterns, against which to measure and understand experience:

> ..the brain needs time to get its story straight. It gathers up all the evidence of our senses, and only then reveals it to us. … Reality is a tape-delayed broadcast, carefully censored before it reaches us. "Living in the past may seem like a disadvantage, but it's a cost that the brain is willing to pay," Eagleman said. "It's trying to put together the best possible story about what's going on in the world, and that takes time.[24]

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Subsequently, not only is the brain's projection of the *past* integral for understanding the *present*, but its projection of this past is absolutely integral for projecting one's self into the *future*:

> The past and future may seem like different worlds, yet the two are intimately intertwined in our minds. In recent studies on mental time travel, neuroscientists found that we use many of the same regions of the brain to remember the past as we do to envision our future lives.[25]

The integral function of these trajectories of becoming will play an exceedingly important role in contemporary self-affirmation, which will be discussed at length.

21. David Eagleman. "Brain Time." *What's Next? Dispatches from the Future of Science*. New York: Random House, 2009. 157.
22. Burkhard Bilger. "The Possibilian." The New Yorker. April 25, 2011.
23. Ibid.
24. Ibid.
25. Carl Zimmer. "Memories Are Crucial for Looking Into the Future." *Discover Magazine*. April 24, 2011.

"Wave physics, together with the realization that lightwaves took time to be transmitted, added a new dimension to preexisting models that related time and space, providing new ways of conceiving the universe as unfolding cinematographically."

Jimena Canales, "Desired Machines: Cinema and the World in Its Own Image" (2011)

2. Physics: Time as Movement | Newtonian Mechanics

Cognitive projections of Newtonian physics is the foundation of anticipating movements through space, i.e. the trajectory of relational location. Whenever an athlete throws a ball or a child jumps down her front steps, the brain is using physics-based maps of movement to predict where the body will end up. This is the foundation of timing itself. The brain projects a calculated map of hypotheses of location, in order to guess where objects will end up after running, falling, diving, etc. The benefits of using such Newtonian models of movement in various early human activities, such as hunting and building, are easy to imagine. Newtonian models are also straightforward in their relationship to textual semiotics: delivery of one moment at a time, along a predescribed path, is a shape both trajectories share (noted previously by Rodowick: "in the physics of language, *semiology represents Newtonian mechanics* and we already inhabit an increasingly dynamic and nonlinear discursive universe."[26])

Time as movement is also a key point of discussion around early cinema, when a sequence of individual images were places together in rapid succession in order to approximate movement. In

26. D.N. Rodowick. "Reading the Figural." *Camera Obscura.* Durham & London: Duke University Press. September 1990.

the late nineteenth century, the primary use of cinematroghic methods of transcribing motion were in scientific laboratories studying the movement of astrological bodies. It wasn't until well after the advent of quantum mechanics, and the suggestion that time is actually not a linear progression but a fabric of multiple dimensions, that cinema began to present experiments in montage and flashbacks.

"People like us, who believe in physics, know that the distinction between past, present, and future is only a stubbornly persistent illusion."

Albert Einstein (1955)

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3. Multidirectional Time | Quantum Mechanics

The model of time that the discipline of physics gives us is a key component for imagining the schema of temporal projection, for it is the theory of quantum mechanics that describes the materiality of time as a fabric conjoined across space. It is from such vocabularies that the phrasing of "the fabric of space-time" is derived. Indeed, one of the shapes of time from which we can glean so much – that of the multi-directional arrow – is also derived from the study of physics.

Both Being and Becoming are crucial aspects of our awareness. The interesting thing is how these two aspects of temporal experience are made to harmoniously coexist. A great deal of the structure of mind, it turns out, can be understood as an adaptation to the presence of these two different experiences of time.....It is well known that none of the basic equations of physics include an arrow of time. In classical physics, in quantum theory, in relativity theory -- the equations run just as well forwards as backwards. They recognize a linear

model of time, but it is a line that looks like this:

$$\longleftrightarrow$$
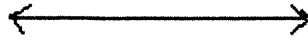
or, perhaps, like this:

$$\longleftarrow$$
$$\longrightarrow$$
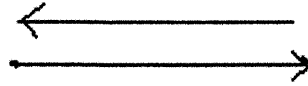
This time-reversibility of our physical equations is not a mathematical fluke; it is a scientific fact that reflects a deep philosophical truth. It reflects the truth that unidirectional time is *not fundamental*. Unidirectional time is here, but it emerges from a more fundamental substrate of *bidirectional* (or perhaps even *multidirectional*) time.[27]

This emergence of the "arrow of time" leads to the consideration of other shapes of time. First, let us address the foil to the multi-directional arrow of time denoted in physics: the unidirectional arrow of progress that is history.

|| 27

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27. Ben Goertzel. "On the Physics and Phenomenology of Time."

"Time ... is what keeps everything from happening at once. "

Ray Cummings (1922)

4. Uni-directional Time | Historiography

The mission of all historiography is, arguably, to identify overarching causal patterns and wrest from them a narrative by way of explanation, to flow in a generally chronographic way (as noted by theorist Siegfried Krauer), a "philosophy of history that views time as a linear, irreversible, and homogenous continuum.... The premise that the flow of chronological time is the carrier of all history."[28] The narrativite linearity with which traditional history is associated comes retroactively, in an image often associated with Walter Benjamin's Angel of History, found in his Philosophy of History:

> An angel is depicted there who looks as though he were about to distance himself from
> something which he is staring at. ... *His face is turned towards the past.* Where *we* see
> the appearance of a chain of events, *he* sees one single catastrophe, which unceasingly
> piles rubble on top of rubble and hurls it before his feet. He would like to pause for a
> moment so fair [*verweilen*: a reference to Goethe's Faust], to awaken the dead and to
> piece together what has been smashed.[29]

28. D.N. Rodowick. *Reading the Figural, or, Philosophy After the New Media.* Durham & London: Duke University Press, 2001. 157.
29. Walter Benjamin. "Thesis on the Philosophy of History." *Illuminations.* Trans. by Harry Zohn. New York: Schocken Books, 1968. 257-258.

I wish to elucidate here my position in relation to Benjamin, both this passage and a variety of vocabularies and historical architectures to which he has given form. I assert that the deluge of narrative material into which the contemporary self dissolves is remarkably different from the retroactive point of view Benjamin describes here. The contemporary is marked by a reversal of the self along a continuum of becoming, one that is defined by its anteriority and immediacy of an imagined future rather than a grasping of that, which is past. This position will be drawn and in much greater detail later in this work. For now, I will continue to describe existing modes of historical thought.

Homi Bhaba, in *The Location of Culture*, describes the impetus behind the creation of such linearity as an attempt to dissuade the terror of unknown modes of existence:

> From the beginning, Bakhtin writes, the Realist and Romantic conceptions of time coexist in Goethe's work, but the ghostly (*Gespenstermässiges*), the terrifying (*Unerfreuliches*), and the unaccountable (*Unzuberechnendes*) are consistently surmounted by the structuring process of the visualization of time: 'the necessity of the past and the necessity of its place in a line of continuous development ... finally the aspect of the past being linked to the necessary future'. National time becomes concrete and visible in the chronotype of the local, particular, graphic, from beginning to end.[30]

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30. Homi Bhabha. "Dissemination: Time, Narrative, and the Margins of the Modern Nation." *The Location of Culture*. New York: Routledge, 1994. 210.

"We are embodied time, and so are our societies, made of history."

Manuel Castells, *The Rise of the Network Society* (1996)

5. Multiplicity | Aberrant Linearities of Historical Knowing

There has begun to emerge a mode of thinking that stresses the sheer impossibility of singular historical narrative. This is paramount to the onset of postmodernism, which rejects the narrative structuring of historiography. Such thinking proposes a multiplicity of linearities, one that privileges the universal over the particular. Ernst Bloch has noted, in his "Not all people exist in the same Now," Bloch remarked, and so history must be seen as "a polyrhythmic and multi-spatial entity."[31] This hews closely with an assertion made by anthropologist Claude Levi-Strauss, in *The Savage Mind*, as discussed by Hayden White in his "Interpretation in History":

> Historical accounts are inevitably interpretive, Levi-Strauss argues, because of "a two-fold antinomy in the very notion of an historical fact." A historical fact is "what really took place," he notes; but where, he asks, did anything take place? Any historical episode-in revolution or a war, for example-can be resolved into a "multitude of individual psychic moments."[32]

31. Ernst Bloch. *Heritage of Our Times.* Berkeley and Los Angeles: University of California Press, 1991. 62.
32. Hayden White, "Interpretation in History." *Tropics of Discourse: Essays in Cultural Criticism.* Baltimore: Johns Hopkins University Press, 1978. 110.

I'd like to note here White's use of the image of the fold, and ask the reader to hold such a picture in their minds as we use images and material to help us think through these abstract and slippery concepts.

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Monuments, as objects, distribute to its viewers those ideologies of sacrifice upon which a nation builds itself. Citizens reach out to them to touch those ineffable abstractions of humanity so vast as to seem incalculable. These objects are notes in a language of a narrative, the project of History itself, of which the political is but one aspect. Some nations are so defined by their monumentality that such objects become stand-ins for their very identity, even as time continues to progress.

A five-channel video installation, entitled *Everything That Has Been and Is No Longer*, examines how such factions of time, memory, monument and place coalesce into an understanding of History and the political.

Egypt is one place irresolutely defined by memory and monument: held captive by a financially lucrative image of its history, the notion of progress seems insurmountable. Its national identity lives in the image of monuments for which no one today alive can claim credit. In a disruption of this cycle, I recorded an object in Egypt that held no such monumentality: a simple elevator. I made video recordings of this elevator (an object that moves through both space and time concurrently, along a predefined axis) from three different positions: within the carriage, the lifting mechanics on the top floor of the building, and the rolling counterweight on the outside wall.
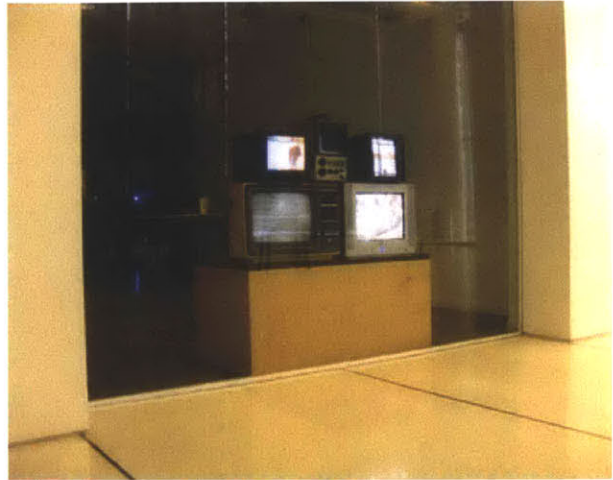
Everything That Has Been and Is No Longer, 2010

five-channel video installation
dimensions variable

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Everything That Has Been and Is No Longer, 2010

By playing all three clips at the same time on three different monitors, and positioning them within a structure that includes other monitors showing unrecognizable feedback, I attempt to underline that our conception of place, of self, and of object are not factual reflections but shifting constructs. History itself is based on these conceptions, as well as our understanding of nation, community, time and memory. Note, too, that the entirety of the installation is behind a pane of glass - immediate in its impact, yet seemingly untouchable in its construction. Thus are the structural conceits of political rhetoric laid open to transparency. I try to underline that what we remember, and how we memorialize the places that define us, are shifting constructs.

"Whoever hears me assert that the grey cat playing just now in the yard is the same one that did jumps and tricks there five hundred years ago will think whatever he likes of me, but it is a stranger form of madness to imagine that the present-day cat is fundamentally an entirely different one."

Jorge Luis Borges, "A History of Eternity" in *Selected Non-Fictions Vol. 1* (1999)

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6. The Infinite: The Divine and the Architectural Imagination

Disparate modes of thought found in cultures and systems of spirituality outside of the West can offer a point of subjectivity on the historical constructions of the West. In Hinduism, time is imagined akin to a circular shape rather than a strict linear plane. This cultural conception is reflected in the built environment, especially in buildings with spiritual purpose, as Hindu temples are destroyed every generation so that they may be rebuilt. The building is not the important portion of the structure, so buildings themselves are not considered sacred or worthy of conservation. Instead, every building project is intended to reflect the single, ultimate moment of creation, and through the continuous destruction and rebuilding of temples, every generation is permitted their own expression and connected to that sacred moment. A further iteration of this circular conception of time are the Hindi translations for the words 'yesterday' and 'tomorrow' – in Hindi, the exact same word (loosely pronounced, "kal.")[33]

Another relationship between architecture and temporality, rooted in spiritual tradition, is found in Islamic traditions of patterning and repetition. Islamic architecture is well known for its leitmotif of complex geometric patterning, which represents a spatial dimension of time denoting

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33. Conversation with Rahul Mehrotra, Chair of the Department of Urban Planning at the Harvard Graduate School of Design, October 2011

the spiritual connection between the self and the infinite. This is yet another cultural depiction of temporal being that is nonlinear, pointing to an idea of a Creator that is decentralized and dispersed. Indeed, the connectivity between Islamic aesthetic tradition and a digital material of ontology are many, integral to keep in mind during the traversal of this thesis. Laura Marks, in her book, *Enfoldment and Infinity: An Islamic Genealogy of New Media Art*, notes the following in a section called, "An Aesthetics of Enfolding and Unfolding":

> In Deleuze's interpretation of Leibniz ["a continuous labyrinth is not a line dissolving into independent points ... but resembles a sheet of paper divided into infinite folds"] the smallest unit of matter is the fold. ... the plane of immanence as a vast surface composed of an infinite number of folds. ... In both Islamic art and new media art, a point can unfold to reveal an entire universe. [34]

Refrains of the infinite, and the integral experiential of the infinite in the moment, can also be found in Buddhism, especially in its relation to another field briefly touched on in this thesis, quatum mechanics. At a conference entitled Physics and Tibetan Buddhism held at the University of California, Santa Barbara, Dr. Victor Mansfield noted the following:

> [U]nderstanding such things as the relativity of time ... and the relativity of the present moment helps us appreciate the closely parallel arguments made in the Middle Way [Buddhism] about time's lack of inherent existence. There is a well-known and difficult section in Nagarjuna's *Mulamadhyamakakarika* that analyzes time and leads to the modern interpretation, "Time is thus merely a dependent set of relations, not an entity in its own right, and certainly not the inherently existent vessel of existence it might appear to be." Such critical, but difficult, points are illuminated by understanding Einstein's relativity of time. In short, science can help us understand ancient, but pivotal, philosophic aspects of Buddhism. [35]

Distinct cultural projections for the shape of contextual time continue to be flourish, even in the face of Western dominance of temporal conceptualizations. This is especially useful in considerations of the self, and examining the exact point at which the Self or Subject intersects with the material of temporality. From *Cognitive Science Journal*:

> It is widely recognized that time is conceptualized spatially in a broad range of languages and cultures—indeed, that all languages so far examined take their vocabulary of time

34. Laura Marks, *Enfoldment and Infinity: An Islamic Genealogy of New Media Art.* Cambridge: MIT Press, 2010. 6.
35. Victor Mansfield. "Time and Impermanence in Middle Way Buddhism and Modern Physics." Talk given at the Physics and Tibetan Buddhism Conference, University of California, Santa Barbara January 30-31, 1998.

primarily from that of space. Specifically, a few basic metaphoric mappings from the spatial domain to the temporal one recur in language after language. ... [S]o far all documented languages (with the exception to be discussed later) appear to share a spatial metaphor mapping future events onto spatial locations in front of Ego and past events onto locations behind Ego, rather than to the left of Ego and to the right of Ego, for example. ... Aymara, an Amerindian language spoken in the Andean highlands of western Bolivia, southeastern Peru, and northern Chile, appears to present a fascinating contrast to these well-known patterns, and a challenge to the cross-cultural universals of metaphoric cognition that have been slowly building up in our databases. In Aymara, the basic word for FRONT (nayra, "eye/front/sight") is also a basic expression meaning PAST, and the basic word for BACK (qhipa, "back/behind") is a basic expression for FUTURE meaning.[36]

36. Rachel Nunez, Eve Sweetser. "With the Future Behind Them: Convergent Evidence From Aymara Language and Gesture in the Crosslinguistic Comparison of Spatial Construals of Time" *Cognitive Science Journal.* Volume 30, Issue 3, pages 401–450, May-June 2006.
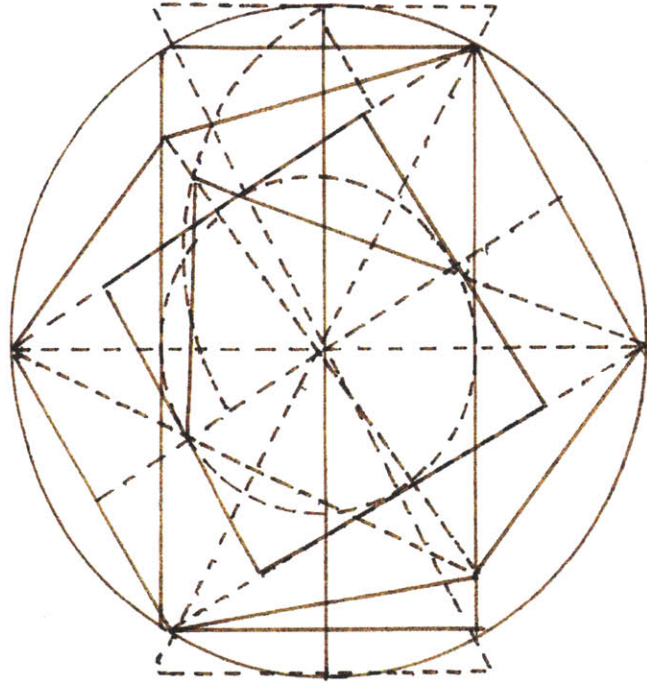
SECTION 2: MOMENTS OF RESISTANCE

"Increasingly, the individual felt himself to be a single flicker between the teeming gulf of the never-more and the boundless void of the not-yet. "

Olaf Stapledon, *Last and First Men* (1930)

1. Further Studies in the Figural

Rodowick writes about being caught in the flow of time with a large group of being, being a piece of an audience caught in the tide of movement that comes from the collective experience of the audience: "Now at home watching *Knots Landing*, I am no less a part of an atomized collective. Though separated in space, I nonetheless share a continuum with millions of others."[37]

Time has shifted again, past the figural into the digital, and continues to become increasingly multi-faceted. Instead of large groups of individuals coalescing into single bodies of reception, charged with absorbing the flow of time as directed by the body of a film viewer, the relationship between subject and flow is much more convoluted, with the diagrammatic of power becoming more difficult to draw. Time is still received, yes, as people still absorb the passage of moments through media exposure. But, that time is also paused, rewound, fast-forwarded, and jumped, a billion times over by a billion different viewers, all at rates and within windows that resemble each other. We "know the giddy power of playing movies whenever [we] want-and playing them in pieces, running ahead to favorite scenes, creating an anthology of [our] own."[38] VCRs played a pivotal role in the way the general public interacted with media, shifting the very relationship

37. D.N. Rodowick. *Reading the Figural, or, Philosophy After the New Media.* 90.
38. David Denby. "Fatal Attraction: The VCR and The Movies." New York Magazine. June 6, 1988.

of time between the two, leading the way to moments of resistance against dominant flows of narrative structure. Such resistance began to take shape as a deliberate agency.

2. Aberrant Linearities in Figural Technologies

The following experiments in linearity and the figural presentation of space-time played a pivotal role in bringing to my attention the assumptions I'd always made about how the delivery of time is structured. These experiences slightly shifted this process in very subtle ways, enough to illuminate the hegemonic control their normal structuring asserts over our absorption of time.

Cinema & VHS

A fiendishly clever moment of cinematic recognition of the new temporal malleability introduced by the medium of the VHS, and, more importantly for our purposes, the subjective complexity of locating one's self in the trajectory of *now* time, occurs in the movie *Spaceballs* (1987). Two villainous antagonists (named Dark Helment, in the template of Darth Vader, and his Colonel) have lost the trail of the good guys they're pursuing, and come up with a plan to find them: they will simply watch the VHS tape of the movie they're in, and fast-forward to the part that shows where the protagonists are hiding. They visit their VHS library (replete with the VHS anthology of the film's director, Mel Brooks), pull out *Spaceballs* and pop it in the VCR. They hit the fast-forward button, then finally "play" again at the exact scene currently occurring:

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[Characters are watching *Spaceballs: The Movie*. They reach "now" in the movie.]

Dark Helmet (DH):
What the hell am I looking at? When does this happen in the movie?
Colonel Sandurz (CS):
You're looking at now, sir. Everything that happens now is happening now.
DH: What happened to then?
CS: We passed then.
DH: When?
CS: Just now. We're at now now.
DH: Go back to then.
CS: When?
DH: Now!
CS: Now?
DH: Now!
CS: I can't.

DH: Why?
CS: We missed it.
DH: When?
CS: Just now.
DH: When will then be now?
CS: Soon.

Television's *Twin Peaks*

Another moment of this uncanny undoing, courtesy of an unusual moving image and its delivery of *reorganized* time and space, comes by way of the TV show *Twin Peaks*. Several months ago I purchased the entire run of the series on VHS, having heard about it as a child but having been too young to see its original airing, and soon encountered the character The Man From Another Place, a dwarf in dreams of protagonist Dale Cooper. Something about the speech of The Man From Another Place, while perfectly understandable, struck me as odd. I could easily grasp his speech, but there was something about the way that words left his mouth, something familiar yet distant, that seemed bizarre: not a foreign accent or speech impediment, but something else entirely. In addition, the Man engaged in small dance steps and movements while speaking that carried the same undercurrent of the peculiar, further complicating his occupation of time and space. I rewound the tape, and paid closer attention. I realized that the rising and falling lilts of the syllables was indeed very familiar, and recognized their cadence: they sounded like words that had been rewound. They reminded me of the recording people made of Beatles records being played backwards, when they claimed they could hear the words "Paul is dead" or other hidden messages in the backwards-audio. I asked myself how, if the speech is being played backwards, was I able to understand it? Why did it resemble normal speech? After yet another viewing, it came to me that the actor had recited the sounds of his dialogue in reverse, the recording of which was then re-reversed so that the sounds resembled normal speech. In addition, the movements and dance steps were recorded in the same way: performed in 'reverse' of the normal movement, recorded, and then 'reversed' again for the broadcast show, resulting in a haunting mimicry of forward-facing time.

Performance Art, Digital Video

An integral point of visceral and intimate dissolution within the diagrammatic of the figural came to me at a moment occupied by the digital and inhabited by ghosts of the analog organic, i.e. a moment rich with the dissolving figures of past and present, movement and stillness, cinema and structure. This moment came to pass while viewing the online portfolio of the artist Fernando

Sanchez, specifically his work, *Untitled* (2005)[39]. The video opens with an image of a prop drywall, perpendicular to the lens of the camera, positioned in the center of the frame and splitting the frame vertically in half. Immediately after the video opens, the body of Sanchez is seen entering from the left, as the artist hurls himself through midair towards the wall structure. His right side and shoulder collide with the wall, sending boards and bits of wood splintering out to the right as the structure collapses. Sanchez's midair energy has been absorbed by the wall, but he continues, stumbling, on his trajectory through the boundary once occupied by the structure and finally exits to the right.

The moment of transcendence I felt came not through watching the performance, but *just after*, when in an effort to restart the video and watch it again I used the mouse to pull the timeline cursor to the left, back to the beginning of the video. I expected the video to simply pause and then reload at the beginning, but to my surprise, the performance *reversed*, and moved backwards in time. Sanchez's body flew to the left through the ghost of the structure, as the wall spontaneously re-spawned. Its bits took flight back to their original positions. I watched as Sanchez resumed his original position and the whole thing happened all over again: his flight caused the wall to crumble again. I grabbed the timeline cursor for a second time, and made his body fly backwards while the wooden atoms rearranged themselves into their original alignment. I think I may have rewound that video ten or fifteen times in a row. I watched in awe, not quite grasping what it was that struck me so but knowing only that I'd glimpsed, for a brief wrenching moment, the undoing of something I'd always considered concrete and fundamental.

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My own projections in aberrant experiences of time, beyond the perceptive capacity of human sensory physiology but within the expressive grasp of video editing software, has taken many forms. One such work, called *I Measure Time the Way a Body Sways,* is a response to the film work of Chris Marker, specfically *La Jetée.* I was fascinated by the portrayal of time travel in the narrative in parallel to Marker's structural recognition of the filmic medium, by presenting the film as a series of still photographs rather than a moving image. I recognized that one short sequence, of a girl waking from sleep, was a moving image and not a series of stills. At the same time, I was looking at YouTube, and thinking over its capacity for storing the moving-images of a huge collective of subscribers. I entered the terms "La Jetée waking scene" into YouTube's search engine and was met with a flurry of versions, all from different users, all people who had uploaded their own copies of the film. Some had been ripped from digital files or DVDs, but others were the recorded projection of 16mm film, complete with the clickety clack of the projector. I was fascinated at such a juncture: a work that operated in so many temporal directions now realizing a the rebirth of a presence in a lateral digital space.
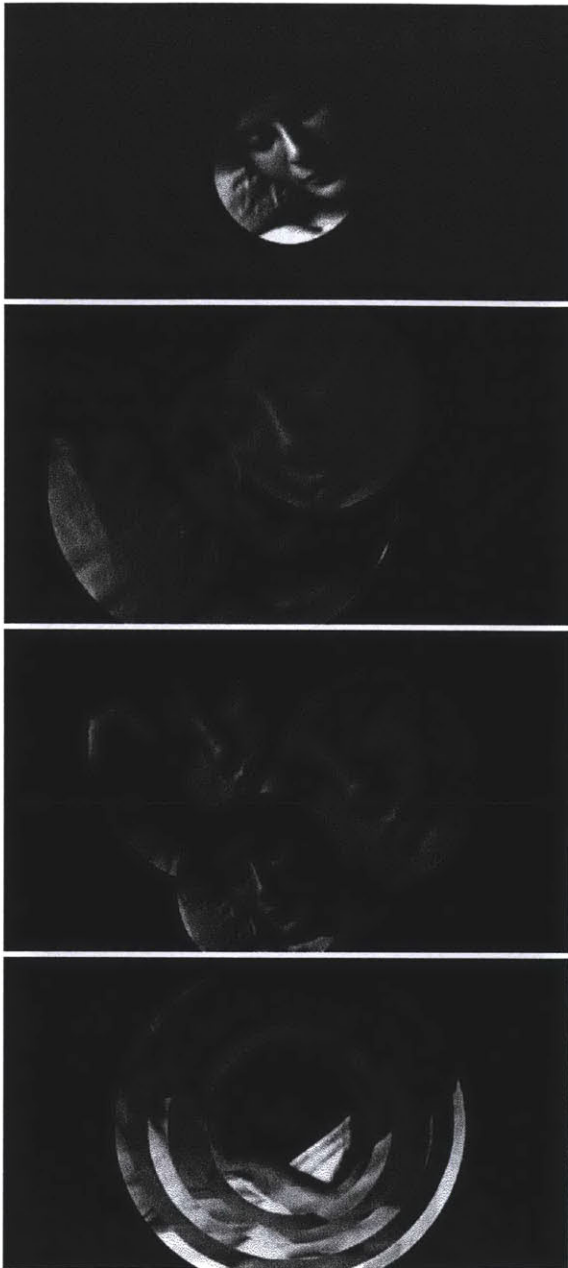
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39. Website of Fernando Sanchez

I composed a short video projection using the top seven most-watched versions, using collage to imitate the temporal mapping shapes found in medieval illustrations of the Days of Creation.
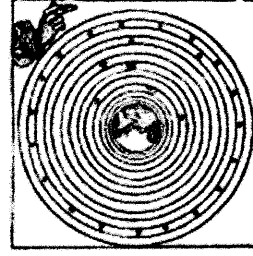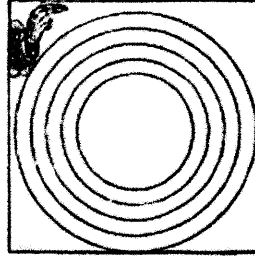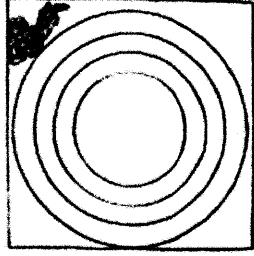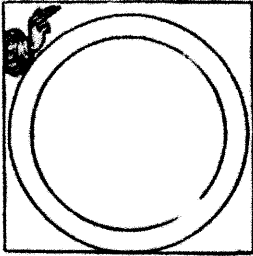
Hartmann Schedel, "The Days of Creation"
from 'The Nuremburg Chronicles' 1493

I Measure Time the Way a Body Sways, 2011

projector, digital video clips sourced from YouTube
(the seven most-viewed uploads of Chris Marker's
La Jetee), dimensions variable

Statement accompanying
video installation:

I am engaged in a humble search for the
nature of time, and a (perhaps futile) attempt
to grasp a multitude of modernities via the
conduit of the corporeal body. I occupy the
space between memory and history, in the
constantly redefined contemporary of the
online video archive. I employ vocabularies
of collage, medieval cartography, and sci-fi
cinema, and wonder whether the multiplicity of
perspectives being uploaded, viewed, searched
and shuffled through a digital exchange is
indicative of a conception of time and memory
which may be circular rather than linear.

These polyrhythmic loops are similar in
graphic representation to recent neurological
findings that mental projections of one's self
into the future are based exclusively on the
brain's construction of the past, mathematical
models of quantum physics wherein time
is multidirectional, and the Hindu theory of
creation, in which God contains the past,
present, and future within.

"Man can indeed conceive, fashion, and carry through this or that in one way or another. But man does not have control over unconcealment itself, in which at any given time the real shows itself or withdraws."

Martin Heidegger, *The Question Concerning Technology* (1982)

3. Dymaxion Mapping: Thinking Through Making

Throughout this thesis I have aspired to identify intersections of thought, pockets of convergence across disciplines and histories, which I felt came close to describing the ineffable experience of living. I was looking for a structure that would help me to grasp how perceptual existence is organized. How was I to translate my findings, and especially my latest conclusions regarding the fold as aesthetic apparatus, into a new way of creating time-based media, a novel device for experiencing framework of a single moments, how it connects to the next, and what these connections look like? As mentioned earlier in this thesis, I'd decided to use the "moment" as a singular unit of temporality, the last division where the self meets the flow of time. So, the question remains: what do I think a moment looks like? In addition, I hoped to be able to contribute something to the community at large; I aspired to offer a new model for thinking *through* and *about* temporal being, reflecting the shapes I'd found in my research.

At this point (with the encouragement and support of my thesis committee), it was time to reassert my role in this work not only as a researcher, but as an artist, and use my findings to help craft a new aesthetic model of becoming in a material – time-based media. With this model, I needed to accomplish four main goals:

1) Reflect what I'd found in my research, gleaning what I felt to be the most revealing, illuminating, or personally edifying components of this discourse.

2) Posit a material exposition that would, through the subjective and instructive process of making, reveal a form that offered an alternative to the linear models of moment delivery which I'd felt, originally, to be so limiting.

3) If possible, extrapolate the forms arrived at to the wider context in which time-based media currently resides and the platform doing the most to change its impact and behavior: the online digital depository. Could the forms I make somehow assist in comprehending the implications these new inscribing and sharing technologies would have in the writing of history? Can I propose a conversant form of inscribing the self through the decentralization of the linear in time-based media? As a further extension, could I find therein the potential for positive growth, by enabling an alternative form of self-identification and historicization through the dispersed locations of authorship inherent in the digital democratic archive?

4) Translate into subsequent instruction and direction on further research, writing, and making, eventually arriving at an aesthetic index I felt could adequately translate the complexity of temporal events.
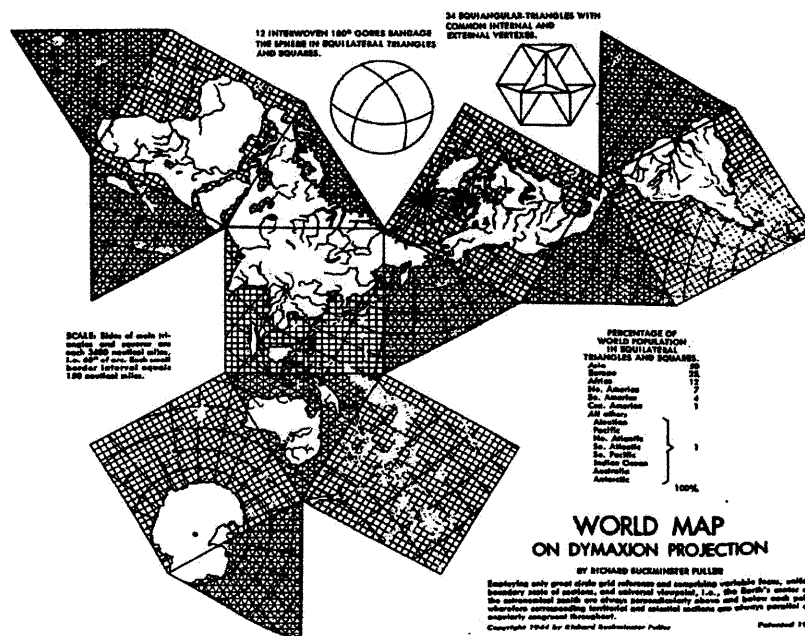
Buckminster Fuller's
"World Map on Dymaxion Projection" 1944
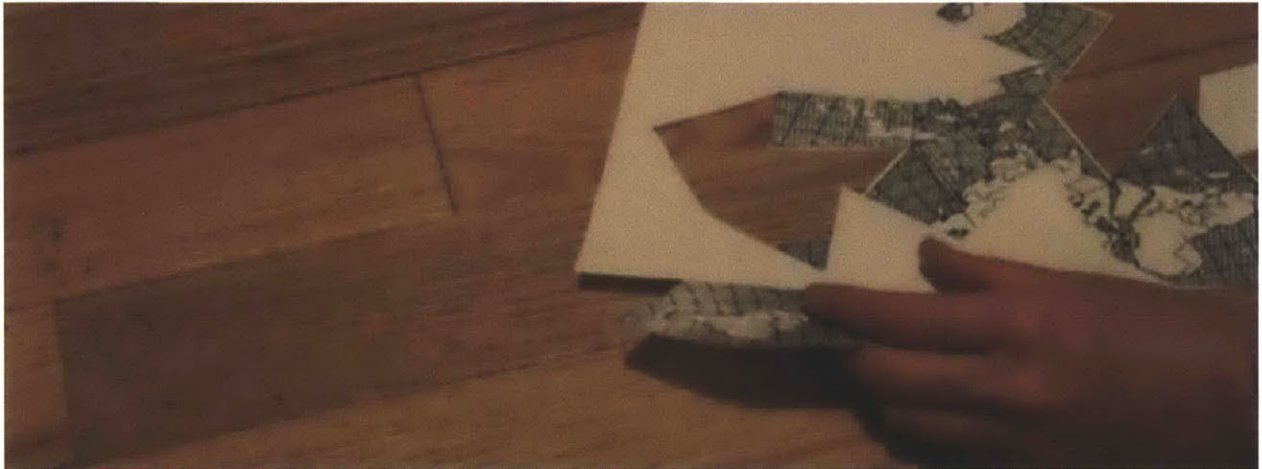
*Making My Dymaxion*, 2012
stills from video, 04:35

In my hunt for a suitable apparatus on which to hang the complexity of time, I came across Buckminster Fuller's Dymaxion Map, and it struck me immediately that Fuller's original problem - representing a volumetric shape in a two-dimensional plane - is a neat inversion of my own question: turning a linear representation of time into something spatial and discursive. I was attracted to its dichotomies: at once delicate, even origami-esque, while stubbornly practical; blocky, even. Plus, since I saw the unfolded form first, spread open with all of its facets facing the viewer in tandem, I had the good fortune to grasp at once its spatial dimension concurrent with its volumetric potential. This was at a key moment in my transition from researching to making.

I decided to begin at the beginning, and build a Dymaxion for myself. Because I wanted to actually *see* what the folded forms looked like in the compositional space of screen, I decided to tape the whole thing with a small digital camcorder.

I immediately loaded the file onto my computer and took a look. I was, to my surprise, struck with the realization that the act of *folding* turned one screen into many screens, all over the surface, that were all different depending on the viewer's orientation to the object. I could easily imagine what such an object would look like, were I to construct it: a large pile of screens, stacked to look like a Dymaxion globe. This reminded me of the monitor-pile work I'd already done in my first semester in the ACT program. I felt there could be a more engaging way of imagining such a world, and reflecting
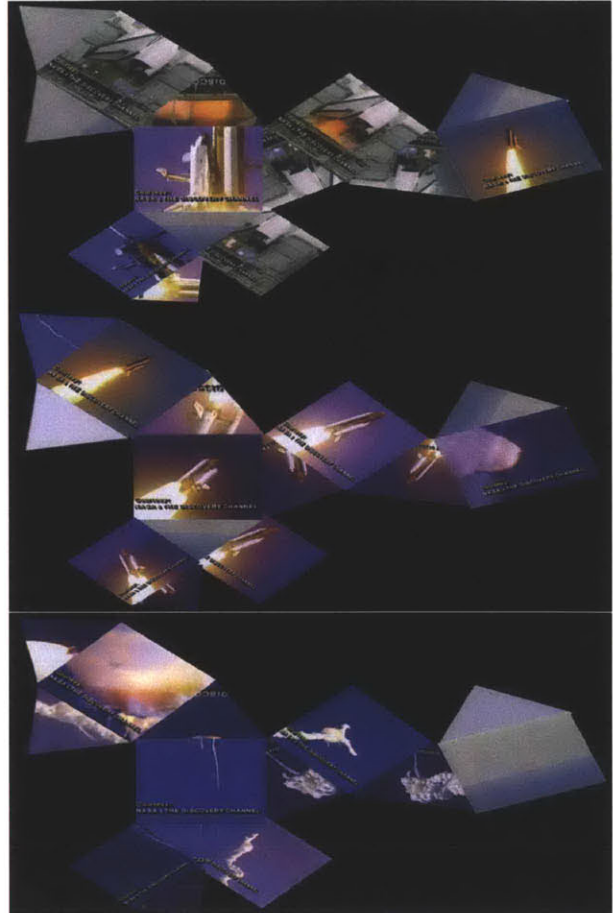
Dymaxion Challenger #1, 2012
stills from video, 03:12
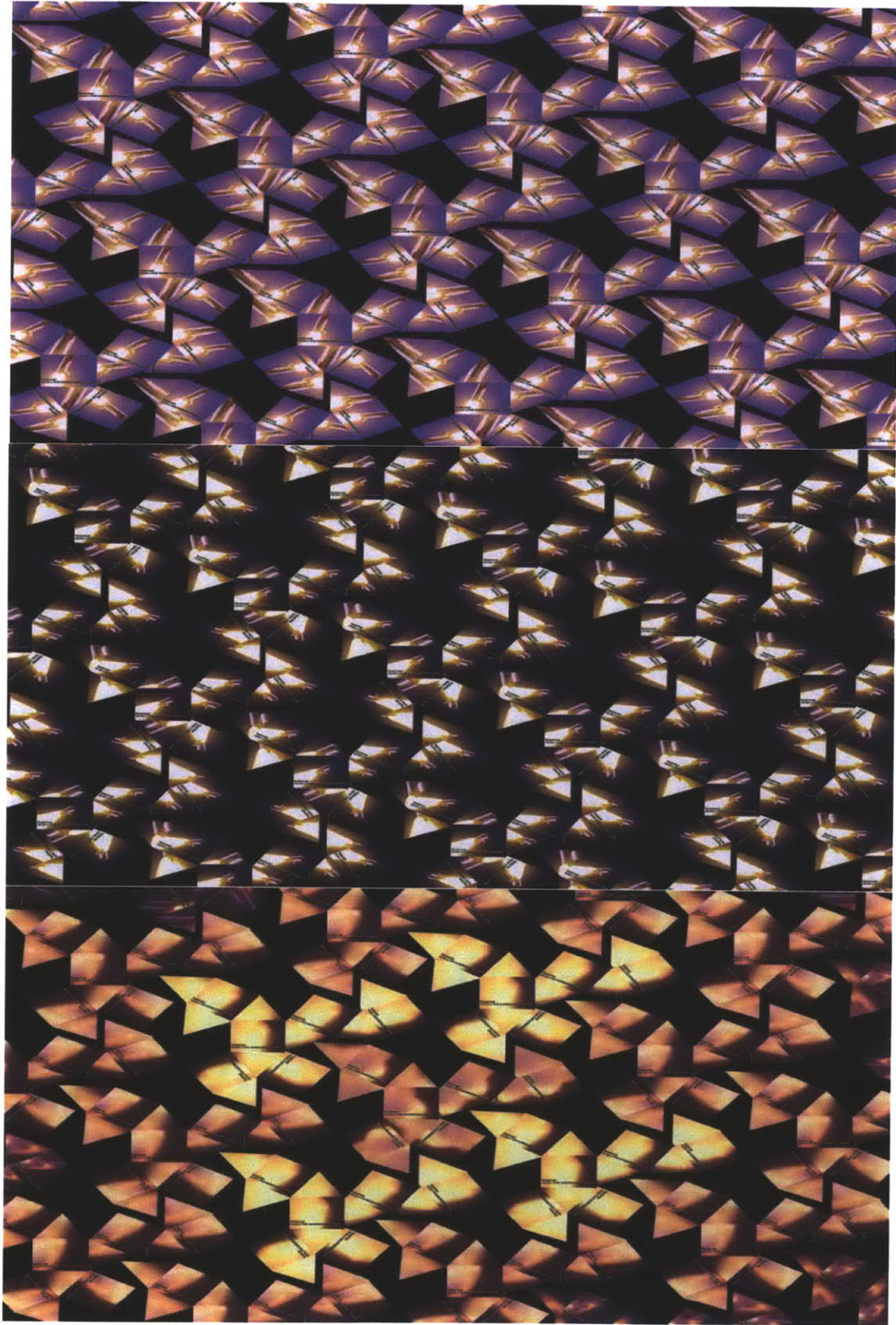
The Challenge, 2012
stills from two-channel video installation with sound, 03:39

the role of the observer in it. What, I wondered, would such a structure look like if the whole world were visible at once, every narrative available in a multiplicity? A spatial organizataion of thought ... what other type of information could be organized spatially and experienced concurrently? Perhaps time itself? Perhaps the collection of moments organized around one particular event?

From here I reimagined the Dymaxion not as a series of surfaces, but a pattern of flat screens, that could concurrently display several different moments associated with a specific event, organized not in a line, but all over space.

With this video, I felt that the way I'd organized the dissemination of points of view through time was both too narrow, and too disorganized. There needed to be many more moments in time available to fill with experience, and I needed to create and follow a structured set of decisions regarding how exactly the perpetuation of time would be realized.

So, I many two decisions: one, I would include many multiples of this outline in one composition, and two, I needed to look for a material guide that would show me how time moves through a material object. What other material, I asked myself, is at once both spatial and volumetric, and can be *folded* as such? I answered with a surface, which is both flatness and object. What surfaces, then, display or play host to the passage of time? Some surfaces do, through their movement. Time can be witnessed, passing through a surface as evidenced by its physical change. I then came to the question, what type of surface can display moving while being flat? I arrived at water. The surface of water displays time through its ripples. Time ripples outward, from a center point of impact.

I had arrived at my directional vehicle: the ripple, as a sequential series of folds, would come to guide how I implemented ideas the *fold* into the material of time-based media. Especially integral was the folding ripple's concentric formation, as it demonstrated a perpetuation of physical change, experienced through time, that was clearly not linear.

On this new extension of my Dymaxion: I would implement multiples, and I would implement the concentric fold/ripple.

For my subject, I chose documentation of the Challenger explosion, accessed via an uploaded copy of the very CNN broadcast from the infamous launch day. I chose this event because of my fascination with the arc of narrative itself, and how it swings suddenly around a single irreversible moment, and also for its audience as a media event. How many Americans had had a concurrent, shared moment of horror and awe at the tragedy? Were their narratives connected in some way by their shared witnessed experience of a traumatic event? I represented all of these disparate individuals through my multiplication and repetition of the screen, in even and regular patterns throughout the composition of the screen.

I structured the temporal directionality as I'd imagined the concentric ripple: starting at the center (at the exact moment of explosion) and moving outward, rippling toward the edges of the screen and back again.
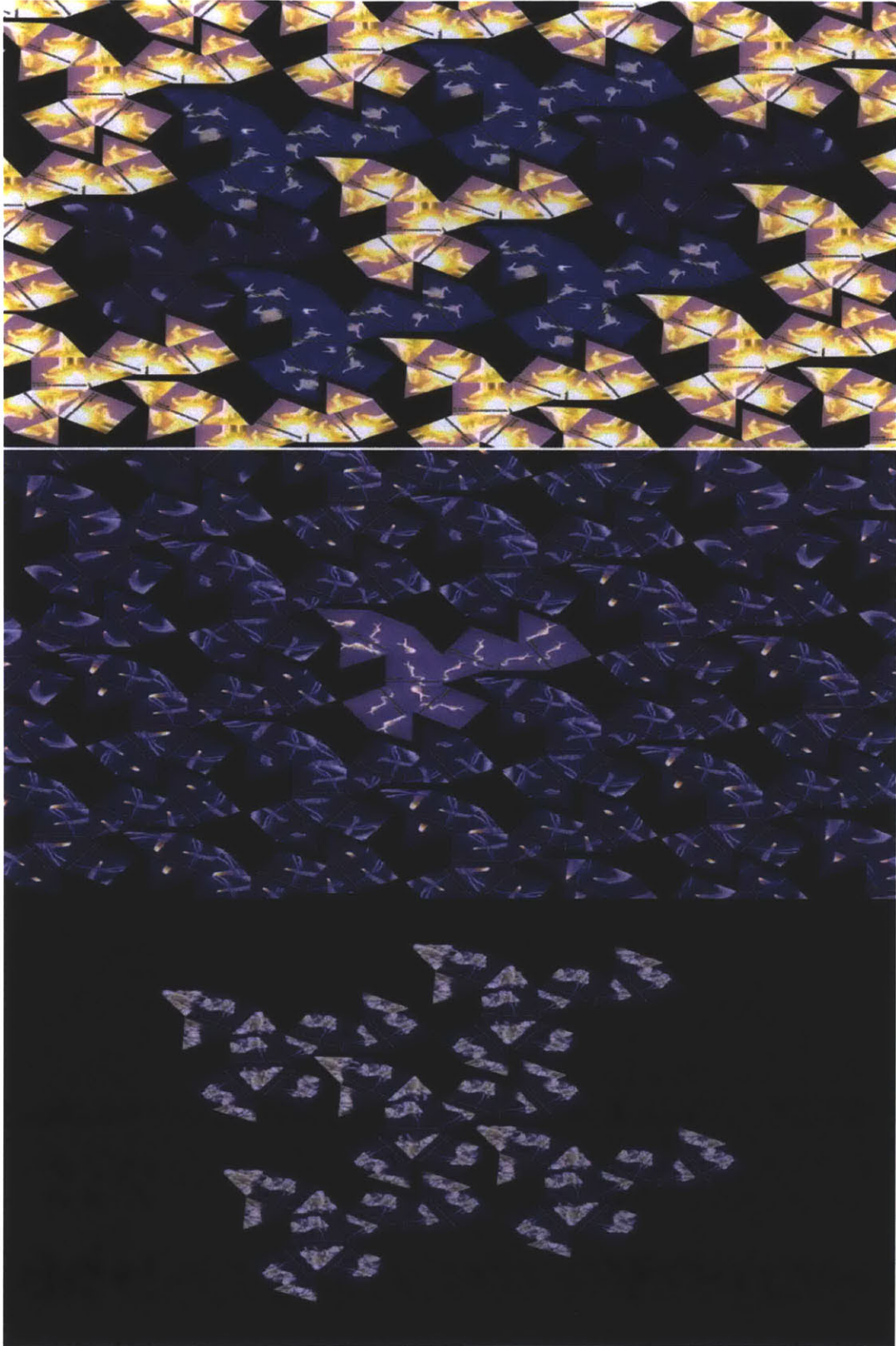
The Challenge, 2012
stills from two-channel video installation with sound, 03:39

The creation of this work ended up being crucial to my execution of all of the ideas I'd been trying to incorporate, and had given me new, structural parameters (concentric ripples, and patterns of repetition) with which I could not only construct future artwork, but also guide the writing and research necessary to bring this project to a platform, from which I could build a larger body of work.

The presentation of this work to the faculty, fellows and graduate students of ACT was invaluable. Some responded to the duality of movement, of showing a representation of leaving the earth within a representation of the earth itself. Some responded to the repetition, seeing reference to Islamic patterns of geometric ornamentation. Some were struck with the violence of the piece, and asked if I'd intended to belittle the event through my beautification of its image. All of these responses helped to shape my next works.

I was also left with questions of my own: why did this event interest me? What did I see in the gathering of an audience around a shared image in a single moment? Was I looking for implications for historical narrative? Were there any such moments, in my own life, that had been so shattering?

While I asked myself these questions, I made another video. In a search for collective moments of change captured in time-based media and stored in the digital archive, I found videos of nuclear testing, declassified by the US government in the 90s. I hoped that I could learn something that would help me to narrow down what kind of moments I was looking

to dissect and extrapolate through repetition and the concentric ripple. What aesthetic decisions would propel my inquiry? I started with this video the same as the last one: one temporal event, one Dymaxion map, centered in the screen. This video, and its movements, would again lead me in a new and illuminating direction.
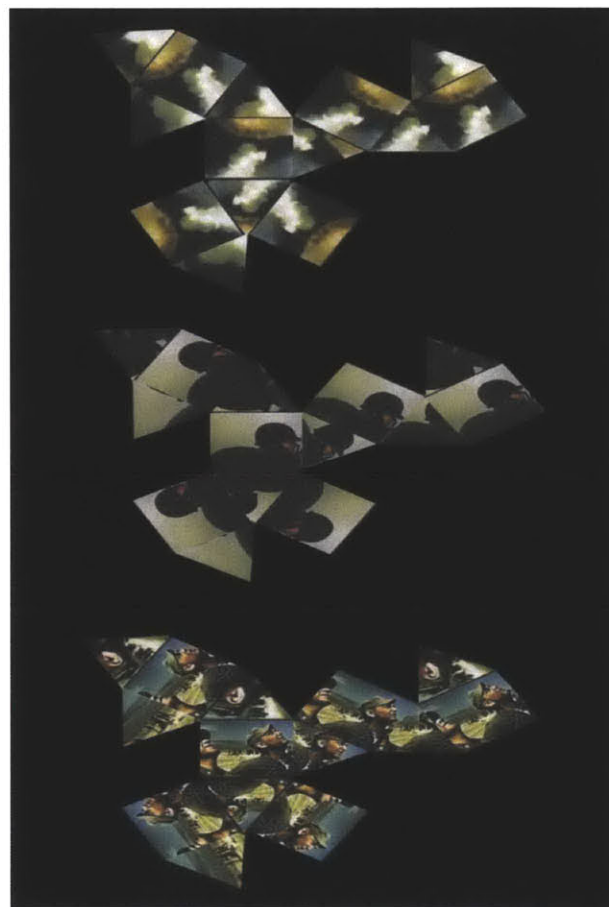
Declassified, 2012
video, 04:25

"The time-image is like Ernst Bloch's concept of Vor-Schein or anticipatory illumination. It is anterior to or ahead of history. ... It is the harbinger of a new reality which must yet be invented. What calls for thinking, then, has the most complex and profound relationship to time."

D.N. Rodowick, *Gilles Deleuze's Time Machine* (1997)

4. Conclusion: Coming to a Projective Model

I realized that this was form that I'd come to again and again in my research on temporal being: the spatialized fold as the shape of becoming. Once I went back and began to look for other corroborating instances of the fold, I found them everywhere.

Foucault touched on the concept of folding:

> Time is the form through which the mind *(l'espirit)* affects itself, is Memory in this absolute sense: a splitting of time where Memory "doubles the present and the outside and is one with forgetting, since it is endlessly forgotten and reconstituted ... Time becomes a subject because it is the folding of the outside" *(Foucault* 107 – 8).[40]

I found similar language in poly-dimensional mathematics:

> I have sometimes thought that the profound mystery which envelops our conceptions relative to prime numbers depends upon the limitations of our faculties in regard to time,

37. D.N. Rodowick. *Gilles Deleuze's Time Machine*. Duke University Press, Durham and London: 1997.

which like space may be in essence poly-dimensional and that this and other such sort of truths would become self-evident to a being whose mode of perception is according to *superficially* as opposed to our own limitation to *linearly* extended time.[41]

I found in again in Walter Benjamin's idea of *erfahrung* (accumulated time). A set of positions along the temporal, multifacted trajectory of becoming (past + present), i.e. a fold:

> We have to stress that *Erfahrung* is not just inner experience - as *Erlesnis* is - but, especially in Benjamin's conception, the partially unconscious settlement of repeated actions and of perceptions of a familiar world in the depths of one's mind. In other words, the concept of experience Benjamin has in mind is one of a continuity of subjective life in which the past prolongs itself into the present.[42]

I want to make a representation of time that is not a linear delivery of moments, but is more complex, layered, spatial: truer to my proffered spatial fold of becoming. I feel strongly that my visual - with the dymaxion fold as a representation of multiple simultaneous points of temporal being oriented around a single transformative moment, as a model of becoming - is true to the disparate time-shapes I'm beginning to get to in my thesis, everything from the folded quantum models of time to the duration of cognitive mapping and memory.

I found more descriptions of folds in a statement accompanying an exhibition at the Node Center for Curatorial Studies, Berlin: "The action of folding is an exponential multiplier of possibilities; conversely, the action of unfolding is the discovery of the fold, from crease to crease."[43] And, I am perhaps most indebted to Deleuze's aptly titled *Le Pli*, or *The Fold: Leibniz and the Baroque*, wherein Deleuze ruminates delightfully on ideas of the fold and the pleat in his discussion of German mathematician and philosopher, Gottfried Leibniz: "the Baroque ... endlessly produces folds. ... twists and turns its folds, pushing them to infinity, fold over fold, one upon the other . The Baroque fold unfiurls all the way to infinity."[44]

I have arrived at the form of the spatial/surface fold as a comprehensive shape of the multifaceted temporalities I wish to describe: an experience of time that is curved in on itself. It is not the straight line of history, nor the simple double-arrow of certain studies of quantum physics, but a looped trajectory of becoming that is a constant fold, ever-changing/ever-developing. My foundational

41. J.J. Sylvester, "On certain inequalities relating to prime numbers", *Nature* 38 (1888) 259-262, and reproduced in *Collected Mathematical Papers*, Volume 4, (New York, 1973), 600.
42. Paolo Jedlowski. "Simmel on Memory." *Georg Simmel and Contemporary Sociology*. Edited by Michael Kaern, Bernard Philips and Robert Cohen. The Netherlands: Kluwer Academic Publishers, 1990. 131-154.
43. "Unfolding: Processes/Space/Time" at the Node Center for Curatorial Studies, Berlin.
44. Gilles Deleuze. *The Fold: Leibniz and the Baroque*. London: The University of Minnesota Press, 1993. 3.

principle is that as we live in the present, we bring a continuous overlay of information from the past, as well as an ever-present expectation of the future. Thus, we are never in the present, but always in a loop of becoming between past/present/future. These shifting locations of the present, and in this case the shifting locations of the self along these same trajectory of being, have been well-documented in philosophical inquiries into the nature of time, as well as cognitive studies of how long-term memory storage is deeply intertwined with the visual cortex area of the brain, where "current" visual processing takes place. The gesture of mapping is closely akin to these explorations, as I attempt to sketch out how events are extrapolated, and in what direction: in simpler terms, I map. From Bosteels' "From Text to Territory: Guattari's Cartography of the Unconscious":

> ...Schematically speaking, the formal and political regime of an interpretive tracing or replica is mimetic and panoptic, whereas a performance map sets in motion a regime that is both autopoietic and rhizomatic. One masterfully looks backward and from above, to the traumatic past of repression; the other throws a furtive glance sideways into an undecidable future of desire. ... There is not only a reversal of directions, but also a difference in nature: The unconscious no longer deals with persons and objects, but with trajectories and becomings.[45]

In setting for myself this task of mapping, I also call upon various characteristics of a map: its spatiality, its surface, its dual operations not only as a tool for modeling abstract thought, but also its materiality as a solid object which can (inevitably) be folded. Within this task is the effort to describe a dynamic concept: the state of the self ever-expanding in the now, continuously changing and responding to change; a ripple effect. With his form in mind, I can now turn my attention back to the material I've accumulated, and search for similar patterns. I must here underline that thinking of temporal experience as a loop is not a new idea. Filmmakers of French New Wave cinema, in their experimentation with montage, successfully began to approximate a fully realized image of the ever-presence of all points of existence held within the moment of now. Performance and video artists have also experimented with looping exposure of now:

> In 1974 Nam June Paik placed a statue of Buddha in front of a TV that displayed live feedback of the figure and titled it *TV Buddha*. The Buddha, an Eastern symbol of meditation and enlightenment, used in conjunction with the then-new technology of the closed-circuit loop, raises interesting questions about the relationship between subjectivity and media technology. ... The tension of *TV Buddha* resides in the precarious balance

45. Bosteels, Bruno. "From Text to Territory: Felix Guattari's Cartographies of the Unconscious." From *Deleuze & Guattari: New Mapping in Politics, Philosophy, and Culture*, ed. Eleanor Kaufman and Kevin Jon Heller. London: University of Minnesota Press, 1998. 159.

between meditation and mediation, between the consciousness and the constructedness of the self.[46]

Dan Graham, in his *Present Continuous Past(s)* (1974) used a camera, mirrored walls, and video monitor to approximate a multiplicity of presents within the spatial plane:
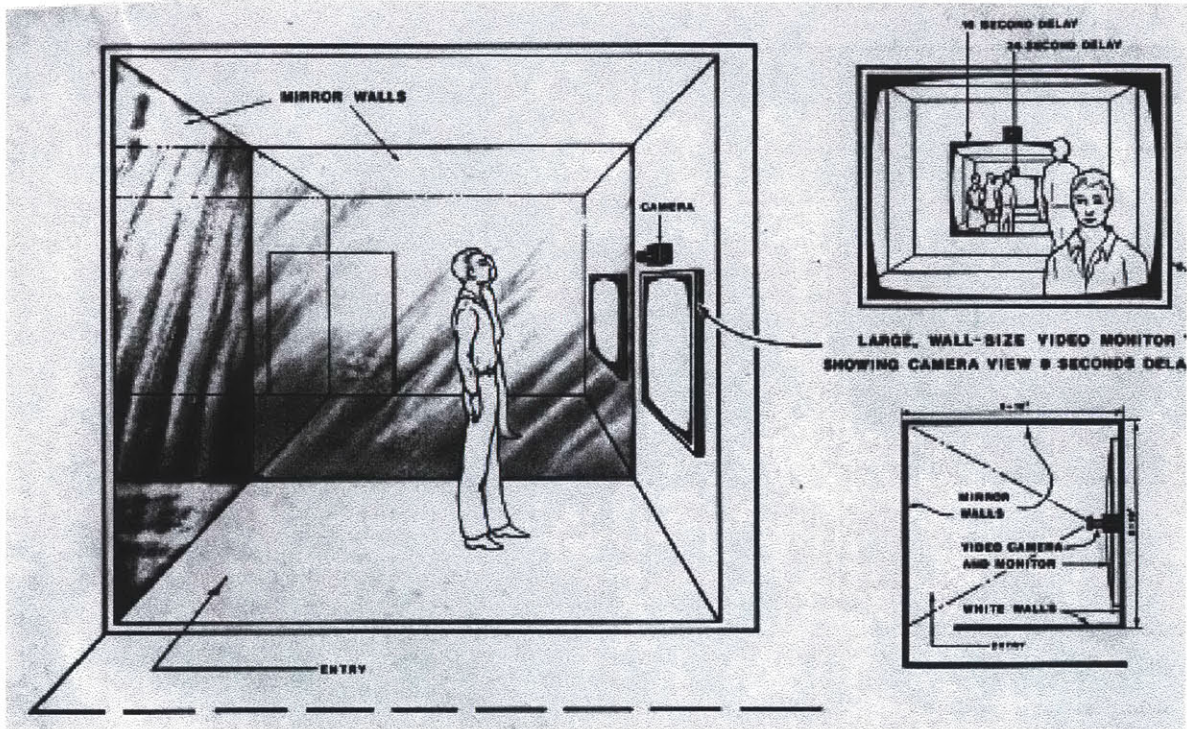
Dan Graham
Present Continuous Pasts(s), 1974

Rather than presenting a sensorial or immersive environment, such as Graham's, I instead redirect my query to the material of digital video, for its potential to act as a projective model for alternative modes of becoming. Is there a time-based *form* of digital video that could possibly approximate a more spatial way of disseminating itself? This is what I looked for in the fold, the form I needed to portray a multitude of simultaneous awarenesses.

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46. Jaimey Hamilton. "The Way We Loop "Now:" Eddying in the Flows of Media" *Invisible Culture: An Electronic Journal for Visual Culture Issue 8: The Loop as a Temporal Form. New York:* Rochester, 2004.

"If an instant of time be conceived, which cannot be divided into the smallest particles of moments, that alone is it, which may be called the present, which flies with such speed from future to past. ... The present hath no space."

Saint Augustine, *Confessions* (AD 397)

5. Making Sense with Pictures

Now that we have the general shape of time, we can begin to map out trajectories of the smallest unit of temporal becoming – the shape of the *now*. We have already begun to cover how folding descriptors have been used in diagramming the experience of now – Bloch's *Vor-shein* did that for us. In addition to delineating geometries of the now, we must do our best to locate ourselves along this trajectory. Where does the self dissolve into the now? In order to identify where the self, which for purposes of comprehension I conceptualize as one unit of the figural, I need to understand units of the temporal. I have decided to focus upon the moment as the locus of this concentration. It is within the moment that all of these trajectories exercise everything that is the most intrinsically, hauntingly beautiful and difficult to grasp. It is this ineffable sublime that drives my interest in this research, and indeed has been the engine of this entire body of work and this thesis.

There have been notable periods of experimentation in time-based media that have begun to subvert the hegemony of the linear, of demarcating specific and rigid relationships between cause and effect. I turn to one of the new media journal experiments called *Invisible Culture*, and their issue (found late in my research), *The Loop as a Temporal Form*. I quote from the article on some of these modes of resisting the hegemony (their assertion is that the linear is the fetish of capitalism):

In Gilles Deleuze's discussions of time and the media, he acknowledges ... ways of disrupting or counteracting the linear narratives of media images and sounds, but he also offers up the notion of pure repetition as another effective tool. The temporal rhythm of the loop, whether produced by artists such as Nauman and Paik or already present in the media flow, provides another kind of micro-level intensity of time that eddies the fetishized, continuous, homogenized time of capitalism, before letting it flow onward.[47]

After completing the last video discussed in the previous chapter, Declassified, using government footage of nuclear testing extrapolated into the Dymaxion map, I watched this work over and over, attempting to glean something from its movements. It did not meet my expectations, which frankly had been to locate something of the sublime in the ornamentation of destruction: the moment of explosion. I had thought that choreography would emerge, as it had in the Challenger sequence, a complex but rhythmically beautiful rumination on the irreversible connection between beauty and devastation.

To my surprise, I was drawn instead to an entirely different gesture: the march of the soldiers. When repeated, their steps fell, together, in and out of the screens, sometimes whirling about the central square in a ballet of youth meting out death. The answer I

Flowers, 2012
stills from video, 05:16

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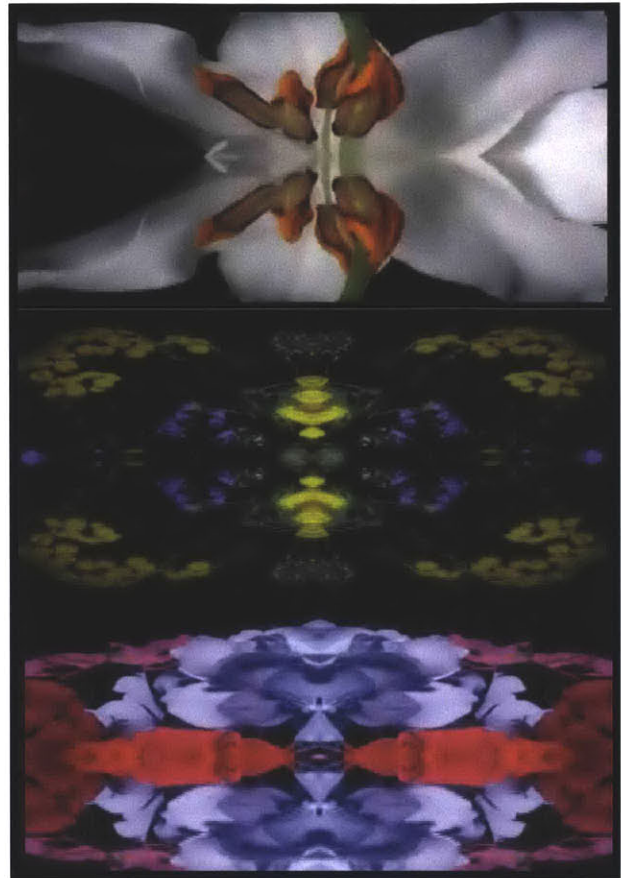
47. Ibid.

sought was in the movement itself, the way figures traversed a screen. When multiplied, these images touched one another across the boundary of the fold, across the edges of the compartmentalized unit, into large waves of synchronized gesture.

I ruminated on the role of moving bodies in front of cameras, so integral to the very history of the cinematographic image, which had originated with the need to record the movements of celestial bodies for scientific measurement. I could see that something here was beginning to line up. But what? What other types of movement had struck me? Was there a corporeal gesture I could associate with my search for moments of collective narrative transcendence, moments ready to be exploded into a spatial series of rippling folds of time?

With these questions in mind, I browsed internet messageboards where videos could be posted, viewed, and discussed, in an informal investigation of how the moving image was dispersed and shared online. To my eye came a link. "Back in the day assassinations were done by sword." I don't know what led me to click the link, but when I did I was presented with a black and white image of an Asian man standing at a microphone. Behind him hung a banner inscripted with what appeared to be japanese characters. His glasses and hair style told me this was taking place in the 1960s. Immediately after opening, there is a movement to the right. A swift movement, a figure coming in, impaling the frame. (At once I was reminded of Sanchez' performance video, in which he hurtles himself through space and
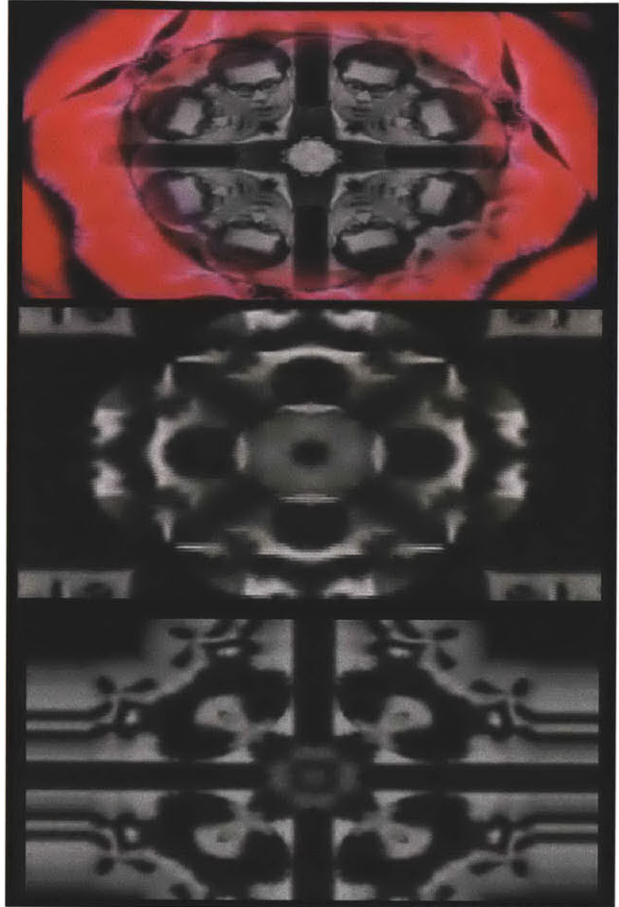
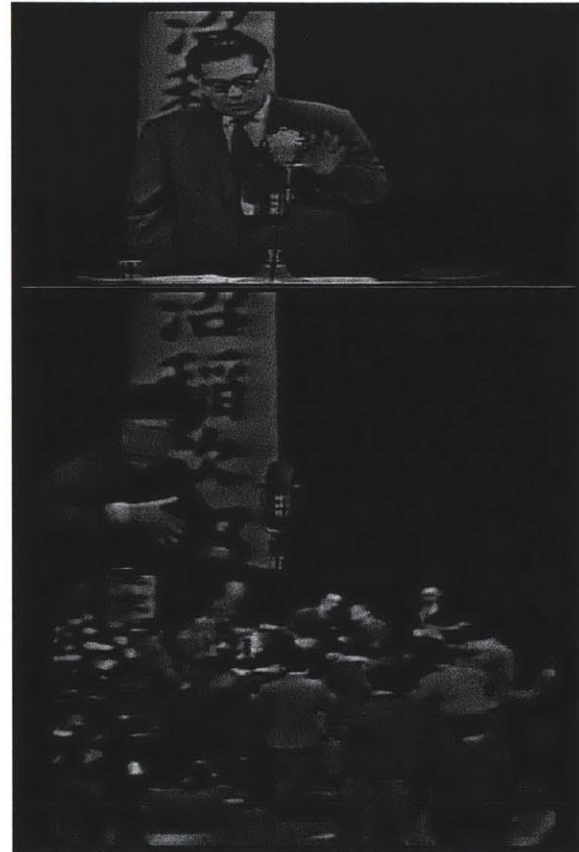*Flowers*, 2012
stills from video, 05:16

through a wall.) There is a sword leading this forward charge, a sword which is plunged into the side of the man speaking. At once there is a burst of flashes, presumably from the cameras we cannot see, and both figures, the killer and the killed, kern to the left as the momentum of the sword carries them across the frame.

At once, I knew I had to see this event extrapolated and folded, for I realized: here was the moment for which I'd searched. The moment of death, captured on camera. How minute of a time period has humanity had the ability to record a death, to transmit it to other across vast distances in real time? What other type of moment could be so integral to narrative, so incredibly important to understanding the ties between moments?

As to the accompanying time-based structure, I decided to expand past the Dymaxion, and incorporate movement itself into my choice of apparatus. There are other organic forms through which change can be seen rippling from a center point. For this work, I chose flowers. Cambridge in the spring erupts into flowers.

After completion of these works, I saw that I was attempting to break the moving image into an alternative visual system for ascribing meaning, but I did not yet know what that system was. I knew only that it seemed to utilize spatial precision, rhthmyic repetition and regularity in form. To me, they began to resemble mathematical charts: spatial representations of significance and behavior.

At this point, I was given the book The *Geometry of Art and Life* by Matila Ghyka
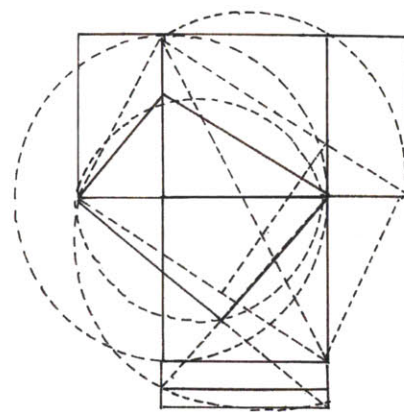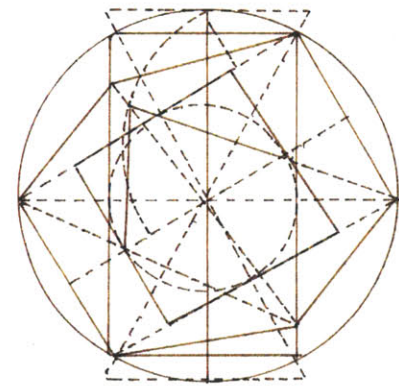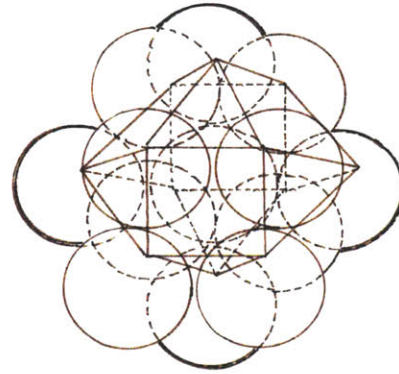

Flowers, 2012
stills from video, 05:16

(1977). There, I found explanations and diagrams for a non-linear process of growth, or what I saw as an alternative method of growing and expanding: an alternative system by which to understand the movements of life and death. Here was a method by which I could map the fractal movements of temporal being, or offer an alternative method for drawing becoming.
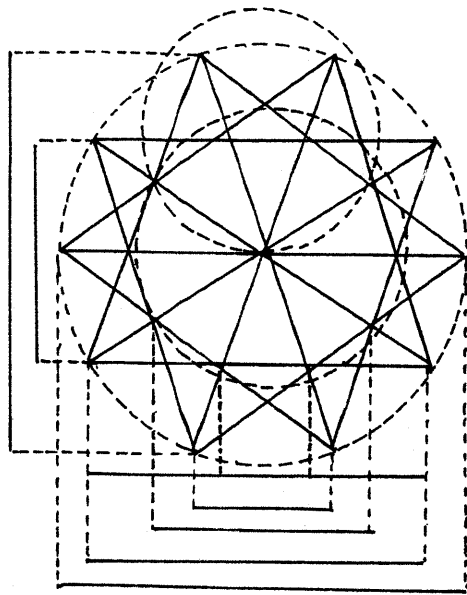
In addition, I saw a way to express the application of unique methodologies to disparate bodies of content. My research constituted, in large part, the investigation of different systems of knowledge production.

However, as an artist, I could not access the entirety of these bodies of investigation. I had to, by necessity, decontextualize them and apply their methods to differing sorts of content, or questions. What does it mean to take one method for inscribing import, principle, and proportion onto space and apply it to a different sort of image? It could embody the very core of my inquiry: the search not only for meaning, but a system by which to determine meaning in the space of the moving image.

In an attempt to grasp an unusual (to me) visual system for ascribing meaning onto space, I drew by hand several of the figures in the book, those that seemed to best reflect what I saw as the overall unifying shape of my very inquiry: an overlapping, often looping set of figures that all interrelate and point to each other. These are the images seen introducing many sections of this thesis, samples of which have been listed at right.

In this way, I happened upon a form that resonated deeply with my projective model for a moving image that could act a site for thinking out disparate methods of non-linear becoming: a looping, patterned fold.

Sketches after Geometry of Art & Life, 2012
ink on paper

SECTION 3: OUTLOOK

"Soon people will be connected to a communication channel which can be used for any kind of media - for the first time in history or for the end of history. ... In electronic warfare, the memory capacity of the computers will soon coincide with the war itself [when] gigabyte upon gigabyte shall exceed all the processing capacity of historians."

Friedrich Kittler, *Gramophone, Film, Typewriter* (1986)

1. Outlook: Redemption of the Hyperhistorical

When I first undertook this writing project, I wondered where the present stood in relation to an historical trajectory, and whether we were at the end of history. I took as my starting point Pierre Nora's *Between Memory and History*, stating that there must be a space between memory and history, a space in which objectivity can be constructed and a narrative drawn forth. I wondered whether there wasn't, at this time, such an onslaught of the material of memory that there could never be a space into which narrative could be interjected: that there was suddenly an overwhelming deluge of memorial such that historicity could never be construed. This line of thought led me to wonder at the function of all this material, and whether its accumulation wasn't at attempt to grasp the logic of historical knowing before it could actually be drawn forth over the distance of objectivity. I imagined a tighter loop, a space in which the present referred to itself in the unknowable relation to past and future, a loop of self-examination the advent of communication devices has allowed to grow tighter than ever before. From this, I withdrew the thought that rather than the end of history, what we'd actually reached was a space of *hyperhistory*, where the accumulation of narrativity is so immediate and overwhelming in its volume, and authorship so dispersed, that the space in which historical narrative is drawn is circumvented. A recent MIT study of behavior on online message boards

noted that, "our technology takes us from the "here and now" to the "everywhere and forever.""[48]

I will here first discuss the rewriting of history, and then speculate on the implications current collective practices of archiving and sharing might have on this rewriting.

The line of history itself is caught within a constant trajectory of re-becoming. Such a trajectory often is altered according to an intersection of conditions, out of which society carves its meanings. Two of the most influential parameters, as we have seen over and over, are time and space. When narratives are forced through a crucible of change, either to be re-written, altered, re-fashioned, or upended altogether in order to meet the current demands of daily living, it is often due to a shift in either time, space, or a tumultuous combination of both. Frederick Jackson Turner, at the Chicago World's Fair in 1893, posited such an explanation for what was then an comparatively new animal: the United States of America. In his frontier hypothesis, he suggested that a shift in calendric time collided with a shift in space, the American frontier itself, to produce an entirely new way of being, a new type of character. Interestingly, in describing such a collision, he was already eschewing narrativity in favor of models delineated by the spatial and the temporal, and an idea of identity defined by constant re-imagining: a trajectory of becoming, to which this and succeeding chapters of my thesis will be devoted.

In an article entitled "Science and Symbol in the Turner Frontier Hypothesis" William Coleman wrote: "in studying American history, Turner urged, we have no longer to do with a narrative ... but must henceforth 'deal with the formation and expansion of the American people.' ... The frontier *as process* stood universal and omnipotent."[49] Turner himself noted that "each age tries to form its own conception of the past. Each age writes the history of the past anew with reference to the conditions uppermost in its own time."[50] It should be noted that Turner was heavily influenced by a growing popular fascination with scientific methodologies and evolutionary biology, disciplines that are, predictably, governed by spatial and temporal ways of seeing.

This is, again, where we can find notions of the *fold*, or a tessellated pattern I argue needs to be utilized to understand patterns of thought in fields such as history, rhetoric and the hard sciences. Echoes of the frontier thesis were heard in the "New Frontier"-type campaign language for John Fitzgerald Kennedy and cold war paranoia. Blended with narrative colloquialisms invoking historicity, similar language was commonly used by physicists to seek funding for new projects, on the "New Frontiers" of science and technology.[51] To put it shortly, the patterned abstractions of narrative, history, and the rhetoric of progress all have spatial and temporal dimensions that

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48. Michael S. Bernstein, Andres Monroy-Hernández, Drew Harry, Paul Andre, Katrina Panovich and Greg Vargas. "4chan and /b/: An Analysis of Anonymity and Ephemerality in a Large Online Community"
49. William Coleman. "Science and Symbol in the Turner Frontier Hypothesis" *The American Historical Review.* Vol. 72, No. 1, Oct., 1966. Page 23 of 22-49
50. Frederick Jackson Turner, "The Significance of the Frontier in American History" Speech given at the Chicago World's Fair, 1893
51. William Coleman. "Science and Symbol in the Turner Frontier Hypothesis."

cannot be understood through the temporal organization of time-based media as it is currently disseminated. A more complex and informed model of being, or *becoming*, is emerging.

On that topic, the curator Joao Ribas, currently at the MIT List Center for Visual Art, has written extensively. We can here advance on the notion of an ever-looping accumulation of meaning, hinted at in the Turner passages but not fully realized. What is the definition of now, at the present time? Can we see where it is going? What can we do to carve a self-actualized mode of being from this set of conditions?

> Memory becomes the storehouse—in the form of museums, libraries, archives, and databases—of what would be impossible to remember... The preservation of such a totality of the past—its institutional objectification—is necessitated as much by the status of knowledge in late capitalist globalization as by what Nietzsche in his Untimely Mediations called the "hypertrophy" of historical time in modernity. It is the kind of archival memory that obscures the importance of the unhistorical and untimely, and that obliterates the present into a future past. ... All of this emphasis on archiving the present demonstrates how contemporaneity is in fact a repository of time, of myriad temporalities that actually comprise what we simply call the contemporary.[52]

This is my key assertion in the outlook chapter of this thesis: the accumulation of the present at the levels existing today, will lead to a massive redirection of historical narrativity, in which vastly dispersed and decentralized authorship will allow more conversant modes of being to emerge. This is the redemption of the chaotic: the overturning of linear, privileged, and narrow threads of history and progress as notarized by capitalist power in favor of the emergence of new voices. Benajamin, in his treatise on the Angel of History, likened Progress to a storm, always hurtling forwarde: "But a storm is blowing from Paradise, it has caught itself up in his wings and is so strong that the Angel can no longer close them. The storm drives him irresistibly into the future, to which his back is turned, while the rubble-heap before him grows sky-high. That which we call progress, is this storm."[53]

Gestures of individual participation - viewing, clicking, and sharing pieces of information online - collectively determine new hierarchies of meaning, as reflected in search-engine algorithms which use viewer numbers to help determine how information is retrieved, which in turn influences future participation and viewing patterns which further enforce the assignment of cultural memory.

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52. João Ribas. "What To Do With the Contemporary?" *Mousse Magazine #27.* Milano, Italy: Mousse Magazine and Publishing. 2010. 89.
53. Walter Benjamin. "Thesis on the Philosophy of History."

Technological intervention is key in this transformation. Kittler in 1997, as the Information Age was extending its reach into homes across the world as more and more people gained access to the Internet and its vast accretion of disparately authored information, noted that "the loop ... represents the potential of infinity, the expression of the inclusion of all possibilities through the act of recycling."[54] The constant reinterpretation of information is influenced not just by these gestures of access, but also by the continued accumulation of narrative material. Marshall Mcluhan, in 1964's *UnderstandingMedia*, noted that "man, as Julian Huxley observes, unlike merely biological creatures, possesses an apparatus of transmission and transformation based on his power to store experience. And *his power to store*, as in language itself, *is also a means of transformation of experience.*"

A note here on the concept of emergence. This outlook chapter of thesis asserts two things: one, that the massive and rapid accumulation of recorded information on the internet, as a result of individual participatory gestures on the part of a large collective of users, may lead to a dispersed and scattered historiography categorically different from how history has up to this point been written. Two, this chapter speculates that the decentralized aspect of this authorship can lead to the emergence of new hierarchies of control over information, narrative, and identity, which may create tvast shifts in how associated systems are structured, including capital, commodity, and agency. I would like to note here the origins of the concept of emergence, and see if it can be applied to such a decentralized space as online participation in ascribing meaning to the moving image. I argue that the colossal volume of individual gestures in such environments can, collectively, lead to the surfacing of new systems of control and access.

Emergence is a concept relating how certain attributes or characteristics can arise from the collected discrete actions of individual operating within a self-determined system, or "the appearance of novel qualities and associated, high-level causal patterns ... running through those very microscopic interactions."[55] Simply put, large patterns can be seen to materialize when collected actions are viewed at a macroscopic level. I would like to apply this concept to YouTube, and argue that the collected actions of millions of people watching videos online can produce a set of emergent properties, or certain truths about how meaning is created. This can reflect realities about how a user base is formed, either where the user-interface and search engine algorithms are written or content creation technologies happent to be particularly suited to a specific niche market. Or this emergent properties can surface directly from the behavioral patterns of the users once they begin to interact with a body of data or content, especially in how their actions continuously and constantly revise that body of data itself. On YouTube, although considerations must be made that this is a privately-owned corporation and not a democratically-

54. Jaimey Hamilton. "The Way We Loop "Now:" Eddying in the Flows of Media" *Invisible Culture: An Electronic Journal for Visual Culture Issue 8: The Loop as a Temporal Form.* New York: Rochester. 2004

55. Timothy O'Connor and Wong, Hong Yu, "Emergent Properties", *The Stanford Encyclopedia of Philosophy* (Spring 2012 Edition)

run public entity and so capital will always have a hand in determining its content, user behavior does play a large part in crafting how content is accessed and represented. Specifically, view count helps to determine the displayed results of searches. The more views a single video has (i.e. how many times individuals opted to watch that video) the higher it will rise in displayed searches for related terms, helping to determine how the ideas and concepts it represents are displayed to future users. Search results reflect a constantly shifting hierarchy of meaning, decided in part by individual user choice, repeated over and over again. Writer "A highly ranked page will garner more page views, thus strengthening its ranking. [In this way] pages that link together "think" together. If many people visit a page over and over again, its PageRank will become so high that it effectively becomes stored in the collective human/electronic long-term memory."56 Though this is a heavily biased system, with hidden influences on page rankings (Google is known to tailor search results to personal preference, severely impacting relativity of subsequent ideas and world view between users) on YouTube (owned by Google) search results are partly determined by view count, and "sort by view count" is a top option when searching for an idea among the hordes. Thus, the actions of the audience of today shape what the audience of tomorrow sees. Simple, individual participatory gestures contribute to articulations of cultural relevance. New hierarchies of meaning are constantly constructed, broken down, and rebuilt. The audience democratically determines their own significance, which may be entirely opposed to the intentions of the owners of the site. New systems of significance may emerge from these actions. Thus, the many may resist the hegemony of the few. Resistant assignment of relevance, and with them new modes of becoming, can surface. What shape will this becoming take? What history will it write? Will this history, determined by dispersed authorship of hierarchies of meaning, be fundamental different from historical narratives that have come before?

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Cultural theorist Paul Virilio has noted that the invention of the tool simultaneously invents its negation, that "to invent the train is to invent derailment; to invent the ship is to invent the shipwreck."57 And the invention of tools, and instrumental reason in general, involves a linear concept of time and self that negates other modes of being. The making of history is also its unmaking. The archive unmakes history, allowing decentralized modes of participatory significance to emerge, paving the way for new modes of historiography. This is the redemption inherent in the chaos of hyperhistory: frenzied accumulation of meaning allows the structure of temporal existence to shake out and new states of being to emerge. With this new state of being comes an alternative mode for thinking out the passage of time. As an artist, I propose a method for conceptualizing this new historiography, by projecting a model for the moving images that such a nonlinearity would generate. I propose a model for the moving image that is ground in becoming, a terrain

56. Michael Chorost. *World Wide Mind: The Coming Integration of Humanity, Machines, and the Internet* in "Mind Control and the Internet" *NY Review of Books.* June 23, 2011.
57. James de Derian. "Future War: A Conversation with Paul Virilio."

of meaning that is constantly shifted and reimagined. Thus, time, narrative, history and cinema are all made/unmade all together, every moment. Linear technologies of event portrayal have for decades allowed indolence on our part, a refusal to recognize the sheer entropic magnificence of the potentials of temporality. Now, we can begin to image it: what would a moving image look like, that was informed by an entirely different way of thinking about time, stories, and influence?

In my projective model, I utilize repetition and subsequent ornamentation through repetition, reflective of my original effort to understand the practice of patterning called narrativity. Again, I turn to Deleuze:

> Narrative in cinema is like the imaginary: it's a very indirect product of motion and time, rather than the other way around. ... If the motion's governed by a sensory-motor scheme ... then you get a story. If, on the other hand, the sensory-motor scheme breaks down to leave disoriented and discordant movements, then you get other patterns, becomings rather than stories.[58]

I propose a new model for the moving image, one that can assist in conceptualizing the complexity of concurrent remembering, perceiving, and anticipating. I propose the form of the *fold* as an aesthetic structure capable of *visualizing*, or diagramming, some of the afore-mentioned strata of complexity resistant to the hegemony of linear temporality. To carry this out, I carve an alternative configuration for ascribing meaning onto the moving image, by breaking it into a set of mathematical models used to [grasp? Comprehend?] the principles of proportion and balance. I break down and redirect systems of logic used in reading the moving image (which occupies both space and time) by breaking it into volumetric, geometric folds. Thus, I work to understand and offer alternative proportions of space and time.

58. Gilles Deleuze. *Negotiations, 1972 – 1990.* Translated by Martin Joughin. New York: Columbia University Press, 1990. 59.
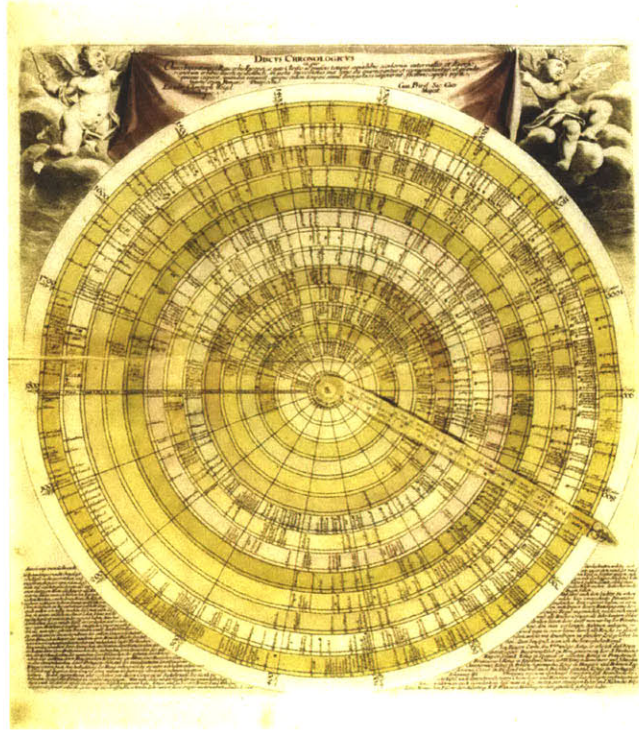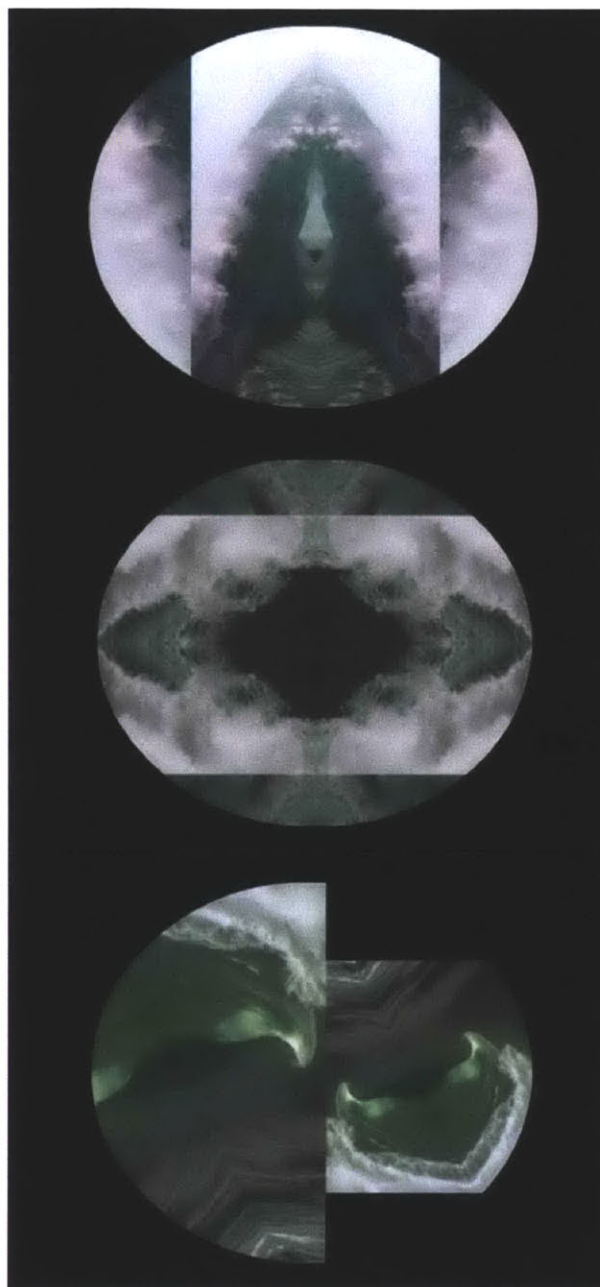
2. Epilogue

Further works redirecting how the eye reads a moving image, by breaking it into geometric models used to ascribe principles of proportion onto space. Thus, these works constitute a proposal for grasping the alternative possibilities of space and time.
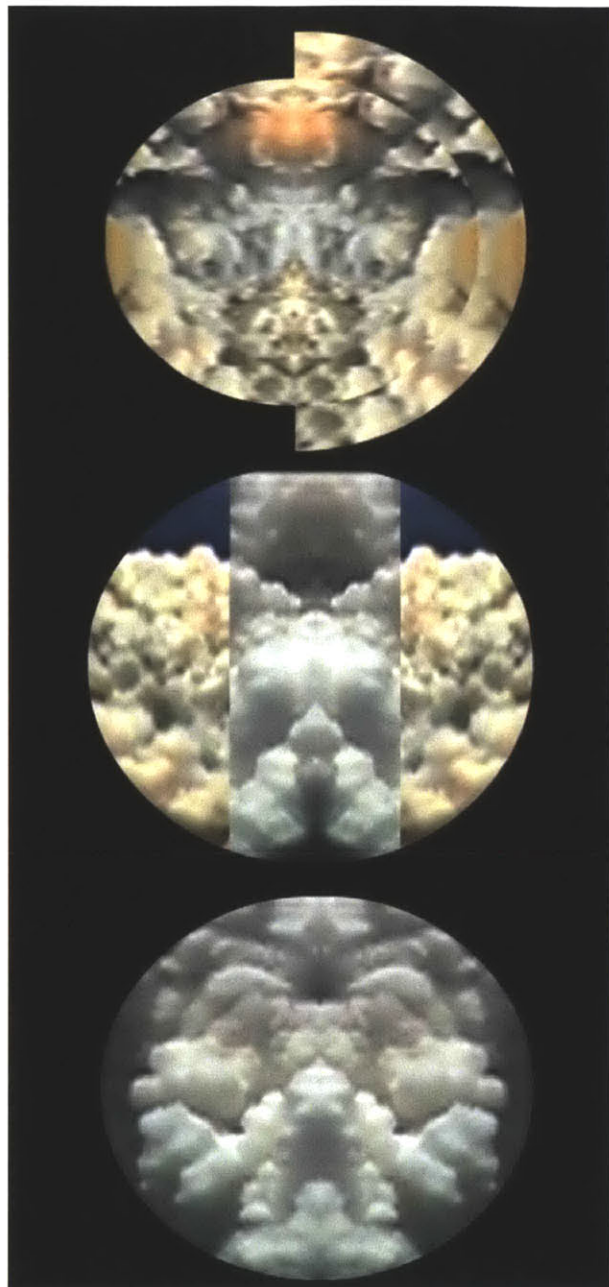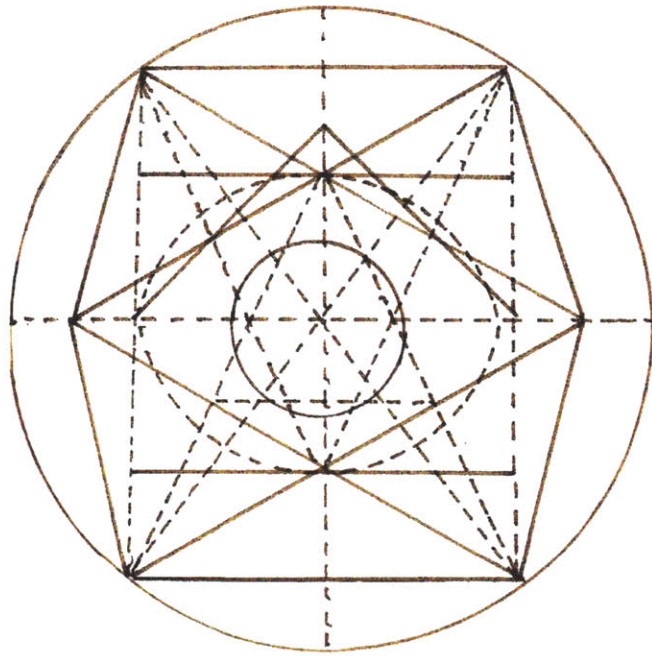
Smoke, 2012
stills from video, 03:11

Waves, 2012
stills from video, 03:30

"Folds of wind, of waters, of fire and earth … The model for the sciences of matter is … the art of folding paper."

Gilles Deleuze, *The Fold: Leibniz and the Baroque* (1993)

Caravaggio's Fruit, 2012
stills from video, 04:16

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