ON THE STRUCTURES OF TIME

A Thesis
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the Degree Master of Fine Arts in the
Graduate School of The Ohio State University

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ABSTRACT

The theme *On the Structures of Time* visually examines some mythologies surrounding the construction of the concept of time and how we interpret ancient cultural belief systems and structures that are founded on the observation of the cosmos. As we approach our own culturally constructed millennium — the end of the 20th century — our modern society has blended and assimilated many of these ancient mythologies into hybrid "New Age" philosophies.

Our culture today is defined by its great advances in computer technology. I am creating work that interprets ancient cultural cosmologies. The viewer is presented with a virtual world constructed using the machines that are themselves a product of our empirical observations. The viewer is asked to embark on a virtual journey to transcend the structures of time and physical space through the use of technologically-created art forms and mediums that incorporate the use of motion, sound, light, fractals and modern theories of chaos.

Grecian, Druidic, and Mayan cosmological beliefs play prominent roles in my work. Stonehenge is the most widely recognized iconographic representation on the structure of time used in my work. My interest in ancient civilizations stems from my fascination with how each culture viewed and interpreted the cosmos. Several of the components of my artwork are my interpretation of their diverse conceptions of the universe.
Dedicated to my mother
Lorraine Davis Mayerson
(1924-1991)
who has ascended to the next
level of existence.
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CHAPTER 1

INTRODUCTION

Astronomical knowledge confers power. The calendar must be kept. The omens must be read. The ceremonies must be performed. . . the concepts of sacred landscape, mythic origins, and cosmovision. . . are symbols we have devised to explain how the world works, and the transformations of these symbols are linked with the cultural evolution of societies.1

The concept of time as an objective measurable phenomena is relatively recent. Time is structured as a means of centralized government to provide society with a framework around which to organize. Our current Judeo-Christian society perceives time from a linear perspective. All events are linked in consecutive order, each one following the next. Within our culture’s timeframe, a great milestone year of the millennium approaches. The meaning of this marker in our history has led us down a path of both hysteria and contemplation. Within a linear view of time, there is a beginning and therefore there must be an end. This cultural construct is different from the cyclical perspective of time held by much of the rest of the world.

The concept of the cyclical nature of time and the mythologies representing this are at the center of my interest. Why wait for time to end when it doesn’t have to? Within our linear view of time, we are often too caught up in our day-to-day lives to contemplate the origins and meanings of mythologies surrounding our own culture. My intent in creating a multimedia exhibition is to provide a forum for interactive contemplation by the public of some of the ideas surrounding our conceptions of the structure
of time and to use technology as a means to define the scope of exploration.

Within a linear perspective, creation is an event at the beginning of historical time. Early humans, who lived in a timeless world, believed that if the sun didn’t rise, then life could not continue. The Sun was worshipped as the bringer of light. Planetary movements were not perceived as mechanical and eclipses were seen as terrifying events. Early humans were hunter gatherers who had no need for the measurement of time except to know the natural cycles of the animals they hunted. It was not until agricultural societies developed that there was any need to “predict” the appearances of the seasons.

The development of astrology in Babylon, Chaldea, and Egypt provided a more accurate means of predicting the future. Basic observation of the days and nights originated the concept of the cyclical nature of the seasons found in almost all cultures. Each day the sun rose and traveled across the sky, to be replaced by a similar traveling moon across the night sky. The major bodies of the sun, moon, and stars were worshipped as gods and goddesses.

Those who could predict the movements of the heavenly bodies became astronomer-priests or shamans. They had influence over the community rulers. Rituals developed out of their observations of the heavens, and entire civilizations were structured around the movements of the planetary bodies. Deification of the planetary bodies formed and rich mythological tales of epic proportions emerged.

The concept of a life span — birth, life, and death and the events that surround our lives, tugging at our conscious awareness of our limited stay in human form — inspired my interest in the origins of culturally constructed measurements and definitions surrounding the concept of time. The questions of why am I here? who am I? and where am I going? all seem predicated on a measurable volume of time.

When we are young, we have no awareness of measurable time. All structures and organization of the world we experience is derived from cultural constructs deter-
mined by our environment and the histories of the people and the culture we are born into. Once we are given a system, we then use that system to empirically measure our own amount of "time" available in this existence. We experience self-awareness based on the limits of our own perceived life span.

Beliefs surrounding the extension of life through reincarnation, extending the concept of the cyclical nature of time that we may experience and repeat lifetime after lifetime, are also a part of many cultural beliefs. The concept of the spirit embodied in all things that can transcend physical embodiment and repeat again and again — evolving into new higher forms to live out the Hindu concept of karma (soul destiny) — are a part of my belief structure. It was not until my own mother's death that I became truly aware of many of the possibilities that exist philosophically concerning the ascension of the spirit into the next realm. Our consciousness seems too important, unique, and precious a commodity to be limited to a brief passage through just one physical plane of existence. I found myself seeking other answers that lay beyond what is considered "mainstream." I began my journey through the study of astronomy and astrology.

References to the new Aquarian Age piqued my interest. I was born in February of 1962, which falls into the Aquarian astrological sign. This means that I am connected with the New Age based upon my birth time. At the time of my birth, five of the nine planets were aligned in the sign of Aquarius, which some astrologers deem as a significant landmark.

Many believe that the entrance of the zodiacal pointer into Aquarius will herald a time of brotherhood and peace, the focus shifting from the devotional religion of Christianity to a New Age based upon a synthesis of universal religious principles.²

The start date of this Aquarian Age is to formally begin when the planet Uranus crosses into the sign of Aquarius, which occurred in January of 1997. Events that occurred prior to this are seen as markers of the coming events for the next millennium.
New Age beliefs are combinations of many diverse belief structures. The New Age is the melting pot for ancient concepts to be reviewed and tested. They infiltrate our existing culture and subsequently form new and modern mythologies. Many people involved in the New Age movement are so caught up in the spirituality of the beliefs that they fail to recognize the premises surrounding the construction of belief structures in general. It is not an uncommon occurrence for people to hold beliefs through the concept of faith – i.e. religious zealots blindly following Christianity. However, it just doesn’t make sense for one belief system to capture the entire attention and devotion of an individual. My own early upbringing and my travels to the origins of Western religion in the Middle East have shown me that all of nature, knowledge, and power being taught to us by our Judeo/Christian culture reinforces the belief structures of Western religion.
CHAPTER 2

MEASURING TIME AND SPACE

2.1 Origins of the Historical Measuring of Time and Space

One of the most common descriptions of time is of a river, an ‘ever-rolling stream’ carrying us along for the ride. We move from the past to the future as unrelentingly as a river flows down from the mountains toward the sea. We think of a clock sitting in one place while ticking away the time. To take this a stage further, each time on the clock could correspond to a different ‘place’ along the river — along the fourth dimension. At any point along the river, it is possible to remember events in the past, ‘upstream,’ but not what lies around the next bend, in the future.\(^3\)

The concept of time incarnates with culture. It goes through several redefinitions based on the structure that is necessary to the concepts identifiable by that culture. For early humans, time was measured by the sun rising and setting and by the changing of the seasons. The structure of time is linked to the invention of devices and structures that could keep time. For example, a simple stick becomes a sundial when it is set upright in the ground casting a shadow that moves around the stick as the sun travels across the sky. Hourglasses filled with sand measure time based on the amount of sand left between two volumes as it flows from one side to the next. A fire clock based upon the steady burning of a stick of incense was developed by the Chinese. The pendulum was the first mechanical measurement of time, invented by Dutch physicist Christiaan
Huygens around the 1650s.

Later, it became important for the measurement of time to be linked to distance traveled. Since pendulums clocks could not be used on sea voyages, the British government, in 1714, offered a prize for the development of a device that could determine the longitude to half a degree of accuracy on a voyage from Britain to the West Indies. To win the prize, John Harrison invented a spring-loaded mechanical clock independent of gravity in the 1730s. Before the invention of the telegraph, the railroads also needed a timetable to cover all railway journeys between towns. For awhile, mail clocks traveled via rail with the time set in London. This eventually led to the development of Greenwich Mean Time.

The measurement of time also made necessary a structural unit for measuring space. Mathematics developed out of this. Astronomers use units that are based on the sizes of objects that are relatively nearby. They measure distances across the Solar System in terms of the astronomical unit, which is the average distance from the Earth to the Sun. Our modern meter, defined in 1799, is based on the fixed distance from the North Pole to the equator, divided by 10 million.

Early units of length were based upon human paces, arm spans, feet, and thumbs. The Egyptian cubit, the standard unit of measurement for thousands of years is based upon the length of an arm from elbow to extended finger. The Egyptians were also credited with the grid system, although it existed in Pre-Columbian cultures who drew large sand sculptures on the plains of Peru. Standard measures developed by the Egyptians were adopted by the Greeks, who were emulated by the Romans. Therefore, Roman columns use a system of measurement originating from early Egyptian structures.

Accurate measurements were required by farmers to divide up land. Units of measurement based on the Pythagorean theorem originated in the 6th century BC. This theorem states the area of the square drawn on the hypotenuse (the side opposite the
right angle) of a right triangle is equal to the combined area of the squares on the other two sides. Our knowledge of early geometry dates back to the Greek mathematician Euclid (320 BC to 260 BC). Euclidean geometry, which has been the basis of mathematics for over 2,000 years, tells us how to measure regions of space. Since geometry extends into three dimensions, it is the basis of architectural design and planning and is used in animation in the creation of virtual worlds.

Most explanations of the origins of measurable time and space are limited to recorded history. Earlier civilizations sophisticated enough to build monumental structures had their own methods of measurement. The construction of sacred and monumental architecture often has symbolic links to the measurements derived from cosmological observations.

Places... had power because they matched and reflected the structure of the cosmos... The entire universe was miniaturized through symbol. The universe and the shrine shared what those who study the nature of structure would call a homologous relationship. Each element of the shrine mimics—through placement, function, and meaning—a corresponding aspect of the universe itself.  

The oldest working observatory, Stonehenge, was built by what we think are the ancestors of the Druids, on the Salisbury plain in England between 2600 BC and 1700 BC, more than 1,000 years before Euclid was born. Stonehenge has been proven to predict the timing of seasonal equinoxes and eclipses. Likewise, many Native American cultures also developed ways to predict the seasonal equinoxes through construction of stone circles and residences called stelae. The concept of time based upon observation of the planetary bodies was not limited to Western thought.

The idea of linear time, flowing from the past to the future, was rivaled in the ancient Greek culture, and also in the Chinese, Hindu, and Aztec cultures, by the ideas of cyclic time. This says that history repeats itself...
E.C. Krupp, in his book Skywatchers, Shamans and Kings, presents information derived from archeological investigations of many cultures' astronomical belief structures and their integration with the concept of time. Monuments, buildings, and whole cities were constructed so that they mirrored the structure of the cosmos and permitted contact with its power. The Maya, in particular, were “concerned with the philosophy of time and interlocking cycles of divine influence...” which they forcefully exerted on their neighbors with the power of the sky. Their priests manipulated an elaborate system of symbolic numerology and cyclical resonances with a calendar designed to apply the sacred structure of the cosmos to the affairs of the earth. Priests juggled the cycles and calculated when several [astrological alignments] would coincide in their search for cosmic congruence. In the Mayan world as elsewhere, celestial phenomena revealed the affairs of dynasties and kings.⁶

The structuring of time and the calendar allows control over ceremonies, commerce and spiritual meaning. It provides the leaders with overwhelming powers to construct the belief systems and mythologies of people living within a culture.

2.2 Reincarnation and Cyclical Time

Many early religions held a belief in reincarnation. This idea rose from observation of the cycle of the seasons and the recurring appearance of major planetary bodies at regular intervals. The concept of soul progression played into this belief. Souls would be reborn into a new incarnation based upon karmic lessons of development initiated under certain planetary alignments. Religions were also structured around natural earth-oriented cycles. Cycles of nature were drawn into parallel with the human reproductive experience. The earth was identified as female. The sky was the male who
impregnated the earth when rain fell to the ground.

The idea of reincarnation and ascension of the spirit is a powerful concept. Some organized religions both accept and deny the concept of reincarnation. In Christianity, for example, a form of rebirth can be achieved by those who follow certain "rules" dictated by the religious leaders thereby making the concept of salvation accessible to those who follow their doctrine. It is religion that imposes the structure of a denied reincarnation while at the same time supporting the concept of salvation (i.e. reincarnation defined in slightly different terms) that makes the concept of time a powerful and easily manipulatable construct. Power given to those priests and shamans who controlled the knowledge about the movement of the heavens — the cyclical nature of the universe and time — became a traditional structure that is rarely questioned because of the longevity of the belief structure itself.
CHAPTER 3

THE EXHIBITION

3.1 The Physical Environment of the Exhibition

*On the Structures of Time* was an exhibition in Hopkins Hall Gallery that explored time as conceived by diverse ancient cultures through the use of virtual worlds constructed using computers that are a product of our empirical observations. Several computer-generated artworks and sculptural forms created an installation that interactively linked different types of media thematically to convey the message. My thesis exhibition was at the front of the gallery where a glass-fronted entrance and doorway lead into a large rectangular room.

Two digital photographic prints from my show were hung on the outside walls of

![Image](image_url)

**figure 3.1** Hopkins Hall Gallery

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the gallery. (figure 3.3) As visitors entered the gallery, they were confronted with large 4' x 5' hanging glass sculpture made of 1/2" etched glass containing an image of the Hunab Ku. This sculpture was suspended from the ceiling within a foot of the glass front. The piece could be seen from outside the gallery and allowed visitors to see the entire exhibition space at all times. (figure 3.1)

Beyond the glass sculpture stood a pedestal for the computer that displayed my multimedia piece *On the Structures of Time*. Suspended above the computer from the ceiling was a video projector mounted perpendicular to the entrance which projected landscape flythroughs *A Shaman's Journey*. To the right was a 12' x 14' room filled with a very large black sand sculpture of the Hunab Ku illuminated from the floor. (figure 3.2) On the left side of the room's entrance was another pedestal containing a black pyramid structure. When visitors passed their hands over this pyramid, the video projector started and displayed animations measuring the width of the wall high over the black sand sculpture. The sand sculpture took up most of the room but allowed viewers to walk into the room for a closer look at both the projected images and the sculpture on the floor.

![figure 3.2 Looking onto the sand sculpture](image-url)
figure 3.3 Hopkins Hall Gallery
3.2 Explorations of the Concept of Time

By using a variety of materials, virtual places, sounds, mediums, philosophies, and iconic references, I am interested in providing an interactive immersive experience that encourages viewers to engage in a self-reflexive dialog about the source of their belief structures concerning time. The goal of my work is to lead viewers down a virtual passageway to a place of pure, intellectual, spiritual thought. I wish to encourage viewers to journey beyond the structures of existence and explore the realms of the spirit where time is nonexistent. I present a narrative through technologically created mechanisms of video projection and a computer monitor that serves as a conduit for changes in sound, color, and motion. This spurs the creation of thought patterns representing a universe with no linear direction. Sacred places of symbolic importance to time are provided as a point of reference in both computer-generated artworks and in the physical sculptural forms. My work dwells on both new and old technologies and our various, complicated relationships to them. I use technology to question technology. The emotional distancing of human to machine interaction provides a stoic forum for logical contemplation of the messages in the narratives provided through the artworks.

In different cultures, many symbols of time are used metaphorically. In my artwork, I have used some of these symbols as pointers to the construction of the concept of time. The most prominent symbol that I use is a Yin-Yang (see figure 3.4) emanating from the Mayan culture and portrayed in the book *The Mayan Factor: Path Beyond Technology* by José Arguelles. This symbol is actually a reference for “Hunab Ku.”

Hunab Ku is usually translated as ‘One Giver of Movement and Measure;’ it is the principle of life beyond the Sun. In this regard, Hunab Ku is the name of the galactic core, not just a name but a description of purpose and activity as well. Movement corresponds to energy, the principle of life and all pervading consciousness immanent in all phenomena. Measure refers to the principle of
rhythm, periodicity, and form accounting for the different limiting qualities which energy assumes through its different transformations.\textsuperscript{7}

The relationship of the Hunab Ku to the measurement of time, life, and energy, is an important principle in the form my artwork takes. My artwork contemplates the questions surrounding our existence and the mythologies and belief structures that emanate from how cultures address the issues of life. The Mayan concept of time and existence is based on a world view that entails a galactic frame of reference synthesizing what we call myth, art, and religion.

figure 3.4 Hunab Ku
A metaphor carries meaning beyond the obvious; therefore a metaphor is more than a theory. A metaphor can be a kind of guiding principle for thought. A metaphor could be explained as a kind of high level analogy . . . A meta-metaphor . . . shows what a metaphor is, a metaphor for a metaphor, for ‘jumping out of the system’ and looking at it from the outside.6

The beginning of my multimedia piece invokes viewers to “transcend existence” and “go beyond the structures of time” to contemplate the very nature of the structures we utilize as a placeholder for our world views and conceptions of reality, namely science, religion, and mythology. It asks viewers to take the a galactic perspective through the use of visuals and concepts about space, mathematical fractal patterns, cultural icons, and paradoxes of interconnected sight and sound. It interactively involves the viewer in a journey where they must navigate a new form of technological geography. Viewers travel through a virtual time and space that exists within the image projected from the monitor of a computer. Journeying through the interface of the multimedia piece as well as watching projected flythroughs of computer-generated landscape introduces the viewer to yet another metaphor. Transcendence becomes an intellectual exercise of human to machine interaction.

Another concept from the book *The Mayan Factor* is one of the ‘Kuxan Suum.’

Kuxan Suum, literally ‘the Road to the Sky Leading to the Umbilical Cord of the Universe,’ defines the invisible galactic life threads or fibers which connect both the individual and the planet, through the Sun to the galactic core, Hunab Ku. These threads or fibers are the same as the luminous threads extending from the solar plexus described by the seer Don Juan, in Carlos Castaneda’s series of Yaqui wisdom books.9

Kuxan Suum is the interconnected energy linking all things to each other from a galactic perspective. The Universe is all One thing and our life forces and everything in them come from the same stuff. It is most similar to the concept from the Hindu of *kundalini*
or life energy, however the same concept can also be found in many religions ranging from Daoism to Native American beliefs to aspects of Judeo-Christian thought. I personally link it to my Jewish roots and interpret the watchword from my faith, “Hear, Oh Israel, the Lord our God, the Lord is One” as being derived from this concept.

All systems of knowledge form the basis of interpretation. Our explorations and perceptions of the universe can illuminate for us the relationship of connective strategies revealing the interconnectedness of being. It is our choice as individuals to explore theories and metaphors and open our minds up to the possibilities and paradoxes we might see from journeying through a virtual landscape that contains an implied narrative about life’s larger picture.

Mythology develops out of things that we cannot understand. The ancient Greek god of time, Chronos, appeared in the mythology of several civilizations around the Middle East. It is interesting to note that both the Iranian god of time and the Greek Chronos were shown as winged serpents. The Romans depicted him in more human form with a serpent wrapped around his body. It was a serpent who led Adam and Eve to expulsion from the Garden of Eden. It is also a serpent that most often represents the kundalini, our symbolic life energy. One could surmise that our mythologized conception of time has roots from biological origins as well.

The symbol of Hunab Ku is used as a repetitive theme through most of the imagery in my exhibition. It appears in the Mayan Dream series (figure 3.5) in two of the images. In one part, a Mayan shaman figure is superimposed on the symbol as he contemplates an image of the moon. In another part, the symbol has transcended to the place of the Sun, where communication exists linking the Shaman to the Kuxan Suum. The figure is illuminated with color emanating from the center. While the choice of color is relatively arbitrary, the intention was to create a highly saturated effect. The effect of saturating color was meant to convey a vividness of experience undertaken by
The Shaman as well as to denote an intensity of emotion by the viewer in their perception of the exchange.

The use of sand as a signifier for time is an integral link between many of the pieces in the exhibition. Sand is a physical metaphor of time. It symbolizes the immeasurable quality of time through tiny particulate matter of infinite quantity. Sand is used as building material for cities and roads, and serves as the foundation for much of our technology. Sand is a crystal-like silicon, linking the modern day computer chip in our electronic machinery to the ancient machine of the hourglass.

The use of the computer as a tool to generate my artwork is intentional. The computer is based upon developments of our technology through the ages as the result of our measuring what is around us. The roots of computer language are based upon mathematical algorithms. The silicon structure of a computer chip links it to the sands of time. The effect of sitting at a computer terminal creates a loss of time for anyone
who has undertaken the experience. In modern media, all is converted into signs or symbols of numbers. Mathematics is the common language of the universe.

The Hunab Ku symbol is etched into the hanging glass piece. It stands as a symbol for the transparency of time and therefore of the fragility upon which our beliefs about time are based. Upon looking into the gallery, viewers can gaze within to see all the other pieces. They can symbolically look beyond the icon into the structure of the glass to see beyond the physical and gaze upon the artworks and products associated with time’s passage and human involvement within it. The material choice of using glass, which is made from sand, also contains a symbolic link to the nature of time’s fluidity.

The large black sand sculpture of the Hunab Ku (figure 3.6) is reminiscent of the temporary nature of time, of art, and of the passing of Native American cultures. The act of producing a sand sculpture requires a large amount of time. It is my perception that the creation of a sand sculpture is ritualized performance art where the very act of creation is meant to give homage to the value of one’s effort and, through association, gives value to one’s existence and appreciation for life. As an artform, a sand sculp-

![figure 3.6 Sand sculpture](image-url)
ture's temporary nature belies its message. The sculpture in the gallery would need a
total recreation in another location to convey the same message. The textures made by
the ridges in the sand are similar to the patterns found in both Middle Eastern and
Southwest American desert landscapes. The patterns of rolling ridges are mimicked in
the landscape flythroughs of projected video overhead. The black color of the sand
sculpture is symbolic of our unknown future as well as representative of the darkness
inherent in our lack of knowledge about it. The spotlight illumination of only a small
part of the sculpture creates both specular highlights and reflections to emphasize the
waves, hills, and patterns in the sand — much like the ups and downs of our experience
with time, but is further significant of our progress into the future.

The Hunab Ku symbol is also used on the mousepad. This was meant to themat-
ically link the interactive multimedia piece and its content with the rest of the artworks.
Upon entrance into the gallery, viewers automatically identify the use of the computer as
a section of the whole of my exhibition, inclusive of all the diverse types of media that
were used to convey the message.

3.3 The Interactive Multimedia Piece

The use of an interactive multimedia presentation is meant to bring technology
and our advances of the modern day into perspective along the current timeline that we
are following. It courts viewers by using current technology to invite and inspire them.
It affords viewers with a sense of timeliness. Those fascinated by the newness of tech-
nology will be more inclined to participate in a presentational medium that uses technol-
ogy.

From my observations at the opening and throughout subsequent visits to the
gallery space, children of elementary school age seemed to be the most interested in see-
ing how the interactive piece worked. The marketplace attracts children through the use
of technology in the form of video and computer games. Obviously this affects who will most want to view certain types of artwork. Young preschool children were attracted to the sand sculpture on the floor. Adults were varied in their wish to participate interactively on the computer.

Visitors to the multimedia piece are greeted by the Greek temple on the main menu. (figure 3.7) This is the Oracle at Delphi — a modern version of the looking glass viewers can walk through to see into the future — only to behold the wonders of the universal birth and death through an exploding pattern in the movie it leads to. The temple structure is floating in a starfield to signify our position in the universe. It ties us to the early observations of the stars when they were our timekeepers. Viewers are asked to maneuver through an interface that reacts to the movement of the mouse and words that highlight when the mouse rolls over them. The center of the temple contains the message “Time is hidden in the void,” challenging viewers to seek out the meaning of the message. Side words: “cycle, symbol, shape, imagery,” light up when passed over by the mouse, illuminating a larger hidden counterpart word. In the right corner is the

![The Oracle at Delphi main screen](image)

figure 3.7 The Oracle at Delphi main screen
word “Beginning” and the left corner states “End.” Clicking on the word “Beginning” will launch the sound of the wind, a revolving Hunab Ku symbol, and lightning sounds coordinated with the flashing of fractal patterns of multiples colors. Words display in separate succession, “Transcend your existence... and go beyond ...the structures of time.” Viewers are now encouraged by the artwork to contemplate the meanings and origins of their own beliefs and structures.

The use of computer-generated fractal imagery at the beginning of the multimedia piece functions as a metaphor for artificially generated patterns in discord with natural phenomenon. It was not until the computer age and Benoit Mandelbrot’s research in the 1970s that mathematical fractal patterns visualized on a computer and found to exist in nature. The compilation of fractal forms serves as a visual metaphor of compressed time and space. These images are intended to grab the viewers attention through a series of rapidly displaying pictures. The speed and quickly changing fractal forms are meant to mimic the visual sensory-overload inherent in much of the imagery found in today’s society. They are meant to convey a state of chaos and uncertainty and a feeling of dislocation. The use of fractals and rapidly flashing patterns implies the existence of alternate realities more commonly accessed through the use of psychotropic drugs which confound and often cross the senses.

Large colored gears appear in the multimedia piece and rotate to the sound of a clock ticking away the seconds. An image of Stonehenge fades in behind the gears, contrasting the diverse ways of measuring time. (figure 3.8) The gears represent the modern industrial age of mechanical machines juxtaposed in contrast over a simple time machine of large monolithic stones. The choice of gears is meant to reflect the progress of the Industrial Age and mass production techniques which are applied to commodities. Much like time is kept by gears in watches and other timepieces, the gears become a modern universal metaphor of time. These lead into the scene of the main menu that shows the Oracle and the launching points into the entire multimedia adventure.
A mouse rollover of the Oracle at the center of the temple brings up a negative image. A click on the Oracle leads to a succession of closeup views of the Oracle. As one gets closer inside the glass, an Escheresque array of progressive images lead to a reflection of the temple inside the glass. Further clicking reveals a reflection of a library of books. This reflection is meant to reference the lost library at Alexandria that contained much of the world's knowledge about earlier times. A certain mythology surrounds its destruction by fire in 48 B.C. during the reign of Julius Caesar. Over 400,000 documents were said to have been destroyed, taking along with them the written history and documentation of earlier civilizations. History recorded from that point on reveals little of what those earlier civilizations were like. As in Ray Bradbury's theme in *Fahrenheit 451*, knowledge is controlled by those with the power to write history. The Oracle now leads the viewer into a movie about the birth of the universe illustrating the theory of the Big Bang. The Big Bang theory posits that time is based upon an expanding and contracting universe. This theory exemplifies a modern perspective on the history of the universe.

Clicking on the word *cycle* starts a movie of rotating planetary bodies. Through repetitive patterns and sounds, the planets revolve around alternating fields of color. A
The universe is a continuous cycle of birth and expansion existing among multidimensional planes of time and space, rotating around on a continuous cycle of birth and expansion, existing among multidimensional planes of time and space.\textsuperscript{10}

The symbolism of color used in this animation alternates red and blue. In this case, red is the cooler color of a planet after a long life, and blue is the hottest color occurring before the explosion of death/birth of a new star. The ever-expanding universe is consistent with an algorithmic fractal code, exploding into chaotic yet ordered patterns of nebulae, galaxies and star clusters.

The Greek philosopher Zeno of Elea lived in southern Italy from 495 BC to about 430 BC. He made a series of statements, which are known as the "paradoxes of Zeno," designed to show that the human understanding of motion and time were inadequate. Plato (427-347 BC) realized that one way to solve the puzzles is if time behaves like space. Another way is if we accept that time cannot be chopped up into ever smaller pieces. Both ideas are now an integral part of modern physics — the theory of relativity and the quantum theory.\textsuperscript{11}
Zeno’s image, which appears on an old world map in the multimedia piece, recalls the transitional periods of history when the mapping of space and time were inadequate until at least the 18th century. (figure 3.9) This and subsequent images are accessed by clicking on *symbol*. An animation of a pendulum, an hourglass, and floating numbers reflect the creation of our base-10 numeric system in use today. The view of earth from beyond the moon infers the distance that we have traveled into the outer universe, our progression beyond the conventions of time and space that we can then contemplate and reflect upon.

*Shape* launches an animation of crop circles floating through space to arrive falling onto Stonehenge. (figure 3.10) The mystery of crop circles has become a widely studied mythology by scientific communities and those interested in the possible connections with an outside intelligence. Crop circles are as much pop-cultural iconic events as the symbol of time that Stonehenge represents.

*figure 3.10* Crop circles in space
A sequence of images leads the viewer through a series of fractal compositions juxtaposed with Mayan figures. The leading image is that of the moon. As it crosses the screen and fades behind a Mayan figure, words appear explaining the Mayan cosmological perspective of time in accordance with their calendar, briefly allowing a glimpse of another world view. (figure 3.11)

![Image of Mayan Kings]

**THE MAYA KING TIMED THEIR ACCESSION RITUALS IN TUNE WITH THE STARS AND THE MILKY WAY.**

**THE COSMOLOGY OF THE MAYA WAS A LIVING, RELIGIOUS PHILOSOPHY THAT PERMEATED THEIR LIVES.**

**THEY WERE ASTUTE OBSERVERS, SENSITIVE TO THE CYCLICAL NATURE OF THE SUN, MOON AND PLANETS.**

**THEIR PHILOSOPHY OF TIME WAS BASED UPON REPEATED CYCLES CALLED "KATUNS."**

**ACCORDING TO THE MAYAN CALENDAR, WE ARE NOW IN THE LAST KATUN OF THIS MILLENIUM.**

![Figure 3.11 Mayan Philosophy]

For the Mayans, time has no fundamental reality, but can be conceptualized more as a holographic interference pattern that weaves itself within the body's various nervous system circuits. This pattern of time is then projected or superimposed over the eternity of the new moment, creating the apparent illusion of linear sequential time. By properly integrating the different circuits of the nervous system, one can learn to stop continually projecting the illusion of linear time onto the current moment and awaken to the ever-present eternity that is here and now.12
Viewers are presented with a series of images made of Mayan hieroglyphic figures. These images reflect my own understanding of Mayan belief structures melded with modern theories of fractal science. Fractal mathematical codes function as metaphor for artificially generated forms. The compilation of fractal forms serves as a visual metaphor of compressed time and space. These images are intended to stimulate the viewer’s relationship to the external structures that form one’s world view toward the existence of alternate realities.

What is a symbol? A symbol is a resonant structure, the reverberation of a particular quality of radiant energy that takes form in our senses.13

The end of the multimedia piece shows a symbol, the *Shield of Pacal Votan.* This symbol is an archetype presented to protect Mayan ideas and concepts. (figure 3.12) The background image shows Mayan hieroglyphic symbols representing months within the Mayan calendar.

figure 3.12 Shield of Pacal Votan
3.4 Flythroughs of Landscape

In another part of the exhibition, animated landscape flythroughs, *A Shaman's Journey*, were projected as video on a wall over the sand sculpture. The video was activated by a hand passing over a motion sensor. The intent was to provide an atmosphere where viewers could experience an out-of-body journey by visualizing themselves flying over the projected imagery. The flythroughs were meant to simulate a Shaman’s journey beyond the normal realm of ordinary experience except without the use of controlled substances. The imagery of the flythroughs was created using a computer program that takes satellite data of real places and converts it into three dimensional space. The textures and colors of the landscape are controlled through randomized fractal codes. Most of the places chosen as flythrough zones were sites considered sacred or having some geological significance. By going beyond their earthly bodies, viewers could experience a new perception of the landscapes, of the culture and mythologies that surround it, and of the very nature of the belief structures that form our opinions about evolution.

One of the wall pieces, *Circles on Circles*, (figure 3.13) takes viewers spiraling through the image into a vortex of space into the center of the *Shield of Pacal Votan*.

![figure 3.13 Circles on Circles](image)
The fact that the animations weren’t truly real landscapes, that the totality of the artwork in the entire exhibition was originally constructed in a computer or through some unnatural process, was intended to show the extent to which belief structures are, in part, a construct of the evolutionary processes of culture.

3.5 Conclusion

The coordinated use of diverse types of media allowed me, as an artist, to experiment beyond the scope of technology while using technology as the foundation for realization of my ideas. The theme *On the Structures of Time* allows a wide spectrum of ideas, origins, and evolutionary processes to be explored using the tools of evolving mediums. Experimentation with a variety of mediums to enhance messages originating from computer artforms has been a invaluable experience to my growth as an artist.

Mastery of tools created by technology is short-lived. The relative newness of computer-generated artworks brings art originating from machines under intense scrutiny. Technology has and will continue to develop new tools. With each new tool there will continue to be new areas for artistic exploration. The world of art continuously questions its own validity and should continue to do so – especially in light of changes technology brings to it. My plans call for continued research and artistic exploration of this theme.
ENDNOTES


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ON THE STRUCTURES OF TIME

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The theme *On the Structures of Time* visually examines some mythologies surrounding the construction of the concept of time and how we interpret ancient cultural belief systems and structures that are founded on the observation of the cosmos. As we approach our own culturally constructed millennium — the end of the 20th century — our modern society has blended and assimilated many of these ancient mythologies into hybrid “New Age” philosophies.

Our culture today is defined by its great advances in computer technology. I am creating work that interprets ancient cultural cosmologies. The viewer is presented with a virtual world constructed using the machines that are themselves a product of our empirical observations. The viewer is asked to embark on a virtual journey to transcend the structures of time and physical space through the use of technologically-created art forms and mediums that incorporate the use of motion, sound, light, fractals and modern theories of chaos.

Grecian, Druidic, and Mayan cosmological beliefs play prominent roles in my work. Stonehenge is the most widely recognized iconographic representation on the structure
of time used in my work. My interest in ancient civilizations stems from my fascination with how each culture viewed and interpreted the cosmos. Several of the components of my artwork are my interpretation of their diverse conceptions of the universe.