

**Examining and Teaching an Aesthetics Unit on the Transcendental  
Landscape in Secondary Visual Art**

Kaitrin Sones Mathew

University of the Arts

Art Education Department

Master of Arts

August 5th, 2012

Copyright © 2012

Kaitrin Sones Mathew

All Rights reserved

The University of the Arts  
The College of Art and Design  
The Graduate Program in Art Education

EXAMINING AND TEACHING AN AESTHETICS UNIT ON THE  
TRANSCENDENTAL LANDSCAPE IN SECONDARY VISUAL ART

by

KAITRIN SONES MATHEW

Has been approved for the Department of Design and Art Education

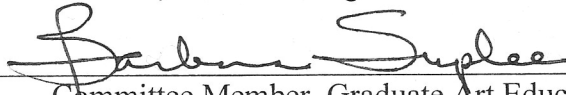
May 9, 2013



Chair of Committee, Graduate Art Education  
Director, Graduate Program for Art Education

5-19-13

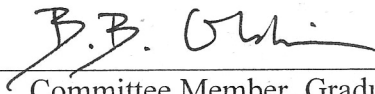
Date



Committee Member, Graduate Art Education

8/20/13

Date



Committee Member, Graduate Art Education

5/19/13

Date



Committee Member, Graduate Art Education

8/20/13

Date



Committee Member, Graduate Art Education

8/20/13

Date

## Abstract

This thesis focuses on how visual artists investigate experiences of the landscape that transcend language and how this aesthetic inquiry can serve as a highly formative paradigm for use in secondary art education. The inclusion of the transcendental landscape and thematic unit in art education addresses the value of teaching aesthetics and interdisciplinary concepts in the secondary classroom and exposes students to contemporary art forms that explore the way we think about and experience the landscape. This thesis presents interdisciplinary connections between science, art, and aesthetics, providing engaging ways for students to learn the profound ways art has influenced innovation and artists' unique capacity to capture the phenomena and wonder of the visual world.

A brief overview of the art historical, philosophical and aesthetic concepts regarding the transcendental landscape are given to establish a history of ideas. Interdisciplinary connections between art and science and applications for art education are addressed, providing educators with clear, applicable ways to present these concepts in secondary visual art courses. The thematic unit is designed to guide secondary art teachers through meaningful ways to engage students in aesthetic and conceptual issues that deepen an understanding of art and art making. The artists represented address the transcendental landscape—ranging from sculptors of light to artists who use astronomy, the land, and the sky to convey their



ideas. The studio investigations include 2-D and 3-D projects that utilize drawing, painting, multi-media sculpture, and unconventional art materials such as light, land, and sky.

## Acknowledgements

Warm Thanks to those who encouraged me: my husband Erik Mathew, Karen Hunter, professors, family, and friends.

It is with immense gratitude that I acknowledge the support and help of my professors: Dr. Barbara Suplee, Dr. Benjamin Olshin, Dr. Teresa Unseld, Dr. Nancy Davenport, Dr. Slavko Milekic, and Rande Blank

Particular thanks to Dr. Benjamin Olshin for believing in my ideas and sharing his great insight on this topic and to Dr. Barbara Suplee for exemplifying what it means to be a thoughtful and extraordinary art educator.

Special Thanks to the teachers who participated in this study:

Karen Hunter, Sharon Willcutts-Havel, Judy Chambers, Dani Pontus, Susan Smith, Ross Clark, Chris Cunningham, Carolyn Klein, and Sharon Carswell

## TABLE OF CONTENTS

CHAPTER 1	INTRODUCTION .....	1
	Research Question .....	7
	Research/ Problem Statement.....	8
	Significance of Study .....	8
	Definition of Terms .....	10
	Limitations of Study .....	21
CHAPTER 2	REVIEW OF LITERATURE.....	23
	Philosophical Origins, Aesthetics, and Artist Interpretations .....	23
	Art, Science, and Perception.....	30
	Applications in Education.....	32
CHAPTER 3	METHODOLOGY .....	39
	Design.....	39
	Population.....	41
	Analysis .....	43
	Expected Findings .....	43
CHAPTER 4	ART, SCIENCE, AND PERCEPTION .....	45
	Parallels in Language and Abstraction.....	45

	Neuroaesthetics and Visual Indeterminacy .....	49
CHAPTER 5	PHILOSOPHICAL ORIGINS, AESTHETICS, AND ARTISTS' INTERPRETATIONS .....	56
	Aristotle .....	56
	Leonardo Da Vinci .....	58
	Immanuel Kant and the Sublime.....	59
	Romanticism .....	61
	Joseph Mallord William Turner.....	62
	John Ruskin and Leslie Stephen .....	65
	Hudson River School .....	67
	Group of Seven.....	69
	East/West.....	71
	Abstract Expressionists .....	73
	Earthworks and Land Art.....	76
	Contemporary Artists .....	85
CHAPTER 6	APPLICATIONS IN EDUCATION .....	91
CHAPTER 7	THEMATIC UNIT.....	101
	Microcosm–Macrocosm .....	103
	Light, Space, and the Cosmos.....	120
	Seen and Unseen .....	138

	The Mapping of Time .....	158
CHAPTER 8	THEMATIC UNIT EVALUATION AND	
	CONCLUSIONS .....	179
	Art Teachers.....	179
	Science Teachers .....	184
	Conclusions: Transcendental Landscape in Art.....	188
	REFERENCES .....	192
APPENDIX	TEACHER ASSESSMENTS .....	199
	Art Teachers.....	199
	Science Teachers .....	223

# Chapter 1

## Introduction

Throughout time, artists have sought to represent experiences and ideas about nature that transcend words. In order to do this, many artists have created unique ways of depicting reality beyond mere appearances. These concepts in art have paralleled other disciplines such as science and philosophy which have also sought to define the principles of the natural world beyond the boundaries of what can be seen with the naked eye. Galileo, for example, relied upon his training at the Florentine Academy of Design to accurately draw in perspective to record his telescopic observations. Through carefully observing and rendering the natural structures of celestial bodies, Galileo revealed hidden principles in nature that have shaped modern physics and changed the way we perceive the visual world. Arthur I. Miller (1995) explains that science has always paralleled art “as a means for extending our intuition into worlds beyond sense perceptions—worlds in which space and time are relative quantities” (Miller, 1995, p.185). Advances in art and science have often paralleled one another because they both seek new ways to understand and represent the unseen phenomena of the natural world. Often times these great leaps in scientific and artistic innovation have been based on conjecture about the way things work. Sculptor and earthwork artist, Charles Ross expands on this idea:

Art and Science are two ways of looking at the world, and they are both equally necessary. Art generates a kind of clarity just as science does. We do not understand things just by measuring and gathering information;

each day is laced with mystery, moments that defy logic. If we want to achieve an integrated sense of reality, we need multiple views of the world. We can never see it through just one window. Ross cited in (Saad-Cook, 1988, p.124)

In art education, teachers have the unique opportunity to tie these two worlds together by teaching students to think creatively about visual experiences that go beyond what can be seen by mere appearances. The Transcendental in art can be defined as developing a visual language for experiences that go beyond the realm of common experience. Concepts such as the infinite, time, space, light, and the cosmos, for example, are all elements in nature that we know exist, but cannot necessarily be seen or quantified in their entirety. In many ways, the imagination itself can be seen as transcendental. The word 'imagine' literally means to "make an image" (Shlain, 1991, p.18), thus the act of visualizing and creating an image is transcendental because it causes one to develop a visual language, using symbols and ideas that transcend words. Perhaps this is why Albert Einstein stated that "imagination is more important than knowledge" (Shlain, 1991, p.119) – for to conceive of a radically new idea, one must first imagine the possibility. Shlain (1991) explains, that our ability to grasp the nature of the universe is our imagination (p.21). In art, as in nature, our ability to reflect upon our sense perceptions of the visual world using both reasoning and intuition can be described as an 'aesthetic experience.' These aesthetic experiences can be used by art educators to explore the captivating phenomena of the visual world and inspire wonder in the creative process.

In history, we see great innovators in art and science making revolutionary leaps in their fields by exploring the unseen properties of natural phenomena. The landscape, and our aesthetic experience of it, has compelled many artists to explore new ways of representing the natural world that push the boundaries of perception. For example, Miller (1995) points out the work of English artist John Constable, a nineteenth century romantic landscape painter, who sought to capture the inherent qualities of light in his paintings as a representation of “visual truth.” During this time of scientific advancement in the early nineteenth century, Constable sought new ways for artists to represent nature in painting (Miller, 1995). His desire to explore new ways of looking at nature and art are evident in a statement he made at the Royal Institution in 1836: “Painting is a science and should be pursued as an inquiry into the laws of nature. Why, then, may not landscape painting be considered a branch of natural philosophy, of which pictures are but the experiments (Miller, 1995, p.186)?” Constable’s observation of light led to the discovery of new ways for artists to use color in painting. His light filled paintings influenced modern art in an astonishing way by opening the door to color theory and abstraction. Constable’s ideas about painting light influenced artists in France, such as Claude Monet, to experiment with new ways of painting color. This important shift in painting was the catalyst that led to impressionism.

Contemporaneously to John Constable’s color and light investigations, other romantic painters explored similar themes of the transcendental landscape. Eighteenth century romantic painters such as J.M.W. Turner and Casper David



Friedrich explored the landscape as an exalted experience of both terror and awe that challenged notions of the infinite and inspired a sense of wonder in the natural world. These artists were interested in capturing the essence of extreme experiences in nature by depicting images of the landscape that conveyed their magnitude and emotive power (Morley,2010). Images of mountains, oceans, and deserts were painted in an expressive manner that challenged the boundaries of representation and strived to capture the infinite.

These types of aesthetic experiences, often associated with overwhelming or awe inspiring encounters with nature, have often been referred to in art and philosophy as the sublime (Morley, 2010). Eighteenth century German Philosopher, Immanuel Kant, believed that the sublime itself was an aesthetic experience that challenged our notions of the infinite and questioned the nature of reality. In essence, Kant believed that our ability to comprehend the infinite is limited to our understanding of the world as we see it and that in order to reconcile our desire to understand the infinite—our reasoning and imagination must coalesce to fill in the gaps of our understanding. Kant's notion of the sublime is important to mention because it was not only influential amongst the romantic painters, scientists, and philosophers of the nineteenth century, it subsequently influenced ideas of the transcendental in modern and contemporary art.

Although the sublime has taken on several meanings since the romantic period, it remains to be a subject matter that many artists continue to explore. Abstract Expressionists, Mark Rothko and Barnett Newman, whose paintings

also draw upon the aesthetic qualities of color and light in much of the same way as John Constable, wrote extensively on the sublime. These artists explored the idea of the sublime in their paintings as a way to transcend the limitations of language. Through their color field paintings, Mark Rothko and Barnett Newman sought to create art that was transcendent and spiritual. For these artists, “the sublime meant an art possessing a depth and profundity that European modern art failed to provide because it was tied...to classical and outdated ideas about beauty and aesthetics” (Morley, 2010, p. 70). The concepts that they were interested in addressing in their paintings posed philosophical questions about time and space, beginning, and ending.

There are many contemporary artists who continue to explore transcendental themes in the landscape. These artists address unique perceptions of the landscape that go beyond what can be seen by mere appearances by exploring concepts such as: time, space, light, natural phenomena, visual perception, cosmological studies, mapping, astronomy, science, and the infinite. The unique methodologies used to create their work are diverse in both media and practice, ranging from walking to mapping geographical, urban, and cosmological systems. At the heart of these visual investigations lies the impulse to create a visual language that demarcates our relationship to the landscape and a system for deciphering and exploring meaning. Contemporary artist's exploration of the transcendental landscape has also evolved with an increasingly complex relationship to new technologies, resulting in a more cross disciplinary approach to artistic research and practice.

Scientists have also begun to collaborate with artists, revealing new insights into neuroscience and the effects of aesthetic perceptions on the brain.

In art education, aesthetic concepts of the sublime and the transcendental can be used in powerful ways to engage students in the classroom. Science teacher, Mark Girod describes the profound connections between art, science, and the sublime and suggests that through aesthetics, the concept of the sublime can shape the way educators teach both art and science in meaningful ways. He describes aesthetics as:

the study of beauty, taste, transcendence and the sublime. In aesthetics, sublime describes a feeling of astonishment at a phenomena, event or experience. This feeling of astonishment so envelops us that the processes of the mind are suspended and cannot entertain anything other than the object or event. Wise teachers use students' astonishment at the phenomena observed as lead in to investigations. Who can deny the incredibly engaging qualities of a raging river, a fiercely howling wind, a night sky filled with stars, or a frenzied pack of feeding lions? Each of these natural occurrences is astonishing, engaging, aesthetic, and sublime. (Girod, 2007, p. 26)

This thesis focuses on how visual artists investigate experiences of the landscape that transcend language and how this aesthetic inquiry can serve as a highly formative paradigm for use in secondary art education. The scope of artists represented address the transcendental landscape—ranging from sculptors of light to artists who use astronomy, the land, and the sky to convey their ideas.

By including an aesthetics unit in the art curriculum that explores the transcendental landscape, students will learn meaningful ways that artists have explored these themes in art while also cultivating a sense of wonder in the exploration of the unknown. The thematic unit is designed to guide students through studio investigations that explore this topic in a variety of ways. The studio lessons include 2-D and 3-D projects that utilize drawing, painting, multi-media sculpture, and unconventional art materials such as light, land, and sky. Through a series of carefully designed lessons that advocate inquiry based learning, students will interact with these concepts through art production, field explorations, and interdisciplinary collaboration. In addition to the studio activities, art history, aesthetics, and studies of the natural world are major components of the thematic unit.

**Research Question**

How do visual artists investigate experiences of the landscape that transcend language and how can this aesthetic inquiry serve as a highly formative paradigm for use in secondary art education?

**Sub Questions:**

1. What systems and methodologies do contemporary visual artists use to explore the transcendental landscape and what aesthetic issues fuel the desire to represent ephemera?
2. How can a secondary art unit effectively address aesthetic inquiry that focuses on the concept of the transcendental landscape?

**Research / Problem Statement**

Given that contemporary artists provide unique representations of the landscape that confront the transcendental and that secondary art curricula do not address this aesthetic inquiry, paradigms for pedagogical use in secondary art programs are needed.

**Significance of the Study**

This research helps art educators understand the unique way contemporary artists interpret visual experiences of magnitude in the landscape that transcend language. In addition, this aesthetic dialogue can inform curricula that can serve as a conceptual framework for secondary art education and engage students and teachers in aesthetic investigations that explore contemporary art practice.

The inclusion of this research and thematic unit in art education is important because it addresses the value of teaching aesthetics in the secondary classroom and exposes students to contemporary art forms that challenge the way we think about and experience the landscape. By making these valuable aesthetic connections in the art classroom, students can learn the profound ways art has influenced innovation and art's unique capacity to capture the phenomena of the visual world. Understanding this connection not only encourages a rich interdisciplinary experience of art, it also provides astounding parallels throughout history that have influenced artistic and scientific innovation.

For many teachers, exploring aesthetics in the art classroom can seem like a daunting task. The thematic unit is designed to introduce secondary art

students to new ways of engaging in aesthetic concepts while guiding secondary art teachers through meaningful ways to teach and engage students in aesthetic and conceptual issues that deepen an understanding of art and art making. In review of the proposed study of the transcendental landscape in art, University of the Arts, Art Education Professor, Dr. Teresa Unseld sheds light onto the concepts that underlie the basis for this research:

In art education, aesthetics is one of the bases of the discipline-based art education paradigm the nation has adopted: art production, aesthetics, art history and criticism. This thesis is taking this aesthetics focus and applying it to how contemporary artists are expanding the concept of landscape in their work. This philosophy has language that reflects concepts outside of the physical realm of concrete mountains, sky, man-made structures, water, etc. There are no religious beliefs supported in this study—although the concepts are transcendental in that they transcend the physical, traditional, and even the typical for landscapes found in art. These contemporary "landscapes" and the philosophies behind them pose a challenge for art teachers—many of whom are without an understanding of this "landscape" concept, although many may be aware of the artists and their works. Many art teachers lack the effective paradigms needed to address this concept with their students. The terms "transcendental" and "ephemera" are used to address the transitional, exploratory, journey and personal attainment artists strive toward in art making (T. Unseld, personal communication, May 2, 2012).

## Definition of Terms

**Aesthetics-** The branch of philosophy that deals with the nature of art objects and experiences. It is concerned with identifying the clues within a work of art that can be used to understand its meaning. The word, aesthetics is derived from the Greek word *aisthesis*, that means perception. Thus, Aesthetics also refers to the sensory, perceptual knowledge gained through art and visual experiences based on logic, reasoning, intellect, and emotive response.

**Aesthetic awareness-** encompasses the abilities necessary for a student to respond in a considered or profound way to artistic creations and the natural environment. In art and in nature, an aesthetic experience refers to our ability to reflect upon our sense perceptions of the visual world, using both reasoning and intuition.

**Aesthetic Experience-** In art and in nature, refers to our ability to reflect upon our sense perceptions of the visual world, using both reasoning and intuition.

**Aesthetic inquiry-** engaging in the process of making intelligible interpretations about art based on comparative judgements, aesthetic appreciation, critical response, and investigative thinking.

**Abstraction-** 1) Imagery that departs from representational accuracy, to a variable range of possible degrees. Abstract artists select and then exaggerate or simplify the forms suggested by the world around them.

2) Abstract thinking can also refer to the contemplation of ideas, forms, imagery, and symbols for which there may not be adequate language to describe. This type of Abstract thinking is most evident in the fields of art and science.

**Archetype-** is a universally understood symbol, term or pattern upon which others are copied, patterned, or emulated.

**Astronomy-** The scientific study of matter in outer space, especially the positions, dimensions, distribution, motion, composition, energy, and evolution of celestial bodies and phenomena.

**Biology-** The science of life and of living organisms, including their structure, function, growth, origin, evolution, and distribution. The life processes of a group or category of living organisms. The plant and animal life of a specific area or region.

**Celestial-** positioned in or relating to the sky, or outer space as observed in astronomy.



**Celestial body**- natural objects visible in the sky. The term celestial body is as expansive as the entire universe, both known and unknown. By definition a celestial body is any natural body outside of the Earth's atmosphere. Examples are the moon, sun, and planets of the solar system.

**Concept**- An idea, thought, or notion conceived through mental activity that refers to the ideas an artist has when creating a work of art.

**Conceptual**- refers to the concept in a work of art. Conceptual art can, at times, deemphasize perceptual accuracy in favor of an engagement with ideas.

**Contemporary Art**- In the Western world, the art history of the generation that followed World War II. The period from roughly 1945 to 1965 is art historically, late modernism. From 1970 to the present is considered postmodernism. Contemporary art generally refers to art created during postmodernism, but may also refer to late modernism.

**Content**- what a work of art is about; its subject matter

**Cosmos**- the universe seen as a well ordered whole

**Cosmology-** The study of the world as a totality of all phenomena in space and time.

**Emotive artwork-** Art that provokes a great depth of feeling or emotional response.

**Ephemera/ Ephemeral-** objects found in nature that are transitory, short lived, or exist only briefly. In addition, the ephemeral is used in philosophy to describe the assumptions made outside of one's scope of time, perception, or knowledge.

**Form-** all the visible aspects of a structure and the manner in which they are united to create its distinctive character.

**Geology-** The scientific study of the origin, history, and structure of the earth.

**Human scale-** is the set of physical qualities, and quantities of information, characterizing the human body, its motor, sensory, or mental capabilities. Many of the objects of scientific interest in the universe are much larger than human scale (stars, galaxies) or much smaller than human scale (molecules, atoms, subatomic particles).

**Ineffable**- too great or extreme to be expressed in words.

**Installation art**- art that is or has been installed and arranged in a specific place by (or specified by) an artist. It may be site specific, indoors, or outdoors.

**Interdisciplinary**- Involving two or more artistic, scientific, or other academic disciplines. While exploring a concept, issue, or theme, interdisciplinary studies adopt methods and theories from different fields of study, often within an academic context. Artists have produced numerous interdisciplinary works since the early 20th century, and more so since the onset of postmodernism.

**Inquiry based learning**- A learning philosophy that embraces exploratory learning activities, analyzing, questioning, and critical thinking skills as key elements in the learning process. Inquiry based learning also advocates learning through personal experiences in order to develop meaningful associations with the content being studied.

**Landscape**- in art can refer to topography, landmarks, architecture, built landscapes, light effects, impressions of the city, the external world, nature, scenes of everyday experience and representations of natural phenomena. Expanded definitions of landscape reference voyaging, map

making, cosmology, scientific inquiry and technology. One's response to the landscape can also be innate, involving interpretations of nature that produce a language of conceptual symbols. In art, artists organize these perceptions of the landscape into optical impressions of unity, defined by spatial relations. It has also been suggested that human perception of the landscape is unconsciously directed by aesthetic experience.

**Macrocosm and Microcosm** is an ancient Greek schema of seeing the same patterns reproduced in all levels of the cosmos, from the largest scale (macrocosm or universe-level) all the way down to the smallest scale (microcosm or sub-sub-atomic or even metaphysical-level).

**Microcosm-** Something small that contains or represents all the features or qualities of something larger. A little world; a miniature universe

**Macrocosm-** the entire world; the universe. A system reflecting on a large scale one of its component systems or parts.

**Mapping-** A representation, usually on a plane surface, of a region of the earth or heavens; mapping refers to the act or process of making a map. Artists use mapping to demarcate systems in the landscape (refer to landscape definition).

**Mark making**- a term used to describe the different lines, patterns, and textures used to create an artwork

**'Naked eye' astronomy**- is a figure of speech referring to human visual perception unaided by a magnifying device, such as a telescope or microscope. The term is often used in astronomy when referring to events that can be viewed without equipment, such as the passage of a comet or a meteor shower. Sky lore and various tests demonstrate an impressive wealth of phenomena that can be seen with the unaided eye.

**Natural phenomena**- all phenomena that are not artificial (see phenomena definition.) Examples include: light, heat, volcanic eruptions, weather, decay, gravity, erosion, earthquakes, floods, etc.

**Observatory**- a place equipped for observation of natural phenomena and celestial events, as in astronomy.

**Phenomena**- An occurrence, circumstance, or fact that is perceptible by the senses, especially one whose cause or explanation is unknown. The phenomena of the mind also includes memory and imagination.

**Phenomenology**- The branch of philosophy that studies all possible appearances in human experience (phenomena) in order to gain a more

comprehensive understanding of reality. Phenomenology also relates to the psychology of perception, chiefly concerned with the analytical description of conscious experience. In art, this can refer to an individual's perception of a work of art, taking into account personal experiences that reveal essential structures and truths about the work through reflection.

**Perception- 1)** In its most basic sense, perception refers to the process of becoming aware through sight, sound, taste, smell, or touch and the way that humans see and understand what they see. **2)** In Art, perception can also refer to: the interpretation of art, the appreciation of the aesthetic, and the nature of aesthetic objects. Perception is also related to philosophy, the mind, questions concerning sensation, expression, emotions, and intentionality. All of these elements are mutually connected, and an analysis of perception in aesthetics takes into consideration the nature of the art object and the assumptions one makes based on aesthetic appreciation. Perception can also refer to the way that one experiences optical mechanisms, the perception of space, perceptual organization and the actual role played by learning.

**Personal reflection or self reflection-** Careful thought about your own behavior and beliefs. Self-examination; introspection.

**Representational/ Recognizable imagery-** used to describe a work of art that depicts something easily recognized by most people.

**Roden Crater-** is an extinct volcano northeast of Flagstaff, Arizona, that artist James Turrell has been transforming into a work of perceptual and celestial art since the late 1970s

**Rough Draft-** Undetailed sketch/ drawing that shows the basic elements of an art idea

**Sublime- In Art:** refers to Aesthetic experiences, often associated with overwhelming, awe inspiring, astonishing or extreme encounters with nature and phenomena—producing heightened experiences of awareness that often transcends words. This feeling of astonishment is so enveloping that the processes of the mind is suspended and cannot entertain anything other than the object or event. The Sublime often deals with philosophical questions about the infinite—time and space; beginning and ending. In Philosophy: Art and aesthetic notions of the sublime were greatly influenced by Edmund Burke's and Immanuel Kant's concept of the Sublime. Edmund Burke considered the Sublime as an external force inherent in the properties of certain objects and nature whereas Immanuel Kant theorized that the sublime came from within the human psyche. Kant, believed that the sublime itself was an aesthetic experience that

challenged our notions of the infinite and questioned the nature of reality.

In essence, Kant believed that our ability to comprehend the infinite is limited to our understanding of the world as we see it and that in order to reconcile our desire to understand the infinite—our reasoning and imagination must coalesce to fill in the gaps of our understanding.

**Sun Tunnels-** is an artwork by Nancy Holt, completed in 1976, consisting of four large concrete tubes, laid out in the desert in an open X configuration. The nine foot diameter, 18 foot long “tunnels” are pierced by holes of varying size that correspond with the pattern of selected celestial constellations.

**Structure-** Something made up of a number of components that are put together in a particular way. Structure is any means of arranging or putting together a work to form a cohesive and meaningful whole.

**Systems-** A set of connected things or parts forming a complex whole.

**Thematic unit-** A theme is a unifying topic, subject or an idea. In art education, a teacher selects a theme as a means of choosing and organizing subject matter for a body of work. Art educators often use non-art-specific themes to organize content and as a basis for selecting artworks to be presented within lessons or units because themes help



students integrate their understanding. A thematic unit typically consists of three to four well developed lesson plans, organized by theme.

**Transcend-** To go beyond the limits of. To surpass, as in intensity or power. Going beyond the ordinary range of perception. It may even mean above and independent of material experience or the universe

**Transcendental-** transcending or surpassing beyond the realm of common experience. Transcendental can also refer to experiences of phenomena beyond sense perceptions, although not beyond potential knowledge. In Philosophy, the transcendental can refer to an intuitive basis of knowledge, independent of experience. In art, the transcendental refers to developing a visual language or experiences that go beyond the boundaries of perception, using symbols and ideas that transcend words.

**Urban landscape-** The traits, patterns, and structure of a city's specific geographic area, including its biological composition, its physical environment and its social patterns.

**Universe-** All existing matter and space considered as a whole

**Viewpoint-** A position from which something is observed or considered; a point of view.

### **Limitations of the Study**

The thematic unit/ thesis project in this study is delimited to the secondary art classroom, grades 9-12. Although the concepts in this research can be adapted for other grade levels, the art lessons in the thematic unit are designed to be developmentally appropriate for high school students.

Although this research draws upon a variety of disciplines including art, aesthetics, philosophy, education, history, and science, it is written by an art educator for the sole purpose of enriching the understanding and application of aesthetics in art education. For this reason, this study is delimited to the scholarship of the visual arts and its application to art education. The concepts of the transcendental that are explored in this thesis and thematic unit do have any religious connotation. The concept of the transcendental is only explored in relationship to aesthetics in art and its application within art education.

The study of the transcendental landscape for this thesis is delimited to western art. Transcendental themes regarding the landscape have a rich history in eastern philosophy and art, which have had a huge impact on western art, aesthetics, and philosophy. However, for the purpose of this research, the study is delimited to western art history. Because the study of the transcendental landscape is so vast, this thesis is delimited to the key moments in western

thought and art history that the author deems as essential in teaching the transcendental landscape in art as it relates to the thematic unit.

In order to assess the effectiveness of this thematic unit in the art classroom, this study is delimited to five secondary art teachers, and four secondary science teachers who assessed the probable outcomes and effectiveness of this thematic unit as an addition to their curriculum. In order to do this, art teachers were asked to provide feedback on the thematic unit in order to gauge its effectiveness in the secondary art classroom. This assessment was based on reflective questions that included an in depth analysis of their thoughts and views toward the thematic unit and the probable outcomes it may have in their classrooms. This information can serve as a way to strengthen the discipline of aesthetics in secondary art education, and bridge the gap for interdisciplinary collaboration by assessing the current practice, use, and understanding of these concepts by high school art teachers and high school science teachers. This qualitative data was collected and used in the analysis of the thesis.

## Chapter 2

### Literature Review

The review of literature examines the transcendental landscape in contemporary art from several vantage points. Current research regarding transcendental themes in art are examined from three vantage points that include: Philosophical Origins, Aesthetics and Artists' Interpretations, Art, Science and Perception and Applications in Education. The literature review was done by utilizing books, scholarly journals, library databases, and the internet. Sources for the Definition of Terms were derived from Oxford Art Online. The following online databases were used: Wilson Web, Eric, EBSCOhost, JSTOR, ProQuest and ARTstor.

### Philosophical Origins, Aesthetics, and Artists' Interpretations

John A. Parks, in his article "The Sublime and the Beautiful: Painting the Hudson Valley," explains the art historical, aesthetic, and philosophical ideas that influenced the American landscape painters, known as the Hudson River School. He describes the grandeur of the mountains and the luminous quality of light that inspired artists such as Thomas Cole, Asher Durand, and Jasper Cropsey to create their work. Parks identifies the philosophical roots of the movement, which were heavily influenced by Edmund Burke's and Kant's notion of the sublime landscape in the 18th century. The vastness, beauty, and awe inspiring power of nature remained to be central themes in their paintings, as well as notions of the picturesque. Parks discusses the influence of British landscape painters such as J.M.W. Turner and points out the distinctions in style that made the American

landscape painting of the Hudson River School unique. He also points out that the Hudson River School was the “first truly American Art Movement,” and gives clear historical information on the evolution of aesthetic sensibilities. This article is an excellent resource for approaching the history of the transcendental landscape.

Immanuel Kant (1787) in *Critique of Judgment*, offers an explanation of the sublime that juxtaposes the aesthetic experience between anxiety, exaltation, and pleasure (Cazeaux, 2000). In this instance, an object is perceived in such a way that a viewer is unable to take in the object as a whole. It is the axis between reasoning and imagination where the sublime seeks to define itself. Kant believed that the sublime itself was an aesthetic experience that challenged our notions of the infinite and questioned the nature of reality.

Influenced by Kantian aesthetics, French philosopher, Jean Francois Lyotard, describes the sublime in *The Sublime and the Avant-Garde* as something that “dismantles consciousness, disposes consciousness, what consciousness cannot formulate, and even what consciousness forgets in order to formulate itself” (Cazeaux, 2000, p.453). The writing of Immanuel Kant and Jean Francois Lyotard examines the mingling of pleasure, anxiety, and transcendence within the sublime and the way in which it decimates language into a purely aesthetic experience (Cazeaux, 2000). Whether the sublime exists in an event, or through an aesthetic experience that transcends time and space, its magnitude perplexes intellectual understanding. It is at this juncture between

space and time, life and death where the grandeur and awing sentiment of the sublime remains a venerable source of inspiration for artists.

In the article, “Embodiment and Modernity: Ruskin, Stephen, Merleau-Ponty, and the Alps” Kevin Morrison (2009) examines the philosophies of John Ruskin, Leslie Stephen, and Maurice Merleau-Ponty, and points out the distinction between their views on perception, the sublime, and the landscape. Leslie Stephen viewed the body as an essential element of the sublime experience, which differed from the Romantic sublime because it viewed “sublimity as an elevation of mind” (2009, p. 498). Ruskin also shared the same notion, but departed from Stephen’s view in that he saw the landscape as a majestic teacher to learn from rather than an element of physical experience. Stephen’s notion of the sublime, which viewed physicality as the embodiment of perception, marks a turning point towards modernity. Almost a century later, his ideas would parallel the philosophy of Merleau-Ponty, whose views on perception would shape modern conceptions of the aesthetic experience in the landscape. This historical, philosophical, and aesthetic overview of the sublime and the landscape gives a clear picture of the shift between romantic notions of the 19th century and modern thought.

The book, *The Natural Paradise: Painting in America 1800-1950* includes several essays written by art historians and curators from the the Museum of Modern Art that reflect on the Romantic tradition of the American Landscape in modern art, from Romanticism to Abstract Expressionism. This collection of essays elegantly portrays the history of the landscape in American Art from

several vantage points including: artists' perspectives, aesthetic philosophies of beauty and transcendence and the perceptions and representations of the landscape in art history. Many visionary artists are examined in this volume including, J.W.W. Turner, The Hudson River School, Barnett Newman, and Mark Rothko—who are examined in the study of the transcendental landscape. These essays also contain perhaps the most valuable information of all—a compilation of interviews and writings from the artist themselves reflecting their thoughts on art, the transcendent, and the landscape. These writings provide valuable primary sources of information that guide the reader through the ideas and insights that fueled these artists' work and exemplified their views on art, aesthetics, and the landscape. These writings are referenced in this thesis as vital sources of information that specifically address concepts that correlate with the transcendental landscape. *The Natural Paradise* also makes clear the art historical trajectory of the transcendental landscape, the origin of these ideas, and their subsequent influence on modernism.

In the “Mystic North,” Gerald Needham (1984), compares the work of the Symbolist Landscape movement in Scandinavia to the Canadian landscape painters known as the Group of Seven. The work of the Symbolist painters along with the Group of Seven approached landscape painting with particular stylistic approaches that intensified the symbolic qualities of the landscape, using elements such as hushed lighting and hovering viewpoints to paint mystical landscapes and twilight scenes (1984, p. 184). They were interested in evoking “psychological moods rather than the scene itself” (Needham, 1984, p. 184).

These artists held an aesthetic philosophy about the landscape that embraced the “cleansing power of the northern wilderness” as a way to access truth, beauty, and heightened states of awareness. They sought to portray the nationalistic sentiment of their homeland through the spirit of the landscape, and embraced values such as theosophy that associated the mysteries of nature with divine truth. A connection is also made between the Symbolist Landscape movement, the Group of Seven and the “transcendental tradition” (Needham, 1984, p. 186) that influenced American artists such as Marsden Hartley, Arthur Dove, and Georgia O’Keefe.

Robert Linsley in his article, “Landscapes in Motion: Lawren Harris, Emily Carr and the Heterogeneous Modern Nations” discusses the Canadian Landscape paintings of the Group of Seven, who made a conscious shift from modernist aesthetics towards a symbolic, mystical, and nationalistic portrayal of the Canadian landscape. Linsley points out that this is a result of the Canadian artists’ rejection of the Armory Show in New York during the 1920s, in favor of the Symbolic landscapes of the Scandinavian painters. This shift towards an anti-modernist aesthetic, Linsley claims, was partly in reaction to the changing social and political conditions of the early 20th century, particularly after World War I. Lawren Harris, who remained a central figure in the Group of Seven embraced the ideas of theosophy that saw the landscape as a utopian emblematic symbol of the Canadian spirit. Linsley discusses the influence of theosophy and how this sentiment resulted in unique symbolic representations of the land. The landscape paintings of Emily Carr, also a member of the Group of Seven, are referenced as



history paintings since they sought to capture the turbulent nature of the changing social conditions. The paintings of the Group of Seven specifically sought to represent the landscape in transcendental ways by employing the ideas of theosophy and developing a unique stylistic approach to achieve this effect. Their work exemplifies a shift to more symbolic forms of representation in the transcendental landscape.

In the article, “Touching the Sky: Artworks Using Natural Phenomena, Earth, Sky, and Connections to Astronomy,” Charles Ross, Nancy Holt, James Turrell and Janet Saad Cook reflect upon their artistic practice and methodology in a series of interviews conducted by Janet Saad-Cook (1988). Charles Ross discusses his piece *Star Axis*, which uses light, stars, and geometry to align the “physical environment that surrounds the perceiver” (Ross cited in Saad-Cook, 1988, p.125). His primary interest is in creating art that evokes a transcendent experience. He states, “It is naked eye astronomy, and it involves a direct physical, emotional, and sensory experience of our earth-to-star connection” (Ross cited in Saad-Cook, 1988, p.125). Ross’s work creates an intimate personal connection to the vastness of the stars. He uses the human body as the axis point for perceiving the universe. The media that Ross uses in his sculptures such as light and color spectrums have inherently unique properties that create a transcendent quality. Ross describes the process of working with this metaphysical medium when he states, “It is through my work with the solar spectrum that I have come to realize we are beings of light” (Ross

cited in Saad-Cook, 1988, p. 126). It is this way that *Star Axis* becomes an important point of connection between man, the land, and the universe.

In the article, "Terry Winters," art critic Jonathan Jones (2000) explores the paintings of Terry Winters and gives insight into the evolution of paintings by discussing his artistic approach and the concepts that inspire his paintings. He addresses Winter's wide ranging interests in information systems that range from the intricacies of biological forms to the complexity of natural and technological systems. Jones discusses the painterly qualities in Winter's work, and his devices such as grid patterns and web formations that characterize Winter's dynamic style. This article gives great insight into the way Terry Winter's art practice exemplifies themes discussed in the transcendental landscape including: Microcosm and Macrocosm, natural phenomena, biomorphic forms, and information systems.

In the article, "Drawing the Universe," Hunter Drohojowska-Philp (2004) discusses the artwork of Russell Crotty and gives an overview of his artistic practice and the origins behind his thought provoking drawings. Crotty's explorations of astronomy, cosmology, and the landscape are discussed, including his telescopic observations and documentations of the landscape along the California coast. Drohojowska-Philp shares Crotty's insight about his own work, his influences as an artist, and his curiosity regarding the "ancient light" of the cosmos (2004, p. 91). He describes the awe and wonderment of the cosmos, and the inspiration behind Russell Crotty's incredible drawings, globes, charts, and over sized books. This information was used as a resource in discussing

Crotty's work and addresses the cosmological themes that are resonate with the transcendental landscape.

### **Art, Science, and Perception**

In the Article, "Seeing Without Objects: Visual Indeterminacy and Art," Robert Pepperell (2006) addresses the perceptual phenomenon of what he calls *Visual Indeterminacy*. In art this term can be used to describe visual encounters where "what we see cannot be matched with what we know" (Pepperell, 2006, p. 395). In this experience, Pepperell addresses the way our brain processes information while viewing a painting, and how perceiving indeterminate images in art can lead to psychological and aesthetic impact. These incomplete or indeterminate images cause the viewer to use their cognitive abilities to arrive at meaningful interpretations of the work. Pepperell's research also draws upon art and science to assess the way perceptual phenomena can cause heightened states of awareness. He refers to the art of Wassily Kandinsky as using "objectless images to evoke a remarkable perceptual response" (2006, p.395). Pepperell's research is emerging with new technologies, so it provides current cross disciplinary research being done in aesthetics. Visual Indeterminacy also parallels other aesthetic and philosophical concepts such as the sublime and the transcendental, and provides insight into the way the brain processes these unique aesthetic experiences.

In the compelling book, *Art and Physics*, Leonard Shlain (1999), a surgeon, professor, and writer, maps the evolution of art and science (primarily physics) throughout history, making astonishing parallels between conceptions of

time, space, and light that have advanced civilization. This book serves as a historical guide through art movements, philosophies, and scientific innovation and gives specific examples that support the way revolutionary artists have been the precursors to the scientific advancements of an age. Shlain also discusses the importance of abstract thought, which he views as being the highest level of thinking for both scientists and artists. Most importantly, Shlain's views support the idea that artists throughout time have created imagery and symbolic representations of forms before there was adequate language to describe such revolutionary concepts. He gives specific examples of this, which have been used to support many of the ideas proposed in this thesis. Shlain's book serves as an excellent resource in the study of the transcendental landscape because it specifically addresses how visual artists investigate experiences of the landscape that transcend language and how this knowledge is naturally interdisciplinary—serving as a highly formative paradigm for art education.

Neuroaesthetics examines the work of neuroscientist, Semir Zeki whose research examines the effect of aesthetic experiences on the brain. Zeki, who is the first professor of neuroaesthetics, is the pioneer of an emerging field that uses both art and science to more fully understand the way the brain processes imagery. He has been successful in identifying certain parts of the brain that are responsible for our perceptual responses to a work of art, including form, color, and emotive response. In a sense, Zeki demystifies a work of art by providing a way to understand the brain's reaction to aesthetic experiences. Zeki proposes that artists have an innate ability to draw upon the images the brain "sees,"

resulting in the desire to create “a visual language for those concepts” (Adams, 2009 p. 2). Neuroaesthetics may also provide ways of understanding the perception of visual phenomena, such as the sublime. Like Pepperell, Zeki provides current, cross disciplinary research being done in aesthetics, which can be used by art educators to understand the profound effects of the aesthetic experience on the brain.

John Barrow, in *The Infinite Book: A Short Guide to the Boundless, Timeless, and Endless* addresses one of the most elusive ideas in the history of thought—the infinite. He examines concepts of the infinite throughout time from the lens of history, philosophy, science, and cosmology and brings into focus the fundamental ideas surrounding the infinite and our desire as human beings to understand and quantify this notion in the mind. Barrow also discusses the inherent paradoxes in quantifying the infinite and makes fascinating parallels between the scientific principles and philosophical ideas that have ensued the exploration of the universe. Barrow provides a history of ideas that locates these transcendental concepts in history and makes valuable interdisciplinary connections that art educators can use in teaching the transcendental landscape in art.

### **Applications in Education**

In the Article, “Mapping the World Through Science and Art,” artist and educator, Lydia Dambekalns (1997) discusses an interdisciplinary art project that she conducted with her high school students using aerial photographs and satellite maps as sources for their work. In this project Dambekalns discusses the

“benefits of studying scientific data from an aesthetic point of view” (1997, p. 5) and views the relationship between art, science, and the environment as a dynamic way to engage students in studies of the visual world. She discusses the criteria for the project including the design, concept, and artistic media as well as the interdisciplinary nature of the images being used. Dambekalns uses “mapping” as an element of her lesson, utilizing visual literacy, technology, aesthetic concepts, symbol making, and the use of complex visual data to engage students in creating art. Her art project serves as an excellent example of a lesson that exemplifies the concepts of the transcendental landscape.

In the article “Aesthetics, Representation and Creativity in Art and Science,” Miller (1995) makes several comparisons between the way visual artists and scientists perceive reality and formulate research systems to understand the complexities of the visual world. Miller brings to light the intrinsic desire that artists and scientists share to represent and gain an understanding of “nature as it is beyond visual appearances” (Miller, 1995, p. 185). Historical observations are made that parallel the advancement of art with science and vice versa. Miller discusses visual explorations made in the Renaissance by Galileo and Giotto that directly correspond to the representation of phenomena and sense perception in art and science. These artistic advancements, for example, lead to “accurate renderings of telescopic observations” (Miller, 1995, p. 185). Art historical and scientific correlations are also made between British landscape painter, John Constable who explored light, “visual truth,” laws of nature, and philosophy (Miller, 1995, p. 186). Miller points out that Constable makes a

profound conceptual connection to landscape painting as a source of philosophical experimentation and innovation. Constable's artistic and scientific investigations of the nature of light in the landscape led to the methodologies that influenced impressionism. Modern and contemporary artists such as Cezanne, Picasso, Rothko, and David Hockney are also examined due to their systematic approach to organizing visual phenomena and intuitive processes that "bridge the gap" of perception (Miller, 1995, p. 190). Miller states, "Science is a means for extending our intuition into worlds beyond sense perceptions—worlds in which space and time are relative quantities" (1995, p. 185). Art and artists do the same.

In the article "Sublime Science," Mark Girod (2007) clearly describes the profound ways aesthetics can be used to illustrate the concept of the sublime in science and art. Girod uses visual representations of sublime concepts such as the vastness of numbers "to help children think more richly about what constitutes art and how we can explore aesthetics to learn more about science and the world around us..." (2007, p. 26). He gives specific examples of how this concept can be used in the classroom, and how inspiring students to think beyond the limits of what they can easily perceive can be a powerful and awe inspiring tool in the classroom. As a teaching strategy, Girod sees the astonishing effects of the sublime as "lead in to investigations" that can help clarify concepts while hooking the attention of students (2007, p. 26). Most importantly, Girod uses aesthetics and philosophy to enrich the interdisciplinary connections that the subject matter requires for a thought provoking lesson. By engaging students

in an experience that requires them to create a tapestry of numbers (from dots), Girod is able to exemplify challenging concepts in a quantifiable way that students can understand. Examples of concepts that illustrate this immensity include: geologic time, history, astronomy, physics, observation of the natural environment, and the cultivation of artistic and aesthetic awareness. Creating this type of aesthetic experience in the classroom can also lead to a deeper understanding of time— and our place within it as finite beings.

In the article, “A Retrieval of Awe: Examining Disruption and Apprehension in Transformative Education,” Rowen (2006) brings to light the transformative power of awe and wonderment in education. Rowen states that research supporting the relationship of “awe and education is still uncharted terrain” (2006, p. 212). He approaches the philosophical framework surrounding the experience of the sublime and its ability to transform the perceptual paradigm of the perceiver. The writings of Immanuel Kant, Jean Francois Lyotard, and Hannah Arendt are analyzed in order to establish a palpable definition for the state of wonderment that Rowen uses to propose a more transformative model for educative thinking. Rowen also makes clear the importance of these concepts to the field of education when he states: “Wonder is what starts the human mind on its journey of trying to engage and investigate the world. That moment is what ultimately rouses individuals and inspires him or her to investigate and learn more” (2006, p. 212).

In the article, “A Sense of Wonder, Arising from Aesthetic Experiences, Should be the Starting Point for Inquiry in Primary Science,” Ian Milne (2010)



examines the powerful effects of wonder and aesthetic learning in science education. He examines current methods that science teachers are using in the classroom and proposes a “phenomenological aesthetic approach” to teaching that utilizes aesthetics and creativity to captivate wonder in exploratory activities of natural phenomena. Milne proposes that the fascination a learner develops through aesthetic experiences of natural phenomena leads to a deeper understanding of the content being taught and promotes curiosity in the learning process. Milne compares “dramatic events” with nature to “aesthetic experiences” which he views as a valuable tool in the classroom. Milne specifically addresses the power of awe and wonder in the classroom which he views as being directly linked to the fascination a learner encounters in the aesthetic experience of natural phenomena. This article serves as an excellent way for art educators to model an aesthetic approach to interdisciplinary art and science themes and suggests captivating ways to inspire wonder and awe in exploratory activities.

Trevor Norris (2006) in his article, “The Refusal of Wonder,” compares wonder to the Kantian Sublime and suggests that in order to adopt a new way of thinking, a learner must first break free from the preconceived notions of thought that many tend to hold onto before embracing a new idea. He makes the important distinction that wonder is the “bridge between philosophy and education” (p. 221). Norris uses wonder as a way to inspire possibility with his students, and thinks that in order to create a transformative experience in education, teachers must use wonder as means to inspire curiosity in the

unknown. Norris's article advocates wonder, curiosity, and the sublime as a transformative way to engage students—all of which support the study of the transcendental landscape.

Science Professor Thomas Sorger (2011) advocates for a more interdisciplinary approach to scholarship and teaching and suggests that art can be used in thought provoking ways to introduce concepts such as relativity and quantum theory. In his article "In the Eye of the Storm: Images of Spacetime in Turner and Poe," Sorger presents a lesson about space and time using J.M.W Turner's painting, *Snowstorm* in order to address Einstein's theory of relativity. He notes that before scientists arrive at revolutionary breakthroughs, they have to engage in the type of abstract thinking that defies logic. He states that in order for Einstein to develop his theory of relativity, he abandoned previous conceptions of time and space and "imagined what it would be like to move within a light beam" (Sorger, 2011, p. 64). This transcendental idea led to one of Einstein's most important theories. This type of scientific visualization is also comparable to Turner's desire to understand the ever changing nature of the sea—to capture the tumultuous movement of forms between wave and sky. Sorger (2011) notes that Turner's brushstrokes in creating this effect eludes to the temporal nature of space, which cannot be attributed to a specific time since the image appears to always be in motion. To abandon objective thinking in favor of abstract visualization, both Einstein and Turner were able to make revelations about space and time. Sorger's (2011) article shows significant ways for teachers to make cross disciplinary parallels between art and science in the classroom

and challenges students to abandon objective viewpoints in favor of transcendental ideas. Sorger's (2011) article also sheds light on the art of J.M.W Turner, an artist being addressed in this study of the transcendental landscape.

In review of the current literature in the field, It is evident that there are many visual artists who have transcendental themes in their work that push the boundaries of representation in art and our understanding of the landscape. Although these artists have been written about extensively in the art world, it is clear that they have not been widely represented in art education. Interestingly, transcendental themes in education are more evident within science education. Many progressive science educators have made fascinating parallels between the power of aesthetics and art in the science classroom. This research also points to key findings between artistic and scientific innovation throughout history and advocates aesthetics as an inspiring way to promote wonderment and creativity in the learning process.

## Chapter 3

### Methodology

Research Perspective: Qualitative

Research Type: Phenomenological, Art Historical, Philosophical

The research for this thesis is organized under four categories:

- I. Philosophical Origins, Aesthetics & Artists' Interpretations
- II. Art, Science and Perception
- III. Applications in Art Education
- IV. Thematic Unit / Thesis Project

#### Design

Phenomenological research is used to synthesize multiple perspectives and interpretations of meaning regarding human perception and experience. Because the research in this thesis involves aesthetic experiences of the landscape such as the transcendental and the sublime, a variety of perspectives that examine these experiences regarding human perception is necessary. For this reason, Phenomenological research will be used to examine the perspectives of artists, writers, and educators who discuss transcendental themes in their work. These perspectives regarding the transcendental landscape include: art, philosophy, perception, aesthetic experiences, the sublime, the transcendent, language, abstraction, cosmological studies, time, space, the infinite, light, natural phenomena, nature, wonder, education, and the interdisciplinary connections between science and art (as it relates to the transcendental landscape). In order to provide the most clear and accurate

account of these experiences and perspectives, interviews and quotations from the artists themselves are used that directly address these themes. Artists provide the most clear and accurate information regarding their own work. For this reason, direct quotes are used whenever possible. The study of these human experiences and perceptions are used to gain insight into the transcendental landscape in art.

Art Historical research was used to examine reoccurring themes in art that identify the desire to represent the transcendental landscape. Parallels are made between art history, philosophy, and scientific innovation to current methodologies in art practice. Art Historical research was also used to establish a timeline through history that reflects significant movements, artists, ideas, and paradigmatic shifts in thought regarding the transcendental landscape. Reflections from art historians, art critics, and art educators on these art historical themes are used to support the research of the transcendental landscape. Interviews and quotations conducted and/or collected by art historians, art critics, art educators, and art curators from artists who address themes of the transcendental landscape in their work are also used. Art historical research is closely aligned with philosophical research in order to establish the paradigms in history that reflect the influence of philosophy on art and vice versa.

Philosophical research was used to establish a history of ideas that have influenced the transcendental landscape in art, establish a definition of terms, and to distinguish the origins of philosophical thought that have contributed to and influenced aesthetic discourse in contemporary art. Philosophical research

reflects a western perspective in relationship to themes of the transcendental landscape in western art history. Philosophical research includes topics such as: the landscape, the transcendental, the sublime, aesthetics, perception, time, space, the infinite, and the cosmos. This philosophical research was used to synthesize multiple perspectives and to acquire insight into the ideas and philosophies associated with the transcendental landscape. This philosophical research can be used to gain insight into the interpretations of meaning gained from human perception, experience, intellect, intuition, and reasoning.

Aesthetics in Education is examined in order to gain insight into the use of aesthetics in the classroom as it relates to themes of the transcendental landscape in art. This research is used as an important point of reference in creating the thesis project. The thesis project consists of a thematic unit that addresses the artists and themes discussed in the thesis. The thematic unit can be used by art teachers to engage students in a dialogue about art that introduces aesthetic inquiry and transcendental themes in relationship to representations of the landscape. The thematic unit combines art practice, art history, aesthetics, and interdisciplinary components. Wonderment, aesthetics, natural phenomena, the sublime, and interdisciplinary themes between science and art are addressed in education as it relates to the exploration of the transcendental landscape in the secondary art classroom.

### **Population**

The thematic unit is designed to address themes that can be used in the secondary art classroom, grades 9-12. The conceptual scope of the thematic unit

is developmentally appropriate for high school students because it requires a high level of critical thinking skills and draws upon other disciplines taught at the secondary level. The teachers who are assessing the thematic unit all teach in Houston, Texas. Four of the five art teachers assessing the unit teach in public schools, and one of the art teachers teaches at an independent school. The four science teachers assessing the thematic unit teach in public schools.

The backgrounds and content area of the teachers who are assessing the thematic unit vary. For visual art teachers, art content areas include: drawing, painting, printmaking, design, photography, graphic design, illustration, media arts, Art I- Foundations, and AP Studio. All of the art teachers assessing the units have advanced degrees in Studio Art, Art Education, or both. Three of the art teachers assessing the unit have taught Visual Art for over 20 years. In addition to teaching, two of these art teachers hold supervisory positions at their school including Coordinator of Studio Arts and Visual Arts Department Chair. The wide ranging backgrounds of these art teachers was chosen carefully in order to reflect a diverse range of media and approaches to art making and teaching art. For science teachers, science content areas include: Chemistry, Physics, AP Physics, Environmental Systems, Aquatic Science, and Environmental Science. Some of the science teachers assessing the thematic unit have some previous knowledge or background in art while the others do not. The diverse backgrounds of the science teachers were also chosen to reflect a variety of content areas in science education.

## **Analysis**

The qualitative research for the thesis draws upon parallels between philosophy, art history, aesthetics, and education in order to engage students and teachers in a multidisciplinary secondary thematic unit on the transcendental landscape. Conclusions to the research questions are addressed by analyzing the scholarly research in the literature review and by creating a secondary thematic unit that models these concepts.

In order to assess the effectiveness of this thematic unit, five secondary art teachers reviewed the unit and provided in depth feedback regarding its application in the art classroom. Four secondary science teachers evaluated the thematic unit in order to assess the effectiveness of this interdisciplinary unit in the science classroom. This information was used to gauge the use of aesthetic concepts in both the secondary art and science classroom. The nine secondary teachers participating in this research rated the unit as a viable, teacher friendly unit and shared their responses to the knowledge gained from the thesis topic and the lessons. They were also asked to share information about their current teaching methods by responding to the reflective questions in the assessment. The assessment takes the form of reflective questions that are designed to produce a variety of responses. This qualitative data was collected and used in the analysis of the thesis.

## **Expected Findings**

By developing a thematic unit for the secondary art classroom that explores the transcendental landscape in Contemporary Art, students can



develop meaningful ways to engage in aesthetic issues that deepen their understanding of art and art making. The author has high expectations for the success of this thematic unit in the secondary art classroom and anticipates a variety of feedback from the art teachers who are assessing the unit. By addressing the value of teaching aesthetics in the secondary art classroom, she foresees this interdisciplinary approach as being a valuable tool for art educators.

By learning about the transcendental landscape, students are exposed to contemporary art forms that challenge the way they think about art and experience the landscape. In this research, the author expected to find reoccurring themes among the artists being studied that can be identified and used to further understand the desire to represent the transcendent in art. She expects that the desire to represent and understand these concepts throughout history will be synonymous with innovation because they compel one to look at the world beyond mere appearances and to ask new questions. It is also her hope that this research leads educators to explore new ways of considering art's unique capacity to capture the phenomena of the visual world— that is perhaps at times beyond words.

## Chapter 4

### Art, Science, and Perception

#### Parallels in Language and Abstraction

The great advancements that have always paralleled one another in art and science history seek to define the nature of reality and the way in which it is understood, perceived, and represented. Shlain (1991) proposes, much like Miller (1995), that visionary artists throughout time have had the insight and ability to create visual imagery and symbolic representations of forms prior to forming an adequate way to describe these phenomena in language (Shlain, 1991, p. 17). Similarly, Miller states, “Science is a means for extending our intuition into worlds beyond sense perceptions—worlds in which space and time are relative quantities” (1995, p. 185). Both Shlain and Miller bring together two disciplines that have typically been independent from one another and give specific examples of how both artists and scientists have pushed the boundaries of reality and influenced one another in both creative thought and vision. In the study of the transcendental landscape, Shlain specifically addresses how visual artists investigate experiences of the landscape that transcend language and how this knowledge is naturally interdisciplinary—serving as a highly formative paradigm for art education. Shlain addresses this question directly by stating that:

In the case of the visual arts, in addition to illuminating, imitating and interpreting reality, a few artists create a language of symbols for things for which there are yet to be words. I propose that the radical innovations

of art embody the preverbal stages of new concepts that will eventually change civilization. Whether for an infant or a society on the verge of change, a new way to think about reality begins with the assimilation of unfamiliar images. This collation leads to abstract ideas that only later give rise to descriptive language (Shlain, 1991, p. 17).

Revolutionary art and visionary physics attempt to speak about matters that do not yet have words. That is why their languages are so poorly understood by people outside their fields. Because they speak of what is certainly to come, however, it is incumbent upon us to learn to understand them (Shlain, 1991, p. 20).

Moreover, Shlain maintains “The world wide community of artists and scientists is an has been at the forefront of this coalesce, offering perceptions of reality that erase linguistic and national boundaries” (Shlain, 1991, p. 21). He discusses the inadequacy of language to describe certain experiences and images, stating that “we are species dependent on the abstraction of language” (Shlain, 1991, p. 18). He also asserts that language is a means to exert control over nature (by naming it) and that in order to learn or create something completely new and innovative, we must first imagine it. It stands to reason that our need to have control over nature by “naming it” stems from a fear of not being able to understand it. Perhaps this is also why many people have apprehension towards confronting what they cannot put into words. Shlain states that the word “imagine” literally means to “make an image” (1991, p. 27). Thus, imagining radically new ideas and generating original thought (by making an

image in the mind) transcends the limitations of language. The visualization that occurs in science also requires the same level of abstraction that artists use in creating their work (Miller, 1995). Often times, the type of visual and scientific problems that scientists and artists address in their work rely upon unresolved visual or conceptual dilemmas about the nature of existence (and our perception of it.) For example, Miller (1995) brings to light the incredibly abstract properties of atomic entities (in atomic physics and quantum mechanics), wherein scientists had the ability to “imagine or visualize something that is continuous and discontinuous—that is both wave and particle” (1995, p. 186). Similarly, artist James Turrell states, “I am working with the idea of a sense of closure without form” (Turrell cited in Saad-Cook, 1988, p. 130). Turrell, like many scientists, visualizes and creates seemingly contradictory perceptions of visual space (which are addressed in more detail in Chapter 5).

The visualization that scientists and artists use in imagining the ‘invisible’ properties of our physical world (such as subatomic particles, closures without form, etc.) have many similarities, both in terms of creative vision and systematic approach for achieving outcomes. Several comparisons can be made between the way visual artists and scientists perceive reality and formulate research systems to understand the complexities of the visual world—both driven by the desire to represent and gain an understanding of “nature as it is beyond visual appearances” (Miller, 1995, p. 185). Though in history, these visions have paralleled one another, presently, technology has allowed art and science to coalesce into more innovative collaborations, making the gap between these two

visions smaller. Ultimately, these two visions share the same goal: connecting to concepts of the visual world for which there are not yet words to describe. At the heart of Shlain's work lies the belief that "Visionary art alerts the other members [of a society] that a conceptual shift is about to occur in the thought system used to perceive the world" (Shlain, 1991, p. 18). Artist Charles Ross expands on this idea:

Art and Science are two ways of looking at the world, and they are both equally necessary. Art gives generates a kind of clarity just as science does. We do not understand things just by measuring and gathering information; each day is laced with mystery, moments that defy logic. If we want to achieve an integrated sense of reality, we need multiple views of the world. We can never see it through just one window (Charles Ross cited in Saad-Cook, 1988, p. 124).

Shlain and Miller's research bring to light that artists are the individuals who create the original images that "precede abstract ideas and descriptive language" (Shlain, 1991, p. 35). Shlain provides examples throughout history that show this, acknowledging visionary artists who may not have been credited for their scholarly contributions to other academic fields. He states: "Repeatedly throughout history, the artist introduces symbols and icons that in retrospect prove to have been an avant-garde for the thought patterns of a scientific age not yet born" (Shlain, 1991, p. 19). Interestingly, it seems that many artists are unaware of their innate ability to generate these prolific symbols, which may or may not be intellectually understood at the time they were made. It is at the

inception of this abstract thinking and symbol making wherein transcendental thoughts begin to form.

### Neuroaesthetics and Visual Indeterminacy

Semir Zeki's (2009) concept of Neuroaesthetics and Robert Pepperell (2006) theories on Visual Indeterminacy in Art address several issues regarding the connections between art practice, neuroscience, and aesthetics. Zeki's and Pepperell's research, much like Shlain, assert that in order to process complex ideas such as space, time, and the infinite, our brain must construct a separate reality that organizes our thoughts into manageable parts. Had the late Leonard Shlain had the opportunity to read about Semir Zeki's work in Neuroaesthetics, the author believes he would be thrilled to know that his conjecture about the way the brain processes these aesthetic concepts is true.

Pepperell, in his theory of Visual Indeterminacy in Art brings to light astonishing parallels between art practice, art history, science, philosophy, and neuropsychology. His research involving Visual Indeterminacy investigates the nature of "perceptual consciousness" wherein "what we see cannot be matched with what we know" (Pepperell, 2006, p. 395). It is also important to note that Pepperell's idea of Visual Indeterminacy has many correlations to Kant's notion of the sublime, which will be discussed in greater detail in Chapter 5. In art, Visual Indeterminacy also relates to the way in which we perceive form, color, and visual images. As a viewer, we attempt to reconcile all of the elements that make up a work of art— with varying elements of detail and abstraction. In Visual Indeterminacy, Pepperell (2006) describes our fundamental need to reconcile the

abstract or ambiguous elements in a work of art and how this mental process creates a unique aesthetic experience both physically and psychologically.

Pepperell sites current research being done by scientists such as Semir Zeki (2009), who have pioneered new ways of understanding the aesthetic experience and perceptual nature of art and the biological effects this has on the brain. Aesthetic experiences that evoke this reconciliation of form and meaning (in visual indeterminacy) has also been linked to intensified neural activity. These aesthetic experiences have often been described as “heightened states of awareness” wherein the act of reconciling indeterminate images evokes “panic, mixed with a brief euphoria” (Pepperell, 2006, p. 396). This perceptual phenomena is the basis for Pepperell’s research, which he explores both academically and artistically through multi-media and cross disciplinary collaborations. He explores this concept in his paintings and drawings and advocates for a more interdisciplinary approach between art and science that bridges the gap between neurological perception and aesthetics.

In many ways, Pepperell’s research about Visual Indeterminacy parallels Kant’s notion of the sublime (discussed in Chapter 5.) When the brain attempts to resolve the ambiguous or incomplete images of a space, this aesthetic experience evokes a “heightened states of awareness,” followed by panic and euphoria, much like the sublime. This research is even more compelling because after almost 200 years since the romantic period (when the topic of the sublime was widely explored in art and literature) this aesthetic phenomenon is being identified in the brain—opening the door between aesthetics, neuroscience, and

art in new and astonishing ways. This research has significant impact on how visual artists investigate experiences of the landscape that transcend language because as art historian Ernst Gombrich (2006) points out, Visual Indeterminacy and Neuroaesthetics identifies the “psychological and aesthetic impact of non-recognizable images” (cited in Pepperell, 2006, p. 396). These types of non-recognizable images often transcend language and confront the viewer with challenging and profound ways to contemplate these unique visual experiences. Gombrich states that when “faced with images that are to varying degrees ambiguous, indistinct, or incomplete, the viewer must deliberately work to arrive at intelligible interpretation” (cited in Pepperell, 2006, p. 395) using challenging cognitive thinking skills.

This research is important because it supports teaching students in the art classroom to analyze complex works of art while making intelligible connections to their own experiences and knowledge. Pepperell supports this claim by citing a study done by psychologists and neurobiologists, led by scientist Gernot Supp, that links human perception of indeterminate visual imagery to intensified neural activity (Pepperell, 2006). In this study, “they found that subjects presented with indeterminate or unrecognizable images showed a marked increase in cooperation in certain parts of the brain and a greater degree of overall coherence between different regions” in the brain (Pepperell, 2006, p. 396). This study not only supports the importance of the concepts and imagery associated with the transcendental landscape it also holds great value to the field of art



education because it points to key findings that directly link art and the aesthetic experience to increased brain activity.

In many ways Pepperell's and Semir Zeki's research examines something even greater than art. Their work examines the way we perceive reality and the way the brain processes complex visual systems. Pepperell explains our mind as imposing perceptible boundaries and outlines on our visual perception of the environment rather than the the world itself imposing these boundaries (2006, p. 398). This observation remains to be a fundamental question that many philosophers, scientists, and artists still pursue (and have for centuries) as a way to more deeply understand the nature of reality—and our perception of it.

Pepperell describes the disconcerting moment that one experiences when confronting indeterminate images as a “momentary state of contradiction, struggling to reconcile a belief in the presence of recognizable external objects with the fact of their immediate disappearance.” (2006, p. 398). This state of contradiction occupies the same domain as the sublime because it temporarily suspends the viewer in a state of awe while the mind tries to reconcile the incomprehensibility of an indeterminate visual space. This idea is further supported by American physicist, John Wheeler (1991) whose research in theoretical physics makes inextricable links between consciousness and the the universe. Wheeler's theories propose that our internal understanding of the world naturally coalesces with our sense experience of the world, making both the mind and our conception of the universe one (Shlain, 1991, p. 19).

In the field of NeuroAesthetics, scientist Zeki examines the intriguing cross disciplinary parallels of the aesthetic experience. His research which focuses on the function of the brain, has pioneered the field of NeuroAesthetics that makes striking parallels between art, aesthetics and visual perception, and its effects on the brain. Zeki's research reveals the way the brain processes aesthetic elements, such as color, shape, and form. Color for example, is processed before form and form before motion (Adams, 2009). These startling insights allow us to understand how the brain responds to aesthetic experiences, and furthermore, makes judgements about our emotive response to images. Neuroaesthetics utilizes both science and art as a means to understand the way our brain perceives reality and processes aesthetic sensibilities.

Zeki claims that all great artists are instinctive neuroscientists. He believes that artists have "an innate understanding of how the brain sees the world, and they are fated by this knowledge to constantly try to find a visual language for those concepts" (cited in Adams, 2009, p. 2). This idea is further supported by Shlain and Miller as discussed previously about language. Zeki, using an MRI scan of the brain, has isolated the areas of the brain that are activated in response to viewing art. Interestingly, this has revealed that when viewing a painting, the different elements of the painting (such as shape, form, color, motion) are all processed in different parts of the brain. This 'deconstructed' understanding of an image does not allow the viewer to ever make the image whole—it rather stores the information in different parts of the brain that control our emotive response to the work. These emotive responses are at the heart of

the aesthetic experience of a work of art. Much like Pepperell's research on Visual Indeterminacy, Zeki also brings to light the intrinsic desire that artists have to reconcile the complexity of visual phenomena in the world. Zeki states, "The brain demands knowledge. It is constantly on the look out for organizing concepts. Art directly feeds that demand with new ways of looking that exploit the brain's neuro-pathways" (cited in Adams, 2009, p. 2).

Zeki's work further supports Pepperell's research on Visual Indeterminacy by affirming the fact that as viewers, we often respond more favorably to unfinished work because of the contradiction that it affords the mind. We are able to imagine the perfect 'whole' of an image while our brain reconciles the incomplete elements. Again this idea is very key in discussing the transcendental landscape and notions of the sublime because it causes the viewer to reconcile the fragmented images of a vast landscape, or work of art. Zeki's research also describes the physiological responses our brain has while processing these aesthetic experiences. The feeling of excitement, anxiety, and euphoria that one may feel in a 'sublime' moment or experience can be attributed to the manner in which our brain organizes such complex visual experiences and phenomena. The very idea that our brains are constantly breaking apart visual information in order to process each element as a complete whole only proves that our perception of the immensity and the vastness of space can only be understood in fragments that only reveal a glimpse of the whole.

That being said, since our emotive responses to visual imagery are integrally linked to our aesthetic experience, perhaps the desire to visually

reconcile the whole (such as the vastness of the universe, beauty, and art) causes the mind to fill in the gaps of information with imagination—resulting in a euphoric state, referred to as the sublime. (This notion of the sublime exemplifies Kant’s philosophy). Thus, as Zeki and Pepperell affirms, the impossibility of completely perceiving vast or immense experiences in nature compels artists to construct systems of organizing that visual information in order to perceive reality more completely. Zeki explains that “All great art exists in this disjunction” (cited in Adams, 2009, p. 3). What remains clear about the field of Neuroaesthetics and Visual Indeterminacy is that we are just at the beginning of understanding the fascinating parallels between art, aesthetics, and the brain. Since Zeki is the first professor of Neuroaesthetics, it is evident that there is a need for further research within this field in order to reveal new insight into the complex relationship between art, creativity, perception, and the brain. This research also raises several interesting questions regarding unresolved visual experiences, such as the sublime, and how these visual phenomena can be addressed in art. Pepperell also confirms that further collaboration between artists and scientists is necessary in order to reveal new insight into the way our brain responds to indeterminate imagery in art.

## Chapter 5

### The Transcendental Landscape:

#### Philosophical Origins, Aesthetics, and Artists' Interpretations

Ancient Greece was the basis for much of the thoughts that later shaped ideas of the transcendental. Plato saw time as “the moving image of this changeless eternity” (Shlain, 1991, p. 32). The ancient Greeks believed that the universe could be understood through the basic elements of water, fire, earth, and air. It was Aristotle, who after a 100 years of acceptance, questioned this concept and proposed that there must be another element that unified the other four, since nature, it seemed, is always in a constant state of change. Aristotle proposed that the celestial constellations of the stars were the missing element—and indeed in many ways he was right. Not the stars per se, but light itself would reveal to be one of the unifying elements in understanding the mystery of existence. As modern physics reveals today, four basic principles still remain, which include space, time, energy, and matter. Shlain states that “it was the unique nature of light that held the key to unlocking the secrets of the other four. In some strange way light is the link connecting space, time, energy, and matter” (1991, p. 26).

Aristotle was also one of the first philosophers to question the nature of infinity. His interest was in defining the difference between ‘actual’ and ‘potential’ infinities. He did not want to put limitations on the beginning and ending of time. In relationship to time, Aristotle believed that the “infinite future” could never be conceived of in a “finite world” (Barrow, 2005, p. 30). From this thought,

he concluded that the existence of time was dependent upon the mind's ability to conceive of events passing. It was not that Aristotle believed that humans created something as vast as time itself, but rather an understanding of events changing, and our ability to record this notion of 'time' passing through our experiences. This view is also very relevant to ideas of the transcendental because it addresses philosophical questions about perception, reality, and existential thought that would continue to be explored in later centuries by artists, philosophers, and scientists (Barrow, 2005, p. 30). He also questioned the nature of finite objects and the possibility of dividing matter. Plato uses the example of the cutting of a piece of wood. He deduced that no matter how many times a piece of wood could be cut into smaller pieces, it could not be divided into an infinite number of pieces. Aristotle concluded therefore that "it is impossible to complete an infinite series of distinct tasks" (Barrow, 2005, p. 28).

Aristotle's analogy is important because it in many ways illustrates a visual way of thinking that many artists use; attempting to reconcile an understanding of the infinite by creating meaningful associations through the physical manipulation of natural materials. Is this not in many ways the most fundamental element of sculpture? Seeking to understand the mysterious nature of the physical world (and universe) through the objects in it, is a basic element that artists, scientists, and philosophers have used throughout history to problem solve. Aristotle's desire to explore transcendental ideas, such as cutting a piece of wood into infinitesimal pieces, is a highly creative and abstract way of thinking. It is in this way that Aristotle, like many contemporary artists today are compelled to make

similar analogies and representations of form in their work. Although this will be discussed in further detail in the Thematic Unit, Richard Long's art work serves as an excellent example of Aristotle's wood analogy.

Leonardo Da Vinci remains to be one of the most visionary artists in history, whose revolutionary ideas were undoubtedly ahead of their time. His exceptional ability to visualize advanced scientific principles, draw startling observations of the visual world, and conceptualize artistic abstractions and natural phenomena (hundreds of years before these concepts came to fruition) is extraordinary. Da Vinci may also be among one of the first visual artists who made the conscious decision to address transcendental concepts of the landscape in his drawings. Shlain claims that Leonardo Da Vinci and Isaac Newton used the brain's highest function—abstraction (1991, p. 73). Newton's theories regarding the laws of motion and force, published in *Principia*, changed the way that science understood the relationship between time and space (Sorger, 2011, p. 61). Newton's theories were also a catalyst for artists and philosophers because they allowed them to consider time and space in new ways. Among Da Vinci's many sketchbooks and beautifully rendered drawings, Da Vinci held particular interest in the organization of natural form, and recorded these observations through his drawings of abstract designs. This notion of abstracting nature into design (though it may seem common today in visual art) was a radical idea and a distinct artistic departure from his contemporaries who were creating art in the classical tradition. No European artists during Da Vinci's time were painting pure landscapes, which is also why this departure from the

Greek and Roman traditions of the time marks an important moment in the history of art and the transcendental landscape.

This moment is also incredibly significant when discussing the transcendental landscape because Da Vinci's interest in drawing abstracted images from nature without human forms, led him to be the first European artist to draw a pure landscape. Shlain notes that in doing this, "He took the important step away from concrete and symbolic representation to abstraction" (1991, p. 78). Da Vinci's fascination with drawing from nature and identifying geometric design continued throughout his life. This is most evident in his notebooks, which show a wide range of drawings of aerial maps, swirling water, plants, grand irrigation schemes and anatomical studies (Shlain, 1991, p. 80). His sketchbooks are filled with drawings of forms that have no identifiable image. This progression into the representation of abstract forms is significant because it is a reoccurring theme in the transcendental landscape—along with the innate desire to understand the fundamental mechanisms and phenomena of the visual world. Da Vinci's work, both artistically and scientifically, demonstrates this beautifully. Shlain also points out the astonishing fact that Da Vinci's drawings of highly abstracted landscapes, depicting "art-without-an-image" occurred hundreds of years before artists such as Wassily Kandinsky and Piet Mondrian began addressing similar themes in Modern Art during the twentieth century.

Immanuel Kant, a philosopher in the eighteenth century, expands on Aristotle's ideas of space and time by proposing that these elements are interconnected elements of human perception. He believed that we are born with



an innate understanding of these principles, and that in effect, we are able to rationalize the world because of this. Kant explains this notion of time by stating, “time is nothing but the form of inner sense, that is, of the intuition of ourselves and of our inner state” (Shlain, 1991, p. 91). By making time and space conceptual and intuitive insights in the mind, Kant unifies our aesthetic experience of the world (Shlain, 1991, p. 92). In essence, having an intuitive understanding of our own inner worlds gives us an understanding of others. This notion in art is particularly important because artists rely on the intuitive understanding of the viewer (the inner knowledge we are born with) to connect meaningful concepts in art, that ultimately give us a more complete understanding of reality.

Kant believed that the universe was infinite (Barrow, 2005, p. 40) but that our ability to understand the vastness of the infinite was impossible because of our limited scope of perception. For example, when we encounter experiences that compel us to confront the ineffable such as the vastness of nature and the cosmos, our minds naturally rely upon our imagination to fill in the gaps of reason for those things that are beyond comprehension. Concepts, such as time, space, light, and the infinite have always inspired human beings to seek new methods for understanding and quantifying these mysterious elements in relationship to our existence.

Kant (2005), in his Critique of Pure Reason discusses how a person’s perception of reality can only be experienced through the senses and processed through the mind (Barrow, 2005, p. 42). This in turn causes the inability to

separate the experience of reality itself from our perception of it through the mind. This fundamental existential dilemma causes one to be completely reliant on the senses, making the way that one “sees” or “perceives” the world—their reality (Shlain, 1991, p. 91). Interestingly, Kant also refers to the mind’s perception of these transcendental concepts as ‘phenomena’ (Barrow, 2005, p. 40). This is important to point out because understanding and investigating visual ‘phenomena’ is one of the main themes many visual artists in the thematic unit explore, and is also used frequently when discussing the transcendental.

Romanticism, which occurred in Europe during the early part of the 19th century, was an artistic and literary movement that cherished the imagination, emotion, and aesthetic experience of the human spirit. In opposition to scientific reasoning, emotions were given a new precedence in defining the authentic expression of the aesthetic experience. The boundless qualities of nature and the vastness of the landscape were explored as exalted sources of both overwhelming beauty and terrifying awe. At the heart of Romanticism was the underlying theme of man’s epic struggle with nature (Galitz, 2004). This sentiment was depicted in painting by showing the extreme forces of nature, such as a raging storm, vast open seas, rugged mountain crests, and ominous skies—often depicted in contrast to the finite nature of man. Scale was also a means of presenting this idea, where for example, the tiny speck of a boat could scarcely be seen amongst the raging waves of the ocean. The state of wonder and awe that imbued the Romantic artists’ view of nature resulted in a major shift in the representation of the landscape that these artists viewed as naturally

transcendental. It is because of this transcendental view of the landscape that these paintings began to exhibit elements of abstraction, that artists such as J.M.W. Turner and John Constable viewed as more authentic expressions of these extreme aesthetic experiences in nature (Galitz, 2004).

These types of aesthetic experiences, often associated with overwhelming or awe inspiring encounters with nature have often been referred to in art and philosophy as the sublime (Morley, 2010). Kant (as discussed previously) believed that the sublime itself was an aesthetic experience that challenged our notions of the infinite and questioned the nature of reality. In essence, Kant believed that our ability to comprehend the infinite is limited to our understanding of the world as we see it and that in order to reconcile our desire to understand the infinite, our reasoning and imagination must coalesce to fill in the gaps of our understanding. Kant's notion of the sublime is important because it was not only influential amongst the Romantic painters, scientists, and philosophers of the nineteenth century, it subsequently influenced ideas of the transcendental in modern and contemporary art. Edmund Burke's (2010) writing on aesthetics and the sublime was also a particularly influential philosophy during the Romantic period (Morley, 2010).

A paradigmatic shift in art occurred in the 19th century when the Romantic painters influenced Impressionists to use paint in more stylistic and expressive ways. The indistinct rendering of natural forms during this period also marks an important moment in art history because it was the beginning of a more abstract approach to representation. It is at this pivotal moment in art history where artists

such as Constable and Turner opened the door to modernism with their atmospheric treatment of space and light filled paintings. Influenced by Turner and Constable, artists such as Monet, Cezanne, and Picasso began investigating new methods of representation, leading to the abstraction of form. This is most evident in Impressionism and Cubism. The paintings from these two movements possess an expressive quality that transforms representational imagery into abstracted forms by inventing new ways of breaking up space, shape, and form in a composition. In Cubism, this idea is expressed through geometric abstraction whereas Impressionism conveys this idea through the variety of brush strokes, dynamic use of color, and abstraction of space (Shlain, 1991, p. 187).

Biology Professor, Thomas Sorger in his article, “In the Eye of the Storm: Images of Spacetime in Turner and Poe,” makes fascinating parallels between the work of artist, Turner and Albert Einstein. Sorger also advocates a more interdisciplinary approach to teaching advanced science concepts through art and literature (Sorger, 2011, p. 69). Like Shlain, he also sees many valuable parallels between the arts and sciences and brings attention to the “thought experiments” between scientist and artist (Sorger, 2011, p. 64). These thought experiments are usually the catalyst for the ground breaking ideas that influence innovation.

Sorger states that Einstein had an epiphany while working on his theory of relativity “after he abandoned the objective viewpoint and imagined what it would be like to move within a light beam” (Sorger, 2011, p. 64). He posits that Einstein’s abandonment of a fixed moment in time and space allowed him to

conceive of the speed of light. Likewise, he makes an interesting comparison to the the English painter, J.M.W. Turner whose interest in direct experiences with the immensity of natural forces had a great effect on his paintings. Turner represented space and time in the landscape in new and astonishing ways. At the heart of Turner's work was the observation and the feeling of the experience itself. Sorger points out Turner's thoughts regarding his painting, *Snowstorm*, painted in 1842 which illustrates this idea:

I did not paint it to be understood, but I wished to show what such a scene is like; I got the sailors to lash me to the mast [of a boat] to observe it; I was lashed for four hours, and I did not expect to escape, but I felt bound to record it if I did (Turner cited in Sorger, 2011, p. 64).

Turner's description gives a visceral understanding of the experiences that fueled his work. It is evident, when standing in front of a Turner painting that the landscape was not just a picture of a place, but rather the immense and emotive experience of the self in the midst of a vast and uncontrollable land. Turner's desire to paint this direct and unencumbered experience of nature resulted in astounding works that in many ways obliterate representation. It is in Turner's work where the abstract forms of nature begin to consume the landscape itself. In the painting, *Snowstorm*, the eyes follow the brush strokes of the paint itself, giving new meaning to the physical motion of a wave form and the movement of clouds (Sorger, 2011, p. 65). Sorger describes the quality of Turner's paintings as a "temporal experience in the viewers mind" because the eye is never at rest at any given place in the painting (Sorger, 2011, p. 66). This observation of a

“temporal experience” in a work of art also mirrors Pepperell’s view of Visual Indeterminacy.

Sorger proposes a model for teaching relativity using Turner’s “revolutionary vision” of painting and further suggests that Einstein’s and Turner’s breakthroughs (as described above) occurred in their ability to “abandon the myth of objective stance” (p. 66). By using his sensory experiences in nature as a platform for understanding space, Turner’s paintings reveal multiple viewpoints, showing a completely new way to consider time and space in an image. Sorger describes this in Turner’s painting:

By using small hatched strokes to portray solid masses and broad washes of color to evoke the ethereal spaces of limitless depth, Turner endeavored to construct the opposing qualities of mass and space into the literal equivalent in paper and canvas (Sorger, 2011, p. 66).

Sorger’s astute observations give clear examples for teachers in the arts and sciences to use in the classroom. His interdisciplinary approach introduces excellent ways for teachers to present the profound impact artists and scientists have had on each other and how engaging in “thought experiments” can lead to innovative thought.

The influential ideas of John Ruskin and Leslie Stephen, who were prominent art and cultural critics during the nineteenth century, also marks an important shift in perspectives on the sublime and the landscape. In contrast to Kant and Burke’s notion of the sublime that included vast and terrifying elements, Ruskin and Stephen primarily viewed the sublime as a transcendent experience

(Morrison, 2009, p.498). In contrast to Romantic notions of the sublime, Ruskin and Stephen believed that the Romantic views of the landscape were too far removed from the lived experience of the environment. Although their understanding of the sublime was deeply entrenched in the awe and beauty of the Romantic sentiment, they believed that too much emphasis had been placed on the imagination, rather than the body's physical response to experiencing the land itself. Ruskin's and Stephen's views differ in that Ruskin viewed the landscape as a "cathedral" (Morrison, 2009, p. 498) to learn from whereas Stephen's view of the landscape encompassed, as Morrison suggests, "a new mode of perception that he presents as modern, kinesthetic, and physically embodied" (Morrison, 2009, p.499).

Stephen's view proposes that the experience of the sublime comes from the "direct bodily contact and engagement of the material world" rather than the pure imaginative powers of perception that Romanticism embraced (Morrison, 2009, p. 499). Ruskin's and Stephen's view of the transcendent landscape are precursors to a more modern conception of the landscape, which Morrison describes in his statement:

The natural self is one that is always situated within an environment. While the mind can transcend matter in thought, it is the body and not the mind that determines the extent to which thoughts are translated into action. In other words, it is through the body that one discerns how to transcend-- or in the case of mountains, ascend-- foreboding obstacles. (Morrison, 2009, p. 503)

In this idea, the body becomes an essential part of understanding the aesthetic and transcendent experience. This is also a very important shift towards a more modern conception of art because it empowers the body, along with the imagination (mind), in the aesthetic experience. This can be seen in modern art, when again the subject of the sublime is taken up by Abstract Expressionists such as Jackson Pollock, Barnett Newman, and Mark Rothko. For the Abstract Expressionists, the sublime has a direct relationship with the body, which cannot be separated from the physicality of the work itself.

Influenced by Kant's notion of the sublime and the beautiful and the Romantic idealism of the awe inspiring power of nature, The Hudson River School came to fruition in America during the mid-nineteenth century. The Hudson River School consisted of a group of painters that viewed the exalted beauty and transcendent qualities of the Hudson River Valley as a place to explore the vast and magnificent qualities of the American landscape. It was in the vast expanse of the American landscape that the Hudson River school painters embraced the sublime sentiment of beauty. The movement, which was initially started by Thomas Cole, and grew to include such artists as Frederic Edwin Church, John Frederick Kensett, and Sanford Robinson Gifford, was inspired by the power of nature and the grandeur of the American wilderness. It was during this time that Cole began painting the mountains, forests, rocks, waterfalls of the Hudson River Valley (Parks, 2009. p. 25). The distinct American sentimentality behind these paintings is also significant since many art historians



consider the Hudson River School to be the first American Art movement. Cole was particularly inspired by the romantic literature of Henry David Thoreau and Ralph Waldo Emerson and particularly by the English landscape painters John Constable and J.M.W Turner (whose studio Cole had also visited). Although the Hudson River School was influenced by British landscape painting and Romanticism, its style is distinctly American due to their invention of Luminism and their implicit use of horizontality in the orientation of their canvases (Wilmerding, 1976, p. 40).

Luminism was also a hallmark of the Hudson River School Painters, which was characterized by the manner in which light was painted in the landscape. The brush strokes revealed a soft effect that created the illusion of a luminous sky or reflective space. Wilmerding notes that Luminism was “a distinctly imaginative natural expression” of American Art and that the Hudson River school had a direct effect on later art movements such as Abstract Expressionism (Wilmerding, 1976, p. 40). This distinctly transcendent experience of the American landscape, that the Hudson River School embraced, marks a pivotal moment in the history of the transcendental landscape. It was the landscape, which Wilmerding points out, that held the the transcendent, pictorial, and nationalistic values of American consciousness. These sentiments would also lead American Artists in the following century to new paradigms of thought, where artists such as Mark Rothko, Barnett Newman, and Wassily Kandinsky would address the concept of the sublime in a radical new ways.

A half century after the Hudson River School, a group of Canadian landscape painters known as the Group of Seven also emerged. There were several characteristics of the Group of Seven that were strikingly similar to the Hudson River School; they both shared the common interest in depicting the awe inspiring power of the wilderness. The main distinction in their motivation, however, lies in their particular philosophy, political beliefs, and execution of compositional devices. It is in the work of the Group of Seven where a shift can be seen in the depiction of the transcendental landscape towards a more mystical ideological view called Theosophy.

During early 1900s, Canadian landscape paintings by the Group of Seven emerged between WWI and WWI. The Group of Seven included artists Lawren Harris, Emily Carr, Tom Thomson, Frederick Varley, Frank Johnston, Arthur Lismer, and A.Y. Jackson. The Symbolist landscape movement, associated with the Group of Seven, is characterized by observations of nature that evoke spiritual elements. An aesthetic parallel is made to Scandinavian artists who employed compositional devices such as hushed lighting, twilight scenes, and hovering viewpoints in order to "evoke psychological moods rather than the scene itself" (Needham, 1984, p. 185). The Symbolist painters all shared the common belief in the "cleansing power of the northern wilderness" (Needham, 1984, p. 184). Although the Symbolist paintings sought to capture the power of the wilderness, they also portrayed a somber and melancholic space. A central theme that resonates throughout the work is the awareness of man's insignificance amidst the vastness of the land.

Among the Group of Seven, the landscape paintings of Lawren Harris are described by art historian Robert Linsley as a reaction against the changing political climate of modernism in Canada and the United States during the 1920s. In resistance to the social integration of American modernism, Linsley claims that Lawren Harris and the '*Group of Seven*' created an aesthetic that strived to represent the "rural, symbolic, (and) mystical" themes inherent in the Canadian landscape (Linsley, 1996, p.81). The anti-modernist aesthetic of the group was characterized by the rejection of urbanism, resulting in landscapes that portrayed the exalted Canadian wilderness and embodied the beliefs of theosophy. Theosophy in the early twentieth century "shared with Marxists a belief that capitalism was a failing system, that the old world order was doomed, and that social contradictions would be resolved in...a utopia of rational planning and organization" (Linsley, 1996, p.81).

This utopian and spiritual idealism positioned the artist as a "representative of higher consciousness" and characterized several visual elements of the '*Group of Seven's*' paintings (Linsley, 1996, p. 82). These themes include: wilderness, symbolism of light, abstraction of form, representations of height and depth, towering and streaming, motion and immobility, and summits and floods. Linsley views this landscape imagery as a reaction to the anxiety of integration and the conscious rejection of a changing history. He further notes that the paintings of Emily Carr, also a member of the Group of Seven, embraced a new modern perspective because her paintings acknowledge movement, change, and indeterminacy. Carr describes her desire to capture "the movement

sweeping out into space... always keeping going— rocks, sky, one continuous movement” (Carr cited in Linsley, 1996, p. 92). Linsley describes her work as “conducive to the emergence of historical truth” because it “is always seeking definition” in the “transitory nature of phenomena” (Linsley, 1996, p. 92).

During the mid nineteenth century, another major influence and paradigmatic shift in thought regarding the transcendental (in western art) came from Asia. The Japanese American Treaty opened the door to trade in the late 1850s, resulting in an exchange of Japanese goods that changed the way European artists dealt with space, time, and light in their work (Shlain, 1991, p. 160). Artists were suddenly able to view Japanese artists interpretations of the landscape that were drastically different from European art. In regard to depicting the landscape, the emptiness of space had significant meaning in Asian art, whereas European artists saw space as something to “fill up with the representation of things” (Shlain, 1991, p. 160). This idea of space being nothing as opposed to the Eastern perspective, where space is representative of everything, was a radical concept—both spatially and philosophically. In Eastern philosophy, the emptiness of space was seen as a void with infinite potential for possibility (Shlain, 1991, p. 160).

In terms of the transcendental, this concept of invisible space and its endless possibility had profound meaning. Shlain points out perhaps one of the most important elements of the Eastern landscape, which is that it positions the viewer “inside the landscape” rather than on the outside looking in (Western view). By doing this, the “Chinese landscape forces the spectator to become both

art and artist in order to supply the missing connections” (Shlain, 1991, p. 161). This Eastern influence of space can be seen in the compositional devices and painting methods of many modern artists, including Cezanne, Van Gogh, and Monet. Van Gogh even states, “I am painting the infinite” (Van Gogh cited in Shlain, 1991, p. 175). Examples of this can be seen in the way these artists used the raw space of the canvas to convey nothingness in the composition and in their desire to paint one view of the landscape from multiple perspectives (Shlain, 1991, p. 168). Shlain gives an excellent example of this concept in the work of Japanese artist, Hokusai, who painted Mount Fuji “from different places in space and different moments in time...not only suggesting the reciprocal nature of space and time, but also disputing the sovereignty of a favored place to stand”(Shlain, 1991, p. 161). The landscape in Asian art had profound roots in transcendental concepts that imbued it with meaning both symbolically and representationally. The Korean curator, Lee Joon, gives a concise description of this transcendental concept in Asian landscape painting:

East Asian Painting traditionally placed more emphasis on the inherent spirit in objects than on representing them....void was often used to express not only profound spaces of nature, such as clouds, atmosphere and ocean, but also worlds that are abridged, suggested and invisible. From the perspective of Western Art, which explicates everything based on forms, the void of Asian painting may appear, to certain extents, to suggest a lack of forms or a space of incompleteness. As a matter of fact, it is difficult to find a term corresponding to the concept in the

Western Artistic Lexicon. 'Empty space', a negative element, implies absence of physical representation or is synonymous with 'blank space.'

In the theory of East Asian Painting, however, void exists as a complete, legitimate part of a work, and, in a more active sense, is an 'unpainted painting'. In that sense, void does not mean the renunciation of the use of space but rather the encouragement of space and is absence-cum-presence (Joon cited in Morley, 2009, p. 155).

This new transcendental perspective on space had a monumental effect on western art and created a new conceptual paradigm for Modern Artists to create work that obliterated space into pure abstraction.

Among the modern artists who most fervently adopted concepts of the transcendental and the sublime in their artwork were Mark Rothko and Barnett Newman. Both Rothko and Newman wrote extensively on the sublime and strived to make art that captured the transcendent experience. It was also during this time that advancements in physics revealed a new relationship between field and particle which changed the scientific understanding of reality (Shlain, 1991, p. 245). Physicist, Walter Thirring describes this concept as "taking our gaze from the visible—the particle—to the underlying entity, the field" (Thirring cited in Shlain, 1991, p. 245). Shlain explains that since the field was made of nothing and was invisible, it remained as a mental abstraction. This abstraction, as Shlain proposes, had a significant impact on artists during the early part of the 20th century who began to address the absence of image (particle) into the field of space in their work (Shlain, 1991, p. 245). Rothko and Newman saw the

landscape in more abstract forms, breaking up the planes of space in the landscape into fragmented fields of color. Shlain points out that “seen through the eye of a modern physicist, Newman’s large color field paintings resemble nothing so much as a readout of the basic elements of the universe—the atoms” (Shlain, 1991, p. 245).

These fundamental properties about the nature of reality posed philosophical questions about what is seen and what is unseen, as well as where something stops and another thing begins. Beginning and ending also posed philosophical questions about time—and our place within it as finite beings. These philosophical inquiries into the nature of time and space held great interest for artists, Newman and Rothko (Shlain, 1991, p. 254). For these artists the sublime and the transcendent existed in the ever present moment of *Now*. They explored the idea of the sublime in their paintings as a way to transcend the limitations of language. For Newman and Rothko, the transcendent expressed the pure emotion of the aesthetic experience. Their ideas regarding nature were more reflective, personal, and introspective, rather than the exalted, divine, and awe inspiring sentiment of the Romantic sublime (McShine, 1976, p. 108). For example, when artist Hans Hoffman accused Abstract Expressionist, Jackson Pollock of not working from nature, Pollock simply responded by saying, “I am nature” (Shlain, 1991, p. 248).

Historically, as noted earlier in this essay, Leslie Stephen’s view of the sublime was the most closely aligned philosophy with the Abstract Expressionists because the transcendent experience came from “direct bodily contact and

engagement of the material world” (Morrison, 2009, p. 499). The inextricable idea of self coalescing with nature led these artists to reflect on perhaps the most omniscient character of nature—existence itself. For Newman and Rothko, timelessness and the infinite remained central themes. As art historian and curator Kynaston McShine notes, for these artists, “the natural paradise is within” (McShine, 1976, p. 108). In discussing such ideas, it is always most accurately described in the words of the artists themselves. For this reason, the author of this study includes the words of both Newman and Rothko, discussing their ideas on art in relationship to space, time, the transcendent, and the sublime:

I remember years ago shocking my friends by saying to my friends I would rather go to Churchill, Canada, to walk the tundra than go to Paris. For me, space is where I can feel all four horizons, not just the horizon in front of me and in back of me because then the experience of space exists only as volume. (Newman cited in McShine, 1976, p. 117)

If we refuse to live in the abstract, how can we be creating a sublime art? We are reasserting man’s natural desire for the exalted, for a concern with our relationship to the absolute emotions. We do not need the obsolete props of an outmoded and antiquated legend. We are creating images whose reality is self evident and which are devoid of props and crutches that evoke associations with outmoded images, both sublime and beautiful. We are freeing ourselves of the impediments of memory, association, nostalgia, legend, myth or what have you, that



have been the devices of Western European painting....We are making [art] out of ourselves, out of our own feelings. The image we produce is the self evident one of revelation, real and concrete, than can be understood by anyone who will look at it without the nostalgic glasses of history. (Newman cited in McShine, 1976, p. 123)

The most important tool the artist fashions through constant practice is faith in his ability to produce miracles when they are needed. Pictures must be miraculous: the instant one is completed, the intimacy between creation and creator is ended. He is an outsider. The picture must be for him, as for anyone experiencing it later, a revelation, an unexpected and unprecedented resolution of an externally familiar need. (Rothko cited in McShine, 1976, p. 123)

The fact that a lot of people break down and cry when confronted with my pictures shows that I can communicate those basic human emotions....The people who weep before my pictures are having the same religious experience I had when I painted them. (Rothko cited in Stoker, 2008, p. 90)

We assert that the subject is crucial and only that subject matter is valid which is tragic and timeless. To us Art is an adventure into the unknown world, which can be explored only by those willing to take the risks. (Rothko and Gottlieb cited in McShine, 1976, p. 125)

In the later half of the twentieth century, during the 1960s, a group of artists emerged whose primary interest was in creating art that used the land

itself. They explored the transitory, sculptural, and elemental nature of the landscape in monumental ways in art forms known as Earthworks. Robert Smithson, who is considered one of the founders of the Earthworks movement, pioneered new and provocative ways to interact with the elements themselves. Smithson used non-traditional art materials such as “language, mirrors, maps, dump trucks, abandoned quarries, hotels, contractors, and earth to produce his sculptures, photographs, films, and earthworks” (Goldberg, 2012). His most famous work, *The Spiral Jetty* (1970), located in the Great Salt Lake in Utah, was constructed using basalt rocks, earth, and salt crystals. In *Spiral Jetty*, the rocks were placed in a spiral formation in the lake that mirrored the patterns of the galaxy, creating a relationship between earth and star that “expressed the inexorable winding force of stellar gravity” (Shlain, 1991, p. 377).

Smithson explored man’s role in the evolution of the landscape and challenged traditional notions of aesthetic beauty by creating a dialectic between the landscape and industrialized society. Smithson considered industrial dump sights to be the modern “monuments of antiquity,” and challenged traditional notions of the picturesque landscape (Goldberg, 2012). Many of his early sculptures consisted of specific arrangements of rocks and soil from these dumpsites, which he excavated and exhibited in installations with glass and mirror. Smithson’s idea of creating art outside of the gallery, commonly referred to as site specific work, was also a radical idea at the time that changed not only the context of the work but also the experience of the viewer. Smithson’s work established a new framework for considering contemporary art and sculpture,

and opened the door for other artists to use the landscape as a transcendental medium. (Goldberg, 2012).

Among these land artists are Nancy Holt, James Turrell, and Charles Ross who use the sky, the earth, and natural phenomena as inspiration for their work. These artists use science and astronomy to create art that explores our “earth to star connection.” In their work, light, stars, and astronomy are used to align the physical environment that surrounds the perceiver, creating an intimate personal connection to the vastness of the stars. The media used to create their work, such as light and color spectrums, have inherently unique properties that create a transcendent quality. The fundamental connection between man, the land, and the universe are explored in profound ways by these artists—creating a unique relationship between art, natural phenomena, and perception (Ross cited in Saad-Cook, 1988). Charles Ross states that “One does not have to leave the modern world completely to remember one’s place among the stars. One just needs a place of focus”—and these Earthworks do just that (Ross cited in Saad-Cook, 1988, p. 125). Among the many themes that these artists address, space, time, and light remain the central focus.

In order to gain a deeper understanding of these artists work, Janet Saad-Cook, conducted a series of interviews with Nancy Holt, James Turrell, and Charles Ross that illuminate the unique processes and central themes that underlie their work. These interviews give the most compelling account of the transcendental landscape because the ideas are clearly articulated from the artists themselves. For this reason, these interviews are used as a point of

reference in the discussion of their work. In many ways, we see these artists ideas come full circle to the philosophies of Aristotle, who marveled at the possibilities of an infinite universe and our personal connection to it. Sculptor and earthwork artist Charles Ross states, “my work deals with looking into light. For me, art is interesting only when it offers transcendent experience” (Ross cited in Saad-Cook, 1988, p. 126). In this statement, we also see the same sentiments that Mark Rothko, Barnett Newman, and many of the Romantic artists shared—the desire for a more transcendent experience in art. The striking parallels made between art and science also provide a window into the way these two disciplines are able to probe reality beyond the realm of mere appearances.

*Sun Tunnels* is a sculpture created by Nancy Holt located in the Great Basin Desert in Utah. In this piece, Holt constructed four concrete tunnels placed in an “X” configuration that correlates to constellations, the times of day, and the summer and winter solstice. Holt describes this ‘earth to star connection’ in *Sun Tunnels* by stating: “The Sun being a star, is casting spots of starlight through the star holes, so that when one walks through the tunnels, in effect, one is walking on stars. It’s an inversion of the sky/ ground relationship—bringing the sky down to the earth” (Holt cited in Saad-Cook, 1988, p. 127). The desire to bring the cosmos down to the earth is an essential idea concerning the transcendental landscape because it reiterates a reoccurring theme, the desire to experience a connection to the infinite. Holt addresses this fundamental desire in her work:

I am just looking at the world, that's all. Anyone alive who had enough food and shelter, even ten thousand years ago, would start observing the sky and would want to somehow demarcate the things that were happening. It is a basic human desire. I feel that the need to look at the sky—at the moon and the stars—is very basic, and it is inside all of us. So when I say my work is an exteriorization of my own inner reality, I mean I am giving back to people through art what they already have in them. (Holt cited in Saad-Cook, 1988, p. 128)

Holt's interest also lies in the universality of time and our connection to it as finite beings. In constructing her works, she explains that she often considers human scale as a vantage point for her sculptures. Holt states "one has to walk through them, in and out of them, so that the works exist in durational time" (Holt cited in Saad-Cook, 1988, p.126). Time in this regard becomes a sculptural element that only becomes activated the moment a person walks through the tunnels. Within Holt's work, there is also a cyclical relationship between inner and outer/ interior and exterior. It is only through the cylindrical confines of a tunnel (which can also be seen as metaphor of the infinite between life and death) that the viewer is able to experience the sky and celestial phenomena of the universe. In Holt's sculptures, light, time, and space are used as a way to locate ourselves within the vastness of the stars, reconciling the desire of the individual (finite being) to connect to the infinite.

James Turrell uses light as the primary medium for his sculptures and installations. In his monumental earth work, *Roden Crater*, Turrell has

constructed a naked eye observatory in an extinct volcano that engages celestial time and space using the light of the sun, the moon, and the stars. In planning the construction of *Roden Crater*, Turrell researched the design of ancient observatories such as the Mayan pyramids, Machu Picchu, Borobudur, and the Egyptian pyramids (Skystone Foundation, 2011). Turrell describes the use of light in his work and the premise behind *Roden Crater*, located near Arizona's Painted desert:

My work has always involved working with light. And working with light in a space so that the light feels tangibly present there and seems to be filling the space. In *Roden Crater*, I am working with a series of spaces that select light from different portions of the sky. The effects of this light will create certain atmospheres in the spaces inside the crater. This setting is a place where one feels like one is standing on the surface of the planet. I am making these spaces that engage celestial time and celestial events. So immediately there is that feeling of orienting to things beyond." (Turrell cited in Saad-Cook, 1988, p. 129)

Turrell's reference to 'orienting to things beyond' refers to the universe, but more implicitly, our aesthetic experience of it within the light of his sculptures. By using light as his sculptural medium, Turrell eradicates the boundaries of form and uses the illusory qualities of light to create ephemeral perceptions of space. To do this, he relies upon the most elusive and transcendental element of all—light. Turrell explains that in *Roden Crater* his light sources are the sun, the moon, and the starlight (Saad-Cook, 1988, p. 129). Light, as Shlain points out in *Physics*, is the

fundamental thread that ties all existence together; thus Turrell's light sculptures unify us with existence.

Turrell's work is also just as much about perception as it is of the phenomena of light. The disorientation of space that one experiences within a Turrell sculpture is partly from the eyes' adjustment to the light within the space, causing the senses to engage in a heightened experience of visual perception. It is at this moment within a Turrell sculpture that one becomes enveloped by the qualities of light that remain so elusive, transcendent or otherworldly. The eyes begin to adjust to the varying degrees of light that our vision affords us in the moment. Perhaps the only experiences comparable are those few and fleeting moments we see before the sun rises or sets where the periphery of light feels so tangibly present and luminous. Turrell not only makes use of the way our senses perceive these natural phenomena, he frames our view of them so that the lens of experience is focused on the moment itself. It is in this way that Turrell engages time and more importantly, our awareness of it in the presence of 'Now'.

This 'now' moment that one experiences in a Turrell sculpture is also the same 'now' that the author of this study believes Rothko and Newman spoke of in reference to the sublime. The 'now' in this sense becomes the pure expression of the aesthetic experience. Our sense perceptions are suspended in the moment of the experience rather than in the contemplation of the object (representation). It is here where language seems incapable of describing sensation. Turrell describes this in his statement about *Roden Crater*:

Another reason I chose this crater is that I am interested in the state of mind engendered by looking into fire. It is not not-thinking, it is a wordless thinking that is pure, primal sort of thinking. I look for spaces that are empowered by the kind of light presence that has that quality. And so one of the settings I wanted was a place of geologic time. (Turrell cited in Saad-Cook, 1988, p. 130).

Turrell equates this “wordless thinking” in the landscape with time. There is a relationship here, that Turrell points out, between geologic time and celestial time, that causes one to feel connected to “things beyond” (Turrell cited in Saad-Cook, 1988, p. 130).

Like Nancy Holt’s work, Turrell is also interested in the relationship between inner and outer/ interior and exterior. He states, “I am working with the idea of a sense of closure without form” (Turrell cited in Saad-Cook, 1988, p. 130). In the case of Turrell’s work, this contradictory idea can be seen in the illusion of space rather than in the dimensions of definite form. It is the paradoxical nature of these ideas, such as capturing the infinite, bringing the sky to the ground, creating closures without form, etc., that makes these works so compelling. It also illustrates the fundamental desire that we have as human beings to connect to things beyond ourselves, for which language does not always suffice. This can be seen in both the language of art and science that describe the phenomena of our visual world in entirely unique ways. Shlain’s belief that a “few artists create a language of symbols for things for which there are yet to be words (Shlain, 1991, p. 17) is supported by Turrell’s “wordless



thinking” wherein our perception of light coalesces with space and time in our experience of the landscape (Turrell cited in Saad-Cook, 1988, p.130).

Richard Long, British sculptor, photographer, and painter is also a contemporary artist who addresses notions of time in his work. He does this by exploring the landscape through walking. In 1967, Long created an artwork called, *A Line Made by Walking* that documented the worn path of his walk. This piece was the first to claim the act of walking as art (Higgins, 2012). In his work, Long documents his experience of walking and his journey across the land by creating ‘Land Art’ from natural materials such as stones, mud, wood, and water. In these poetic sculptures, Long maps his journey through the land and records a moment in time by leaving an ephemeral mark on the places he has been. Traces from a walked path or the arrangement of rocks along a hillside document these ephemeral moments in time—and affirm our place within it. His gallery installations reveal the formal structures of these organic shapes and create another layer of meaning through the symbolic placement of these elements. These reoccurring symbols in Long’s work include: circles, spirals, lines, arcs, and maps. Long discusses these concepts in his work:

The significance of walking in my work is that it brings time and space into my art; space meaning distance. A work of art can be a journey. My footsteps make the mark. My legs carry me across the country. It’s like a way of measuring the world. I love that connection to my own body. It’s me to the world. It’s finding the universe in a grain of sand, or that every

fingerprint is different, every snowflake is different. (Richard Long cited in Higgins, 2012).

There are many other contemporary artists who continue to explore transcendental themes in the landscape. These artists address unique perceptions of the landscape that go beyond what can be seen by mere appearances by exploring concepts such as: time, space, light, natural phenomena, visual perception, cosmological studies, mapping, astronomy, science and the infinite. The unique methodologies used to create their work are diverse in both media and practice, ranging from walking to mapping geographical, urban, and cosmological systems. At the heart of these visual investigations lies the impulse to create a visual language that demarcates our relationship to the landscape and a system for deciphering and exploring meaning. Contemporary artists' exploration of the transcendental landscape has also evolved with an increasingly complex relationship to new technologies, resulting in a more cross disciplinary approach to artistic research and practice. Although transcendental concepts between art and science can be seen throughout history (as outlined earlier), it is clear that technology has allowed us to see the phenomena of our visual world in new ways, allowing artists to draw upon this information using cross disciplinary research in their work. Correlations between abstraction, philosophy, art, astronomy and science remain to be the core disciplines that define the transcendental landscape.

The work of Contemporary artists Julie Mehretu, Demetrius Oliver, Russell Crotty, and Terry Winters are examined to provide a framework for the thematic

unit. These artists works have been written about extensively in the art world, whose rich interdisciplinary work and compelling visions have ensued a variety of interpretations. For the purpose of this research, their work is briefly discussed in order to gain insight into their art practice as it relates to the transcendental landscape. Their own words have also been included to give the most accurate account of these ideas.

Julie Mehretu is an artist who creates complex layered drawings and paintings using a variety of mark making techniques. Her work examines systems that draw upon the urban landscape such as: architecture, urban spaces, city planning, geography, charts, maps, building plans, columns, stadiums, and airplane terminals. Mehretu describes the imagery in her work as a visual language—examining identity and social environments. Her interest lies in “mapping experience and development” in civilization. Mehretu employs architectural plans, maps, and drawings in her artwork that reference history in order to bring her paintings into a specific “time and place” (Mehretu cited in Firstenberg, 2002, p. 70). According to Mehretu;

I think of my abstract mark-making as a type of sign lexicon, signifier, or language for characters that hold identity and have social agency. The characters in my maps plotted, journeyed, evolved, and built civilizations. I charted, analyzed, and mapped their experience and development: their cities, their suburbs, their conflicts, and their wars. The paintings occurred in an intangible no-place: a blank terrain, an abstracted map space. As I continued to work I needed a context for the marks, the characters. By

combining many types of architectural plans and drawings I tried to create a metaphoric, tectonic view of structural history. I wanted to bring my drawing into time and place (Mehretu cited in Firstenberg, 2002, p. 70)

Demetrius Oliver explores the relationship between visual perception and the universe by using ordinary objects to create intricate sculptural installations in configurations that reference the cosmos. He uses sculpture, photography, video installation, music, and performance to engage his audience from multiple perspectives. Natural phenomena such as planetary systems, celestial bodies, the sea and the sky are all sources that Oliver draws upon in creating his work (Light Work, 2010). In an installation called *Jupiter*, Oliver made several connections between science and art that focused on the work of Albert Einstein and jazz musician John Coltrane. Drawing upon the ideas of these two visionaries, he used photography, performance, and science to make parallels between solar systems, constellations, and black holes (Friends of the High Line, 2010). Demetrius Oliver's blog, *Almanak*, documents his work and also provides several scientific articles and links, organized by theme, related to his cosmological explorations. This site provides several interdisciplinary connections between science and art and provides excellent resources for educators.

Artist Terry Winters disrupts conventional realism by basing much of his imagery on abstract treatments of biological and mineral forms blown up to eye opening size. His microscopic imagery draws on scientific and diagrammatic forms and patterns in the natural world, both visible and invisible. Biomorph

forms, concentric circles, sound waves, wave formations, grids and systems are all reoccurring themes in Winter's paintings, drawings, and prints. His work can be seen as a hybrid between landscape and modern science that challenges the distinctions between representational forms and abstraction (Jones, 2000, p. 111). Art critic Jonathon Jones notes that Winter "moves effortlessly from the macrocosm to the microcosm; from the solar system to ripples on water; from a world map to a circuit board" (2000, p.111). Winter's work is also influenced by architecture and urbanism, and he uses arc formations and the complexity of urban systems as inspiration for his paintings. The rich combination of colors that Winters uses in his paintings creates a vibratory quality that makes his work mesmerizing and illusionistic. His layered imagery references the complexity of both the digital and natural world, which can be seen in the energetic grid formations that move the eye in undulating rhythm across the canvas. Jones comments that Winters attempt to represent the unrepresentable, such as the nature of sound and sound waves, "links Winters to one of the predominant difficulties for the visual artist, to make images succeed where words fail" (Jones, 2000, p. 111). Terry Winters speaks about his work:

There's been a development in all the sciences of new spatial landscapes that are open to an investigation through painting. I was looking for a way to address an expanded idea of nature. (Winters cited in Princenthal, 2009)

I try to keep myself a bit off balance in order to achieve results that are unpredictable or unforeseen. It's only through connection with intuitive or

unconscious forces that we contact the fresh and new. (Winters cited in Diehl, 2005)

Artist Russell Crotty observes the landscape and the cosmos through telescopic observations to create his drawings that explore astronomy, the natural world and surfing. Crotty (2010), who is also an accomplished amateur astronomer, records his drawing by viewing the stars through his own observatory, located at his home on the Los Angeles coastline. Crotty's specific interest in telescopic observations are most aligned with 19th century astronomers who were captivated by the "romance and mystery" of the cosmos (Drohojowska-Philp, 2004, p. 90). It is through the act of looking that Crotty is able to reveal the intricate and ineffable nature of the stars in his drawings, carrying on an ancient tradition started by visionaries such as Galileo. It is "where it all begins" Crotty explains (Drohojowska-Philp, 2004, p.90). In his detailed and energetic drawings, Crotty records the vastness of the cosmos and the rugged landscape of the California coast on books, sculptural spheres, charts, and paper. His spheres reference the cosmos and the planetary systems and give his drawings a unique sculptural form that mirrors the cycle of the infinite. Crotty's drawings of nature give a poetic view of the landscape that play with perspective, scale, and "observations of the natural and man made world" (Crotty, 2010). His landscapes drawings include his own personal journeys through mountains, rock climbing, seascapes, hiking paths, forests, and "extraordinary spots along the coast" (Crotty, 2010). His drawing observations, both celestial and topographical,

give a spectacular view of natural phenomena inspired by the wonderment of looking. Russell Crotty discusses his work:

The main thing is the awe of it all. The awe of looking through a telescope at the ancient light of the planets. That's the phrase used by poet Kenneth Patchen. Ancient light. It's simple, but it expresses so much. I like being out in the cold, with my paper on a clipboard, making drawings of planets. (Crotty cited in Drohojowska-Philp, 2004, p.91).

## Chapter 6

### Applications in Education

Artists and scientists have paralleled one another throughout history in their quest to understand our aesthetic experiences and the phenomena of the visual world that go beyond mere appearances. In art education, these connections can be used in profound ways to inspire wonderment and creativity in studies of the natural world that have interdisciplinary connections to art history, science, philosophy, and contemporary art practice. In the proposed study of the Transcendental Landscape, some of the most effective research being done on this topic in education is by science teachers. In order to assess the most effective ways to teach aesthetic concepts of the sublime and the transcendental in the natural world, their research is drawn upon as an effective model for teaching the transcendental landscape in art education. Because of the interdisciplinary nature of the transcendental landscape, the perspectives of several science educators have proven to be an incredibly valuable resource in assessing this in the classroom. Many science educators have conducted fascinating research that makes a direct link between the importance of aesthetic experiences, creativity, natural phenomena, wonder, and student engagement.

Milne (2010) for example, examines the powerful effects of wonder and aesthetic learning in science education. Through creative exploration and observation of visual phenomena, students can engage in exploratory activities that promote curiosity and fascination in the natural world, resulting in a more engaged learning experience (Milne, 2010, p. 106). Milne brings to light the



research of Girod and Wong (2003) that describes the observation of natural phenomena as “dramatic events” (Milne, 2010, p.106). According to Girod and Wong, these dramatic events are synonymous with the “aesthetic experience” (Girod and Wong cited in Milne, 2010, p.106). This powerful insight, supported by the research of Girod and Wong (2003) suggests that aesthetic experiences of natural phenomena have a profound impact on learning. Although the research done by Milne (2010), Girod (2007) and Wong (2003) was intended for science educators, their research has profound implications for the field of art education. It is clear that within the contemporary art world (as discussed in previous chapters and in the thematic unit) that a more cross disciplinary approach to art practice has emerged significantly since the 1960s and has continued to evolve with new technologies.

Art educators have the unique opportunity to tie these two worlds together by teaching students in the art classroom about contemporary artists who employ these cross disciplinary investigations of the landscape. Making this powerful connection, between art and science, as outlined in the study of the transcendental landscape, gives art and science educators an opportunity to explore the “aesthetic experience” that Milne, Girod, and Wong view as an essential part of inspiring wonder and fascination in the learning process. It can undoubtedly be said that the ‘aesthetic experience’ has always been championed by the domain of the visual arts. So then the questions remains, why aren’t art educators the leaders in advocating the profound effects of the aesthetic experience on learning? Aesthetics has certainly played a huge role in Discipline

Based Art Education, but it has not necessarily been addressed in terms of its significance to interdisciplinary approaches in art education.

Science educators are currently the ones leading the way in the realm of aesthetics, with groundbreaking research that supports its powerful impact in the classroom. It is also possible of course, that art educators are in fact promoting these aesthetic experiences in the art classroom but are not sharing or documenting their results for other educators to build upon this research. In regard to aesthetic questioning in the classroom, Milne (2010) also brings to light that a greater depth of understanding and learning occurs among students who “communicate and justify their ideas with others” (Milne, 2010, p. 111). This type of aesthetic questioning facilitated by the teacher not only generates a more thoughtful response from the learner, it also leads to “the development of personal conceptual understanding and procedural knowledge” (Milne, 2010, p. 111). Aesthetic questioning, which naturally lends itself to the study of art, can be used as a wonderful tool in all academic subject areas. Aesthetic questions are also used as an essential part of the thematic unit on the transcendental landscape, which addresses these explorations of visual phenomena in art.

In art education, an example of this cross disciplinary approach that models these aesthetic concepts can be seen in a project led by Lydia Dambekalns (1997). Her project serves as an excellent guide to approaching the transcendental landscape and the ‘aesthetic experience’ that Milne, Girod, and Wong advocate in their research. Dambekalns, an artist, professor, and secondary art teacher, facilitated an interdisciplinary art project with her high

school students at the Pennsylvania Governor's School for Agricultural Sciences, located on the campus of Penn State University. In her article, "Mapping the World Through Science and Art," she describes the process of teaching an interdisciplinary art lesson that was aimed at engaging students with meaningful experiences of the landscape (Dambekalns, 1997). She describes the basis of her project with her students as:

the benefit of studying scientific data from an aesthetic point of view. The visual display of the earth's surface through aerial photographs and satellite map images was used as the basis for interpretative artworks created with dyed silk by high school students....(Dambekalns, 1997, p.156)

When Dambekalns describes the rationale behind her class project, she makes some eye opening parallels between art, science, and aesthetics that support the creative exploration of the transcendental landscape in secondary art education:

Despite efforts by some to separate the two, art and science may present similar challenges for study. Science attempts to solve problems and explain events in the universe as a way to reveal and/or gain knowledge about the physical world. While art may also be used to investigate the physical world, it also serves to express an individual's thoughts and feelings about the world and one's own reality. In other words, art may partially be defined as an aesthetic representation of an individual's view of the universe. In either case, both scientist and artist rely on keen observation skills and an ability to work creatively. This notion underpins

how a person looks at data and interprets that into an understandable form (Dambekalns, 1997, pp. 157-158)

Dambekalns' statement describes art as an aesthetic representation of an individual's view of the universe. This notion also parallels Kant's philosophy, that a person's perception of reality can only be experienced through the senses and processed through the mind (Shlain, 1991, p. 91). This viewpoint is very key to the notion of the transcendental because it clearly describes the desire that artists have to form visual representations of concepts beyond the limits of comprehension (such as the universe, sublime, etc.) Dambekalns' ideas describe the desire we have as people to "interpret data into understandable forms" (Dambekalns, 1997, p. 158). Simply stated, this process is what artists seek to do in their art, and is also what Shlain describes as "artists [who] create a language of symbols for things for which there are yet to be words" (Shlain, 1991, p.17). Shlain expands on this idea:

Art and physics like wave and particle are an integrated duality: they are simply two different but complementary facets of a single description of the world. Integrating art and physics will kindle a more synthesized awareness which begins in wonder and ends with wisdom. (Shlain, 1991, p. 24)

By employing these concept with her students, Dambekalns was able to successfully develop a method of teaching her students to use the visual imagery and data collected from the satellite and aerial maps of the land to create their own original artwork. She describes her teaching process as combining "sensory

information with theoretical ideas” (Dambekalns, 1997, p. 159). Dambekalns’ research is important to the study of the transcendental landscape in art education because it beautifully demonstrates the way this concept can bring together forms of representation in the landscape that surpass what can be seen with the naked eye. She models innovative ways for art educators to use aesthetics as a powerful way to process visual data as means of developing meaning in art. In her article, she also outlines her assessment criteria for these multidisciplinary artworks that resulted in a wide range of “stunning” pieces, reflecting multiple solutions to the map imagery being used.

Milne’s research into aesthetic learning brings to light the most fundamental and perhaps most underestimated element of learning—wonder. Milne’s research, along with Girod and Wong address the unique role of wonder in the learning process and how this experience can be used to create profound connections to the subject being studied. Norris (2006) suggests that wonder is the bridge between philosophy and education. He traces this notion back to Plato who saw wonder as “the beginning of all philosophy” and advocates for a more transformative model for education that pushes the boundaries of what is possible (Norris, 2006, p. 1). By providing aesthetic experiences in the classroom that mentally and visually engage students in the exploration of phenomena—teachers can inspire wonder and captivate the learner in new and engaging ways.

In a study conducted by Susan McWilliams, the nine classroom indicators that advocate wonder and curiosity include: “questions, observations, hypothesis

making, theories, art, imaginative play, stories, myths, and conceptual play in language”(McWilliams cited in Milne, 2010, p. 108). This also makes clear the valuable connection not only between aesthetic learning and wonder—it also brings to light art’s unique role in creating meaningful ways for students to gain knowledge in other disciplines. Furthermore, in regard to science education, studies indicate that students associate emotional responses to the aesthetic experience of an object, including “the structure and form of the object and the sensory perception they experienced” (Milne, 2010, p. 108). In art education, this can serve as a valuable tool because art relies upon these sensory perceptions for both the artist and the viewer. Drawing from nature for example, allows students to observe natural forms and involves them in both visual and analytical investigations of form. Sculpture for example, allows students to experience the physical nature of many different materials, resulting in a rich way for students to engage in aesthetic learning through sensory experience.

Science teacher Mark Girod (2007) provides excellent ways for teachers to employ aesthetic questioning and inspire wonder in his classroom. His research makes profound connections between art, science, and the sublime and suggests that through aesthetics, the concept of the sublime can be used to shape the way educators teach both art and science in meaningful ways. Girod uses visual representations of sublime concepts such as the vastness of the stars and geologic time “to help children think more richly about what constitutes art and how we can explore aesthetics to learn more about science and the world around us...” (Girod, 2007, p. 26). By challenging students to think beyond the

limits of what they can see, the sublime can be used as a powerful and awe inspiring tool in the classroom. Girod sees the astonishing effects of the sublime as “lead in to investigations” that can help clarify concepts while hooking the attention of students (Girod, 2007, p. 26). Girod uses art, aesthetics, and the sublime to address concepts in science such as: geologic time, history, astronomy, physics, observation of the natural environment, and the cultivation of artistic and aesthetic awareness. Creating this type of aesthetic experience in the classroom can also lead to a deeper understanding of time— and our place within it as finite beings. For Milne, this approach, as Girod suggests with his students, “is about students personalizing their science activity, leading to the development of creative explanations of natural phenomena” (Milne, 2010, p. 110).

Milne also makes correlations between aesthetic questioning and wonder that suggests using terms such as “wonder at” “wonder about” and “wonder whether. ” This type of questioning leads students to investigate how things work, and make probable outcomes for what may happen next. This in turn leads to curiosity and exploratory learning (Milne, 2010, p. 107). Regarding current challenges in science education, Milne proposes a new way for science educators to approach teaching through aesthetic, art, and inquiry based learning. He introduces specific ways for educators to employ this method in their classroom and advocates curiosity, awe, and wonder as key attributes of student engagement. He suggests a “phenomenological aesthetic approach” to:

teaching and learning in science that stresses the importance of of  
aesthetic experiences of natural phenomena that leads to the

development of a sense of fascination by the learners involved. Thus a feature of science education programs must be the significance of exploratory activities that, with teacher direction and input, provide aesthetic experiences of natural phenomena that will promote a sense of wonder leading to a desire for understanding and explanation of phenomena for the learners involved. (Milne, 2010, p. 105)

Although the research of Milne, Girod, Wong, and Norris are intended for the science classroom, their implications in art education are far reaching. Art educators can engage students in powerful ways by using aesthetic concepts as “lead in to investigations” that evoke both curiosity and wonder in the phenomena of the visual world. Innovative art educators such as Dambekalns have employed these methods in their teaching, yet very few other documentations can be found. This also reveals a gap in art education between the cross disciplinary nature of contemporary art practice and what is being taught in the art classroom. It is clear that many artists use these transcendental concepts of the landscape in their work (as outlined in this thesis), yet there is very little evidence that art educators teach these concepts in their classroom. If in fact they are teaching these concepts, it is clear that there is a need for more documentation so that art educators can expand on this aesthetic paradigm in the art classroom. Rowen (2006) also points out that “the relationship between awe and education is still uncharted terrain.

The key findings of Milne, Girod, Wong, Norris, Rowen and Dambekalns all support the concepts used in the study of the Transcendental Landscape.



Their research proposes innovative ways for educators to employ interdisciplinary approaches towards art and science concepts using aesthetics, wonder, and the sublime to explore the captivating phenomena of the visual world. The thematic unit developed by this author provides a way for art educators to use these profound connections in their teaching and gives a clear way to approach these concepts in the secondary art classroom. In addition, the thematic unit on the Transcendental Landscape provides a way for art teachers to address art historical and philosophical paradigms that have influenced contemporary art practice.

## Chapter 7

### Thematic Unit

The focus of the thematic unit is how visual artists investigate experiences of the landscape that transcend language and how this aesthetic inquiry can serve as a highly formative paradigm for use in secondary art education.

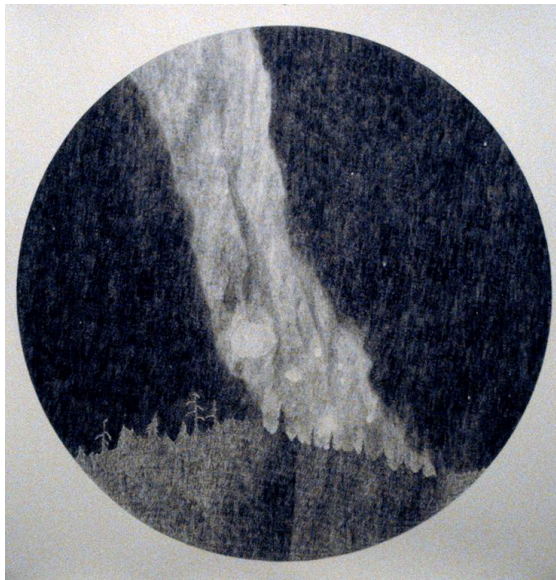
Although the lessons in the unit are designed for the art classroom, they are interdisciplinary and can easily be adapted for many science topics and lessons. The scope of artists represented address the transcendental landscape—ranging from sculptors of light to artists who use astronomy, the land, and the sky to convey their ideas. By including an aesthetics unit in the secondary classroom that explores the transcendental landscape, students will learn meaningful ways that artists have explored these themes in art while also cultivating a sense of wonder in the exploration of the natural world. It is also the author's hope that this research leads educators to explore new ways of considering art's unique capacity to capture the phenomena of the visual world.

The Thematic Unit is designed to guide students through studio investigations that explore this topic in a variety of ways. The studio lessons include 2-D and 3-D projects that utilize drawing, painting, multi-media sculpture, and unconventional art materials such as light, land, and sky. Through a series of carefully designed lessons that advocate inquiry based learning, students will interact with these concepts through art production, field explorations, and interdisciplinary collaboration. In addition to the studio activities, art history, aesthetics, science, and studies of the natural world are major components of the

thematic unit. The Unit has four lessons that are organized by theme. Each theme examines artists who employ these concepts in their work. The themes include:

- 1. Microcosm–Macrocosm**
- 2. Light, Space, & the Cosmos**
- 3. Seen and Unseen**
- 4. The Mapping of Time**

# Microcosm–Macrocosm



Winters, Terry. (1997). *Image Location* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>

Crotty, Russell. (1999). *Summer Milky Way Sinking* [Drawing]. Retrieved from ARTstor: <http://www.artstor.org>

## Background

Disrupting the conventions of realism can enhance the abstract qualities of a painting, including such strategies as a drastic change in scale, unexpected viewpoint, or an abstraction of space. Artist Terry Winters disrupts conventional realism by basing much of his imagery on abstract treatments of biological and mineral forms blown up to eye opening size. Artist Russell Crotty observes the landscape and the cosmos through telescopic observations to create his drawings that explore amateur astronomy, the natural world, and surfing.

## Concept

In order to understand the relationship between macro and micro scales of natural forms, students will record observations of natural forms such as seeds, leaves, pods etc. by sketching them with pencil on paper. (If the classroom has access to viewing the specimens under a microscope, this is even better!) Have students compare these biological forms to shapes and forms found in the solar system. Students will observe the intricacy of both micro and macro forms in nature, and explore these observations through drawing. Through this exercise, students will discover similar shapes/ forms on all scales—from the galaxy to a fingerprint. This information will be used to start a thought provoking conversation about archetypal shapes such as spirals, arches, loops etc. A final art piece will

be made that combines 3 visual elements from this study based on initial sketches. The final piece can be drawing, painting, or mixed media.

### **Areas Covered**

Art Production, Art History, Aesthetics, Collaboration, Interdisciplinary themes, Astronomy, Environmental Science, Geography, Physical Science

### **Goal**

Through a process of layering imagery, the student will create a composition that contains both micro and macro elements in relation to one another. The organization of forms may include studies of biology, astronomy, or any natural element (Human biology, leaves, trees, seedpods, satellite photographs, solar systems, stars, or other natural forms.) These elements from the natural environment will be incorporated into the artwork and modified. A variety of techniques will be included in the finished project. Students will use at least three different sources and combine them into a composition.

### **Objectives**

Create a work of art that fuses macro and micro forms in nature into a thoughtful painting or drawing by employing painting and expressive drawing. Make a statement about the beauty, scale or shape of forms using organic, geometric, and linear gesture. Students will be exposed to art history, contemporary art practice, and concept driven artwork. Refer to the paintings of Terry Winters and the drawings of Russell Crotty for examples. A reference list with additional resources/ websites is attached.

### **Ideas to consider:**

- Abstracting Nature- themes or topics that appear in the natural world
- Abstracting the Spiritual- expressing a spiritual dimension
- Abstraction as commentary- gestural brushstroke as a sign of inner emotion; hard edges, grid or other geometric forms as signs of order and rationality
- No painted surface- take advantage of the colors and physical qualities of the materials you select - natural wood, stamps, labels, or other found objects
- The use of a large quantity of things or the isolation of something interesting

### **Requirements**

#### Establishing Formal Contrasts

Combine 3 or more in the composition:

**A contrast of color**

- Neutrals and saturated colors
- Pairs of complementary colors
- Dark and light
- Warm and cool
- Transparent and opaque

**A contrast of shapes, planes, volumes**

- Geometric / Organic
- Rounded / Angular
- Flat / Curved
- Large / Small
- Many / Few

**A contrast of texture and surface treatment (painting techniques)**

- Rough / Smooth
- Thick / Thin
- Glossy/ Matte

**A contrast of linear qualities**

- Straight / Rounded
- Thick / Thin
- Continuous / Broken

**A contrast of dimension**

- Flatness and Depth
- Near and Far

**Procedure**

1. Look at the artwork of Terry Winters & Russell Crotty and take notes/sketch drawings in the journal of themes. After viewing, participate in discussion with teacher regarding aesthetic inquiry questions.
2. View specimens from nature under the microscope or through naked eye observation (seeds, pods, leaves, nautilus, shells, etc.) This exercise can also be done outside if your classroom situation allows this. Draw observations in journal.
3. Research images on computer or in library of astronomy, the galaxy, satellite images of space, celestial bodies etc. Draw observations in journal.
4. From drawings in the sketchbook and photos collected, students will select at least three different elements from nature that exemplify the concept of microcosm and macrocosm and begin to assimilate them into a composition.
5. Using the sketches to articulate the final drawings, students will then combine the images onto a single surface.

6. Use of photoshop may be helpful in obtaining a preliminary design.

7. Canvas Size: 18" x 24" to 24" x 30"

### **Teacher Preparation:**

- Powerpoint discussion on Terry Winters & Russell Crotty
- Optional- show Art21 interview with Terry Winters
- Microscope demonstration / drawing demo
- Short presentation on star systems, supernovas, and satellite images

### **Teacher Resources:**

Crotty, R. (2010). *Russell Crotty*. Retrieved from <http://www.russellcrotty.com/>

Helden, A. (1995). *The Galileo project*. Retrieved from [http://galileo.rice.edu/sci/observations/sunspot\\_drawings.html](http://galileo.rice.edu/sci/observations/sunspot_drawings.html)

Kent County Council. (2011). American artist Russell Crotty talks about his show at Turner Contemporary [Video file]. Retrieved from <http://www.youtube.com/watch?v=2T8ppBf54C4>

Knisely, L. and Vogel, T. (2007). *Telescopes from the ground up*. Retrieved from <http://amazing-space.stsci.edu/resources/explorations/groundup/teacher/grabbag.html>

Nemiroff, R and Bonnell, J. (2012). *Astronomy picture of the day*. Retrieved from <http://apod.nasa.gov/apod/astropix.html>

Tate Shots. (2009). Tate shots NYC: Terry Winters [Video file]. Retrieved from <http://www.youtube.com/watch?v=PLW3cs0LfY>

### **Supplies/ Materials:**

- Found objects- manufactured or taken from nature
- Acrylic Paints- full range of colors for mixing a variety of hues
- Paint brushes
- Sketchbook
- Pencils
- Tracing paper
- Computer w/ Photoshop (optional)
- Stretched canvas or painting board

### **Teacher Preparation:**

Gather and maintain supplies. Be prepared to demonstrate variety of painting techniques (listed in lesson) and color theory / mixing concepts. Powerpoint presentation on Terry Winters & Russell Crotty recommended.

### Time Frame: 5-6 one hour classes

1st class- Introduction, watch youtube videos for Terry Winters and Russell Crotty (see teacher resources), engage in aesthetic inquiry questions, explain studio project

2nd class- View nature objects, astronomy and galaxy images, sketch ideas in journal

3rd class- Studio- finish final sketches/ ideas. Start on final piece

4th class- Studio- continue to work on final piece

5th class- Studio- continue to work on final piece

6th class- Critique and discussion. Close with aesthetic inquiry questions and concepts

### Extensions

This lesson can easily be extended into a more in depth study of art, aesthetics, astronomy, and biology by looking at and discussing the drawings of Galileo in the 16th century and Isidore of Seville, c. A.D 800. This will provide valuable historical connections while also affirming the archetypal nature of these images throughout history. Have students compare these scientific/ historical drawings to the work of the contemporary artists in this lesson. See drawings listed below for reference.

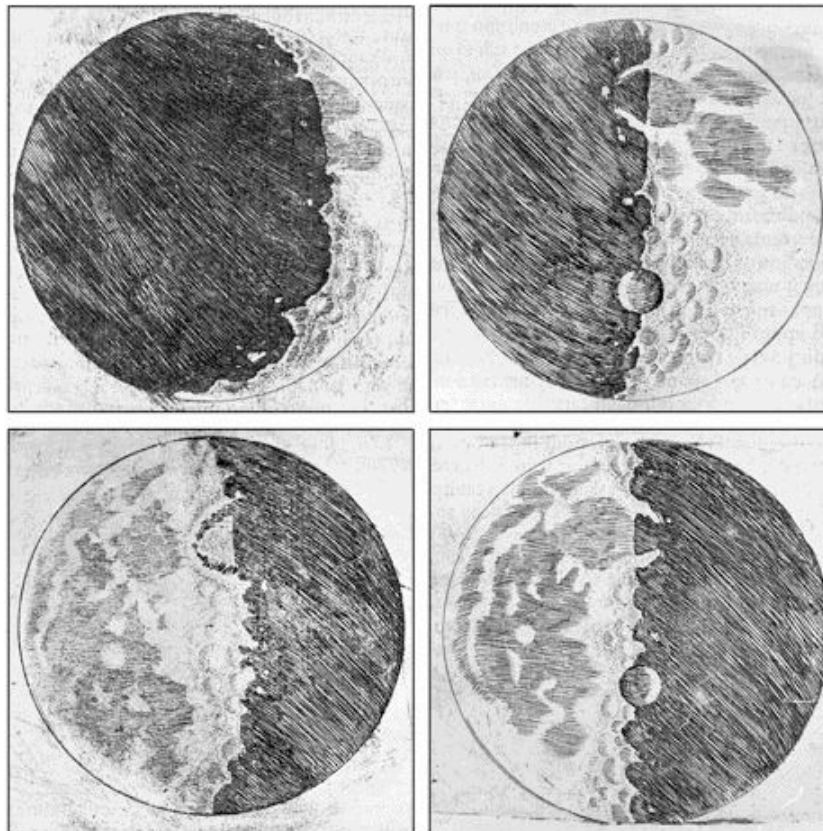


Fig 3 Galilei, Galileo. (16th c. A.D). *Drawings of the Moon*. Retrieved May 20, 2012 from ARTstor: <http://www.artstor.org>



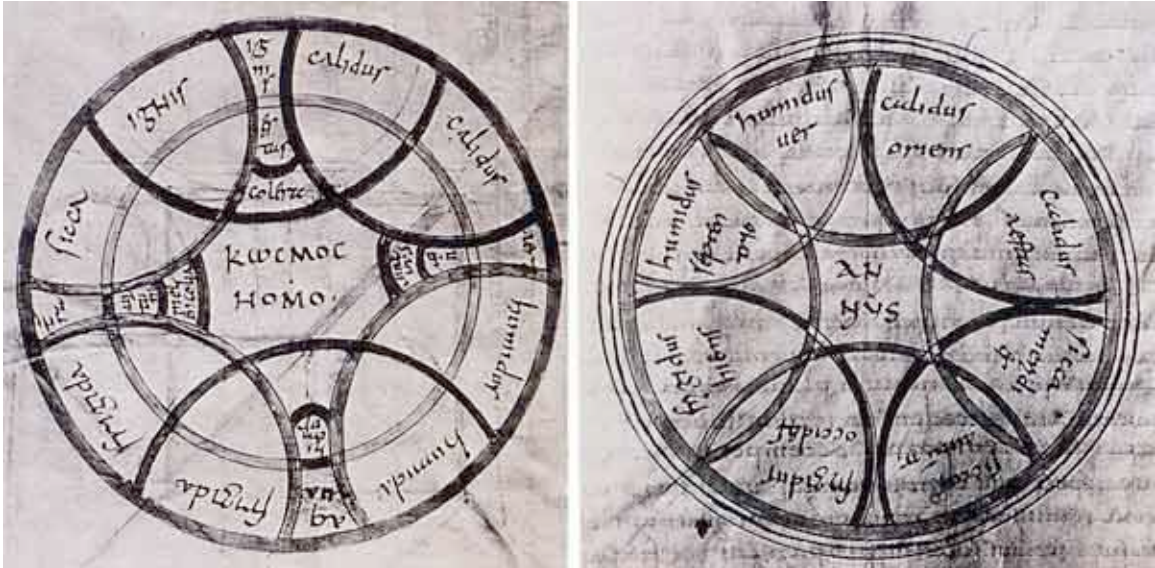


Fig 4 Isidore of Seville. (c.A.D. 800). *De Natura Rerum*, manuscript anthology. From *Alchemy and Mysticism*, The Hermetic Museum by Alexander Roob, 1997, London: TASCHEN, 44

## Assessment

Critique, Self Assessment

## Aesthetic Inquiry Questions

- What shapes are found in nature and how do these shapes fit together to create a form?
- Why do these forms exist at all scales (circles, spirals, arches / cosmos, nautilus, fingerprint)?
- Have you ever looked through a microscope? A telescope?
- What did you see and how did it change the way you saw nature? stars?
- In what ways does Terry Winters use biological forms in his paintings?
- Why is the scale of his paintings important to representing his ideas?
- How can the way visual artists use biology and astronomy help us understand our visual world? How is this different from 'naked eye observation' of natural forms?
- What is the viewpoint of Russell Crotty's drawings and why is scale important in these drawings?
- What do you think these artists want the viewer to pay attention to?
- How does Russell Crotty use astronomy to inform his work?
- What reoccurring shapes, lines, and forms do you see in these drawings?
- How are these similar to photographs in astronomy....of the the galaxy? How are they different? What can you see in a drawing that you can't see with a lens? How do you think these artists use photography to inform their work?
- How are Russell Crotty's drawings different from what you see through a telescope or in satellite images?
- How do these drawings relate to human scale? How does the body relate to these artworks?

- How does texture, color, and line effect the way we perceive these works of art?
- What is abstraction and how does it change the way we look at things? Why is this important?

## **Vocabulary**

**Abstraction-** Imagery that departs from representational accuracy, to a variable range of possible degrees. Abstract artists select and then exaggerate or simplify the forms suggested by the world around them.

**Archetype** is a universally understood symbol, term or pattern upon which others are copied, patterned, or emulated.

**Astronomy-** A branch of science that deals with celestial objects, space, and the physical universe as a whole

**Biological-** Of, relating to, caused by, or affecting life or living organisms

**Biology-** The science of life and of living organisms, including their structure, function, growth, origin, evolution, and distribution. The life processes of a group or category of living organisms. The plant and animal life of a specific area or region.

**Celestial body-** natural objects visible in the sky. The term celestial body is as expansive as the entire universe, both known and unknown. By definition a celestial body is any natural body outside of the Earth's atmosphere. Easy examples are the Moon, Sun, and the other planets of our solar system.

**Form-** the visible shape or configuration of something.

**Human scale** is the set of physical qualities, and quantities of information, characterizing the human body, its motor, sensory, or mental capabilities. Many of the objects of scientific interest in the universe are much larger than human scale (stars, galaxies) or much smaller than human scale (molecules, atoms, subatomic particles).

**Landscape-** A painting, photograph or other work of art that depicts scenery such as mountains, valleys, trees, rivers, forests, and sky in the scene. In addition to its conventional definition, the landscape will also be referred to in terms of aesthetics which highlights the way contemporary artists have expanded the concept of landscape in their work. This concept of the landscape can reflect representations (of mountains, sky, man-made structures, water, etc) beyond the physical realm.

**Macrocosm and Microcosm** is an ancient Greek schema of seeing the same patterns reproduced in all levels of the cosmos, from the largest scale

(macrocosm or universe-level) all the way down to the smallest scale (microcosm or sub-sub-atomic or even metaphysical-level).

**Microcosm-** Something small that contains or represents all the features or qualities of something larger. A little world; a miniature universe

**Macrocosm-** the entire world; the universe. A system reflecting on a large scale one of its component systems or parts.

**Natural object-** an object occurring naturally; not made by man

**'Naked eye' astronomy-** is a figure of speech referring to human visual perception unaided by a magnifying device, such as a telescope or microscope. The term is often used in astronomy when referring to events that can be viewed without equipment, such as the passage of a comet or a meteor shower. Sky lore and various tests demonstrate an impressive wealth of phenomena that can be seen with the unaided eye.

**Stylization:** alter natural shapes, forms, colors, or textures in order to make a representation in a preset style or manner.

**Viewpoint-** A position from which something is observed or considered; a point of view.

## References

Crotty, R. (2010). *Russell Crotty*. Retrieved from <http://www.russellcrotty.com/>

Helden, A. (1995). *The Galileo project*. Retrieved from [http://galileo.rice.edu/sci/observations/sunspot\\_drawings.html](http://galileo.rice.edu/sci/observations/sunspot_drawings.html)

Kent County Council. (2011). American artist Russell Crotty talks about his show at Turner Contemporary [Video file]. Retrieved from <http://www.youtube.com/watch?v=2T8ppBf54C4>

Knisely, L. and Vogel, T. (2007). *Telescopes from the ground up*. Retrieved from <http://amazing-space.stsci.edu/resources/explorations/groundup/teacher/grabbag.html>

Nemiroff, R and Bonnell, J. (2012). *Astronomy picture of the day*. Retrieved from <http://apod.nasa.gov/apod/astropix.html>

Tate Shots. (2009). Tate shots NYC: Terry Winters [Video file]. Retrieved from <http://www.youtube.com/watch?v=PLW3cs0LfpY>

Roob, A. (1997). *Alchemy and mysticism, the hermetic museum*. London: Taschen





Winters, Terry. (1984). *Double Gravity* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Winters, Terry. (1989). *Eureka* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



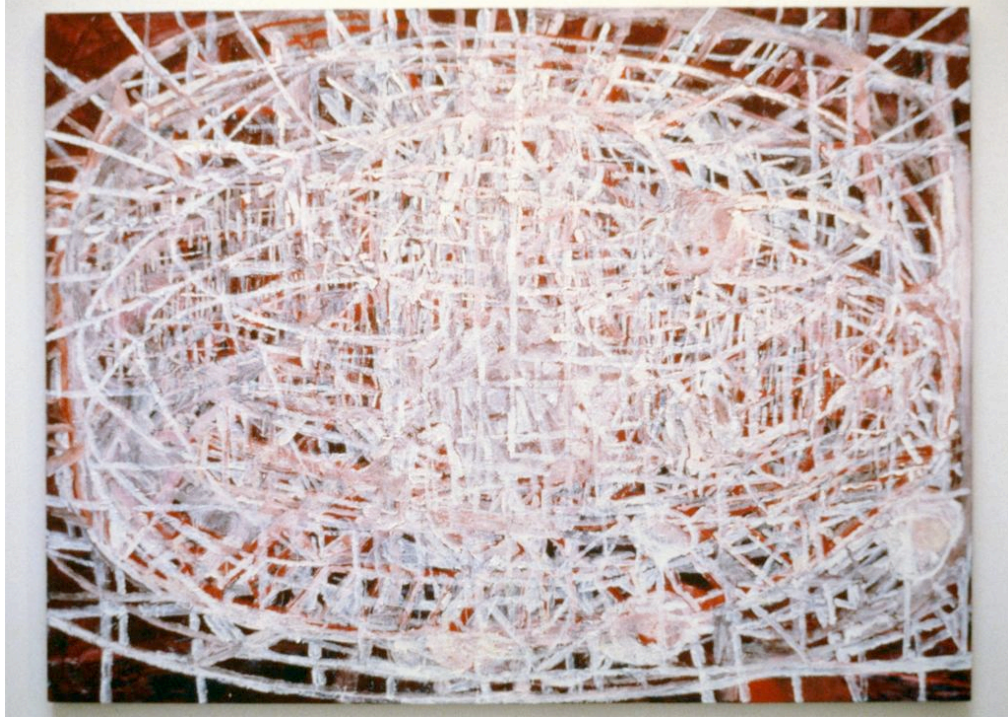


Winters, Terry. (1998). *Graphic Primitives 8* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>

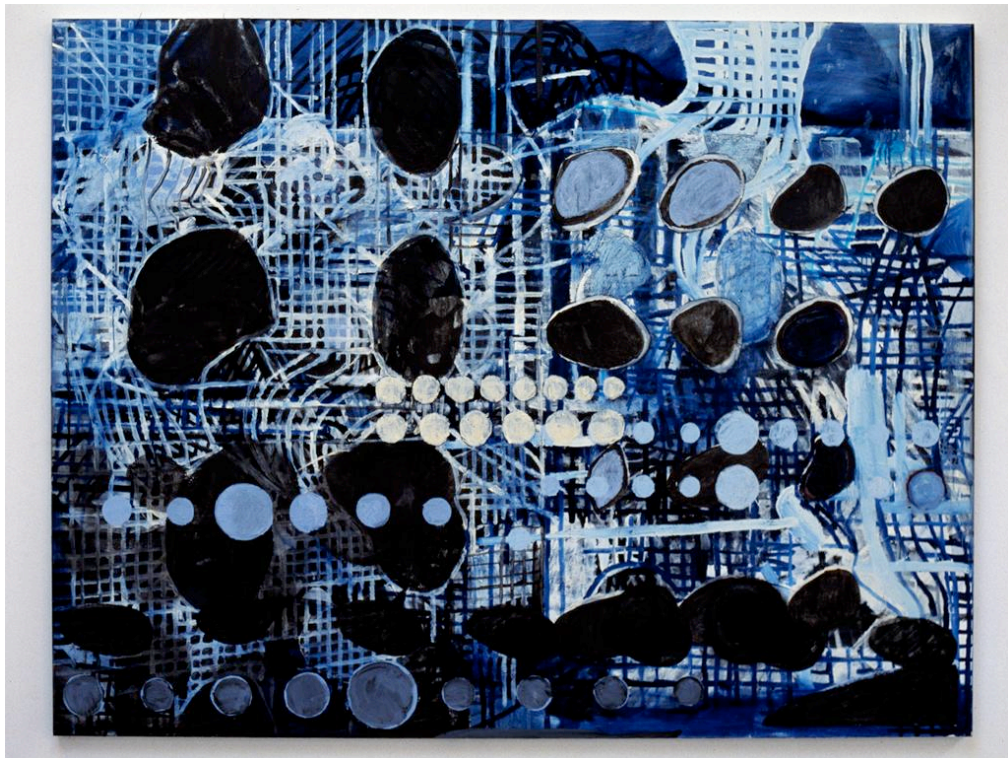


Winters, Terry. (1997). *Picture Cell* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



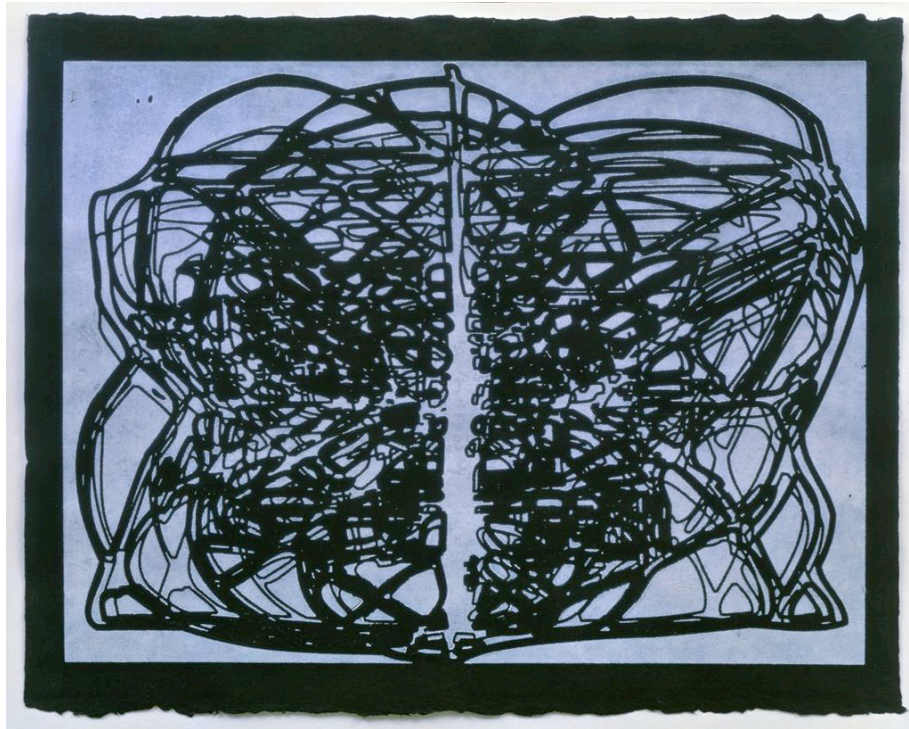


Winters, Terry. (1997). *Light Source Direction* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>

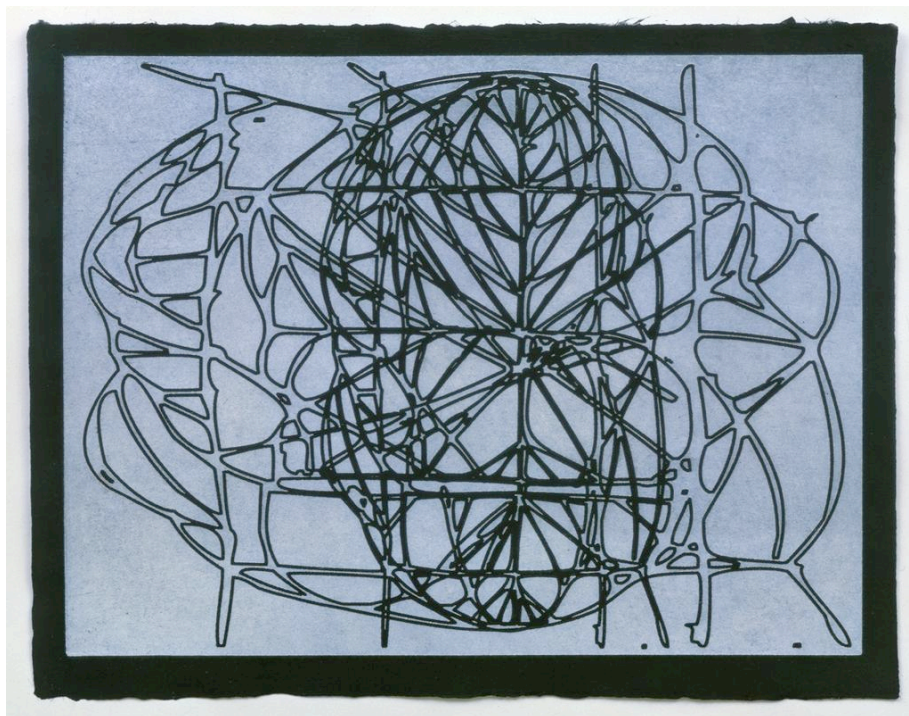


Winters, Terry. (2003). *StandardGraph/1* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



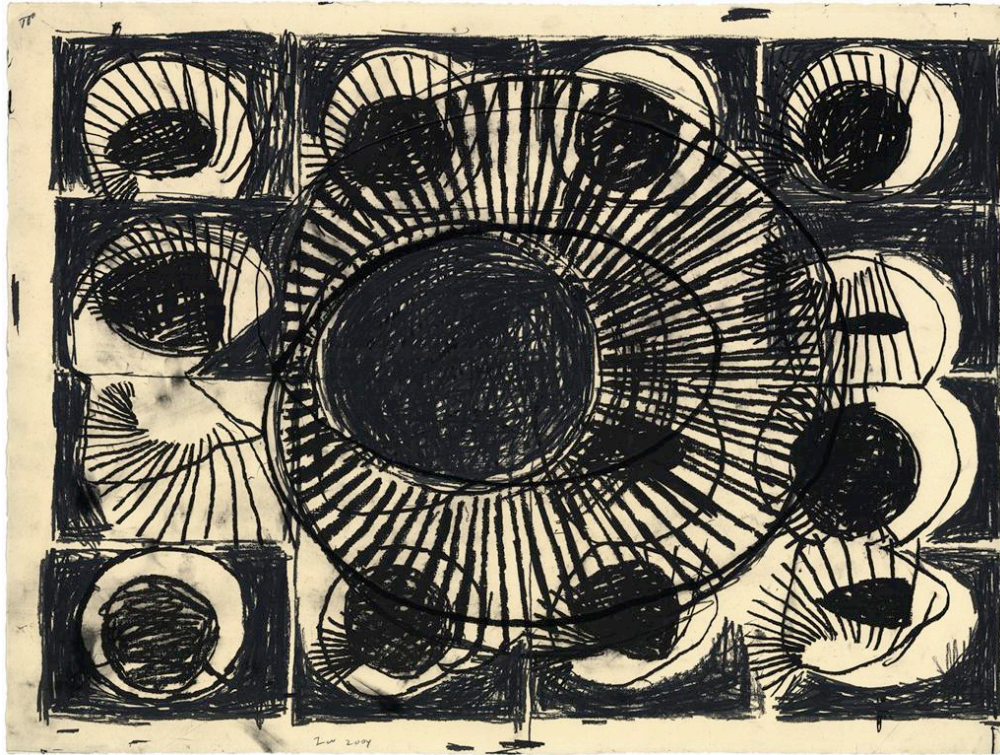


Winters, Terry. (1998). *Graphic Primitives 6* [Woodcut]. Retrieved from ARTstor: <http://www.artstor.org>

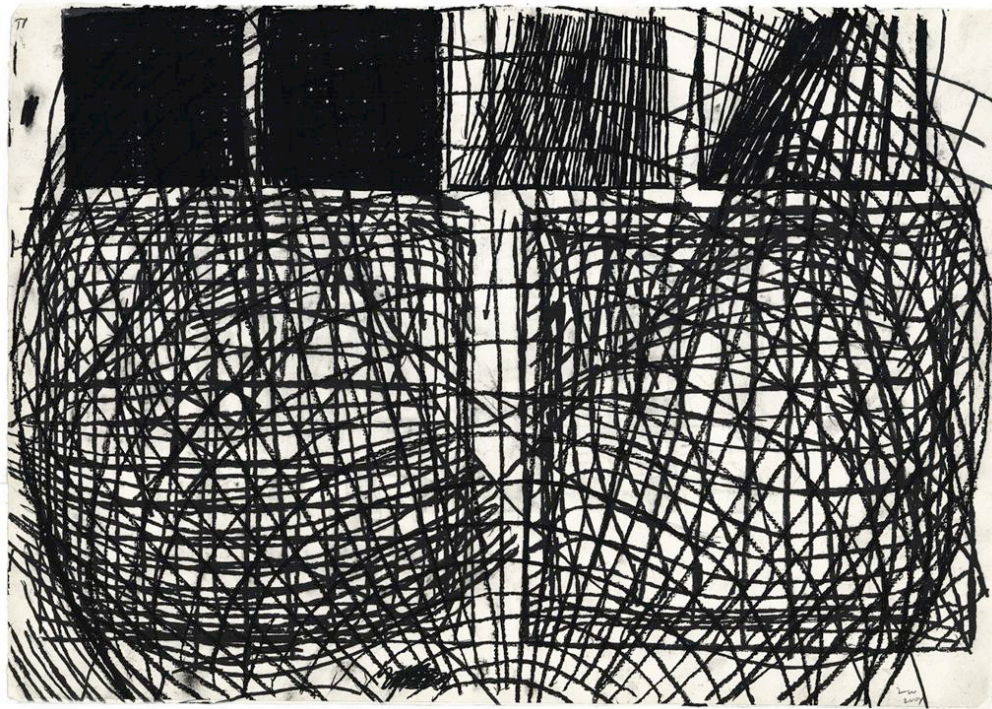


Winters, Terry. (1998). *Graphic Primitives 4* [Woodcut]. Retrieved from ARTstor: <http://www.artstor.org>





Winters, Terry. (2004). *Sequence* [Lithograph]. Retrieved from ARTstor: <http://www.artstor.org>



Winters, Terry. (2004). *Grid* [Lithograph]. Retrieved from ARTstor: <http://www.artstor.org>





Crotty, Russell. (2003). *Three Astronomical Globes* [Drawing]. Retrieved from <http://www.russellcrotty.com>



Crotty, Russell. (2002). *M11 Galactic Cluster in Scutum* [Drawing]. Retrieved from <http://www.russellcrotty.com>



Crotty, Russell. (2000). *The Milky Way, Northern Hemisphere* [Drawing]. Retrieved from <http://www.russellcrotty.com>



Crotty, Russell. (1999). *M13 Globular Cluster* [Drawing]. Retrieved from <http://www.russellcrotty.com>

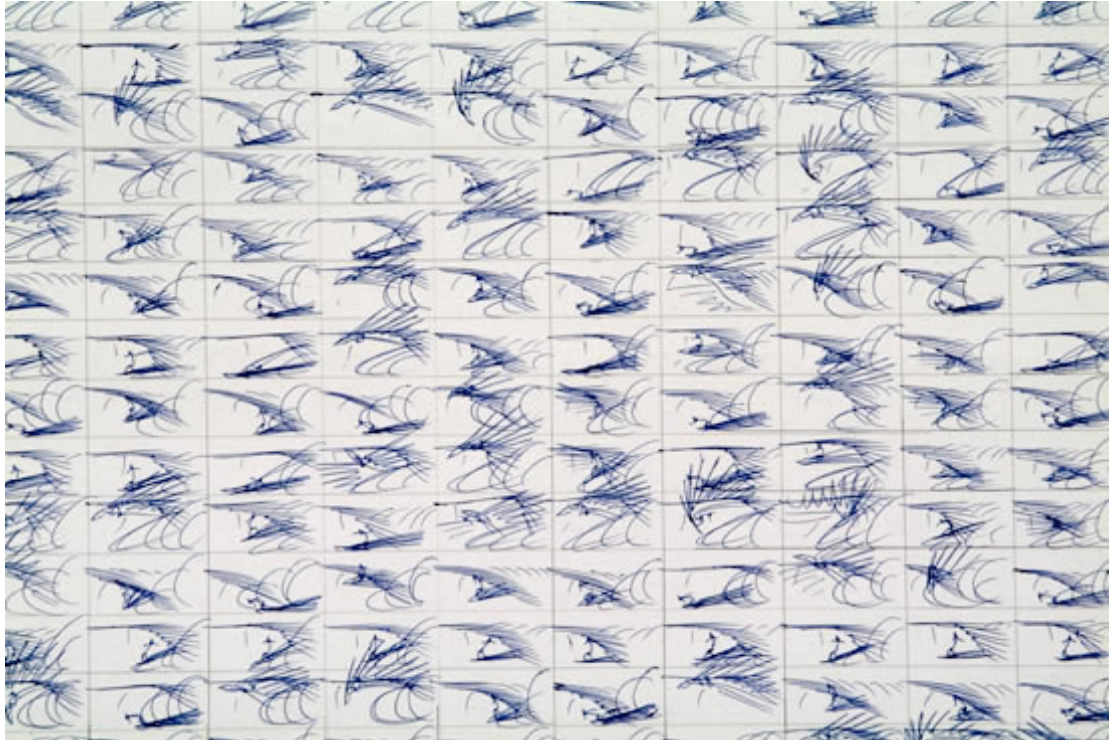


Crotty, Russell. (2005). *Into the Sespe Wilderness* [Drawing]. Retrieved from <http://www.russellcrotty.com>



Crotty, Russell. (2009). *Point Saint George* [Drawing]. Retrieved from <http://www.russellcrotty.com>





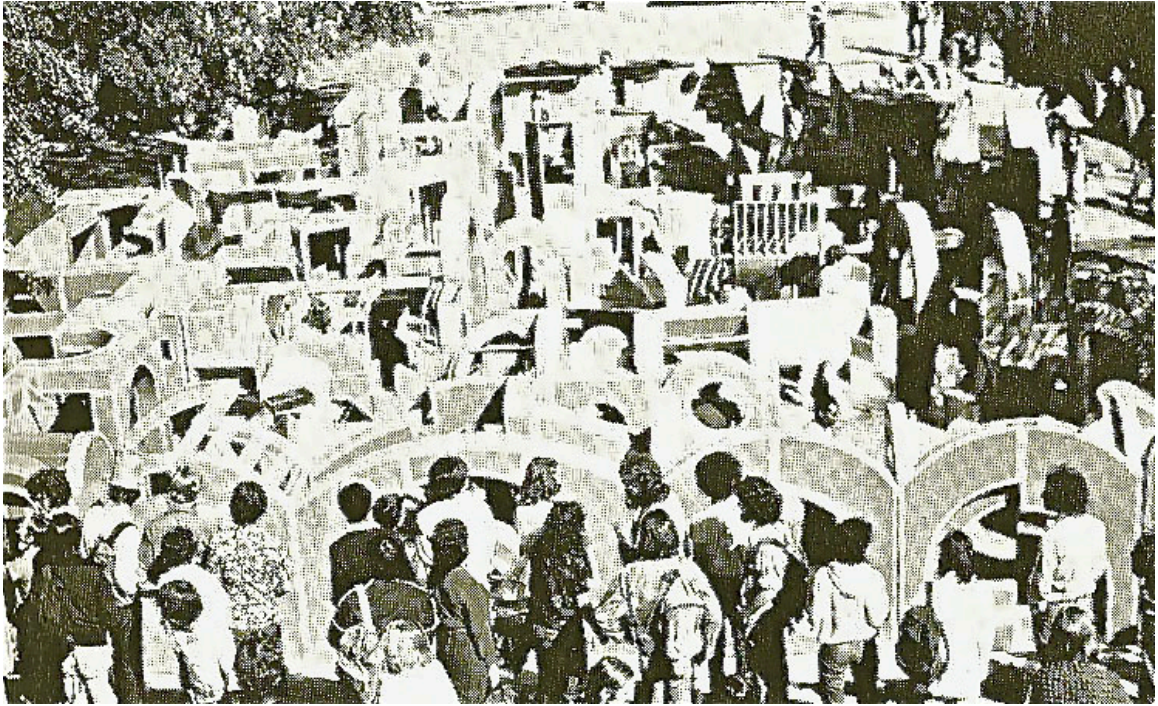
Crotty, Russell. (1990). *Detail from Surf Drawing* [Drawing]. Retrieved from <http://www.russellcrotty.com>



Crotty, Russell. (2008). *A Portfolio of Surf Drawings* [Drawing]. Retrieved from <http://www.russellcrotty.com>



## Light, Space, and the Cosmos



Roukes, Nicholas. (1982). *Piazza of San Cardo* by students of Rafaelo Dvorak's Design class, University of California, Berkeley [sculpture installation]. Worcester, Massachusetts: Davis Publications.107



Holt, Nancy. (1973-76). Sun Tunnels [Installation]. Great Basin Desert, Utah. Retrieved from ARTstor: <http://www.artstor.org>

## Background

James Turrell, Nancy Holt, and Demetrius Oliver are all artists who use the sky, the earth and natural phenomena as inspiration for their work. These artists draw upon science and astronomy to create art that explores our “earth to star connection.” These artists use light, stars, and astronomy to align the physical environment that surrounds the perceiver, creating an intimate personal connection to the vastness of the stars. The media that these artists use to create their work, such as light and color spectrums, have inherently unique properties that create a transcendent quality. The fundamental connection between man, the land, and the universe are explored in profound ways by each of these artists—creating a unique relationship between art, natural phenomena, and perception (Saad-Cook, 1988).

*Sun Tunnels* is a sculpture created by Nancy Holt located in the Great Basin Desert in Utah. In this piece, Holt constructed four concrete tunnels placed in an “X” configuration that correlate to constellations, the times of day, and the summer and winter solstice. Nancy Holt describes this ‘earth to star connection’ in *Sun Tunnels* by stating: “The Sun being a star, is casting spots of starlight through the star holes, so that when one walks through the tunnels, in effect, one is walking on stars. It’s an inversion of the sky/ ground relationship—bringing the sky down to the earth.” (Holt cited in Saad-Cook, 1988, p. 127).

James Turrell uses light as the primary medium for his sculptures and installations. Turrell describes the use of light in his work and the premise behind his monumental Earth work, *Roden Crater*, located near Arizona’s Painted desert: “My work has always involved working with light. And working with light in a space so that the light feels tangibly present there and seems to be filling the space. In Roden Crater, I am working with a series of spaces that select light from different portions of the sky. The effects of this light will create certain atmospheres in the spaces inside the crater. This setting is a place where one feels like one is standing on the surface of the planet. I am making these spaces that engage celestial time and celestial events. So immediately there is that feeling of orienting to things beyond.” (Turrell cited in Saad-Cook, 1988, p. 129)

Demetrius Oliver explores the relationship between visual perception and the universe by using ordinary objects to create intricate sculptural installations in configurations that reference the cosmos. He uses sculpture, photography, video installation, music, and performance to engage his audience from multiple perspectives. Natural phenomena such as planetary systems, celestial bodies, the sea and the sky are all sources that Oliver draws upon in creating his work (Light Work, 2010). Demetrius Oliver’s blog, *Almanak*, documents his work and also provides several scientific articles and links, organized by theme, related to his cosmological explorations. This site provides several interdisciplinary connections between science and art.

## Concept

### Creating an Architectural Environment

1. Students will create a modular structure that relates to the sun, light, and sky in some way. The structure will need to be constructed so that it is able to interlock with other similar modular structures. Use cardboard, tape, and acrylic or latex paint (Roukes, 1982, p. 107).
2. As a collaborative project, assemble all of the structures to form an architectural cluster.

### **Area covered:**

Art production, design, architecture, art history, aesthetics, science, technology, astronomy and creative problem solving through collaboration

### **Goal**

Create a modular structure that relates to the sun, light, and sky. The structure will need to be constructed so that it is able to interlock with other similar modular structures. Effectively collaborate with other students on structure design, concept, and construction.

### **Objectives**

- Create a modular structure that relates to the sun, light, and sky
- Develop an awareness of light as an important sculptural element
- Develop awareness of form that relates to the natural environment
- Explore 3-dimensional forms using basic materials and construction techniques
- Build complex shapes that vary in width and size
- Develop spatial awareness and craftsmanship skills
- Work collaboratively with other students to achieve project goal
- Exposure to art history, contemporary art practice, and concept driven artwork

### **Procedure**

1. Listen to introduction on artists: James Turrell, Nancy Holt, and Demetrius Oliver.
2. Watch videos/ interviews about the artists and engage in aesthetic inquiry questions.
3. Listen carefully while teacher explains studio project/ lesson.
4. Separate into groups of three. Begin sketching concepts and ideas for sculpture. Collaboration should be evident among the members in each group.

5. Decide on final concept; show a completed sketch of the idea to teacher for approval. Evidence of a well thought out idea should be apparent in preliminary sketches.
6. Listen to and watch cardboard construction techniques demonstrated by teacher
7. Studio/ art production: work on building and constructing your sculpture
8. When sculpture is complete, participate in class discussion about your artwork. Be prepared to present your concept and ideas to the class. Participation required.

## Requirements

- Preliminary sketches of ideas for the design of the structure
- Modular structure that relates to the light in some way
- Use of multiple shapes that vary in size to create structure
- Piece may be constructed indoors, but must be installed outdoors
- Structure needs to be able to interlock with other similar modular structures
- Collaborate with at least two other people (groups of three)
- One paragraph statement describing how light is being used in the piece

## Resources

### Cardboard Construction videos:

**These instructional videos are helpful to watch in the order listed.**

RyersonEDGElab. (2011). Adaptive design studio: basic cutting techniques [Video file]. Retrieved from <http://www.youtube.com/watch?v=P-4CyAQO7O4>

RyersonEDGElab. (2011). Adaptive design studio: making dowel nails [Video file]. Retrieved from <http://www.youtube.com/watch?NR=1&v=D87W12u-etw&feature=endscreen>

RyersonEDGElab. (2011). Adaptive design studio: gluing [Video file]. Retrieved from <http://www.youtube.com/watch?v=XIHNUIE0UX0>

RyersonEDGElab. (2011). Adaptive design studio: putting things together [Video file]. Retrieved May 20th 2012 from <http://www.youtube.com/watch?v=63BUj5nAR5A>

RyersonEDGElab. (2011). Adaptive design studio: finishing and edging [Video file]. Retrieved from <http://www.youtube.com/watch?v=GbEwSowD6W0>

Guiomar, Eric. (2008). *Cardboard Furniture: How to make a cardboard cupboard*. Retrieved May 20th 2012 from <http://www.youtube.com/watch?v=nZaa5poiTWk>



## **Artists interviews, videos, and resources:**

### **James Turrell:**

Art21 inc. (2001-2012). James Turrell in spirituality [Video file]. Retrieved from <http://www.pbs.org/art21/artists/james-turrell>

Kunstmuseum Wolfsburg. (2009). James Turrell: The Wolfsburg Project [Video file]. Retrieved from <http://www.youtube.com/watch?v=QWeklcZaKns&feature=plcp>

Skystone Foundation. (2011). *About Roden Crater*. Retrieved from <http://roden crater.com/about>

### **Nancy Holt:**

Christian, P. (2011). Nancy Holt: Sun Tunnels [Video file]. Retrieved from <http://www.youtube.com/watch?v=NMtUDgUirdI>

### **Demetrius Oliver:**

Friends of the High Line. (2010). Demetrius Oliver: Jupiter. Retrieved from <http://www.thehighline.org/about/public-art/oliver>

Light Work. (2010). Demetrius Oliver: Penumbra. Retrieved from <http://www.lightwork.org/exhibitions/oliver.html>

Oliver, Demetrius. (2011). Artists blog: Almanack. Retrieved from <http://demetriusoliver.blogspot.com/>

### **Suggested Articles:**

Saad-Cook, J. (1988). Touching the sky: artworks using natural phenomena, earth, sky and connections to astronomy. *Leonardo*, 21, 123-134.

## **Supplies/ Materials**

Cardboard, elmers glue, x-acto knives, scissors, pencils, markers, sketching paper or sketchbook

## **Teacher Preparation**

- Remember that recycled cardboard is great for this project. Consider having cardboard boxes donated from local stores or retailers if you are unable to order sheets of cardboard. The beauty of this project is that it is incredibly economical for any classroom. Use the cardboard construction videos listed under resources to help with some basic cardboard construction techniques.

- It is helpful for the teacher to watch the artist videos/ interviews (listed under resources) before teaching the class.
- Acquire basic familiarity with the cardboard construction techniques by watching the short instructional videos listed under resources
- Reading the article, “Touching the Sky: Artworks Using Natural Phenomena, Earth, Sky and Connections to Astronomy” is also very informative, though not required to teach this lesson.

## Teaching

- Introduction to artists: James Turrell, Nancy Holt, and Demetrius Oliver.
- Show class artists videos/ interviews (listed under resources)
- Engage class in aesthetic inquiry questions. The aesthetic inquiry questions can be used to discuss the work of James Turrell, Nancy Holt, and Demetrius Oliver by inserting their name into the questions. They can also be used as a way to guide students into thinking about the formal and conceptual nature of their own art work. A handout with the aesthetic questions may be helpful for students to refer to when sketching ideas for their sculpture.
- Art production/ studio time: demonstrate basic cardboard construction techniques
- Help students to achieve idea/ concept by demonstrating construction techniques and offering technical solutions to the design of the structure
- Facilitate thoughtful discussion and class critique of the finished art work by encouraging reflective comments and revisiting aesthetic inquiry questions. Sit inside the installation the class has created and have each group present their sculpture and discuss the concept behind their piece. Each group is required to present their work orally. Participation is required.

## Aesthetic Inquiry Questions:

When Developing the Concept Behind Your Piece, Consider the Following:

- How am I using light as a sculptural element in this structure?
- What are the unique qualities of light and how can I use these elements in my piece?
- How do I want this sculpture to make people feel? How does light make you feel?
- How does the structure relate to the body? What is the scale?
- Can I walk inside it or am I on the outside looking in? How does this change the experience?

- What is the relationship between the earth, the sky, and the cosmos in this art work?
- What shapes and forms most clearly represent the concept behind my art work?
- How can I effectively collaborate on this project with my group?
- If this modular structure is one part of a whole—how will it relate to the other structures?
- How do the materials I am using relate to the environment where the sculpture will be?
- How do I want people to interact with this piece? Is there movement or sound?
- Is this sculpture meant to be viewed at a certain time of day? If so, when and why?
- How does time effect this piece? Are the materials temporary or permanent?
- If someone was viewing your sculpture 500 years from now, how do you think s/he would relate to your artwork? Explain? Consider ancient works such as Stonehenge, the Mayan observatory, the Egyptian pyramids...What do you think these ancient civilizations were trying to accomplish when they built these structures?
- How can you represent the idea of the infinite - like the universe? Is that even possible? If so, what shapes, symbols, and forms do you think you would use?

### **Extensions:**

- This project can easily be extended to incorporate digital media and technology by having students design a short film/video clip on imovie that can be played or projected inside the sculpture installation. The short film/ video clip should also address the sun, light, and sky in some way. It should also relate to the sculpture with consideration to content and form. Refer to the art work of Demetrius Oliver for inspiration.
- Another excellent way to extend this project is with a visit to the planetarium! This would allow students the opportunity to make profound connections between science and art while inspiring wonder in the natural world. It also provides a great context for understanding the artists' work in this lesson.

### **Time budget**

#### 6-8 one hour classes

Class 1- Introduction to artists: James Turrell, Nancy Holt, and Demetrius Oliver. Watch videos/ interviews about the artists, engage in aesthetic inquiry questions, introduce lesson concept.

Class 2 - Separate class into groups of three. Sketch concepts and ideas for sculpture. Introduce cardboard construction techniques; watch instructional videos (if needed).

Class 3 - Studio / art production

Class 4 - Studio / art production

Class 5 - Studio / art production

Class 6 - Studio / art production

Class 7 - Closure / critique and discussion

Class 8 - Another class if needed to finish project

## **Vocabulary**

Astronomy- The scientific study of matter in outer space, especially the positions, dimensions, distribution, motion, composition, energy, and evolution of celestial bodies and phenomena.

Celestial- positioned in or relating to the sky, or outer space as observed in astronomy.

Cosmos- the universe seen as a well ordered whole

Content- what a work of art is about; its subject matter

Concept- An idea, thought, or notion conceived through mental activity.

Cosmology- The study of the world as a totality of all phenomena in space and time.

Form- all the visible aspects of a structure and the manner in which they are united to create its distinctive character

Geology- The scientific study of the origin, history, and structure of the earth

Installation art- art that is or has been installed and arranged in a specific place by (or specified by) an artist. It may be site specific, indoors, or outdoors.

Natural phenomena- all phenomena that are not artificial. Examples include: volcanic eruptions, weather, decay, gravity, erosion.

Observatory- a place equipped for observation of natural phenomena and celestial events, as in astronomy.

Perception- the process of becoming aware through sight, sound, taste, smell, or touch

Phenomena- an occurrence, circumstance, or fact that is perceptible by the senses

Roden Crater- an extinct volcano northeast of Flagstaff, Arizona that artist James Turrell has been transforming into a work of perceptual and celestial art since the late 1970s.

Solar cycle- a period of time, averaging c. 11 years, during which certain phenomena, as maximum sunspot activity, recur on the sun

Sun Tunnels- an artwork by Nancy Holt, completed in 1976, consisting of four large concrete tubes, laid out in the desert in an open X configuration. The nine foot diameter, 18 foot long “tunnels” are pierced by holes of varying size that correspond with the pattern of selected celestial constellations.

Structure- Something made up of a number of components that are put together in a particular way. Structure is any means of arranging or putting together a work to form a cohesive and meaningful whole

Universe- All existing matter and space considered as a whole

## References

Art21 inc. (2001-2012). James Turrell in spirituality [Video file]. *Art in the twenty first century*. Retrieved from <http://www.pbs.org/art21/artists/james-turrell>

ARTstor Inc. (2012). ARTstor: An Image Library for the Arts and Sciences. Retrieved from <http://www.artstor.org/index.shtml>

Christian, P. (2011). Nancy Holt: Sun Tunnels [Video file]. Retrieved from <http://www.youtube.com/watch?v=NMtUDgUirdI>

Creative Commons. (2012). Sun tunnels. *The center for land use interpretation*. Retrieved from <http://clui.org/ludb/site/sun-tunnels>

Friends of the High Line. (2010). Demetrius Oliver: Jupiter. Retrieved from <http://www.thehighline.org/about/public-art/oliver>

Guiomar, E. (2008). Cardboard furniture: how to make a cardboard cupboard [Video file]. Retrieved from <http://www.youtube.com/watch?v=nZaa5polTWk>

Kunstmuseum Wolfsburg. (2009). James Turrell: The Wolfsburg Project [Video file]. Retrieved from <http://www.youtube.com/watch?v=QWeklcZaKns&feature=plcp>

Light Work. (2010). Demetrius Oliver: Penumbra. Retrieved from <http://www.lightwork.org/exhibitions/oliver.html>

Oliver, D. (2011). Artists blog: Almanack. Retrieved from <http://demetriusoliver.blogspot.com/>

Roukes, N. (1982). *Art synectics: stimulating creativity in art*. Worcester, Massachusetts: Davis Publications, Inc.

- RyersonEDGElab. (2011). Adaptive design studio: basic cutting techniques [Video file]. Retrieved from <http://www.youtube.com/watch?v=P-4CyAQO7O4>
- RyersonEDGElab. (2011). Adaptive design studio: making dowel nails [Video file]. Retrieved from <http://www.youtube.com/watch?NR=1&v=D87W12u-etw&feature=endscreen>
- RyersonEDGElab. (2011). Adaptive design studio: gluing [Video file]. Retrieved from <http://www.youtube.com/watch?v=XIHNUIE0UX0>
- RyersonEDGElab. (2011). Adaptive design studio: putting things together [Video file]. Retrieved May 20th 2012 from <http://www.youtube.com/watch?v=63BUj5nAR5A>
- RyersonEDGElab. (2011). Adaptive design studio: finishing and edging [Video file]. Retrieved from <http://www.youtube.com/watch?v=GbEwSowD6W0>
- Saad-Cook, J. (1988). Touching the sky: artworks using natural phenomena, earth, sky and connections to astronomy. *Leonardo*, 21, 123-134.
- Skystone Foundation. (2011). *About Roden Crater*. Retrieved from <http://roden crater.com/about>



Holt, Nancy. (1973-76). *Sun Tunnels* [Installation]. Great Basin Desert, Utah. Retrieved from ARTstor: <http://www.artstor.org>



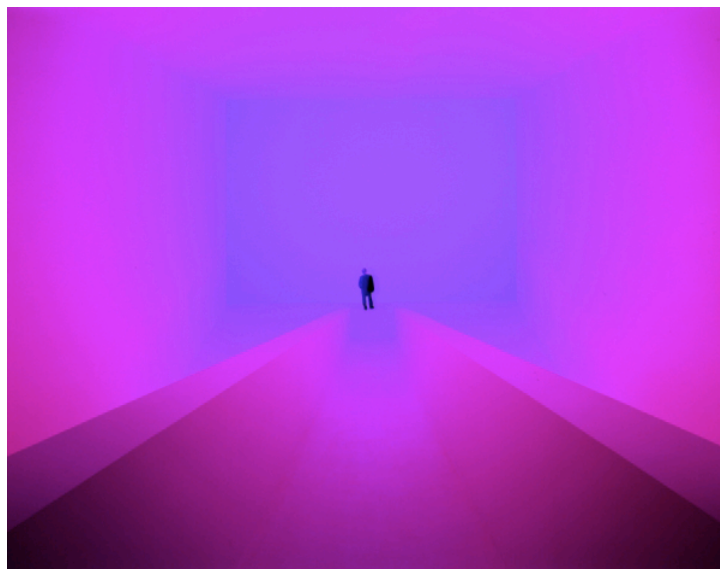


Holt, Nancy. (1973-76). *Sun Tunnels, aerial view* [Installation]. Great Basin Desert, Utah. Retrieved from ARTstor: <http://www.artstor.org>



Holt, Nancy. (1972). *Views Through a Sand Dune* [Sculpture]. Retrieved from ARTstor: <http://www.artstor.org>

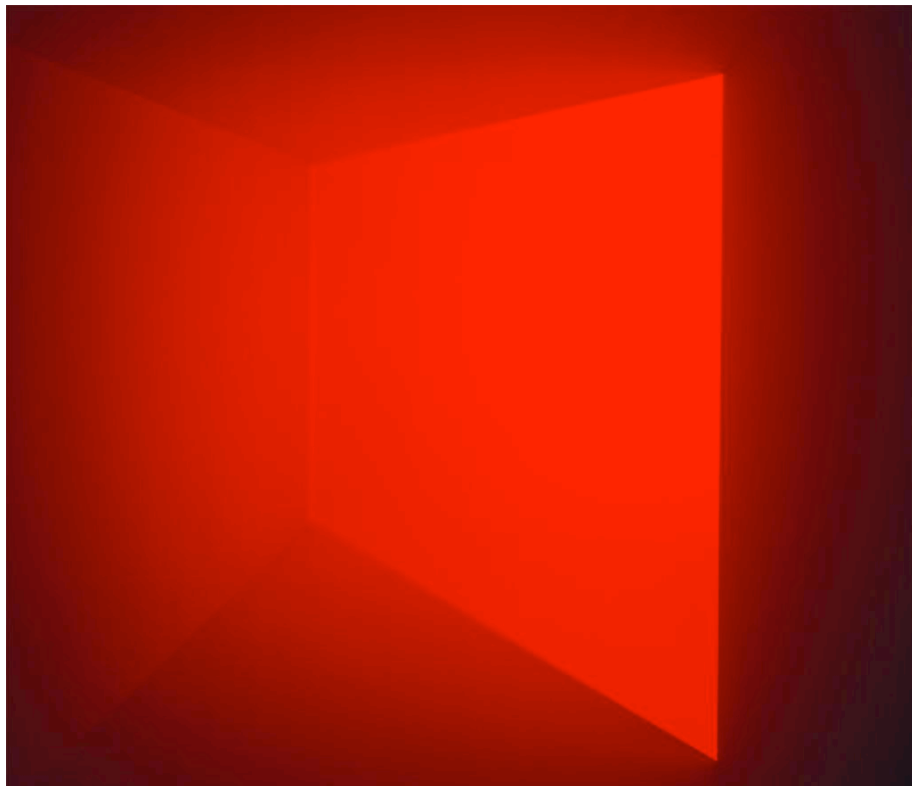




Turrell, James. (2009). *The Wolfsburg Project: James Turrell* [installation]. Photo: Florian Holzherr. Retrieved from [http://www.designartnews.com/media/users/akrol/originals/003\\_911.jpg](http://www.designartnews.com/media/users/akrol/originals/003_911.jpg)



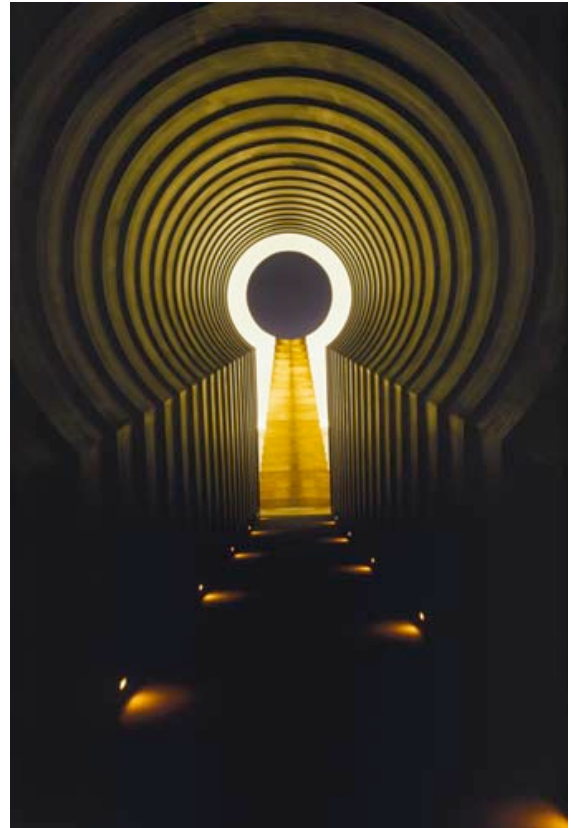
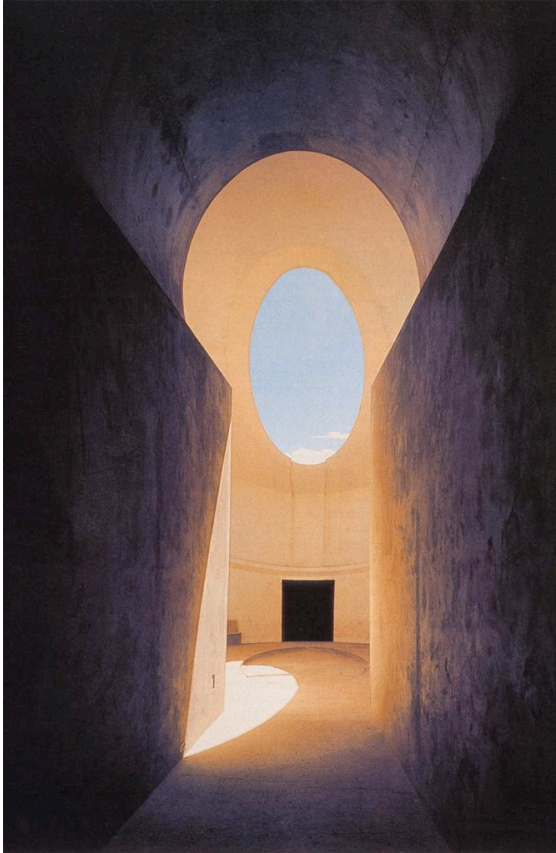
Turrell, James (2011). *Ganzfeld Apani*. Biennale Art di Venezia, Hausler Contemporary [Light Installation]. Retrieved from [http://www.hausler-contemporary.com/hausler-contemporary/JAMES\\_TURRELL.html](http://www.hausler-contemporary.com/hausler-contemporary/JAMES_TURRELL.html)



Turrell, James. (1994). *A Frontal Passage* [Light Installation]. Retrieved from ARTstor: <http://www.artstor.org>



Turrell, James. (1974- 2011). *Roden Crater* [Earthwork Sculpture]. Flagstaff, Arizona. Retrieved from <http://roden crater.com/>



Turrell, James. (1974- 2011). *Roden Crater* [Earthwork Sculpture]. Flagstaff, Arizona. Retrieved from <http://rodencrater.com/>

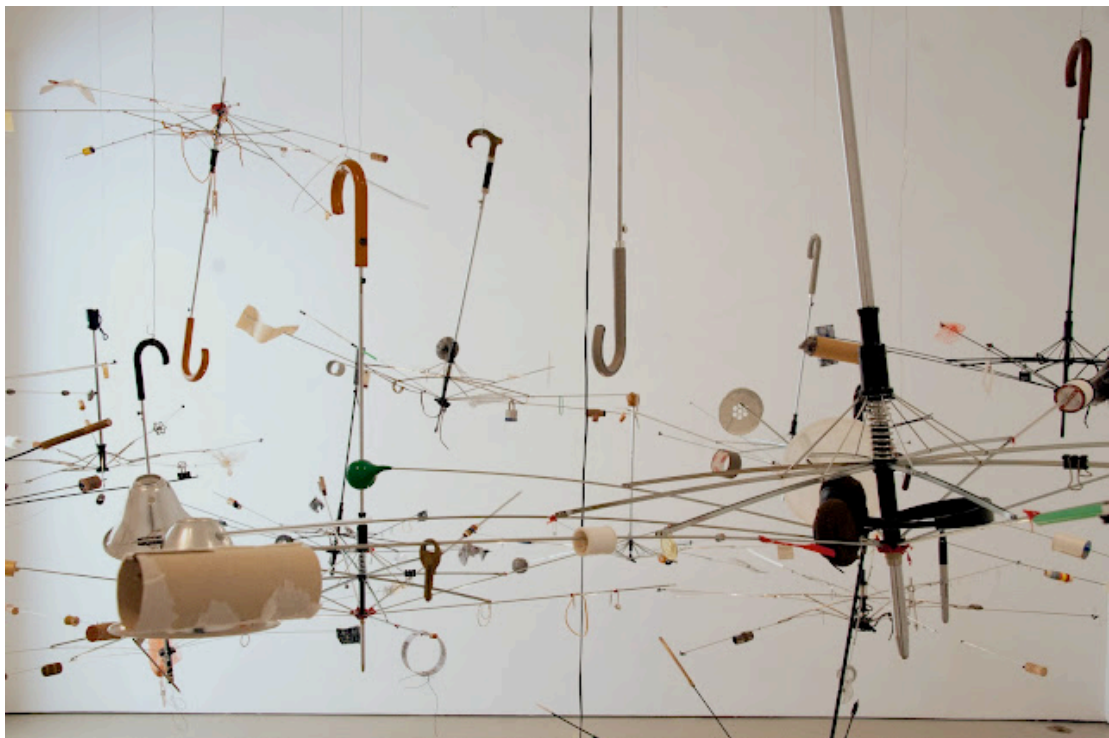




Oliver, Demetrius.(2010). *Jupiter* [Installation]. Friends at the High Line, New York. Photo: Jason Mandella. Retrieved from <http://www.artreview.com/forum/topics/demetrius-oliver-jupiter>



Oliver, Demetrius. (2010). *Perigee* [Video Installation]. Lightwork. Installed at the Lightwork Urban Video Project, Everson Museum of Art site. Retrieved from: <http://www.lightwork.org/exhibitions/oliver.html>



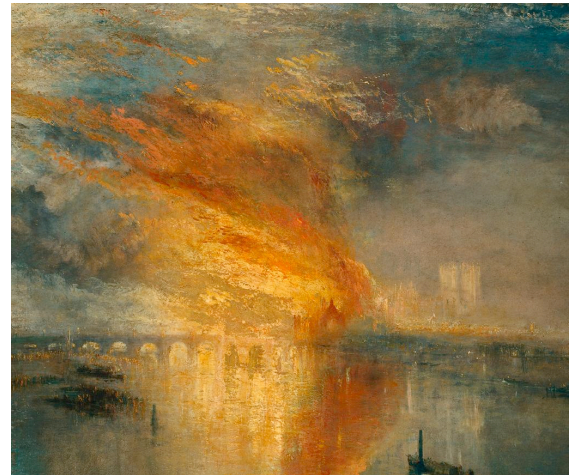
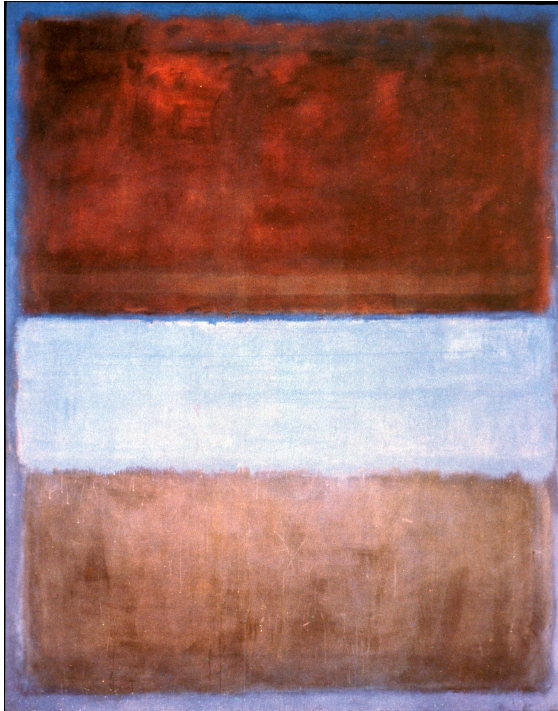
Oliver, Demetrius. (2010-2011). *Orrery* [Installation]. Retrieved from <http://demetriusoliver.blogspot.com/>

Description: **Orrery** is a room-sized model of the solar system made from discarded materials, substituting umbrella frames for planets.



## Seen and Unseen

### Creating an Emotive Painting



Turner, J.M.W. (1835). *The Burning of the Houses of Lords and Commons* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>

Rothko, Mark. (1953). *No. 61 (Rust and Blue)* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>

### Background

English artist John Constable, a nineteenth century romantic landscape painter, sought to capture the inherent qualities of light in his paintings as a representation of “visual truth.” During this time of scientific advancement in the early nineteenth century, Constable sought new ways for artists to represent nature in painting (Miller, 1995). His desire to explore new ways of looking at nature and art are evident in a statement he made at the Royal Institution in 1836:

Painting is a science and should be pursued as an inquiry into the laws of nature. Why, then, may not landscape painting be considered a branch of natural philosophy, of which pictures are but the experiments? (Constable cited in Miller, 1995, p.186)

Constable's observation of light led to the discovery of new ways for artists to use color in painting. His light filled paintings influenced modern art in an astonishing way by opening the door to color theory and abstraction. Constable's ideas about painting light influenced artists in France, such as Claude Monet, to experiment with new ways of painting color. This important shift in painting was the catalyst that led to impressionism.

Contemporaneously to John Constable's color and light investigations, eighteenth century romantic painter Joseph Mallord William Turner explored the landscape as an exalted experience of both terror and awe that challenged notions of the infinite and inspired a sense of wonder in the natural world. Turner was interested in capturing the essence of extreme experiences in nature by depicting images of the landscape that conveyed their magnitude and emotive power (Morley, 2010). Images of mountains, oceans and light filled skies were painted in an expressive manner that challenged the boundaries of representation and strived to capture the infinite. These types of aesthetic experiences, often associated with overwhelming or awe inspiring encounters with nature have often been referred to in art and philosophy as the sublime. Turner's painterly brushstrokes and use of color, like Constable, elegantly captured light in new and innovative ways. This is also why Turner is commonly known as the "painter of light" (National Gallery, 2012). Turner's subject matter was unique in that he sought to capture fleeting moments in the landscape that conveyed transcendent and ephemeral qualities.

Abstract Expressionist, Mark Rothko is an American painter whose large scale color field paintings draw upon the aesthetic qualities of light and color. Rothko was interested in conveying a transcendent experience in his paintings that expressed 'basic human emotions' such as tragedy, ecstasy, and the sublime. Rothko explored the idea of the sublime in his paintings as a way to transcend the limitations of language. He states:

The fact that a lot of people break down and cry when confronted with my pictures shows that I can communicate those basic human emotions.... The people who weep before my pictures are having the same religious experience I had when I painted them. (Rothko cited in Stoker, 2008, p. 90)

For Rothko "the sublime meant an art possessing a depth and profundity that European modern art failed to provide because it was tied...to classical and outdated ideas about beauty and aesthetics" (Morley, 2010, p. 70). Rothko's interest in creating paintings that conveyed this profoundly emotive experience led him to abandon representational forms, resulting in the abstract paintings he is known for today. The concepts that Rothko addressed in his paintings posed philosophical questions about time and space; beginning and ending.

**Areas Covered:** Art Production, Color Theory, Painting, Art History, Aesthetics



**Concept:**

In art, the brush stroke, mark, or gesture can be the conveyor of meaning in an artwork. The student will construct a large scale painting on gessoed paper that illustrates the idea of seen/unseen. An atmosphere will be created in the artwork that describes both an abstract space (ambiguous) as well as something representational (recognizable imagery), such as an object, person, place or thing.

Creating a dynamic relationship between abstraction and representation is the goal of this piece. What is visible and what is hidden will be illustrated by the student using any imagery that is desired. Painterly technique will be explored through the study of Mark Rothko, J.M.W. Turner, and John Constable.

Examples of the unseen could be:

- Air currents are not seen, but their motion across the landscape is evident
- Emotions and feelings are another place you can look for the unseen.
- Light and shadow- an ominous shadow coming through a door, a shadow of person in an interior
- Sounds and sound waves
- Light and color spectrums
- Weather conditions- tossed seas, mists, fog, or light
- Imaginary place in the mind

**Procedure**Underpainting

1. Prepare 3 sketches of your ideas to discuss in class. Select idea from sketches.
2. Gesso large paper 24x 30 or more and pin it up.
3. Paint a colored ground covering the piece (refer to painting techniques).
4. Lightly draw in the major spaces with watered down paint. (Can be any color)
5. Make corrections and additions in a different color
6. Further changes and/or additions will be made using a third color
7. Pre-mix all of your color scheme into little jars

### Tips for getting started on your painting:

- Work simultaneously over the whole canvas, not trying to finish one area before you go to the next. Start in general areas all over, then become more specific and detailed later
- Create depth of space by contrast of brush stroke and value
- Keep colors clear and 'unmuddied' by not over mixing and by rinsing your brush often
- Create surface interest by using a variety of painting techniques

### Painting Techniques

Use 5 or more of the techniques below. Must include blending and underpainting

1. Blending - merging one color or tone into another so there are no boundaries between them.
2. Dry Brush - working with the minimum of paint on the brush so that the color below is only partially covered.
3. Glazing - application of several layers of color that creates luminosity and depth, built up in a series of semi transparent layers over an under painting. This will modify the color each time glaze is applied. Glazes are thinned by adding water to paint or gloss/matte medium to the paint.
  - Glaze over an area of impasto (see below)
  - Glaze over areas of color to heighten value
4. Grounds - layer of paint that separates the painting from the canvas, paper, or panel. A ground can also be the underneath color over which successive layers of paint are put down.
5. Impasto - paint applied very thickly so that the marks of the brush or painting knife can be clearly seen. Apply heavy paint strokes to the painting surface and allow to dry. Put a glaze of another color over the impasto.
6. Knife Painting- paint applied with a special palette knife rather than a brush, which creates ridges with strokes of the knife. Apply the paint in layers, allowing the first layer to become dry, before the second color is laid on more thinly. Do not cover the first color entirely, but allow the color to show through. Add additional colors for variation.

7. Masking - a method used for making crisp hard-edges with masking tape or frisket. This can also be used to keep certain areas white and to create clean lines.

### Color and Value:

- Color will be limited to six hues. Contrast in value will be achieved using tints, tones, and shades of any color.
- A pair of opposite (complimentary) colors will be used to create tension
- One free color of your choice can be selected

### Examples:

- Tint- pale yellow / Tone- grayish blue / Shade- deep purple
- Opposites (complimentary)—any set of colors opposite from one another on the color wheel. Must be the same value (such as burnt orange and deep blue grey).
- Free- a color you choose

### **Goal**

Create a painting that shows evidence of a well developed concept that has both abstract and representational elements (seen and unseen.) The painting should display a variety of painting techniques as outlined in the procedure. Art historical connections will be made to the artists Rothko, Turner, and Constable in order to:

- Examine transcendent themes in painting and develop aesthetic awareness
- Establish historical context for painters who influenced modern and contemporary art
- Examine the progression from representational to nonrepresentational imagery in art

### **Objectives**

- Explore color theory and paint mixing techniques
- Gain a technical understanding of painting by using a variety of techniques
- Research ideas in order to develop a meaningful concept in an artwork
- Examine transcendent themes in painting and develop aesthetic awareness
- Establish art historical contexts in painting that led to modern and contemporary art
- Examine the progression from representational to nonrepresentational imagery in art
- Exposure to art history, contemporary art practice, and concept driven artwork

## Requirements

Requirements outlined under 'Procedure.'

## Aesthetic Inquiry Questions:

- How does Rothko use color to create an ephemeral quality in his paintings?
- Have you ever experienced a fleeting sunset or dawn? Sun rising over water? How did that make you feel? Describe the quality of light, the air, and the surroundings in that moment?
- How do you think Rothko's work might have been inspired by Turner's paintings? What qualities do you think they share as painters? Do you think they have a similar concept in mind? Why or why not?
- Compare Constable's paintings and Turner's paintings. What sensibilities do they share? What is different?
- Why do you think Turner included boats in many of his seascapes? Do you think it is important there are? If you were on that boat, how do you think you would feel? What does the size and scale of the boat tell you about the scene?
- How does Rothko use color to create emotion in his paintings? What do you feel when you are looking at a Rothko painting? Why is the scale of Rothko's work important?
- Why do you think Rothko chose to use color without any recognizable subject matter?
- How does Rothko make color "float" in his paintings?
- Rothko strived to represent the transcendent in his paintings. What do you think that means? Why would an artist want to paint this?
- Name three things that all three artists have in common?
- As an artist, would you paint the landscape? If so, what would you paint and why?
- In Turner's paintings, how does he convey the time of day?
- From what vantage point are we viewing the landscape in Turner's paintings? Constable's paintings?
- In Turner's paintings, what is the scale of the buildings, architecture, boats, etc. in relation to the sky, and the water? Why is this important? What does this convey in the painting?

- Describe the way Constable and Turner used light in their paintings. Why do you think they painted light in so many different ways? What is the effect?
- Do you think Turner's landscapes are emotional? Why or why not? How can you convey emotion in a painting? A work of art?

## Requirements

Requirements outlined under 'Procedure.'

## Resources

ARTstor Inc. (2012). *ARTstor: an Image library for the arts and sciences*. Retrieved from <http://www.artstor.org>

Mark Rothko [Video file]. (2009). Retrieved from <http://www.youtube.com/watch?v=GPQgFMHQ57c>

Schama, S. (2006). The power of art: Mark Rothko [Video file]. Retrieved from <http://www.bbc.co.uk/arts/powerofart/rothko.shtml>

The National Gallery. (2012). *The National Gallery: Joseph Mallord William Turner*. Retrieved from <http://www.nationalgallery.org.uk/content/ConConstituent/539>

Schama, S. (2006). The power of art: Mark Rothko (3 of 4) [Video file]. Retrieved from <http://www.youtube.com/watch?v=MP5zoAgAlbE>

Schama, S. (2006). The power of art: Mark Rothko (4 of 4) [Video file]. Retrieved from <http://www.youtube.com/watch?v=xXOKIhmq0K8>

Turner and the emotional landscape [Video file]. (2011). Retrieved from <http://www.youtube.com/watch?v=N2iUsUgpM0o&feature=related>

Rothko exhibition in London [Video file]. (2008). Retrieved from <http://www.youtube.com/watch?v=-ApGK1OEFmo&feature=related>

## Supplies/ Materials

Paint brushes, gesso, paper (oaktag or paper for wet media) 24"x 30", jars for paint mixing, cup or can for water, mixing palette, sketch book, pencils, masking tape, palette knife, gel or matte mixing medium.

## Teacher Preparation

- Be prepared to do an in class demonstration of the painting techniques listed, as well as a demonstration of color mixing and value. This demonstration is essential because it allows students to gain a technical understanding of

painting. Since many of these painting techniques require the paint to dry in between applications, it is helpful to do all of these techniques on a separate piece of paper in advance. Have one example (of each technique) completed before the class to show the students for reference (exemplar), and also another in class demonstration of the technique to show students the steps/ process on how to achieve the effect.

- Art History- Mark Rothko, J.M.W. Turner and John Constable. Teachers need to introduce these artists by providing a brief art historical overview. This can be done by presenting a brief powerpoint to the class, using the information provided in this lesson. I also recommend introducing the Aesthetic Inquiry Questions provided during the presentation of this powerpoint. For additional information, have students watch the videos listed under 'Resources' on Rothko and Turner.

## Teaching

- Introduction- Mark Rothko, J.M.W. Turner and John Constable. Address Art Historical overview and Aesthetic Inquiry questions. Optional—watch the videos listed under 'Resources' on Rothko and Turner, if time allows.
- Introduce lesson concept as outlined in procedure
- Demonstration—painting techniques and mixing color/ value
- Visual references—student must research on computer (or in library) content chosen, such as sound waves, weather currents, color spectrums, light/ shadow, etc.
- Help students individually by discussing their ideas/concepts for their painting and by explaining painting techniques that may be used to achieve desired effect.
- When paintings are complete, facilitate class critique/discussion. Have each student discuss their painting, and how it relates to the concept of 'Seen and Unseen.' Students also need to discuss the painting techniques they chose and why.

## Critique

- Class critique/ discussion
- Students will discuss the concept of 'Seen and Unseen' in their painting and the painting techniques used to achieve this idea.

## Extensions

- Watch the videos on Rothko and Turner listed under 'Resources'.

- This lesson can easily be extended by exploring color theory more in depth. Challenge students to create unique color combinations using tints, tones, and shades.
- Rothko, Turner, and Constable created several drawings that explored atmospheric spaces through expressive mark making. Have students review these drawings, and create their own expressive drawing using pencil/ graphite. Ask students the correlation they see between the artist's sketches/ drawings and their paintings. Have students reflect on this by writing a one paragraph description in their journal.

**Time budget:** 8 classes / each class is 90 minutes

## **Vocabulary**

- Also Refer to painting techniques

Abstraction—refers to Abstract Art, artworks that do not represent a being, place or thing. Abstraction can also refer to depicting a being, place or thing in a simplified, generalized manner, such as using a circle to represent the sun.

Ambiguous—Open to more than one interpretation; having a double meaning

Color wheel—a radial diagram of colors in which primary and secondary, and sometimes intermediate colors are displayed as an aid to color identification, choosing, and mixing. A color wheel with primary (red, yellow, blue) and secondary (orange, green, violet).

Complimentary (or opposite colors)—Colors that are directly opposite each other on the color wheel, such as red and green, blue and orange, and violet and yellow

Composition—the spatial property resulting from the arrangement of parts in relation to each other and to the whole. The plan, placement or arrangement of the elements of art in a work.

Ephemera/ Ephemeral— The term is used to describe objects found in nature that are transitory, short lived, or exist only briefly. In addition, the ephemeral is used in philosophy to describe the assumptions made outside of one's scope of time, perception, or knowledge.

Hue—Color. The name of any color as found in its pure state in the spectrum or rainbow.

Tint— hue + white

Tone— hue + grey

Shade— hue + black

Representational/ Recognizable imagery—used to describe a work of art that depicts something easily recognized by most people.

Sublime—concept, thing or state of exceptional and awe-inspiring beauty and moral or intellectual expression— a goal to which many nineteenth-century artists aspired in their artworks.

Transcendent—to go beyond the limits of. To surpass, as in intensity or power. Going beyond the ordinary range of perception. It may even mean above and independent of material experience or the universe

Underpainting—the layer or layers of color on a painting surface applied before the final coat of the painting

Value—An element of art that refers to the lightness or darkness of a color.

### **References:**

ARTstor Inc. (2012). ARTstor: an Image library for the arts and sciences.  
Retrieved from <http://www.artstor.org>

Mark Rothko [Video file]. (2009). Retrieved from <http://www.youtube.com/watch?v=GPQgFMHQ57c>

Schama, S. (2006). The power of art: Mark Rothko [Video file]. Retrieved from <http://www.bbc.co.uk/arts/powerofart/rothko.shtml>

Schama, S. (2006). The power of art: Mark Rothko (3 of 4) [Video file]. Retrieved from <http://www.youtube.com/watch?v=MP5zoAgAlbE>

Schama, S. (2006). The power of art: Mark Rothko (4 of 4) [Video file]. Retrieved from <http://www.youtube.com/watch?v=xXOKIhmq0K8>

The National Gallery. (2012). Joseph Mallord William Turner. *The National Gallery*: Retrieved from <http://www.nationalgallery.org.uk/content/ConConstituent/539>

Turner and the emotional landscape [Video file]. (2011). Retrieved from <http://www.youtube.com/watch?v=N2iUsUgpM0o&feature=related>

Rothko exhibition in London [Video file]. (2008). Retrieved from <http://www.youtube.com/watch?v=-ApGK1OEFmo&feature=related>



Stoker, Wessel. (2008). The Rothko Chapel paintings and the urgency of the transcendent experience. *International Journal of Philosophy and Religion*, 64(2), 90



Constable, John. (19th c.). *Hampstead Heath in a Storm* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Constable, John. (1824-5). *Seascape Study with Rain Clouds* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





John Constable. 1821. Study of Sky and Trees. [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Constable, John.(1822). Cloud Study [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





Turner, J. M. W. (1840). *Rockets and Blue Lights (Close at Hand) to Warn Steamboats of Shoal Water* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Turner, J. M. W. 1844. *Rain, Steam and Speed - The Great Western Railway* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





Turner, J.M.W. (1835). *Fire Aboard Ship* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Turner, J.M.W. (1835). *The Burning of the Houses of Lords and Commons* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Turner, J.M.W. (1810-12). *Snowstorm: Hannibal & His Army Crossing the Alps* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Turner, J.M.W. (1842). *Steamer in a Snowstorm* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





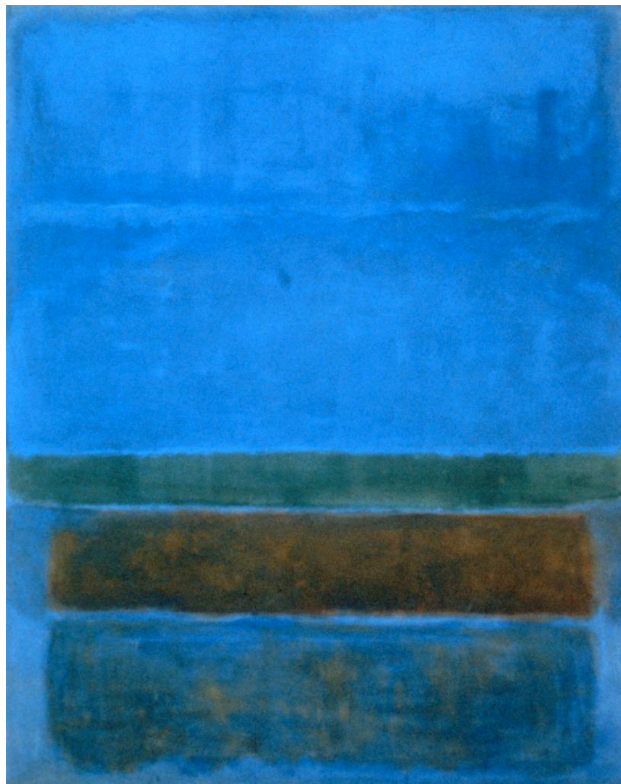
Rothko, Mark. (1953). *Untitled* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Rothko, Mark. (1964). *Untitled* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Rothko, Mark. (1960). No. 14 [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Rothko, Mark. (1951-52). Untitled (Blue, Green and Brown) [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





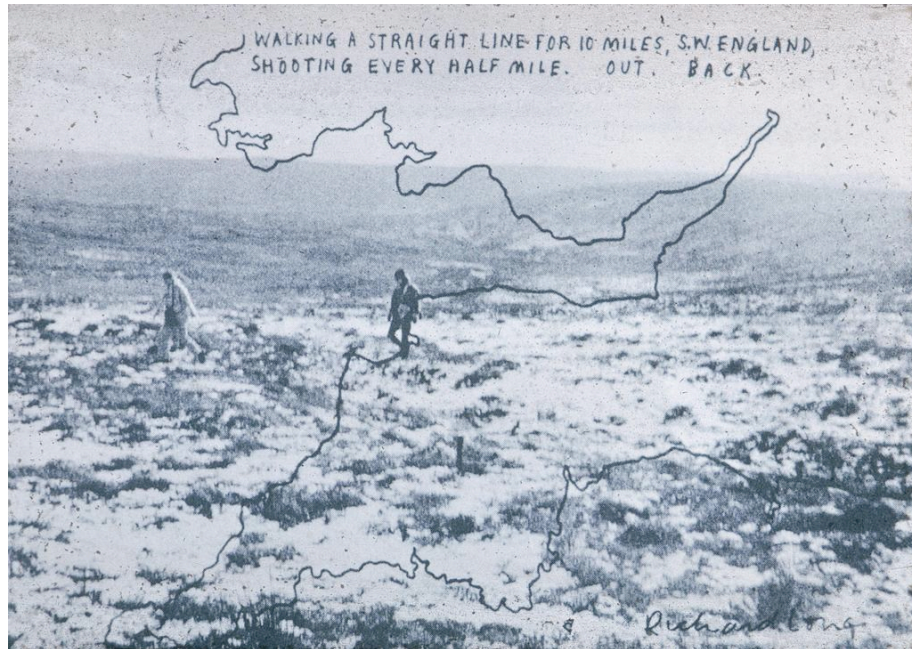
Rothko, Mark. (1951). *Number 12* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Rothko, Mark. (1952). *Number 8* [Painting]. Retrieved from ARTstor:  
<http://www.artstor.org>



## The Mapping of Time



Long, Richard (1968). *Walking a Straight Line for 10 Miles, SW England, Shooting Every Half Mile. Out. Back.* [Earthwork Art]. Retrieved from ARTstor: <http://www.artstor.org>



Mehretu, Julie. (2004). *Stadia II* [Drawing/ Painting]. Retrieved from <http://www.pbs.org/art21/artists/julie-mehretu>

## Background

Richard Long is a British sculptor, photographer, and painter who explores the landscape through walking. In his work, Long documents his experience of walking and his journey across the land by creating 'Land Art' from natural materials such as stones, mud, wood, and water. In these poetic sculptures, Richard Long maps his journey through the land and records a moment in time by leaving an ephemeral mark on the places he has been. Traces from a walked path or the arrangement of rocks along a hillside document these ephemeral moments in time—and affirm our place within it. His gallery installations reveal the formal structures of these organic shapes and create another layer of meaning through the symbolic placement of these elements. These reoccurring symbols in Long's work include: circles, spirals, lines, arcs, and maps.

Julie Mehretu is an artist who creates complex layered drawings and paintings using a variety of mark making techniques. Her work examines systems that draw upon the urban landscape such as: architecture, urban spaces, city planning, geography, charts, maps, building plans, columns, stadiums, and airplane terminals. Mehretu describes the imagery in her work as a visual language—examining identity and social environments. Her interest lies in “mapping experience and development” in civilization. Mehretu employs architectural plans, maps, and drawings in her artwork that reference history in order to bring her paintings into a specific “time and place.” (Firstenberg, 2002)

## Concept

### The Walk: Exploration of Self

The student will explore his/her inner promptings of thought and self-expression by quietly meditating on an internal state of being. These thoughts and feelings will be translated into words and images. It may be based on something actually observed or an internal expression of something that seemed interesting/profound at the time of the walk, unrelated to the surroundings (B.Olshin, personal communication, April 2, 2012).

## Area Covered

Art production, art history, visual studies, aesthetics, architecture, design, environmental science, geography, writing and visual literacy

## Goal

Students will create a well developed art work inspired by a personal and reflective journey—through walking. The walk that students will take is guided by a thoughtful series of reflections that the students will respond to based on their own experience and feelings during the walk. This exercise is designed to heighten students' awareness of their environment, and the way they move and interact within it. Time, personal reflection, and the mapping of a space or environment are key elements in this experiential artwork. An emotive artwork based on the students' personal experience during the walk is the final outcome.

## Objectives

- Develop concept in art- how personal experiences can generate meaningful concepts
- Heighten awareness of the environment through careful observation and self reflection
- Develop observational, visual literacy, and writing skills
- Learn about environmental systems: urban, architectural, natural, social, and personal
- Heighten students' aesthetic awareness and interaction within the environment
- Develop method for personal self reflection, and unique and creative expression
- Exposure to art history, contemporary art practice, and concept driven artwork

## Procedure

### Step 1 The Walk

1. Take a silent, contemplative walk for 20-30 minutes. Allow your thoughts to roam.
2. Do what is natural to you—observe things, look at nature, go deep within your thoughts.
3. Without talking to anyone, go inside and begin writing in your art journal for 10 minutes or more, beginning with “While I was outside....”
4. Write down what you were thinking and feeling. Phrase your thoughts simply.
5. Read what you wrote. Do a drawing in your journal from the content.

### Step 2 The Walk, Concept, Drawing

6. Take another walk for 20- 30 minutes. This time continue on the same idea you began in Step 1. This time, however, expand the thought and vision—make it more complex, more detailed. Be prepared to change your original idea if something else appeals to you.
7. Write down your experience. How did it change? Why did it change? What seems important to you on this occasion? Is it the same notion, perhaps altered, or something completely different?
8. Do a preliminary drawing for the final drawing. Be articulate in the composition and choice of subject matter. Be extremely clear in your thought process as to what you will include to express the content of this work.

### Step 3 The Final Drawing

- Compose the drawing using a mixed media format, at least 18”x 24”. Drawing must contain some subject matter that relates to the landscape. Inspiration may come from the City: architecture, transit systems,

pathways, a busy downtown area etc. or from Nature: a forest, coastline, patterns in nature etc.

- Consider use of stylistic format—such as diptych or grid.
- The use of contrast is essential in this drawing

### Optional:

Have students write a Concept Statement that helps them organize, plan, and formulate the ideas for their artwork. See outline below.

#### Concept Statement:

- 1) The idea and subject matter: what you are going to draw and the meaning behind it.
- 2) Procedure: **a)** How are you going to organize this project according to the element and principles of design?; **b)** How are you going to use color?; **c)** List of materials and how you are going to use them; **d)** Sources: pictures, observational drawings, photographs, books, etc.
- 3) This statement is turned into the teacher with a rough draft sketch of the idea

### Requirements

- (Refer to Procedure)
- Participate in class critique and discussion

### Resources

#### Julie Mehretu Video:

Art21, inc. (2001-2012). Julie Mehretu in systems. *Art in the twenty first century* [Video file]. Retrieved from <http://www.pbs.org/art21/watch-now/segment-julie-mehretu-in-systems>

#### Richard Long Videos:

Dines, J. (2011). *Richard Long- Artist* [Video file]. Retrieved from [http://www.youtube.com/watch?v=39G\\_rXkJanw](http://www.youtube.com/watch?v=39G_rXkJanw)

Time Out London. (2009). *Richard Long retrospective at Tate Britain* [Video file]. Retrieved from [http://www.youtube.com/watch?v=9\\_T3OvBdtKM](http://www.youtube.com/watch?v=9_T3OvBdtKM)

#### Official Website:

Long, R. (2012). *Richard Long official website*. Retrieved from <http://www.richardlong.org/>

## Supplies/ Materials

Sketching/ writing journal, 18"x 24" paper, pencils, pens, (other desired drawing media), Camera (optional for documentation)

## Teacher Preparation

- Be prepared to give a brief presentation about the artists Julie Mehretu and Richard Long using the information provided in this lesson. I suggest introducing the Aesthetic Inquiry Questions to the class when you are viewing the artists work in order to generate a discussion.
- It is helpful for the teacher to watch the artists' videos/ interviews (listed under resources) before teaching the class.

## Teaching

- Introduction to artists: Julie Mehretu and Richard Long
- Show class artists' videos/ interviews (listed under resources)
- Engage class in Aesthetic Inquiry Questions. The Aesthetic Inquiry Questions can be used to discuss the work of Julie Mehretu and Richard Long. They can also be used as a way to guide students in developing a 'concept' in their own art work. A handout with the aesthetic questions may be helpful for students to refer to before they begin the walk and sketching their ideas.
- Art production/studio time. Work with students individually.
- Demonstrate drawing techniques. Discuss students' ideas for final drawing based on sketches and 'Concept Statement.'
- Facilitate thoughtful discussion and class critique of the finished art work by encouraging reflective comments and revisiting Aesthetic Inquiry Questions.

## Aesthetic Inquiry Questions:

- What does Richard Long's art tell us about time and place? the environment and our place within it?
- Are Richard Long's sculptures temporary or permanent? Explain. Why is this significant in his work? What does this tell us about his walks and his own personal journey?
- Walking is one of the primary mediums for Long's work. How can artists use their actions to make a statement?
- Why do you think Long uses photography to document his work? Would you consider these documentations 'photographs' or 'sculptures'? Explain.

- Why do you think Richard Long photographs the landscape without people? Do you think this is significant or not? Explain.
- Richard Long uses natural materials such as stone, mud, and water to create his work. What do these materials tell us about his art?
- Richard Long creates many of his pieces in the natural landscape as well as in the gallery setting. How do both of these settings change the way the work is perceived? How do these two settings inform the way we experience the artwork? Do you think it impacts the meaning of the artwork? Explain.
- Richard Long states that the *“meaning of his work lay in the visibility of his actions rather than in the representation of a particular landscape”* (Tate Collection, 2012). What do you think this means? Be specific.
- Compare Richard Long’s artwork to ancient works such as Stonehenge. How are the forms and images in Long’s work similar? How are they different? Why do you think certain symbols such as circles, spirals, lines, and arcs have been repeated throughout history? What do these symbols tell us about humanity? Why are they important?
- How does Richard Long use text in his work to describe his experiences?
- Julie Mehretu describes her work as an “mapping experience and development.” How does she do this in her drawings? What elements in Mehretu’s work are like maps? What do maps tell us about where we are going and where we have been?
- In what ways does Julie Mehretu reference charts, city maps, architecture, urban spaces, and geography in her work? What other systems do you see in her drawings?
- How does Julie Mehretu show movement in her drawings and paintings? Why is this important and how does it change the feeling of the piece? What is the speed of a city? A suburban space? How can this be shown in an artwork?
- Julie Mehretu uses several layers of mark making to create her paintings. What does this convey in her paintings? Describe the variation in line, color, and shape.
- When you look at a Julie Mehretu painting, describe what you notice first. How do your eyes move across the piece? What types of perspectives do you see?
- Mehretu describes her abstract mark making as symbols of language, identity, and social urgency. How does she show this in her work? Describe.



- How does a city show its history? What visual clues tell us about the history of a place? As a visual artist, how would you represent a sense of time or history in your artwork?
- How do you move through a crowded city, a busy walkway, or an airport? Do you walk quickly or slowly? Do you notice every detail of a place or do you just remember the feeling of the place? How would you draw this?
- How does the way we move through a city or the landscape effect our experience of it?

## Critique

Facilitate thoughtful discussion and class critique of the finished art work by encouraging reflective comments and revisiting Aesthetic Inquiry Questions

## Extensions

- This lesson can easily be adapted to incorporate any artistic medium: sculpture, ceramics, photography, video, painting, etc. For example; students can photograph or film their walk or create a sculpture inspired by their walk. The sculptures and photographs of Richard Long provide excellent examples.
- Have students watch the film *Koyaanisqatsi*, directed by Godfrey Reggio with music by Phillip Glass. This incredible film documents several systems of our visual world in astonishing ways—ranging from urban landscapes and social systems to phenomenas of the natural world. If the teacher has access to a projector, I highly recommend watching it on a large screen. Have students write a one page reflection on this film and/or have a class discussion based on personal interpretations of the film. See link below for full length film.

## Time budget:

### 5- 6 one hour classes

Class 1: Background on artists, Watch videos (listed under resources), Introduce lesson

Class 2: Walk #1 & Walk #2, journal reflections/ sketches / concept development

Class 3: Rough draft and concept statement due

Class 4: Work on Final Drawing

Class 5: Work on Final Drawing

Class 6: Closure- critique and discussion

Note: In order to save valuable class time, Walk #1 and Walk #2 can be assigned as an out of class assignment for Homework. This can allow class time to be spent on sketches, concept development, and studio production.

## **Vocabulary**

Aesthetic awareness—encompasses the abilities necessary for a student to respond in a considered or profound way to artistic creations and the natural environment. An aesthetic experience results in a reasoned judgment regarding the beauty of an object, event, or place.

Concept—An idea, thought, or notion conceived through mental activity.

Conceptual Art—In general referring to concept. In reference to art, imagery which departs from perceptual accuracy to present a mental formulation of the object rather than its appearance alone.

Content—What a work of art is about, its subject matter

Environmental awareness—The growth and development of awareness, understanding and consciousness toward the biophysical environment and its problems, including human interactions and effects.

Emotive artwork—Art that provokes a great depth of feeling or emotional response

Mapping—a representation, usually on a plane surface, of a region of the earth or heavens; mapping refers to the act or process of making a map.

Mark making—a term used to describe the different lines, patterns, and textures used to create an artwork

Systems—a set of connected things or parts forming a complex whole.

Personal reflection or Self reflection—Careful thought about one's own behavior and beliefs. Self-examination; introspection.

Phenomena—an occurrence, circumstance, or fact that is perceptible by the senses

Rough Draft—undetailed sketch/ drawing that shows the basic elements of an art idea

Urban landscape—the traits, patterns and structure of a city's specific geographic area, including its biological composition, its physical environment and its social patterns.

## **References**

ARTstor Inc. (2012). *ARTstor: an image library for the arts and sciences*. Retrieved from <http://www.artstor.org/index.shtml>

Art21, inc. (2001-2012). Julie Mehretu in systems. *Art in the twenty first century*

[Video file]. Retrieved from <http://www.pbs.org/art21/watch-now/segment-julie-mehretu-in-systems>

Dines, J. (2011). Richard Long- Artist [Video file]. Retrieved from [http://www.youtube.com/watch?v=39G\\_rXkJanw](http://www.youtube.com/watch?v=39G_rXkJanw)

Firstenberg, L. (2002). Painting platform in NY. *Flash Art*, Vol. XXXV No. 227, 70

Long, R. (2012). Richard Long official website. Retrieved from <http://www.richardlong.org/>

Johnson Museum of Art, Cornell University. (2012). Excavations: the prints of Julie Mehretu. Retrieved from <http://museum.cornell.edu/exhibitions/excavations-julie-mehretu.html>

Tate Collection. (2012). Richard Long, Tate Britain, UK. Retrieved from <http://www.tate.org.uk/art/legacy/ArtistWorks>

Time Out London. (2009). Richard Long retrospective at Tate Britain [Video file]. Retrieved from [http://www.youtube.com/watch?v=9\\_T3OvBdtKM](http://www.youtube.com/watch?v=9_T3OvBdtKM)



Long, Richard. (1967). *Line Made by Walking* [Conceptual Art, Earthworks Art]. Retrieved from ARTstor: <http://www.artstor.org>



Long, Richard. (1975). *Line in the Himalayas* [Conceptual Art, Earthworks Art]. Retrieved from ARTstor: <http://www.artstor.org>





Long, Richard. (1981). *Line in Scotland* [Conceptual Art, Earthworks Art]. Retrieved from ARTstor: <http://www.artstor.org>

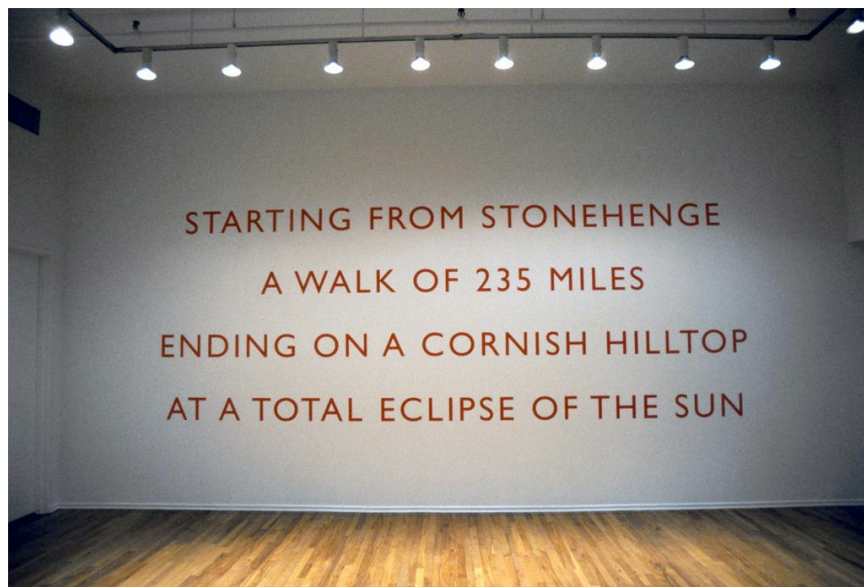


Long, Richard. (1985). *Mountain Lake Powder Snow* [Conceptual Art, Earthworks Art]. Retrieved from ARTstor: <http://www.artstor.org>





Long, Richard. (1986). Brittany Lake [Conceptual Art, Earthworks Art]. Retrieved from ARTstor: <http://www.artstor.org>



Long, Richard. (1999). *Walking to a Solar Eclipse* [Conceptual Art, Earthworks Art]. Retrieved from ARTstor: <http://www.artstor.org>



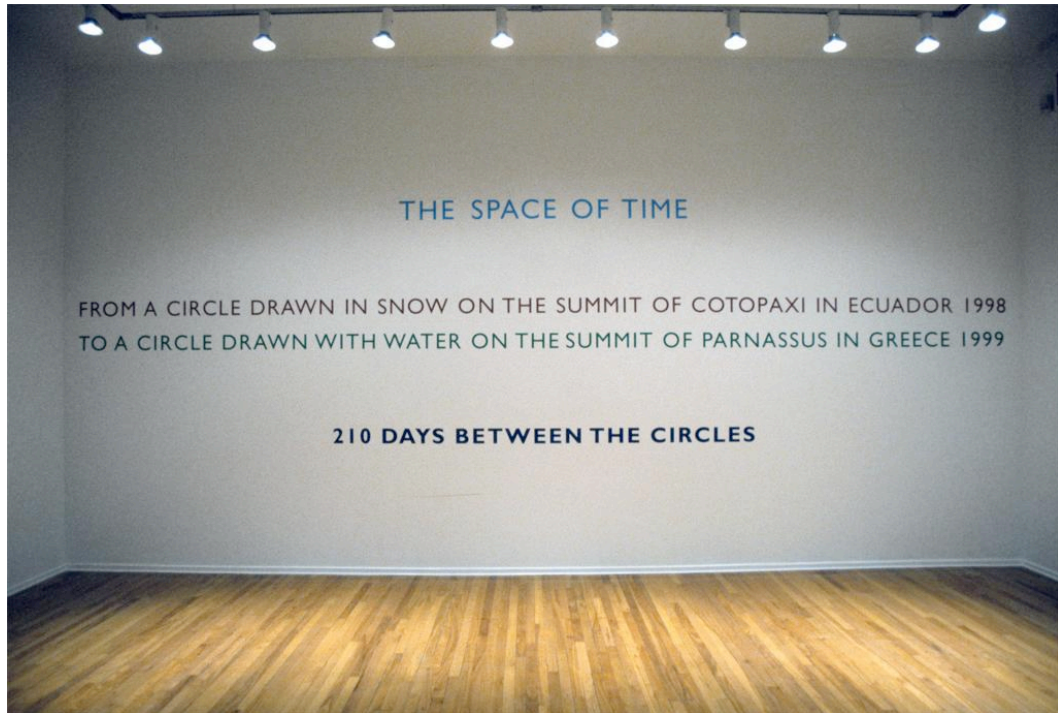


Long, Richard. (1993). *White Mud Circles* [Sculpture and Installations]. Retrieved from ARTstor: <http://www.artstor.org>

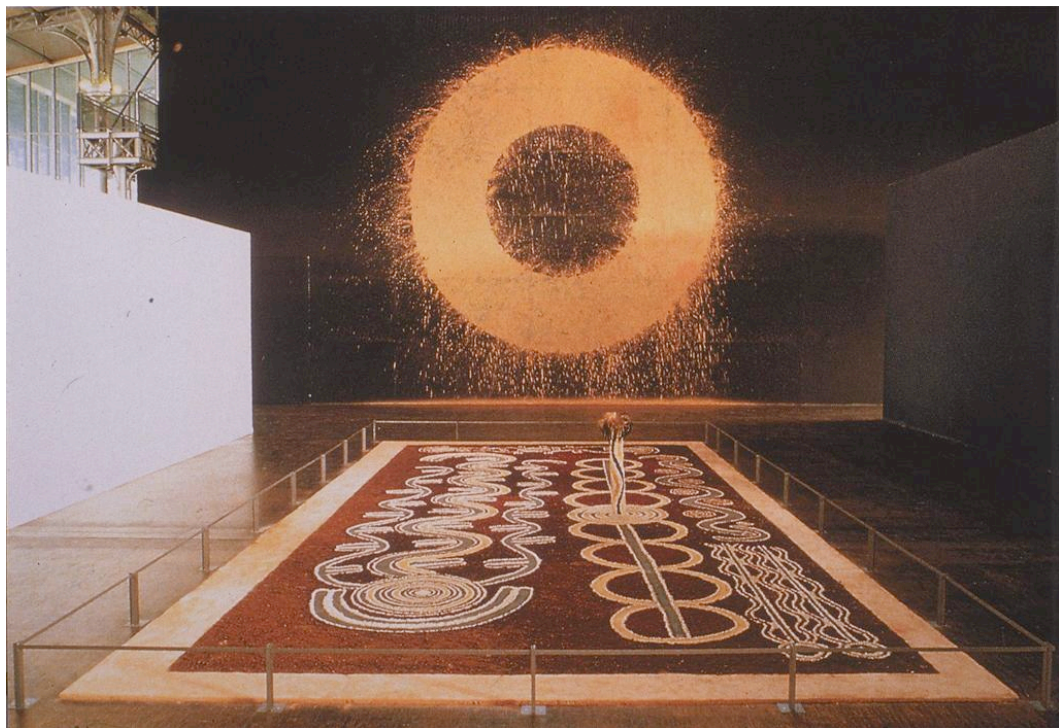


Long, Richard. *Muddy Wall* [Sculpture and Installations]. Retrieved from ARTstor: <http://www.artstor.org>



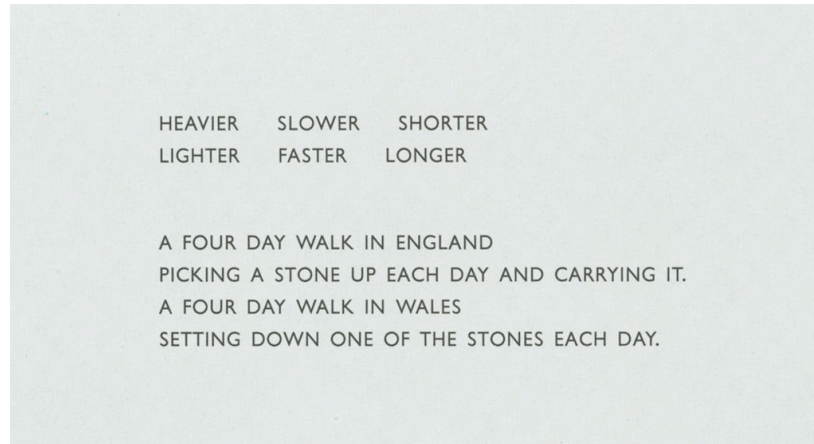


Long, Richard.(1999). *The Space of Time* [Sculpture and Installations]. Retrieved from ARTstor: <http://www.artstor.org>



Long, Richard.(1999). *Magiciens de la Terre*: installation view [Sculpture and Installations]. Retrieved from ARTstor: <http://www.artstor.org>

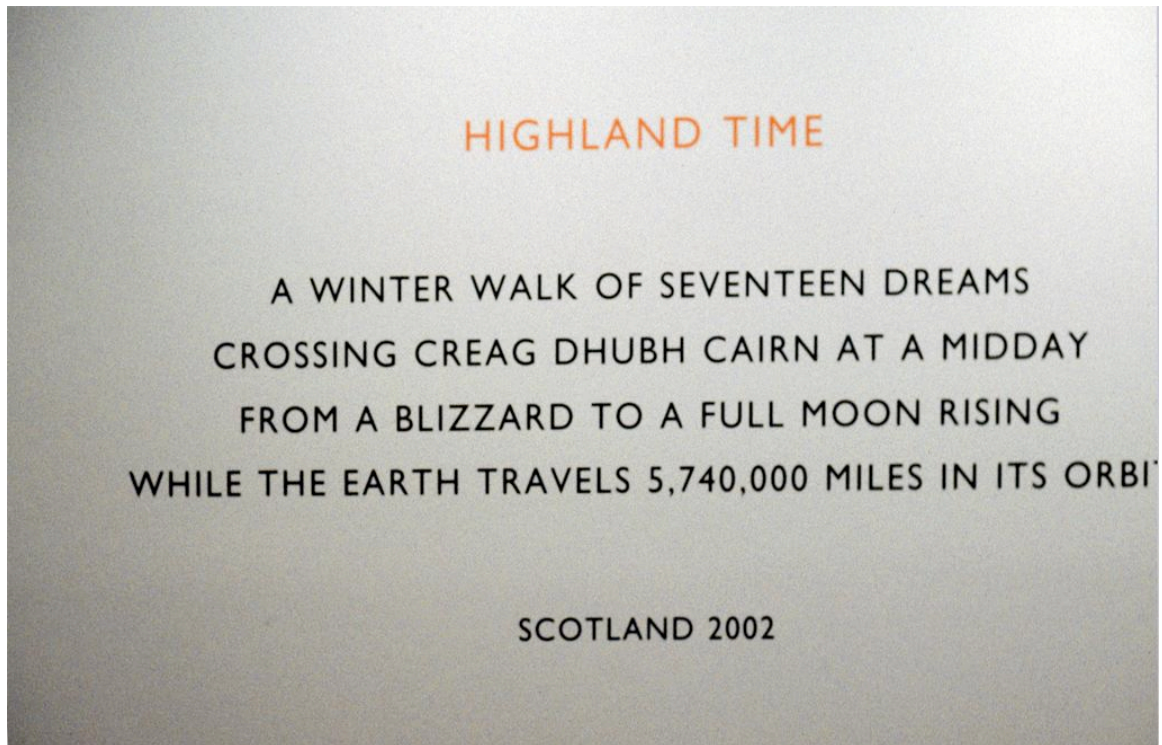




Long, Richard.(1999). *Untitled* [Sculpture; Writings]. Retrieved from ARTstor: <http://www.artstor.org>



Long, Richard.(1984). *Athens Line* [Sculpture]. Retrieved from ARTstor: <http://www.artstor.org>



Long, Richard.(2002). *Highland Time* [Sculpture and Installations]. Retrieved from ARTstor: <http://www.artstor.org>

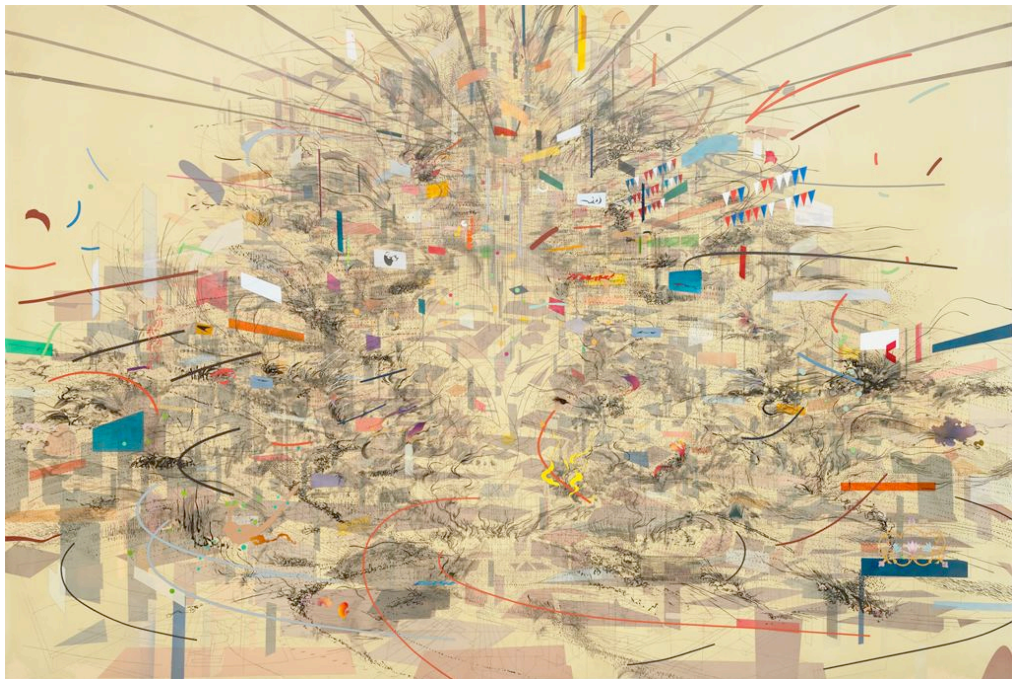


Long, Richard.(2004). *Untitled* [Sculpture and Installations]. Retrieved from ARTstor: <http://www.artstor.org>





Mehretu, Julie. 2004. *Stadia I* [Drawing/ Painting]. Retrieved from ARTstor: <http://www.artstor.org>

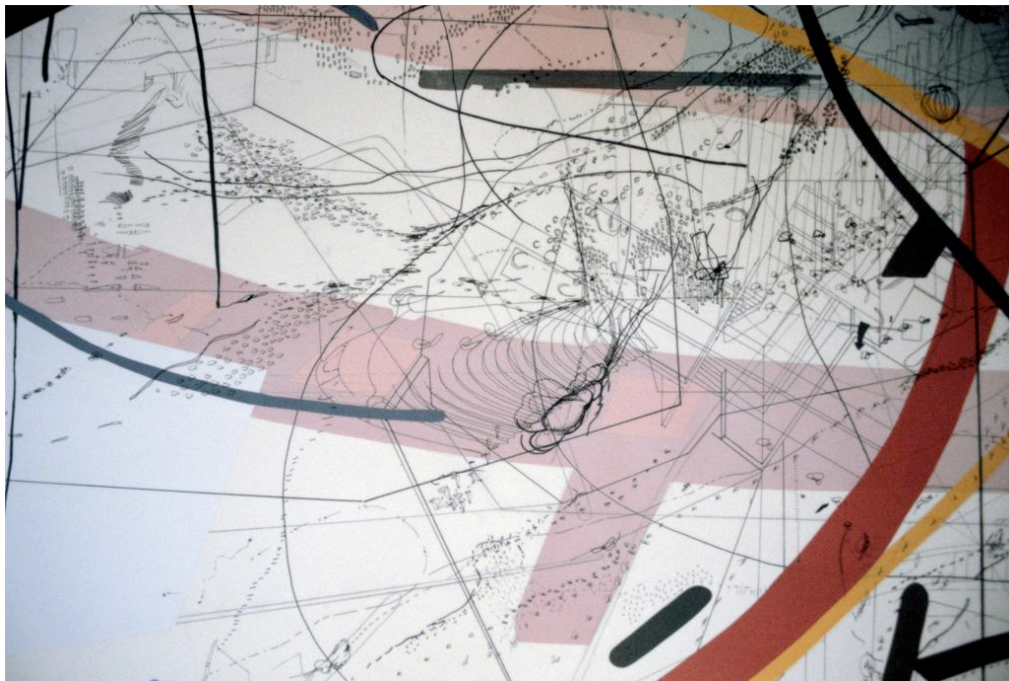


Mehretu, Julie. 2003. *Empirical Construction, Istanbul* [Drawing/ Painting]. Retrieved from ARTstor: <http://www.artstor.org>



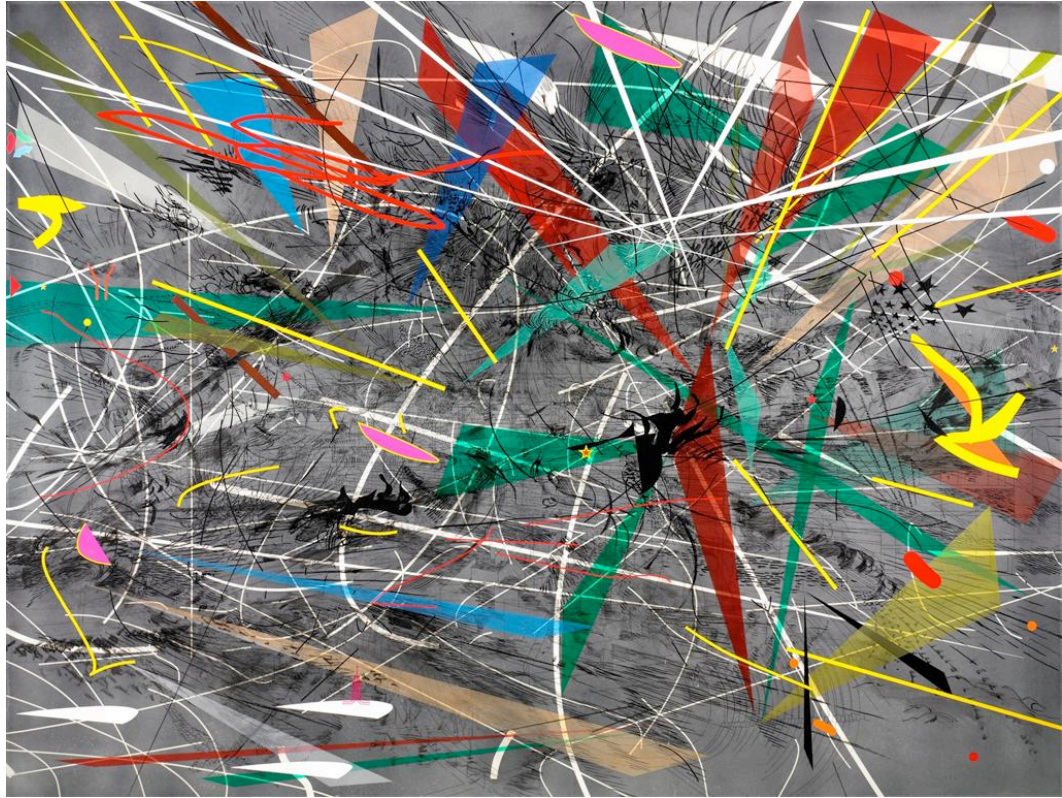


Mehretu, Julie. (2005). *Immanence* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Mehretu, Julie. (1999). *Back to Gondwanaland* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





Mehretu, Julie. (2006). *Grey Space* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Mehretu, Julie. (2007-2009). *Middle Grey, detail* [Painting]. Retrieved from ARTstor: <http://www.artstor.org>





Mehretu, Julie. (2002). *Untitled* [Painting Installation]. Retrieved from ARTstor: <http://www.artstor.org>



Mehretu, Julie. (2002). *Untitled* [ Painting Installation]. Retrieved from ARTstor: <http://www.artstor.org>





Mehretu, Julie. (2001). *Retopistics: A Renegade Excavation* [ Painting]. Retrieved from ARTstor: <http://www.artstor.org>



Mehretu, Julie. (2005). *DomEtch4 Untitled* [Drawing and Watercolors]. Retrieved from ARTstor: <http://www.artstor.org>

## Chapter 8

### Thematic Unit Evaluation and Conclusions

#### Art Teachers

Each of the art teachers found the thematic unit easy to follow, understand, and teacher friendly. They thought the ideas, goals, and objectives in the lesson plans were very clear and that the background information on the artists and the transcendental landscape was comprehensive. Some of the teachers thought the lessons would be particularly appropriate for advanced level students.

Four of the five art teachers found the concepts addressed in the thematic unit relevant to their classroom. All of the art teachers provided feedback on how they could use these concepts in their specific content areas, and how they would go about teaching these lessons in their class. Some of these ideas included: drawing and painting extensions, the golden rectangle, Fibonacci's golden ratio, researching fractal designs in nature, and using weather patterns and mapping to combine elements and principles of design. Many teachers were interested in adapting these lessons for drawing assignments. The results reflect a particular interest in the *Microcosm/ Macrocosm* lesson as well as *The Mapping of Time* lesson. Some teachers also expressed that their students are particularly interested in learning about contemporary art and that students enjoy challenging problems to solve in the art classroom. They felt that a complex idea like the transcendental landscape was “broken down into easy to grasp steps for the students.”



All of the teachers found the lessons challenging and engaging, although half of the teachers were concerned that some of the ideas may be too advanced for certain students. Suggestions were made to make adaptations for students who may need more concrete examples. Many of the teachers were very excited to incorporate the lessons into their curriculum, and saw the aesthetic inquiry questions as a great tool to help students develop their ideas. They also noted that engaging students in concepts about the landscape that relate to their own experiences, is a great way to connect them to the environment, and their place within it. Having students explore their personal thoughts in relation to the concepts in the unit can help them find a voice for their art.

All of the art teachers found the lessons in the thematic unit developmentally appropriate for their students, particularly for upper level or advanced art students. They expressed that the lessons addressed “higher level thinking” and that the “ ideas were universal among all people, so the content could easily be related to by all.” There was concern, however, that beginning level students in Art I may have difficulty grasping these projects if the lessons were not taught by a strong teacher.

All teachers agreed that this unit would be a great addition to their existing curriculum. They commented that the unit added an aesthetic, interdisciplinary, and historical aspect to their current courses, and would be a great resource for advanced drawing and painting students. All of the teachers commented on how useful the extensions were in the unit because they allowed them the flexibility to adjust the media to the needs of their classes. They also thought the extension

projects added another layer of meaning and understanding for students.

Teachers also appreciated the open ended nature of the lessons because they saw this as a way for students to develop original thinking.

Four of the five art teachers said that they teach aesthetics in their classroom, but have not approached it in terms of the concepts addressed in the transcendental landscape. They thought that the study of the transcendental landscape provided “endless ways to engage students in contemporary problem solving and creative thinking processes” and that “the unit on transcendental landscapes raises the bar and provides new ways for students to consider art and making art.” One teacher noted that because the lessons on the transcendental landscape allow for a variety of interpretations, it will make discussions and critiques interesting and thought provoking. One art teacher out of the five who participated saw the concept of aesthetics as an outdated teaching method, and suggested focusing on process.

Four out of the five art teachers who participated thought that the aesthetic component provided insight into interdisciplinary thinking, discussion and activities. They saw the relationship between science and art as an interesting way for students to engage in exploratory learning and that the unit provided great interdisciplinary connections. One teacher noted that “the unit expands the definition of what inspires artists and the role that other disciplines play,” and suggested additional art historical movements that would work well with the concept of the transcendental landscape.

Another teacher stated that the “aesthetic Inquiry questions add a higher level of exploration to the concepts of the lessons” and would help students to develop their own ideas in meaningful ways for their own projects. One teacher out of the five who participated thought that the aesthetic inquiry questions were “too cerebral for high school students.” She thought that it would be difficult to get high school students to participate in a class discussion using aesthetic questions.

All of the art teachers include interdisciplinary themes in their lessons when possible. Some actively collaborate with teachers in other disciplines to overlap concepts such as: narrative art projects that relate to reading assignments, artists that relate to history class, and design principles that relate to math such as the Golden Rectangle and Fibonacci's Golden Ratio of Sequences. Teachers shared that approaching a topic from a variety of perspectives helps students “see the broader picture of art and learn that art is not made in a vacuum. It also makes the projects more relevant to the students and shows how all parts of their lives can be used to explore topics for their art works.” Nature and art are also interdisciplinary themes that art teachers use in their drawing classes. One teacher commented that everything in the art classroom is interdisciplinary. She addresses interdisciplinary concepts by simply turning 2-D projects into 3-D projects, encouraging students to develop math and measuring skills through art making. Two teachers commented that because of the large size of their school, it is often difficult to collaborate with teachers in other disciplines. Although

collaboration can be challenging in a large school, they felt that “any method that reinforces and expands the subject matter in all subjects is valid and necessary.”

All of the art teachers who assessed the unit thought that teaching students about contemporary art and art history is extremely important. Each of them include contemporary artists in their lessons as a way for students to connect to what is current in art and in the world. They view art as a window into “social culture” and include a wide range of perspectives including graffiti art, contemporary culture references, and the politics of contemporary art. One teacher added that she assigns projects that require her students to go to the Contemporary Art Museum for reference.

All of the art teachers thought that the thematic unit on the transcendental landscape presented clear ways to engage students in a dialogue about contemporary art, stating that “it makes contemporary art understandable and exciting.” They thought that the scope of the artists chosen was interesting, and worked well with the topic of the transcendental landscape. They viewed the inquiry questions and the resources listed as a great way to engage students. One teacher expressed concern about holding the students attention for the duration of the lesson, and suggested trying to think of ways to engage students who may only have a five minute attention span. She recommended more collaboration among the students.

They all agreed that the unit provides a clear overview of the artists and themes being addressed and that the lessons complimented each other as a unit. They viewed the overview in each lesson as understandable, informative,

and comprehensive’—which made the concepts clear and easy to follow. In particular, they thought the artists chosen for the unit exemplified the ideas of the transcendental landscape and represented “themes that are relevant to us all as human beings.”

## Science Teachers

All of the science teachers who reviewed the unit found it well written, clear, easy to follow, and very teacher friendly. One commented that “the structure is most appealing because it includes resources to support and demonstrate investigations. Each unit is truly a complete package of learning and teaching.” Two science teachers expressed concern that some of the art content may be too advanced for some science teachers. All of the science teachers found the background information and concepts addressed in the lessons sophisticated, promoting a “higher level” of thinking. They thought the lessons were developmentally appropriate for advanced honors level students who may also have interest in the humanities. However, they did have concern that the lessons may be too advanced for some beginning level students. One science teacher commented that the higher level thinking involved in this unit may be difficult in a “huge urban comprehensive high school” but may be more appropriate in a magnet high school.

They found the theories addressed in the lessons relevant to their classroom, but thought that some of the objectives addressed in the studio investigations were outside of their scope and content area. One teacher commented that the lessons address science concepts in a general way

pertaining to considerations of form, sub-atomic particles, and theoretical data reflecting “missing” equations for the beauty of aesthetic forms. The results also show that like the art teachers, science teachers also responded most favorably to the lessons *Microcosm/ Macrocosm* and *The Mapping of Time*. They remarked that addressing science concepts such as systems and the scale of natural forms encourages students “to look closer at the world around” them. One teacher suggested for the lesson *Microcosm/ Macrocosm* that students “find natural patterns (such as spirals) in the face of a sunflower or in a galaxy and to compare their shapes.” Most of the science teachers expressed their concern for fitting these lessons into their curriculum because they have a great deal of content that they have to cover in such a limited amount of time. This makes it difficult to include more exploratory and aesthetics oriented projects.

Three out of the four science teachers thought these lessons would be challenging and engaging for their students. One teacher commented that, “interweaving traditional classroom lab exploration and lecture with artistic, actionable outlets can only further solidify the concepts being demonstrated” while another science teacher commented that she could easily adapt the lessons to assess the needs of her students at all levels. Two of the four science teachers expressed concern that these lessons may be too advanced for prep level students, but would be great for advanced Physics courses. One science teacher of the four who evaluated the unit saw no real application of these lessons in her classroom.

Half of the science teachers thought this unit could be used as an addition to their existing curriculum. In order to do this however, the unit would have to be adjusted to address the standards that were being covered so that the objectives were more suited for the science classroom. Two teachers stated that it would be very difficult to include an aesthetics unit in their curricula because science teachers are given very specific objectives to cover during the school year, and aesthetic related lessons do not necessarily fit into those objectives.

All of the science teachers saw aesthetics as an interesting entry point for engaging students in science concepts. However, two of the four teachers found this to be challenging because of the lack of time and the focus on science objectives. The other two science teachers saw aesthetic thinking as a great way to build on science principles, but thought they were not necessarily practical in unit form. The aesthetic ideas addressed work best as an addition to science objectives addressed in the standards. One teacher remarked, "The answer to your question: "Why do these forms exist at all scales?" lies in the mathematical structure of the laws that govern physical systems. Stars and planets are spherical because gravity obeys an inverse square law that is spherically symmetrical, and so on." This observation reveals the type of learning and teaching that could take place between the science and art classroom.

All of the science teachers saw the aesthetic questions as valuable interdisciplinary ways to engage students in science and art concepts. Again, they felt that they were well suited for upper level students in advanced Physics, but perhaps not developmentally appropriate for prep level students. Teachers



noted that the aesthetic concepts were easy to follow and navigate for students, allowing for “self-directed exploration.” One teacher commented that the aesthetic questions, for the science classroom, needed to be connected to science theories that led students to the “right” answer regarding these questions. He thought the aesthetic questions could work well with “advanced areas like fractal geometry, conservation of angular momentum, and field theories.”

All of the science teachers who participated said that they address interdisciplinary themes in their teaching, and thought that using art and science together would allow for another level of understanding. It was evident that many science teachers draw upon other disciplines in their teaching, such as math and English, but had not necessarily used art in an interdisciplinary capacity. One teacher out of four said that she uses art themes in her classroom frequently. She maintained that “anything that makes the topics or concepts more real to the students can help them to actively engage in the classroom. Connecting the science of nature with the art within nature is a perfect way to engage the students!” Another teacher commented that connecting the aesthetic concepts to science topics allows students to become more invested in science because they have the opportunity to create something which serves as a way to demonstrate what they know and what they feel at the same time. He thought this process would be very rewarding for students.

## Conclusions: Transcendental Landscape in Art

Throughout time, artists, philosophers, and scientists have investigated experiences of the landscape that transcend language. They are all driven by the desire to represent and gain an understanding of nature as it is beyond appearances. As the artist Nancy Holt expresses, humankind since the beginning of time, has had the desire to understand, and demarcate the earth and the sky as a way to examine our place within the vast scheme of the universe. These investigations can be seen as far back as history has been recorded—from the cosmological philosophies of Aristotle, Galileo, and Leonardo Da Vinci to physicists and contemporary artists. The engagement with ideas about the transcendental nature of the landscape has taken on numerous forms in history, yet the conceptual problems, themes and philosophical issues remain consistent throughout. All of these ideas maintain a central paradox—the desire to quantify, understand, and make representations of forms of the landscape that remain illusory and unquantifiable. Such paradoxes can be seen in the following ideas: capturing the infinite, bringing the sky to the ground, creating closures without form, mapping built civilizations, painting intangible no-places and blank terrains, engaging celestial time, exploring unknown worlds, orienting to things beyond, conveying absolute emotions and timelessness, spaces that exist without volume, and walking to capture time and space, to just name a few.

The prevailing themes that artists have used throughout history to address perceptions of the landscape that transcend language include: time, space, light, natural phenomena, visual perception, cosmological studies, mapping,

astronomy, science and the infinite. The artists who draw upon these transcendental themes employ methods that are diverse in both media and practice, ranging from: drawing natural phenomena; painting the sublime; sculpting with light; walking to measure time; mapping geographical, urban, and cosmological systems; and using stars to demarcate space and time. Regardless of media, each of these artists use levels of abstraction as an essential element in the formulation of their work. Abstraction, both visually and mentally, as Shlain (1991) points out, is the highest form of thought and the thread that ties together all visionary artists and scientists. There is also a connection between the abstraction of forms in art and science and the inability to describe these visionary ideas in language. As Shlain elegantly states:

Whether for an infant or a society on the verge of change, a new way to think about reality begins with the assimilation of unfamiliar images. This collation leads to abstract ideas that only later give rise to descriptive language.(Shlain, 1991, p. 17)

It is also evident from the artists addressed in this thesis that visionary leaps in both art and science have occurred through this higher level of abstract thinking.

Perception and aesthetic experiences also remain a central theme in the study of the transcendental landscape. Philosophy has greatly influenced these ideas and has guided artists and theorists to new insights regarding the nature of the aesthetic experience. These aesthetic experiences that transcend language, described as the transcendental and sublime, have been addressed by philosophers such as Kant, and used by artists to explore ideas about the

landscape that push the boundaries of perception. Research into the nature of perception has led both artists and scientists to explore provocative new ways of examining the relationship between aesthetic experiences and the brain. The field of Neuroaesthetics and the study of Visual Indeterminacy in art gauge the location of aesthetic experiences in the brain, providing compelling insight into the nature of the sublime.

Kant's notion of the sublime suggests that these aesthetic experiences originate in the psyche and that our ability to comprehend the infinite is limited to our understanding of the world as we see it. In order to reconcile our desire to understand the infinite, Kant suggests our reasoning and imagination must coalesce to fill in the gaps of our understanding. Like Kant's ideas of the sublime, Pepperell's research regarding Visual Indeterminacy also reveals similar findings in the brain. The sublime experience parallels the "heightened states of awareness" that Visual Indeterminacy evokes such as "panic, mixed with a brief euphoria" (Pepperell, 2006, p. 396). The psyche can also be compared to Pepperell's "perceptual consciousness" wherein "what we see cannot be matched with what we know" (2006, p. 395).

In Visual Indeterminacy, Pepperell describes our fundamental need to reconcile the abstract or ambiguous elements in a work of art and how this mental process creates a unique aesthetic experience both physically and psychologically. Visual indeterminacy and Kant's notion of the sublime describe the exact same phenomena, and both point out the intrinsic desire the mind has to organize and reconcile these indeterminate visual experiences. Studies with

indeterminate imagery also showed an increase in brain activity and “a greater degree of overall coherence between different regions” in the brain (Pepperell, 2006, p. 396). This study supports the study of the transcendental landscape and holds great value to the field of art education because it points to key findings that directly link art and the aesthetic experience to increased brain activity.

Zeki's and Pepperell's research, much like Shlain, assert that in order to process complex ideas such as space, time, and the infinite, our brain must construct ways to organize our thoughts into manageable parts. Zeki believes that artists are the ones who try to reconcile the way “the brain sees the world” and that because of this, artists are always seeking “a visual language for those concepts.” Zeki's research into the brain supports Shlain's claim that “a few artists create a language of symbols for things for which there are yet to be words” and that “these 'radical innovations of art embody the preverbal stages of new concepts that will eventually change civilization” (Shlain, 1991, p. 20). The study of the transcendental landscape in art reveals the “preverbal stages of new concepts” that these visionary artists explore and how these paradigms of thought can influence innovation and change the way we understand the landscape.

## References

- Adams, T. (2009). Neuroaesthetics. *Modern Painters*. 21, 3
- ARTstor Inc. (2012). ARTstor: An Image Library for the Arts and Sciences.  
Retrieved from <http://www.artstor.org/index.shtml>
- Art21 inc. (2001-2012). James Turrell in spirituality [Video file]. *Art in the twenty first century* Retrieved from <http://www.pbs.org/art21/artists/james-turrell>
- Art21, inc. (2001-2012). Julie Mehretu in systems. *Art in the twenty first century* [Video file]. Retrieved from <http://www.pbs.org/art21/watch-now/segment-julie-mehretu-in-systems>
- Barrow, J.. (2005). *The infinite book: a short guide to the boundless, timeless, and endless*. New York: Random House, Inc.
- Cazeaux, C. (2000). *The continental aesthetics reader*. London: Routledge
- Christian, P. (2011). Nancy Holt: Sun Tunnels [Video file]. Retrieved from <http://www.youtube.com/watch?v=NMtUDgUirdI>
- Creative Commons. (2012). Sun tunnels. *The center for land use interpretation*. Retrieved from <http://clui.org/ludb/site/sun-tunnels>
- Crotty, R. (2010). Russell Crotty. Retrieved from <http://www.russellcrotty.com/>
- Dambekaln, L. (1997) Mapping the world through science and art. *VisionQuest: Journeys toward Visual Literacy*, 5, 157-160
- Diehl, C. (2005). Thinking, mapping, painting: Terry Winters. *Art in America*, April
- Dines, J. (2011). Richard Long artist [Video file]. Retrieved from [http://www.youtube.com/watch?v=39G\\_rXkJanw](http://www.youtube.com/watch?v=39G_rXkJanw)

- Drohojowska-Philp, H. (2004). Drawing the universe. *Astronomy*, 32(12), 90-91
- Firstenberg, L., (2002). Painting platform in NY. *Flash Art*, XXXV, 227, 7
- Friends of the High Line. (2010). Demetrius Oliver: Jupiter. Retrieved from <http://www.thehighline.org/about/public-art/oliver>
- Galitz, K. (2004). Romanticism. *Heilbrunn timeline of art history, the Metropolitan Museum of Art*. Retrieved from [http://www.metmuseum.org/toah/hd/roma/hd\\_roma.htm](http://www.metmuseum.org/toah/hd/roma/hd_roma.htm)
- Girod, M.. (2007). Sublime science. *Science and Children*, 6, 26-29.
- Girod, M., Wong, D. (2003). An aesthetic (Dewyan) perspective on science learning. *School Journal*, 102(3), 199-226
- Goldberg, E. (2012). Robert Smithson. *James Cohan Gallery*. Retrieved from <http://www.robertsmithson.com>
- Guiomar, E. (2008). Cardboard furniture: how to make a cardboard cupboard [Video file]. Retrieved from <http://www.youtube.com/watch?v=nZaa5poITWk>
- Helden, A. (1995). The Galileo project. Retrieved from [http://galileo.rice.edu/sci/observations/sunspot\\_drawings.html](http://galileo.rice.edu/sci/observations/sunspot_drawings.html)
- Higgins, C. (2012). Richard Long interview. *Guardian News and Media*. Retrieved from <http://www.guardian.co.uk/artanddesign/2012/jun/15/richard-long-swinging-60s-interview>
- Johnson Museum of Art. (2012). Excavations: the prints of Julie Mehretu. *Cornell University*. Retrieved from <http://museum.cornell.edu/exhibitions/excavations-julie-mehretu.html>
- Jones, J. 2000. Terry Winters. *Modern Painters*, 13(2), 111



- Kant, I. (1987). *Critique of judgement*. Indianapolis: Hackett Publishing Company.
- Kent County Council. (2011). American artist Russell Crotty talks about his show at Turner Contemporary [Video file]. Retrieved from <http://www.youtube.com/watch?v=2T8ppBf54C4>
- Knisely, L., & Vogel, T. (2007). Telescopes from the ground up. Retrieved from <http://amazing-space.stsci.edu/resources/explorations/groundup/teacher/grabbag.html>
- Kunstmuseum Wolfsburg. (2009). James Turrell: The Wolfsburg Project [Video file]. Retrieved from <http://www.youtube.com/watch?v=QWeklcZaKns&feature=plcp>
- Light Work. (2010). Demetrius Oliver: Penumbra. Retrieved from <http://www.lightwork.org/exhibitions/oliver.html>
- Linsley, R.. (1996). Landscapes in motion: Lawren Harris, Emily Carr and the heterogenous modern nation. *Oxford Art Journal*, 19, 80-95.
- Long, R. (2012). Richard Long official website. Retrieved from <http://www.richardlong.org>
- Lyotard, J. (1989). *The sublime and the avant-garde*. The Lyotard Reader, ed. New York: Edinburgh University Press.
- Miller, A.I. (1995). Aesthetics, representation, and creativity in art and science. *Leonardo*, 28, 185-192.
- Nemiroff, R., & Bonnell, J. (2012). Astronomy picture of the day. Retrieved from <http://apod.nasa.gov/apod/astropix.html>

Oliver, D. (2011). Artists blog: Almanack. Retrieved from

<http://demetriusoliver.blogspot.com/>

Mark Rothko [Video file]. (2009). Retrieved from

<http://www.youtube.com/watch?v=GPQgFMHQ57c>

Milne, I. (2010). A sense of wonder, arising from aesthetic experiences, should be

the starting point for inquiry in primary science. *Science Education*

*International*, 21, 102-115

Morley, S. (Autumn 2010). Staring into the contemporary abyss. *Tate Etc.*,

20, 70-77.

Morley, S. (2009). Painting the page. *Journal of Visual Arts*, 8, 141-159

Morrison, K. (2009) Embodiment and modernity: Ruskin, Stephen,

Merleau-Ponty, and the Alps. *Comparative Literature Studies*, 46(3),

498-511

Needham, G. (1984). The mystic north. *Art Journal, Art and Science: Part I, Life*

*Sciences*, 44,183-186.

Norris, T. (2006). The refusal of wonder. *Philosophy of Education Yearbook*,

221-223

Novak, B., Rosenblum, R., Wilmerding, J., McShine, K. (1976). *The natural*

*paradise: painting in America 1800-1950*. New York: The Museum of

Modern Art

Oxford University Press. (2012). Oxford art online: encyclopedia of aesthetics.

Retrieved from [www.oxfordartonline.com](http://www.oxfordartonline.com)

Parks, J. (2009). The sublime and the beautiful: painting the Hudson River valley.

*American Artist*, 73, 24-31

Pepperell, R. (2006). Seeing without objects: visual indeterminacy and art.

*Leonardo*, 39(5), 394-400.

Princenthal, N. (2009). Interview: Terry Winters. *Art in America*. Retrieved from

[http:// www.artinamericamagazine.com/features/interview-terry-winters/](http://www.artinamericamagazine.com/features/interview-terry-winters/)

Roob, A. (1997). *Alchemy and mysticism, the hermetic museum*. London:

Taschen

Rothko exhibition in London [Video file]. (2008). Retrieved from [http://](http://www.youtube.com/watch?v=-ApGK1OEFmo&feature=related)

[www.youtube.com/watch?v=-ApGK1OEFmo&feature=related](http://www.youtube.com/watch?v=-ApGK1OEFmo&feature=related)

Roukes, N. (1982). *Art synectics: stimulating creativity in art*. Worcester,

Massachusetts: Davis Publications, Inc.

Rowen, T.B. (2006). A retrieval of awe: examining disruption and apprehension in

transformative education. *Philosophy of Education Yearbook*, 212-220.

RyersonEDGElab. (2011). Adaptive design studio: basic cutting techniques

[Video file]. Retrieved from <http://www.youtube.com/watch?v=P-4CyAQO7O4>

RyersonEDGElab. (2011). Adaptive design studio: making dowel nails [Video

file]. Retrieved from <http://www.youtube.com/watch?v=D87W12u-etw>

RyersonEDGElab. (2011). Adaptive design studio: gluing [Video file]. Retrieved

from <http://www.youtube.com/watch?v=XIHNUIE0UX0>

RyersonEDGElab. (2011). Adaptive design studio: putting things together [Video

file]. Retrieved May 20th 2012 from [http://www.youtube.com/watch?](http://www.youtube.com/watch?v=63BUj5nAR5A)

[v=63BUj5nAR5A](http://www.youtube.com/watch?v=63BUj5nAR5A)

RyersonEDGElab. (2011). Adaptive design studio: finishing and edging [Video file]. Retrieved from <http://www.youtube.com/watch?v=GbEwSowD6W0>

Saad-Cook, J. (1988). Touching the sky: artworks using natural phenomena, earth, sky and connections to astronomy. *Leonardo*, 21, 123-134.

Schama, S. (2006). The power of art: Mark Rothko (3 of 4) [Video file]. Retrieved from <http://www.youtube.com/watch?v=MP5zoAgAlbE>

Schama, S. (2006). The power of art: Mark Rothko (4 of 4) [Video file]. Retrieved from <http://www.youtube.com/watch?v=xXOKIhmq0K8>

Shlain, L. (1991). *Art and physics: parallel visions in space, time, and light*. New York: Quill William Morrow

Skystone Foundation. (2011). About Roden Crater. Retrieved from <http://rodencrater.com/about>

Sorger, T. (2011). In the eye of the storm: images of spacetime in Turner and Poe. *Interdisciplinary Humanities*, 28(1), 60-72

Stoker, W. (2008). The Rothko Chapel paintings and the urgency of the transcendent experience. *International Journal for Philosophy and Religion*, 64(2), 90

Tate Collection. (2012). Richard Long, Tate Britain, UK. Retrieved from <http://www.tate.org.uk/art/legacy/ArtistWorks>

Tate Shots. (2009). Tate shots NYC: Terry Winters [Video file]. Retrieved from <http://www.youtube.com/watch?v=PLW3cs0LfpY>

The National Gallery. (2012). Joseph Mallord William Turner. *The National Gallery*: Retrieved from <http://www.nationalgallery.org.uk/content/ConConstituent/539>

Time Out London. (2009). Richard Long retrospective at Tate Britain [Video file]. Retrieved from [http://www.youtube.com/watch?v=9\\_T3OvBdtKM](http://www.youtube.com/watch?v=9_T3OvBdtKM)

Turner and the emotional landscape [Video file]. (2011). Retrieved from <http://www.youtube.com/watch?v=N2iUsUgpM0o&feature=related>

## Appendix

### **Teacher Assessments**

#### Art Teachers

**Sharon Willcutts-Havel**

**Art Teacher: Coordinator of Studio Arts**

**Episcopal High School**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

Secondary Visual Arts grades 9 through 12. I am an instructor of both beginning and advanced levels of 2FD art

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Yes, this Thematic Unit of study provides great topics of interests to inspire teachers and students both at the beginning and advanced levels. I could follow the concept quite easily.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

- This unit of study would be a great topic to culminate a beginning drawing and/or painting unit on Value, Form and Light. Students could begin by learning to draw/paint forms from nature through direct observation, paying particular attention to light and value, using the theme of Microcosm/ Macrocosm and collaging of images. The culmination of the unit could end with a direct observation of a full landscape with collaged components.
- The advanced level student could apply research of the Golden Rectangle and Fibonacci's Golden Ratio, or research fractal designs in nature.
- Students could follow weather patterns and mapping to combine elements and principles of design, referencing Julie Mehretu's painting.

**4. Do you think these lessons would be challenging and engaging for your students?**

Yes absolutely, I would love to work this into my units of study for next year!

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

Absolutely!



**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

Yes this Thematic Unit would definitely fit into the needs of my current curriculum. As mentioned above it would add an aesthetic, interdisciplinary, and historical aspect to my current beginning and advanced drawing and painting courses.

**7. Do you teach aesthetic concepts in your classroom? Do you think including an aesthetics unit on the transcendental landscape provides new ways for students to consider art and art making?**

I do teach aesthetic concepts but have not approached the topic of Transcendental Landscapes. I think the topic provides endless ways to engage students in contemporary problem solving and creative thinking processes.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

I absolutely think that the aesthetic component will provide insight to interdisciplinary thinking, discussion and activities.

**9. Do you currently include interdisciplinary themes in your lessons?**

**Do you think including interdisciplinary themes in your curriculum is important?**

I believe students learn best when they can experience many angles to a topic, and when the subject matter in their classes overlap. So I do try to include interdisciplinary themes in my lessons as often as possible. I check with other academic instructors to find ways in which there might be overlap in concepts going on, and try to plan my lessons accordingly whenever possible. For example, I assign a narrative project that can relate to reading assignments, focus on artists that relate to History class, and present the Gold Rectangle and Fibonacci's Golden Ratio of Sequences along with math.

**10. Do you teach your students about art history and contemporary artists? Do you think learning about contemporary artists is an important part of secondary art education?**

Yes each of my units of study includes an art history component and/or artist in history to reference. It is very important for students to be introduced and aware of current artists and events in their world.

**11. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

I can find many ways to engage the students in dialogue regarding contemporary art through artists such as James Turrell (light), and Julie Mehretu (mapping), etc.

**12. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes the thematic unit does provide a clear overview and examples of artists and that relate to the lesson.

**13. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

Yes, the lesson plans provide clear how to steps and approach, allowing any instructor to apply the information to a classroom. I can immediately come up with fun, engaging, ways to apply the themes below basic on the lesson plan.

- Microcosm/ Macrocosm
- Light, Space, & the Cosmos
- Seen and Unseen
- The Mapping of Time

**14. Are there any other specific thoughts or comments you may have?**

I can't wait to apply the notion of Transcendental Landscapes in a lesson plan.

**Judy Chambers**

**Art Teacher: Drawing, Printmaking, Design**

**North West Houston Community College Systems**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

I teach Studio Art courses to college students at the North West Houston Community College Systems at the Spring Branch location. At this time I teach Drawing I & II, but I have taught Design and Printmaking in the past.

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Yes. I enjoyed reading all four lessons, and found them easy to follow and understand. Everything I needed to teach the lessons were mapped out in the plans.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

Yes. Three of them could be easily adapted to my Drawing classes but the

Light, Space, and the cosmos lesson is primarily a 3-D lesson.

**4. Do you think these lessons would be challenging and engaging for your students?**

They would be very challenging and engaging. The Aesthetic Inquiry questions add a higher level of exploration to the concepts of the lessons and help the students to greater insight to their personal thoughts and ideas for their own projects.

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

I think that these lessons would be most appropriate for the upper level students and students on track for AP or IB, however I could see a very strong teacher using this unit with Art 1.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

As a Drawing I and II teacher, I could see me using some of the individual lessons in the Drawing I and the unit with three out of four lessons in the Drawing II class. Although Seen and Unseen is primarily a painting lesson, Kaitrin has provided an alternative drawing lesson in the Extension.

**7. Do you teach aesthetic concepts in your classroom? Do you think including an aesthetics unit on the transcendental landscape provides new ways for students to consider art and art making?**

- The beginning of the Drawing focuses on basic skills, learning to see, contour, gesture, expressive, etc. drawing, but I always show artists' works which exemplify the concepts. Later on in the semester I am able to really add aesthetic concepts to the lessons.
- I do think including this unit on transcendental landscapes raises the bar and provides new ways for students to consider art and making art.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

Absolutely for both questions! As I stated above, the Aesthetic Inquiry questions add a higher level of exploration to the concepts of the lessons and help the students to greater insight to their personal thoughts and ideas for their own projects.

**9. Do you currently include interdisciplinary themes in your lessons? Do you think including interdisciplinary themes in your curriculum is important?**

- I do in some cases in the Drawing I, especially in the Surrealism lesson where

science and literature was a great influence on the art. Nature and math are also brought into lessons on a regular basis. Many of the Drawing II lessons are interdisciplinary.

- I think that it helps students see the broader picture of art and learn that art is not made in a vacuum. It also makes the projects more relevant to the students and shows how all parts of their lives can be used to explore topics for their art works.

**10. Do you teach your students about art history and contemporary artists?**

**Do you think learning about contemporary artists is an important part of secondary art education?**

Absolutely to both questions.

**11. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

Yes. It is not only clear but it makes contemporary art understandable and exciting, especially the way Kaitrin has developed the Aesthetic Inquiry Questions.

**12. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

I think that Kaitrin has chosen the perfect artists to exemplify the themes. Her



overview of each lesson was understandable, informative, and captured my attention. I thought that all four lessons worked well as a unit.

**13. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

I thought that the steps were laid out in an extremely clear and understandable format and I cannot think of any way I would improve them.

**14. Are there any other specific thoughts or comments you may have?**

1) Here is a book that you might want to read, it fits right in with your thesis topic:

Gamwell, Lynn. (2002). *Exploring the Invisible: Art, Science and the Spiritual*.

New Jersey: Princeton University Press.

2) In teaching *The Mapping of Time*, I highly suggest using your Note: Walk #1 and #2 can be assigned as an out of class assignment, not just to save time, but in a High School setting, students need to be supervised both for their safety and for your protection in case something was to happen while they were out of your sight.

3) In teaching *The Mapping of Time*, I also agree about using the Aesthetic Inquiry Questions first, otherwise I think the assignment will be too hard to grasp. After reading and writing/answering the questions, it will give them ideas to jump off from.

**Dani Pontus**

**Art Teacher: Photography, Graphic Design, Illustration, Art I**

**Westside High School**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

Art 1, Photo 2/3/4 AP, Graphic Design/Illustration. Art/Tech 9-12

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Yes, I could see these lessons being part of a higher level (not art 1) curriculum.

There is too much variety and openness for a level 1 course, but in a higher level it can be done.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

Not really. I could adapt it for photo classes as a macro project, but that is a little boring for photo classes. The projects that are more "color theory" (Rothko) based could be an interesting way for the photo classes to create abstract photography using light and color as an abstraction.

**4. Do you think these lessons would be challenging and engaging for your students?**

Since we live in a world of differentiated (so?) curriculum it will be challenging and engaging. You might want to come up with something more concrete for those students who are ALL about reality. The secondary school years tend to produce students that see something and want to make it. How would you handle a student that is discouraged because they still don't get it?

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

I think that with the right group of students, students that **want** to be in the art room, not students "placed," you can create an environment where a "higher level" of thinking is promoted.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

It would strengthen any program where students are given the chance to think for themselves. Even if a student is AP and GT, it doesn't mean they'll understand it. BUT... students that find their home in the art room will enjoy given the opportunity to think freely and design freely.

**7. Do you teach aesthetic concepts in your classroom? Do you think including an aesthetics unit on the transcendental landscape provides new ways for students to consider art and art making?**

I'm not a big fan of the word "aesthetic." I think it's an older concept that focuses on the students' ability to finish and make it look the way the teacher wants it to look. I think **process** is the most important part of the art making. It also gives the students some flexibility as to what they will hand in.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

Some of your questions are too cerebral for high school students. Your assuming they will be there and be attentive everyday. A typical teenager not only scoffs at paperwork and questions, but if you were to ask them as a class I don't think you would get student to answer, for example;

- How do these drawing relate to human scale? How does the body relate to these artworks (from Microcosm). These types of questions you'll get one word answers for. (Unless you specify full sentences)

**9. Do you currently include interdisciplinary themes in your lessons? Do you think including interdisciplinary themes in your curriculum is important?**

As an art teacher, everything we do is interdisciplinary, which is **very** important. We are able to sneak core subject ideals into artwork without them even knowing. An example I can give you is a lesson called the Flatpack Toy. The student has to create a flat pack toy to be cut out of paper; this involves math and measurements. In the beginning they struggle with the idea of making something 2d into 3d, but when the project is complete they feel a great sense of gratification.

**10. Do you teach your students about art history and contemporary artists? Do you think learning about contemporary artists is an important part of secondary art education?**

I try to focus on contemporary artists, so they can see that there are artists that exist and are alive making art and making money from it. I bring in magazines like *Fructose*, *Clutter*, and *Juxtapoz* to show them what is happening NOW in art. This also helps them connect to the art more. An example for me would be showing them the first graffiti that existed, the Lascaux Caves and then show them snippets of *Exit Through The Gift Shop*. Connecting graffiti from then till now. I also show *Style Wars* to get them to understand the politics of contemporary art, which in this era is a big part. I ask them often, "What is your message?"

**11. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

Yes and no, you need to find a way to grab their attention and KEEP it. With a 5 minute attention span, it is not easy. The mapping of time I think is the strongest; it could also become a collaborative project where students work on each others' pieces for a 5-10 minute period of time and then give it back to the original artist for completion.

**12. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes

**13. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

YES! I (personally) would stay away from the word Aesthetic. It's an old one and when you break it down it tends to be about the final product and how it looks. When I was in my Masters program we were taught that the word aesthetic was aged and not part of current art culture. And furthermore, you have to explain what the word means over and over and over.... ugh.

**14. Are there any other specific thoughts or comments you may have?**

You're doing great. Great resources and information. You may have to simplify the questions a bit for your classes. I personally think getting them to critique is key; the sooner you can get them doing that... the better! It also helps them by seeing others' work and helps to build their art vocabulary. Having a list of the rules of critiquing handy for all students would help. You will get a lot of students with ADHD and Dyslexia. ( I have ADHD and Dyslexia and I tell them I do.) Also, as a side comment, I show them some of my work. They want to see that their art teacher is actually producing art. It helps to solidify a bond between you and your classes, I even let some of my classes use my older work to learn how to critique, they SOOO enjoy that! I live by the 3 R's. Relationships, Relevance, and Rigor. If you show them **relevant** art to their culture and society it will help create a **relationship**, thus making them more **rigorous** artists!

**Karen Hunter**

**Art Teacher: Art Department Chair, Painting, Drawing, Art I**

**Westside High School, HISD**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

Art 1PreAP, Painting 2, 3, 4, APStudio Painting, Dual Credit Foundation Drawing  
1, 2

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Yes—the background material is comprehensive and the goals and objectives were clear. Aesthetic inquiry are questions helpful for class discussion.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

Yes - students are very interested in contemporary artwork. They WANT to understand it. My upper level students want/need challenging problems to solve, both technically and conceptually. They are assigned trips to the museums to look at works that require a thoughtful inquiry.

**4. Do you think these lessons would be challenging and engaging for your students?**

Yes, given the opportunity to think creatively, I feel that they can rise to the occasion when the subject is interesting and when they can relate to it. We all have a relationship with landscape in some way—urban or natural, and we like to understand our place in it. Students will relate to this subject matter on different levels which is what makes the art class interesting.

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**



Yes. Time and space, the universe and light are concepts that ask the questions of who we are, and why we are here. These ideas interest all human beings as we begin to ponder our significance.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

Absolutely! I will be using these lessons with my upper level painters. Hopefully I can use some of the extensions included to make understanding more comprehensive.

**7. Do you teach aesthetic concepts in your classroom? Do you think including an aesthetics unit on the transcendental landscape provides new ways for students to consider art and art making?**

I do teach aesthetics. Where else will they get this? Art provides the perfect platform for understanding this concept. The transcendental landscape will be a new way of thinking for them, but they will respond to the idea. The levels of understanding will be different, and that will make the discussions and critiques provocative.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do**

**you think the aesthetic questions will encourage discussion and promote creative thinking?**

Yes. The relationship between science and art is interesting. Artists and scientists research, explore, make observations and give us a look at "truth." The lesson on microcosm and macrocosm is a good example of how these subject areas can work together. This would be a great interdisciplinary lesson to try. Often students bring other subject areas to art. This would be a wonderful way to bring art to science.

**9. Do you currently include interdisciplinary themes in your lessons? Do you think including interdisciplinary themes in your curriculum is important?**

We are a large high school and often we do not have the opportunity to share ideas between disciplines. I would like to do more, and perhaps this would offer an opportunity to do so. In terms of the importance of interdisciplinary themes, I think that any method that reinforces and expands the subject matter in all subjects is valid and necessary.

**10. Do you teach your students about art history and contemporary artists? Do you think learning about contemporary artists is an important part of secondary art education?**

Yes, I teach art history and include contemporary art. Naturally, understanding what contemporary art is and why it is being done is part of experiencing our

social culture. Students need to have this information to better relate to the world we live in and be a contributing factor in it.

**11. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

Yes, I think it will be exciting to lead students into a questioning search about their identity through this subject matter. Inquiry questions are most helpful as well as the list of resources provided.

**12. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

The clear overview is one of the strongest elements in the lessons. I am interested in the process as much as the product—perhaps even more so. These themes are relevant to us all as human beings and the exploration of these concepts is greatly aided by the material given in the comprehensive overview.

**13. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

Yes, there is clarity in the steps given. I will use a different time frame for some of the lessons as I feel they will take longer to explore in depth than the suggestions given.

**14. Are there any other specific thoughts or comments you may have?**

This work is intelligent, thought provoking, and relevant. I will definitely use these ideas next school year. Additionally, I am very impressed with this choice of topic. I feel that she has taken a complex idea and broken it down into easy to grasp steps for the student. Given the opportunity to be creative and thoughtful, my students always surprise me! They NEED to think outside of the linear box that education can be, and explore beyond the comfort zone of "the right answer." In the beginning, all they want to know is if their artwork is "right." I ask them if they think it is and eventually they began to understand the process of self assessment. When they leave my class I hope they know how utterly unique they are, and how beautiful they have become in the process of expressing their "truth."

**Susan Smith**

**Art Teacher: Drawing & Art I**

**Westside High School**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

I teach Art 1, Drawing 2,3,4 and AP Drawing Portfolio at Westside High School in Houston, Texas.

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

The unit was easy for me to follow and understand but I'm not sure an art teacher without an MFA would think so.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

The concepts of drawing that I teach are more related to direct observation because the AP Drawing Portfolio is geared that way. The Design and 3D Portfolios and would be a better fit, I think.

**4. Do you think these lessons would be challenging and engaging for your students?**

The concepts you present would be challenging for some of my students but would be too advanced for many.

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

The concepts you present would be challenging for some of my students but would be too advanced for many.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

I could plan some interesting projects with advanced students.

**7. Do you teach aesthetic concepts in your classroom? Do you think including an aesthetics unit on the transcendental landscape provides new ways for students to consider art and art making?**

Yes.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

The unit expands the definition of what inspires artists and the role that other disciplines play. Could tie other earlier art historical movements such as Futurism, Earthworks, etc.

**9. Do you currently include interdisciplinary themes in your lessons? Do you think including interdisciplinary themes in your curriculum is important?**

Not in relation to science or math, mostly because of my limited background in those areas.

**10. Do you teach your students about art history and contemporary artists?**

**Do you think learning about contemporary artists is an important part of secondary art education?**

Yes, but there is or was (he left this year) a person teaching AP Art History last year. I include art history more as reference material for projects than a chronology of developments in art. Yes, contemporary is included. Shepard Fairey last semester is one for example. As you know some of the artists you reference have work in Houston.

**11. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

Yes.

**12. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes.

**13. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

Team teaching with a science teacher, or a collaborative project would be good. Don't know if a science teacher would appreciate the experience or the products created.

**14. Are there any other specific thoughts or comments you may have?**

I would love to see images of student artworks created in Dambekalns' dyed silk lesson.

**Science Teachers**

**Ross Clark**

**Science Teacher: Chemistry**

**Mayde Creek High School, Katy ISD**

**Katy, Texas**

**Teacher Assessment / Thematic Unit: Transcendental Landscape**

**Questions:**

**1. What subject, content area, and grade levels do you teach?**

Chemistry; Science 8-12

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Very well written and easy to follow; the structure is most appealing because it includes resources to support and demonstrate investigations. Each unit is truly a complete package of learning and teaching.



**3. Are the concepts in this unit relevant to your classroom? Explain.**

While the the actual investigations are centered around content and objectives outside of my scope, the theories behind them are absolutely relevant. I'm a firm believer in providing students with mechanisms for connecting concepts with logical, stepwise products; an overlapping of learning types with actionable learning devices.

**4. Do you think these lessons would be challenging and engaging for your students?**

I believe a large number of students would appreciate and benefit from lessons formatted in this style; interweaving traditional classroom lab exploration and lecture with artistic, actionable outlets can only further solidify the concepts being demonstrated.

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

Certainly, as they operate in the "higher levels" of products and investigation.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

These units may be more appropriate for students in an IPC or biology classroom; however, yes they could be integrated. If the units included

references to the standard objectives of the respective states, it would be beneficial, as I like my students to know ahead of time what objectives they'll be expected to master. It would also be beneficial to the instructors to have this information at hand.

**7. Do you think teaching aesthetic concepts in your classroom can provide new an exciting ways for students to engage in science and art topics?**

Yes, and in some ways, though not in unit form, this is already happening in many science classrooms. Many of the products coming from a typical high school science classroom require interdisciplinary alignment with other content areas. Math, English, and, to a lesser degree, art are all used to allow students to demonstrate mastery in my classroom, and this style would integrate well.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

They are well-written, thought provoking, and, most importantly, are efficient guides for students through the concepts being explored. The questions allow for self-directed exploration, while keeping students on the task at hand.

**9. Do you currently include interdisciplinary themes in your teaching? Do you think including interdisciplinary art themes in your science curriculum can actively engage students in science concepts?**

Yes I do; from acts as simple as including familiar mathematical terms and equations to using poetry to describe the logic behind theories, my students create products completing actionable assignments that are modeled from other disciplines. Art, being tactile, visual, and even audible is a logical choice to support scientific themes.

**10. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

As stated previously, resources provided in the units do a great job at guiding students through the assignment, while allowing room for creative interpretation. I believe this would translate into rich dialogue, not only about science, but about the arts.

**11. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes, wonderful background is provided, both from the interpretation of the author and from the artists themselves.

**12. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

The units are well written and organized for both the students and educators.

Again, including references to state objectives would be the only improvement I'd like to see, should these units become widely available to educators.

**13. Are there any other specific thoughts or comments you may have?**

I very much enjoy the concept behind these units and had a visceral response to the art and science concepts being discussed. I can only assume that many students will have a similar reaction to such assignments, and, if that is truly the case, I believe these students will become greatly invested in the products they create, as they aren't just representations of what they know, but what they feel.

Thank you again for sharing your creations; you're really on to something.

Elementary education likely does a better job of integrating art concepts with other content areas, but somewhere along the grade levels this gets lost in translation. In an ideal world this style of investigative learning would be perpetual throughout the careers of our students. Admittedly, many of my students would need a "re-education" before benefiting from these units; however, that's a reflection of the system and not of the effectiveness of your work. Congrats on a wonderful product.

**Chris Cunningham**

**Science Teacher: Physics**

**Westside High School**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

Physics, Science, 11th and 12th grade. I teach all levels of Physics (Prep, PreAP, AP B and C). If these designations are unfamiliar: Prep is "on-level"; PreAP would be like an "honors-level" course. AP Physics B and C (Mech.) would be like freshman college physics. C (EM) is the sort of physics class a typical science or engineering student might take in their sophomore year in college.

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Yes, but I used to teach AP European History, and I have extensive (for a high school teacher) background in art and art history. I think many high school science teachers would find much of the content alien.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

In a general way, yes. Many concepts in art, symmetry and other considerations of form, for example, are important to science. Sub-atomic particles and terms within mathematical expressions and equations have been conjectured to be

"missing" based on arguments referencing symmetry and "beauty." Maxwell didn't think Ampere's law looked quite right, and so on. Recently the Higgs Boson a "beautiful" theory says it should be there, and it is (probably).

**4. Do you think these lessons would be challenging and engaging for your students?**

I think these lessons would be beyond the reach of my prep-level students. My better PreAP and AP Physics would embrace them, particularly those with interests in the humanities.

**5. Do you think the lessons in this unit are developmentally appropriate for highschool students?**

They are too sophisticated for the typical high school student that I encounter in a huge urban comprehensive high school. They are on track for AP students in such a school. They would be on track for sharp students in the magnet high schools in a district like HISD.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

With difficulty. Every science class has a set curriculum and timeline. Prep Physics follows STAAR, PreAP follows LTF, AP follows College Board guidelines, and so on. We have to turn in schedules and lesson plans that reflect specific

objectives within the official curricula. These objectives reference specific concepts, laws, equations, etc. Aesthetic principles, rightly or wrongly, are not there in the physics curricula.

**7. Do you think teaching aesthetic concepts in your classroom can provide an new exciting ways for students to engage in science and art topics?**

Yes. And I do, at least when I have an audience that is sophisticated enough to appreciate them. The answer to your question: "Why do these forms exist at all scales?" lies in the mathematical structure of the laws that govern physical systems. Stars and planets are spherical because gravity obeys an inverse square law that is spherically symmetrical, and so on.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

Yes, and yes. But, many of the correct scientific "answers" will only be found in advanced areas like fractal geometry, conservation of angular momentum, and field theories, for example. We touch on these ideas in AP-level physics classes. If you were to talk about conservation of angular momentum to a prep class (because it is vector-based concept), for example, they would stare at you as though you had two heads.

**9. Do you currently include interdisciplinary themes in your teaching? Do you think including interdisciplinary art themes in your science curriculum can actively engage students in science concepts?**

Yes, and yes.

**10. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

Yes, but again for sophisticated students.

**11. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes.

**12. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

Yes. Referencing specific scientific objectives from official curricula would help "sell" the lessons to science teachers.

**13. Are there any other specific thoughts or comments you may have?**

I think I've written everything, I can add.



**Carolyn Klein**

**Science Teacher: Environmental Science**

**Westside High School, HISD**

**Houston, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

I teach Environmental Science to 11th and 12th graders.

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

I have absolutely no art training. The format of the unit seems very clear, but I confess that I don't understand much of the content, but I'm sure it's clear to an art teacher.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

The concepts of scale and close observation have direct application to my science classroom, as you so well discuss in your overview. It would be an interesting exercise for students to find natural patterns (such as spirals) in the face of a sunflower or in a galaxy and to compare their shapes. The exercises themselves would not be terribly relevant in my class, but that is partially a factor of time. Since the time spent with my students is limited, these activities would

not get priority in my class even though they are interesting concepts. There's just too much required content to cover—a situation I'm sure you're familiar with.

**4. Do you think these lessons would be challenging and engaging for your students?**

As discussed above, these lessons would not really apply to my class, but I'm sure it would be different if I were an art teacher.

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

Since I don't have any training in art, I don't know if this material is appropriate for high school students. As a complete novice, I will say that the technical terms and directions for the work are sophisticated, at least to me. The content—issues of amazement, universal scales, and an attempt to appreciate the scale and beauty of the natural world are definitely appropriate for high school students.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

See my note in #3

**7. Do you think teaching aesthetic concepts in your classroom can provide new an exciting ways for students to engage in science and art topics?**

Yes, it would be a great thing to do, but I don't see how it could fit into the science school year—we have too much we have to cover. If we could get away from this restriction, these concepts would be great for science students. Science really is about seeing patterns, asking questions, and interacting with our amazing universe. Appreciation enriches the experience.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

Yes.

**9. Do you currently include interdisciplinary themes in your teaching? Do you think including interdisciplinary art themes in your science curriculum can actively engage students in science concepts?**

Yes, I include interdisciplinary themes as often as possible, but not often.

Including art themes would be another avenue for art students to connect with the science curriculum and may make the science curriculum more interesting to other students.

**11. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

I would have a very difficult time to bring in discussion about contemporary art because I don't know anything about it, but if I did have some background, I would do so.

**12. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes.

**13. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

If I taught art, these would be very clear steps. If your intended audience is non-art teachers, discussion of how to prepare paints/canvases/materials would need more detail.

**14. Are there any other specific thoughts or comments you may have?**

Thank you for taking the time to create a means for more people to see the connection between science and art.

**Sharon Carswell**

**Science Teacher: Environmental Systems & Aquatic Science**

**Mayde Creek High School, Katy ISD**

**Katy, Texas**

Teacher Assessment / Thematic Unit: Transcendental Landscape

Questions:

**1. What subject, content area, and grade levels do you teach?**

I teach Aquatic Science and Environmental Systems. The majority of my students are high school seniors.

**2. Is this Thematic Unit 'Teacher Friendly', easy to follow and understand?**

Yes, absolutely Teacher Friendly. Very easy to follow and understand.

**3. Are the concepts in this unit relevant to your classroom? Explain.**

Yes, they are. I cover a lot of subjects in earth science and biology. Being able to look at systems and look closer at the world around us is a key element in my instruction.

**4. Do you think these lessons would be challenging and engaging for your students?**

Yes, they would be challenging and engaging. But, they would also be easy to adapt or modify for my special needs students as well.

**5. Do you think the lessons in this unit are developmentally appropriate for high school students?**

Yes, I do. Like I said, some may be a bit too sophisticated for my special needs students, but lend themselves to easy modifications.

**6. Would this Thematic Unit work as an addition to your existing curriculum? How can this thematic unit be strengthened to fit the needs of your classroom?**

It would be a great addition to my curriculum!

**7. Do you think teaching aesthetic concepts in your classroom can provide new an exciting ways for students to engage in science and art topics?**

Absolutely! I have a great deal of ESL students and using art and aesthetic concepts is a great way to bridge the language barrier.

**8. Do you think the aesthetic questions in this unit provide new ways for students to think about art, science, and interdisciplinary concepts? Do you think the aesthetic questions will encourage discussion and promote creative thinking?**

I think the aesthetic questions in this unit do provide new ways for the student to connect art and science and the natural world around them. It would be easy to facilitate discussions and creative thinking with the use of this unit.

**9. Do you currently include interdisciplinary themes in your teaching? Do you think including interdisciplinary art themes in your science curriculum can actively engage students in science concepts?**

Yes and yes. I do use interdisciplinary themes in my teaching because I do believe that anything that makes the topics or concepts more real to the students can help them to actively engage in the classroom. Connecting the science of nature with the art within nature is a perfect way to engage the students! I practice this often in my classroom.

**10. Does this thematic unit present clear ways to engage students in a dialogue about contemporary art?**

Sure. And I believe that art and humanities are integral in understanding and appreciating science!

**11. Does this thematic unit give a clear overview of the artists and themes being addressed in the lesson?**

Yes, it does. The background information on the artists and themes they used is very clear.

**12. Do the lesson plans provide clear steps on how to teach these concepts? How can this be improved?**

The steps seemed very clear to me. Very precise and easy to follow.

**13. Are there any other specific thoughts or comments you may have?**

I was very impressed with your work! So was my husband, a graphic artist, curriculum designer & graduate student himself! Like I've said before, I have a background in art so this all seems very natural and exciting to me. I already do nature walks, but I love the lesson on mapping the walk through journaling and finally creating a visual product! Nice job! Thinking about my fellow teachers, I believe they would all be open to the integrating of art in their science classrooms as well.