SEQUENTIAL/CONSEQUENTIAL

by

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May, 2017

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"Sequential/Consequential" refers to my material-based, process-oriented approach to creating ceramic sculptures. A guiding principle of my thesis activities is centered around expressing temporal accumulation of the art making process in a visual dialogue. The working properties of clay have physical characteristics that change over time. Beginning first with a wet, malleable material, the transformation during drying and kiln firing create a stone-like final product. While in many cases the final product is just that, *final*, I explore how to expand upon that linear history.

My creative process involves multiple components to create a visual dialogue that explores the idea of time being a cyclical entity. Incorporating video recording devices, material processing and still image photography, I illuminate how geologic processes that may take millennia to occur can be experienced in a few minutes.

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A Thesis

Presented to the Faculty of the School of Art and Design

East Carolina University

In Partial Fulfillment of the Requirements for the Degree

Master of Fine Arts in Art

by

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May, 2017

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TABLE OF CONTENTS

LIST OF FIGURES v
LIST OF PLATES vi
INTRODUCTION 1
Time Perception as Related to Human Life Span 1
PROBLEM STATEMENT 3
The Packaged Idea 3
Ceramic Sculpture 4
Temporal Accumulation 6
Human Timeline vs Geologic Timeline 8
SPECIFIC AIMS 10
Communication Through Material Findings 10
METHODOLOGIES 11
Contemporary Art Research 11
Value System: Art as Activity 13
STUDIO ACTIVITY 15
Creative Approach 15
Video Recording 15
Construction 16
Deconstruction 17
Reconstruction 18
PROJECTED OUTCOME 21
Discovery and Personal Relevance 21
CONCLUSION 23
PLATES 24
REFERENCES 40
APPENDIX A: Technical Information 41
APPENDIX B: Deconstruction Machine 42
APPENDIX C: Glossary 45

LIST OF FIGURES

Figure A: Sculpture Detail 5
Figure B: Rock Fracture Detail 6
Figure C: Cone Plaques 7
Figure D: One and Three Chairs 11
Figure E: Deconstruction Machine 18
Figure F: Concept Illustration 1 19
Figure G: Concept Illustration 2 20
Figure H: Leonardo da Vinci's Cam Hammer 42
Figure I: Deconstruction Machine 43

LIST OF PLATES

Plate 1: Still Image from Documentational Recording……..……...…24

Plate 2: Sculpture with Glazes Applied…….…25

Plate 3: Deconstructed Sculpture……...……26

Plate 4: Reconstructed Sculpture……...……27

Plate 5: Ct=6,888……...28

Plate 6: Gr=Rock Fractures……29

Plate 7: Gr=Recrystallization…….……30

Plate 8: Gr=Erosive……..……..……31

Plate 9: Gr=Attrition……...……...…….……32

Plate 10: Gr=Attenuation…...……33

Plate 11: Rock Fractures II……34

Plate 12: Ct=7,290…….……35

Plate 13: Ct=3,960 Dt=6,480…….……36

Plate 14: Ct=11,160……..…….……37

Plate 15: Ct=9,360…….……38

Plate 16: Ct=5,670…….……39

INTRODUCTION

Time Perception as Related to Human Life Span

Utilizing ceramic material as a means for discovery and communication, I expand the linear history of my making process and accumulated result in narrative form. Each phase in the formation of a ceramic object is manifested through technical manipulation of geologic materials. Combining silica[1], alumina[2], feldspar[3], and water, in a homogenous blend, these materials become the basis for object narrative. From wet clay to glaze-fired object, the chemical composition has been altered; glaze has been sintered[4], clay has been calcined[5] and inorganic material burned out. In reference to geologic phenomena such as weathering, erosion, or decomposition, these changes may have taken hundreds of decades to occur. Utilizing a high temperature kiln to encourage this geologic mutation at an accelerated speed, the viewer can experience these processes through visually tangible products.

This time compression is documented during my formation process utilizing a video recording device. The recordings of my creative process acts as a historical marker and allows for re-presenting this information to augment the visual and temporal narrative. These recordings allow a participant to experience geologic material transformation at a pace geared for human timeline comprehension.

After the glaze-fired sculpture has been documented in both video and still format images, it is then incorporated into a “repurposing machine”. This is a machine I designed and constructed for the purpose of pulverizing the ceramic sculptures into powder. Acting much like geologic

weathering, the time and pressure of the hammer strikes transform the sculpture into ingredients for future sculpture. Using the deconstructed sculptural material as a main ingredient for subsequent creations, the inherent qualities of the initial sculpture are incorporated in the following sculpture. The cyclical nature of this creative activity informs my research of materiality, time and process.

PROBLEM STATEMENT

Time, as defined by the Merriam-Webster Dictionary, is a "measured or measurable period during which an action, process, or condition exists or continues". Additionally, *passage* is defined as, "an act of moving or passing from one place or state to another". Ceramic material can exist under many conditions; it can be raw and earthy, malleable or stone-like, or chemically refined. The material's physical state is liminal and exists only under particular circumstances. Ceramic material's passage through time is continual and cyclical. A sculpture atop a white pedestal within the walls of a gallery space, is considered to be a temporal accumulation of all previous actions upon the material. However, this state of being only exists within the confines of understanding process and procedure. If the object is then pulverized into a refined powder, and combined with additional ceramic ingredients, the sculpture can be manifested into another form. This further exemplifies *time* as being a nonlinear movement. The ceramic object is not the end of the process because the process is a *passage,* "…from one place or state to another". These temporary states of material manipulation cannot exist without experiencing phases. The progression is driven by process and by re-presenting the conditions of ceramic material the observer becomes aware of the *passage of time*.

The Packaged Idea

Timelines have been a way to create a logical sequencing of events for centuries. Often, a timeline is used in education to help students understand the order or chronology of historical

events and trends. To imagine a timeline of my own understanding, I envision a circle, or a dot. This dot represents a sculpture atop a white pedestal, within the walls of a gallery space. This act of preservation and display is a technique which disregards what material is being manipulated and focuses solely on the idea and importance placed around the object. Materials do not have meaning unto themselves, until we as humans give them meaning. I explore how to extrude the one dimensional "dot" of the sculpture into a timeline by representing the processing steps through visual dialogue.

The approach I take to achieve this goal is to exhibit still frame images of completed sculpture and video documentation of the building process. This visual information will aid the participant in timeline comprehension. Instead of seeing an object on a pedestal, "one dimensionally", the visual narrative of the creative process will also be illuminated. This is an opportunity for me to record my own history. "While history dealt in stories, chronology dealt in facts". (Rosenberg, et al. 10)

Ceramic Sculpture

I work specifically with ceramic materials because of their ever-changing physical properties. When hydrated, the clay is malleable and responsive to touch. During the drying process, it loses water through evaporation and simultaneously shrinks. In this stage, known as bone dry[6], the material is very fragile but can still be reconstituted into workable clay. After the initial firing process, however, the earthen mud becomes hardened and cannot be slaked[7] down. On this

bisque[8] fired sculpture, glazes that produce textural surfaces are applied to the sculpture, and the work is fired once more. A white crackle glaze (see Figure A), for example, references the geologic occurrence called rock fractures. This event occurs in nature when stresses exceed the strength of the rock and causes fissures along its weakest plane. (Figure B). The rapid drying of thickly applied glaze causes a contraction that cracks the surface. A second glaze, with a metallic bronze color, references earth metals.

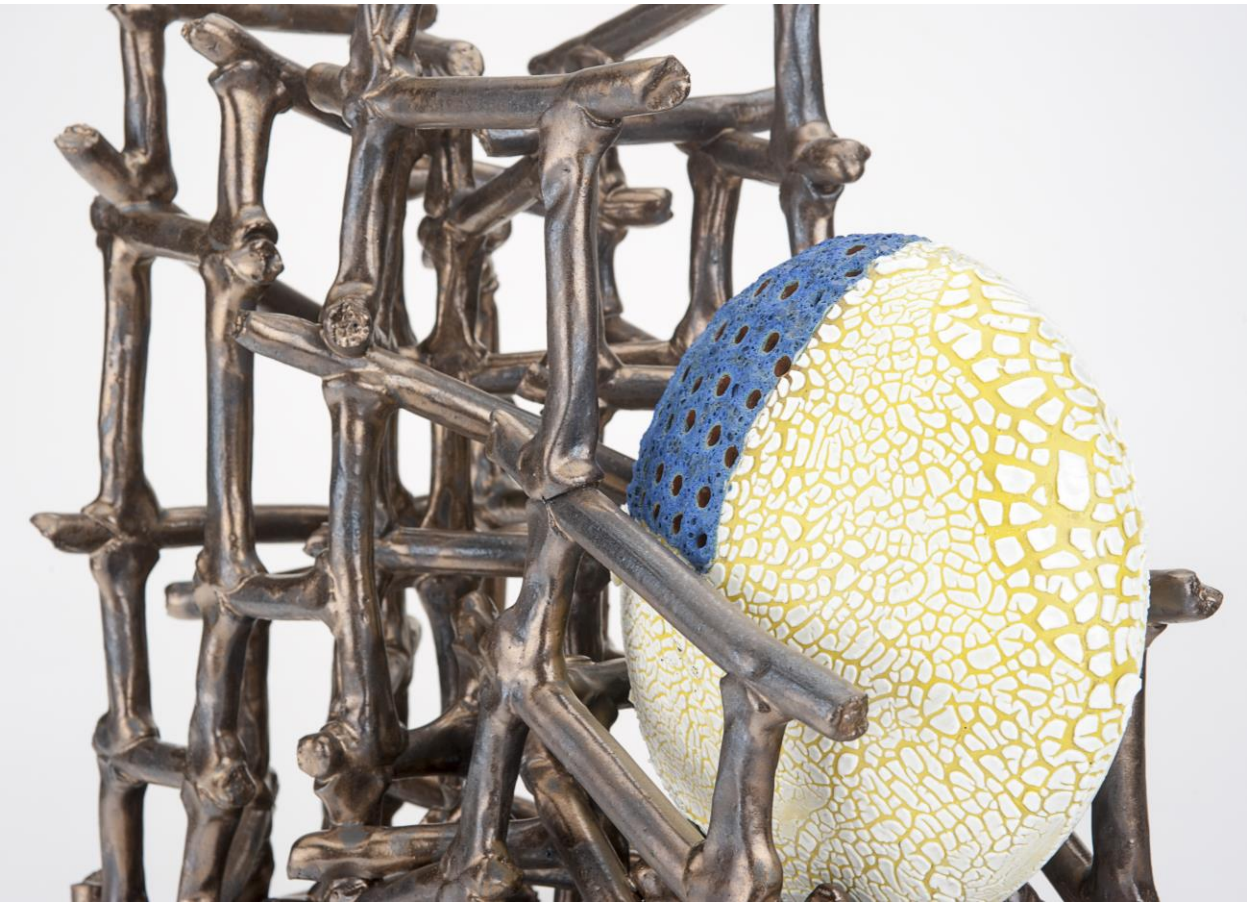


Figure A: Sculpture Detail with Rock Fracture Glaze and Metallic Bronze Glaze

Figure B: Detail of the geologic event of Rock Fractures. (Harington)

Temporal Accumulation

An Orton pyrometric cone is a three-inch-long, triangular pyramid shaped ceramic blend used to measure work heat during a kiln firing.

> "The starting premise of cone development was that a blend of ceramic materials compounded to exacting proportions should behave similarly to the ceramic ware

being fired in the kiln… from this work grew a series of blends that would deform at an exceptionally predictable temperature and be highly reproducible”. (Pyrometric Cones)

In each kiln I have operated at East Carolina University, I utilized cones to inform me of the internal temperature. When a kiln rises in heat to the target temperature, the operator must peek inside through a portal by removing an optic plug. When looking into a kiln over 2,000 degrees Fahrenheit it is a blinding bright yellow color. Depending on the target temperature desired, between two and five cones would bend in sequence to communicate the temperature of the interior of the kiln. Imagine an index, middle and ring finger erect, signaling the number 3. This is the same orientation (and approximate size) that the cones are positioned inside the kiln. When the ring finger goes down, now signaling 2, a cone will have dropped indicating the target temperature is near. When the middle cone is lowered to 90 degrees, the operator shuts down the kiln. Traditionally, these cones are one-time-use and are disposed of after the firing. I however, have kept all the cone plaques fired with my sculptures. (Figure C) These humble little temperature indicators have been recording a history all their own.

Figure C: A selection of cone plaques fired to cone 6.

“Temporal accumulation, or time accumulation, refers to the time history experienced by a person, place or thing.” (Rosenberg, et al.) Orton cones are a prime example of this accumulation of time. They will only bend by experiencing heat over a period of time. Likewise, my ceramic sculptures will only exude a particular appearance from accruing time through processing steps.

Human Timeline vs Geologic Timeline

An average human life span is roughly 40-80 years. Relative to the 4.5-billion-year old earth, the miniscule time of human existence is relatively short in comparison. Actions and events in geologic time happen very slowly when compared to human experience. A morning work commute is speedy, compared to the hundreds of years it takes for a tectonic plate to shift. If a traffic jam causes a delay to work, in relation to a glacier moving, no time has passed.

Individuals experience time in their own unique way regarding certain circumstances. The relationship between internal and external influences allow the mind to perceive time in various ways. The saying, “I saw my life flash before my eyes” could refer to a near death experience in which thousands of images or thoughts may flood your mind in milliseconds. Conversely, if you have a very banal work project, time may drag on and feel like an eternity while focusing on few images or thoughts. The myriad of temporal experiences is endless. Time is a completely intangible concept, yet we can possess it (age) and experience it pass by. According to Rosenberg, the construction of the perception of time. -that’s just it, a perception- ‘time does not pass, time simply is.,’

In our geologic world, time does not self-reflect or consider how its time is being passed. To create understanding of the natural world, Homo sapiens must classify and define particular geologic phenomena based on chronology. Categorizing geologic time into periods such as Archean, Prehistoric, Cambrian explosion, and Stone age are a few ways we come to terms with the world around us. In my creative process, I do just that, categorize sculptures into chronology and illustrate the process in a timeline suitable for human comprehension.

SPECIFIC AIMS

Communication Through Material Findings

Working with ceramic material I make commentary about geology in reference to these materials. Specifically, I explore how to illustrate an augmented timeline allowing a participant to view geologic phenomena that would occur over multiple lifetimes, within a few minutes. Limestone stalagmites and stalactites, for example, usually form less than 10cm every thousand years. It is unlikely that a human will be able to visually detect any significant changes with their naked eye, however, my creative process allows a participant to see the change. Exploring the concept of *passage of time*, through ceramic materials, I reference the differences of human time and geologic time.

The approach I take to achieve these objectives involve video documenting my creative process. A condensed version of the entire process is as follows: build a sculpture using clay, fire in kiln, apply glazes with geologic references, fire in kiln again, photo document, deconstruct with machine, used deconstructed material to restart said process. The video recording occurs during the building, glazing and deconstruction phases, this helps to communicate a cohesive timeline. Documentation of processing steps helps to articulate the overall activity. Displaying the recordings in a gallery setting enable the participants to see the *passage of time*.

METHODOLOGIES
Contemporary Art Research

Research of conceptual artist Joseph Kosuth has influenced my comprehension of installation and display techniques. Kosuth's *One and Three* series, presents three versions of a utilitarian object—the physical wooden chair, a full-scale photograph of it and a Photostat of its dictionary definition. (See Figure D)

Figure D: *One and Three Chairs.*

Consideration of how art objects can be viewed and interacted with using language and installation methods have challenged my own creative activities. Traditionally, I have ascribed to the notion that 3D artwork should be displayed on neutral colored white pedestal and 2D artwork

be framed and hung on a neutral colored white wall. Viewing works in this manner suggests an importance on the work of art over the vehicle of display.

My research involved contacting David Horowitz, a Curatorial Assistant at the Solomon R. Guggenheim Museum. He wrote to me stating, "[installation] Plans are designed around the specific needs of the artworks and exhibitions and are not rigidly defined in advance…" This comment is in relation to the color of paint used on pedestals, architectural surroundings, and preexisting cultural standards. Furthermore, "the needs of the artworks" states a claim that an artwork can communicate its needs. This is an ideological viewpoint and is completely subjective.

To further this discussion based around cultural ideology, I spoke with Daniel Kershaw, an exhibition designer in the American Wing of the Metropolitan Museum of Art. Our conversation centered around the idea of neutrality in a museum space, while the idea of neutrality is simply that, an idea. David states, "The usage of white or off white paints to create an identity of neutrality and is completely culturally driven". Following this logic, if museum walls were painted orange from inception, that would be the standard and would be treated as neutral.

Kosuth's series, "Art as Idea as Idea" challenges the ideology of conventional display tactics. "the work of art is the idea that language itself can be art… "art-as-idea-as-idea"' (Art After Philosophy). I have reconciled the challenge of exhibiting my creative process using a visual dialogue through physical objects, video recordings and documentation.

Value System: Art as Activity

Critical discussion and studious inquiry have shaped the standards by which I validate my creative activity. Utilizing the culturally defined museum standard of white pedestals, I create artworks intended to be viewed and displayed from these conceptual platforms. (Plates 5-11) It is my opinion that these seven sculptures exhibit the degree of technical and formal refinement worthy of being displayed in the museum setting. This assessment is confirmed through the contemporary relevance of my creative practice within the ceramic field. Acceptance into nationally juried art exhibitions, is one such way to seek validation. Often, an exhibition committee includes academically educated artists and museum collectors. Endorsement from such individuals verifies the significance of my art activity.

Value is a complex subject when dealing with art. A work of art from an established artist may sell for many tens of thousands of dollars, while a similar work of art from an unestablished artist may not even sell. Value may also be assessed in non-monetary terms, such as cultural relevance. When the public or a collector interacts with a work of art, they might ask themselves, “Is what I must give up, worth what I will receive?” This could reference making a purchase, or spending the time it takes to visit the location artwork is displayed, like a museum or gallery. The consumer only sees the final product and not the *process* that goes into making it. Through illuminating the process, does that change the value?

Each sculpture created in my studio, I attempt to build the ideal sculpture based on my own personal sensibilities. Influences from contemporary artists, architectural research, academic

study, and practical experience inform my decisions. When I deconstruct the sculpture, does that affect the overall value of the activity? Many of these questions do not have definite answers, but simply raise more questions. For me, that is the joy of working in the art field. There is ambiguity without resolve.

STUDIO ACTIVITY

Creative Approach

Methods incorporated in this body of work involves multiple components. The primary material being manipulated is clay. A video recording device documents the building process. (Plate 1) Still image photography of completed sculptures is taken. (Plate 2) The sculpture is pulverized into powder. (Plate 3) I rebuild the sculpture using the crushed powder and additional materials. (Plate 4) The overlap and interface among these components creates a “packaged idea” to be exhibited in a museum/gallery setting.

Video Recording

I utilize time lapse photography for documenting the building aspect of my practice. The photographs are taken every 3 seconds throughout the construction phase of a sculpture. When they are strung together I can adjust the replay rate known as Frames Per Second (FPS) to a speed suitable for viewing. Example, if a sculpture takes 120 minutes to build, that means 2,400 images would have been taken. With a 30 FPS replay rate, there will be one minute and 20 seconds of “live footage” to view in real time.

According to an article written by Leon Watson of the Telegraph Media Group, the average human attention span ranges anywhere from 8 seconds (less than a goldfish) to approximately 20 minutes. I aim to supply visual information for both categories. The recording of my actions may occur over a one to six-hour interval, however, compressing or expanding the replay speed

augments the comprehension. By speeding the video footage up, I can accommodate the short attention span and by slowing the footage down I enhance an altered visual narrative.

Additionally, the use of a video recording device during my working process enables me to review the development of a sculpture. It also allows a participant to view how material was manipulated to arrive at the final product, giving them an insight they are not accustomed to having. A person standing in a cave admiring stalactites and stalagmites, may see the accumulated result of thousands of years of geologic transformation while being unable to watch the physical transformation occur in real time due to a limited lifespan. My video recordings suggest both; the weathering or decomposition of a sculpture as well as the creation and building process. This allows the viewer to experience the full transformative effects from start to end of a geologic process. Still photographs of the fired ceramic objects documented on a white backdrop will also aid in the timeline comprehension, as the photographed piece will eventually end up pulverized and used in a later piece's construction.

Construction

A combination of industrially mined materials such as Hawthorne bond, OM4 ball clay, Redart and silica consist of the primary ingredients used to make clay. Specifically, my sculptural objects begin first with drawings on paper then are relayed in clay through wheel thrown, hand built and altered forms. Stacking, heaping, piling, layering and grouping are my primary approaches to building sculpture.

Utilizing mason stains[9], underglazes[10], slips[11] and oxides I compose depth, through color. Additionally, I apply glazes with different properties; metallic, eroded and textured are my three desired glaze surfaces. The addition of silicon carbide in glaze recipes has yielded a pitted surface vocabulary which I desire. Variations among the glaze surfaces enhance the visual characteristics of the sculptures through referring to geologic phenomena. The metallic glaze references earth metals, the eroded glaze references weathering and the textured glaze references rock fractures in the earth's surface. For further technical information see Appendix A.

Deconstruction

The next method I integrate to augment the geologic timeline is to deconstruct the ceramic object. After using a sledgehammer to crush my first sculpture, I recognized the necessity of having a motorized process. Not only because it physically fatigued me, but also to mimic the industrial refinement processes. Therefore, using a mechanical machine to 'refine' the material will continue a cohesive timeline. The experience of creating a mechanical device has been one of abundant research and exploration. I utilized mathematics and engineering in order to successfully translate my sketches and ideas into a functional machine. This machine I designed and built for the function of deconstructing my sculptures, see Figure E.

Figure E: Deconstruction Machine

See Appendix B for further research details and an explanation of my repurposing machine.

Reconstruction

After the initial sculpture has been pulverized into a ceramic powder, I sieve the material through a 1/8” mesh screen and combine with fresh materials to create a workable, plastic clay body. I can choose which mesh size to sieve the sculpture through and have found that aggregate sized 1/2” or larger becomes difficult to build with. (Plate 3) If, for example, I end up with sculpture powder that weighs 10,000 grams, I take 5,000 grams and add it to 5,000 grams of fresh material. The result yields two, 10,000 gram batches of workable material. This allows me to create two sculptures.

Conceptually, this is an interesting stage to investigate. The initial sculpture (A) is 1/2 of the material for both of (B) and (C), as illustrated below in Figure F:

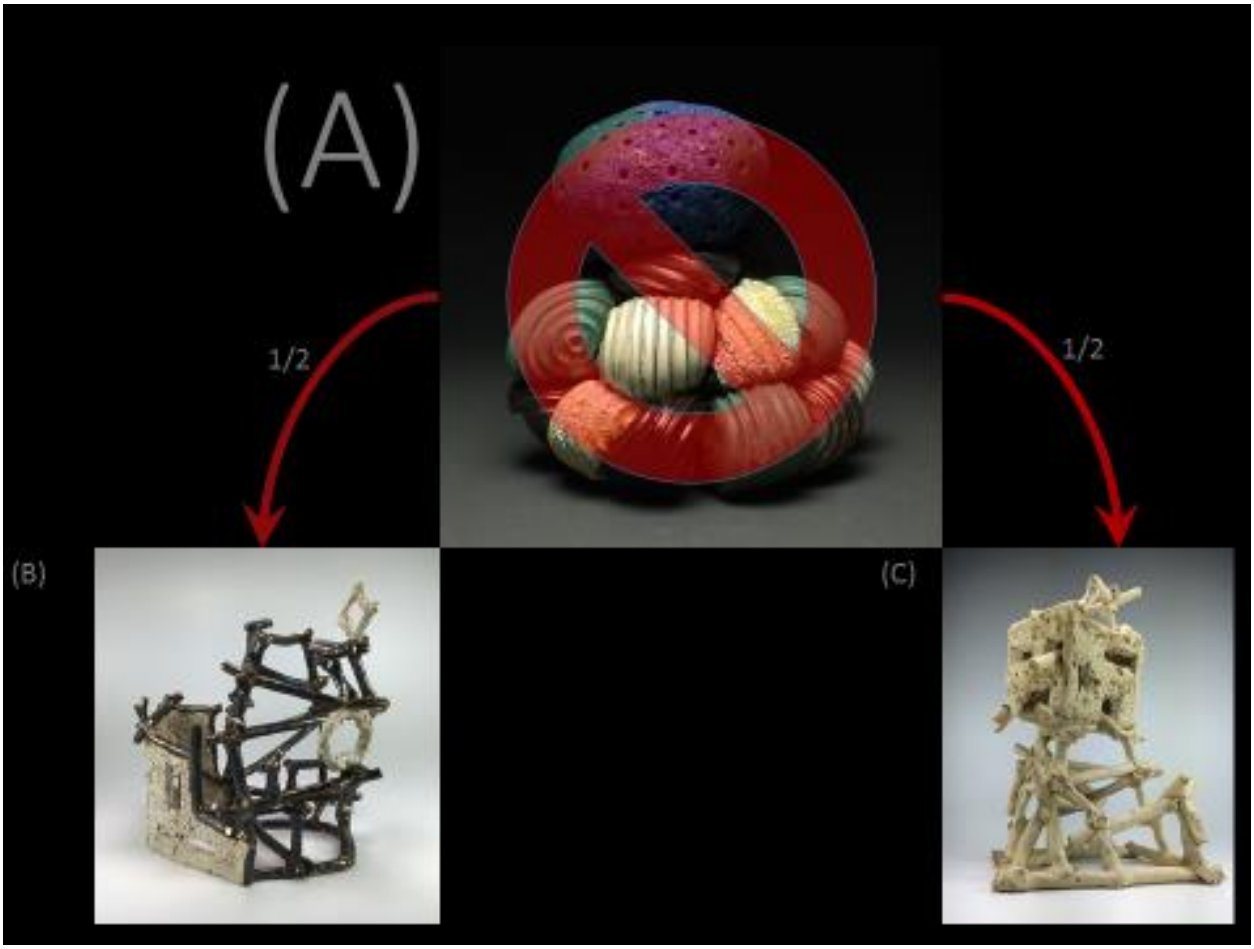


Figure F: Concept Illustration 1

The continuation of video documentation and still image photographs are present throughout (B) and (C) construction. Since (A) is the origin for the following sculptures it must get pulverized to create (B) and (C). However, now that there are two sculptures, (B & C), to continue the deconstruction and reconstruction phase of the project, I must deconstruct one of the two sculptures. Meaning, (B) will continue to exist and (C) will continue the timeline journey. (Figure G) Choosing which of the two sculptures to deconstruct is a decision based on my own aesthetic subjectivity.

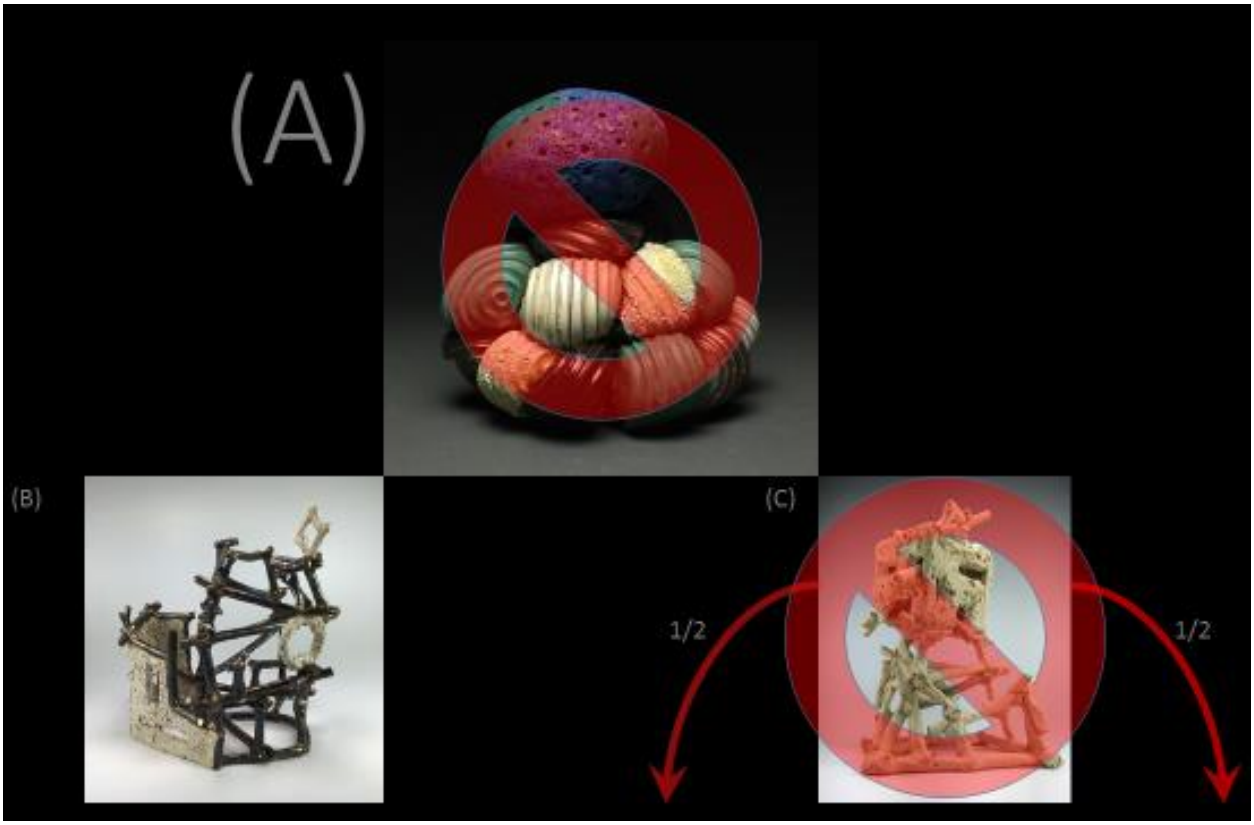


Figure G: Concept Illustration 2

This stage only 1/4 of (A) will be present in (D) and (E). The use of the alphabet is a way to discuss the sculptures in a visual dialogue. The titles of the sculptures are categorized with the following abbreviations: Ct=Construction time, Dt=Deconstruction time, Gr=Geologic reference, Rt=Reconstruction time. Sculpture (A) for example, has a video replay time of 29 seconds with a play rate of 30 frames per second, and the recording took photos every 3 seconds, the real time construction took 2,610 seconds. The title of (A) is Ct-2,610.

PROJECTED OUTCOME

Discovery and Personal Relevance

Discovery, has played a pivotal role during this thesis journey. This process illuminated the preconceived ideas I had surrounding the word value. Where does the value of this activity fit into my life? How does the value of the entire process fit into the art world? What does consumer value mean and how do I reconcile that? While the answer to these questions continue to evolve, one thing remains constant, I must remain true to my vision and see this process through to the end. However, the end is just an alternative beginning.

Video documentation has become a large component of my creative practice. My first video recordings were visually cluttered and did not communicate effectively. The composition of the frame included background studio 'noise' such as shelving, books, chairs, artwork and tables. This background noise did not communicate my intentions; it became clear that I needed a more visually composed working environment. A white backdrop became the standard by which the subsequent recordings had been created. Through utilizing the physical and conceptual framework of the white background, conversation about neutrality and institutional critique is formed. On a technical level, video documentation is achieved by using an iPhone 6S. Having worked with a go-pro on multiple occasions, the fish eye lens does not lend itself to this process.

When working with the original mixture of clay, it had working properties I had been accustomed to. It is flexible, homogenous, soft and builds with ease. However, when working

with the reconstituted deconstructed material, I had to reacquaint myself with the clay. Chunks of pulverized sculpture and large pieces of sharp, glazed material have a unique working characteristic. I developed alternative building techniques that suited working with this new-to-me clay body. Sometimes I would wear latex gloves to aid my hands when working to avoid cuts. Other times, I would use tools instead of my hands to manipulate the material. Overall, the technical experience of this process has been rewarding.

While not the initial impetus of my creative activities, during the working process, personal relevance and associations came to light. I began to recognize the correlation between the geologic processes and biologic process in a personal manner.

I became acutely aware of my own lifespan when I was diagnosed with Multiple Sclerosis (MS). At the ripe age of 26 my internal clock sped up and I became conscious of my own mortality. The diagnosis of MS does not mean indefinite handicapping or quick death, in many cases it is a slow, progressive illness. MS is an autoimmune disease that causes damage to the nervous system through demyelination of nerves in the brain.

Instead of becoming obsessed with my diagnosis and letting it ruin my life, I actively seek a positive way to channel and focus my energy. I'm trying to comprehend my own life span, and illuminate the relationships I see between the geologic phenomenon and communicate these findings through art.

CONCLUSION

Utilizing a multi-faceted approach to art making has allowed me to participate and consider more roles than an artist alone. Value, as it relates to the art world, and value as related to the consumer has been assessed. Technical processes of material manipulation through use of deconstruction machine and rebuilding with repurposed material illuminate a geologic correlation. The use of a video recording device has enabled me to review the building process, and display the video for gallery visitors to further posit the idea of time being a cyclical entity. Glazes with textural properties that reference geologic phenomena encourages my concepts to be connected. Historical markers such as still image photography and physical sculpture express the "packaged idea" which is exhibited in the museum/gallery setting. I believe that through professional documentation, thoughtful display techniques, and coherent writings, the *passage of time* can be communicated.

PLATES

Plate 1

Still image taken from documentational recording.

Plate 2

Sculpture with glazes applied.

Plate 3

Various mesh sizes of deconstructed sculpture. Clockwise from Top Left: 1/2” aggregate, 1/4” aggregate, 1/8” aggregate, fine powder.

Plate 4

Time based image from video recording. This sculpture was constructed from materials of a previous deconstructed sculpture.

Plates 5-11 are representative of sculptures intended for pedestal display.

Plate 5

"Ct=6,888" This sculpture suggests geologic corrosive phenomena.

19" H x 19" W x 9" D
Mid-Range Stoneware, Manganese Bronze Glaze, Foaming Glaze

Plate 6

"Gr=Rock Fractures" Referencing the geologic occurrence of 'Rock Fractures' by using thickly applied glazes. (*DownEast National Juried Sculpture Exhibition:* Juror: Kyle Van Lusk)

16" H x 18" W x 10" D
Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fractures Glaze, Underglaze

Plate 7

"Gr- Recrystallization" Similar to magmafication, recrystallization occurs in nature when great pressure and high temperature modify the original materials. (*Juried Art Show 2017*, Juror: Harriet Hoover)

15.5" H x 10" W x 11" D
Mid-Range Stoneware, Manganese Bronze Glaze, Foaming Glaze, Underglaze

Plate 8

"Gr=Erosive"

18" H x 18" W x 9" D
Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fracture Glaze, Foaming Glaze, Underglaze

Plate 9

"Gr=Attrition" A form of coastal erosion. (*The Schwa Show 2017*, Juror: Gerard Lange)

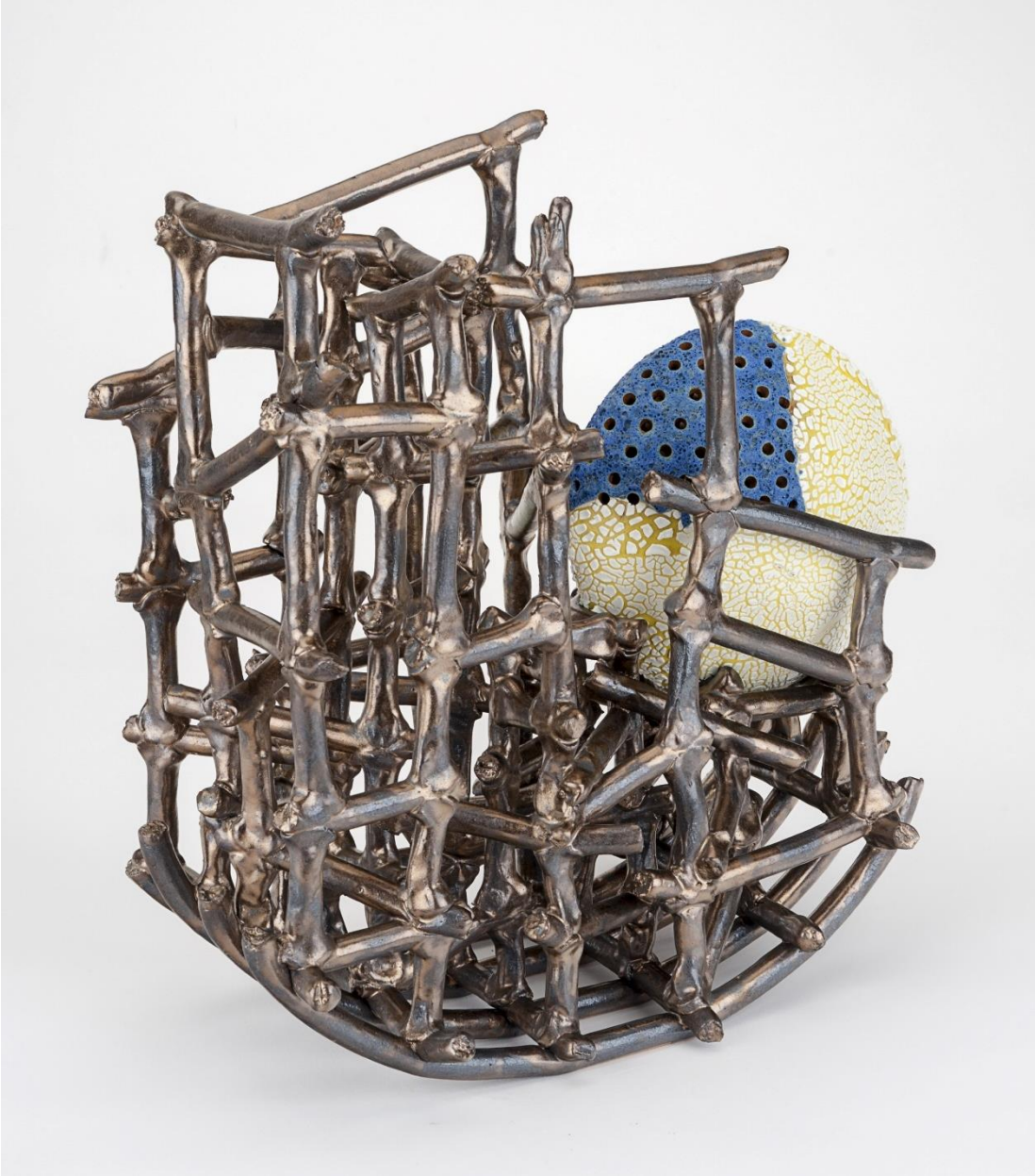
16.5" H x 14" W x 12" D
Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fracture Glaze, Foaming Glaze, Underglaze

Plate 10

"Gr=Attenuation"

17" H x 16.5" W x 8" D
Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fractures Glaze, Foaming Glaze, Underglaze

Plate 11



"Rock Fractures II" (*49th Clay, Fiber, Paper, Glass, Metal, Wood All Media Exhibit.* Juror: Santiago Cal)

17" H x 16.5" W x 8" D

Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fractures Glaze, Foaming Glaze, Underglaze

Plates 12-16 are representative of the timeline series.

Plate 12

"Ct=7,290"

12" H x 9" W x 9" D

Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fractures Glaze, Foaming Glaze, Underglaze, Various Glazes

Plate 13

"Ct=3,960 Dt=6,480"

12.5" H x 10" W x 11" D

Deconstructed Mid-Range Stoneware

Plate 14

"Ct=11,160"

13.5" H x 14" W x 10" D

Deconstructed Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fractures Glaze with Deconstructed Sculpture

Plate 15

"Ct=11,160"

16" H x 10" W x 8.5" D
Deconstructed Mid-Range Stoneware, Manganese Bronze Glaze, Rock Fractures Glaze, Foaming Glaze, Underglaze

Plate 16

"Ct=5,670"

10" H x 8" W x 9.5" D

Deconstructed Mid-Range Stoneware, Manganese Bronze Glaze,
Foaming Glaze

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APPENDIX A

Technical Information

On a technical level, the ceramic materials are fired in an electric kiln to what is known as cone six, or 2200 degrees Fahrenheit. This temperature ensures that all chemically combined water has been evacuated allowing the ceramic material to mimic the geologic actions of nature in a sped up/fast forwarded manner. What might take hundreds of years to achieve in nature is compressed into an 18-hour kiln firing. Recrystallization is an event driven by thermodynamic properties in the earth's crust. According to U.S. Department of Interior, "recrystallization… takes place when deeply buried rocks are subjected to great pressure and high temperature" (North Cascades Geology). However, this temperature also modifies the original form of the material to what is called calcined. Through thermal decomposition, the new calcined material does not have the original working properties of the initial material.

APPENDIX B

Deconstruction Machine

During research, the first type of historical hammer I found is called a “pounder”. Their job is to crush kaolin, which is the main ingredient in porcelain clay. The simple yet elegant solution to its functioning is the water counterbalance system. These machines are powered by the free and available water that is moving in the river. As the water fills the reservoir and lifts the hammer, it simultaneously empties out and gravity allows the hammer face slam into the ground. The repetitive motion creates a bowl shaped hole in the ground and as the hammer face lifts up, the material settles back toward the center allowing the material to be crushed once again, until it becomes a fine, usable powder. When I refined my searches for automated tools I came across the cam hammer, invented by Leonardo da Vinci (See Figure H). After much troubleshooting, sketching, and brainstorming I began creating my very own cam hammer. Since I already owned a 1700 RPM 1HP motor, I developed the machine based around those mechanical parameters. Through a series of pulley systems, I have geared down the motor to 27 RPM’s which translates to the action of the hammer crushing the ceramic material. Deciding which industrially available materials to use and which to fabricate for a particular purpose prompted more research. Ultimately, I decided upon one-inch steel tubing for the frame structure due to the high tensile strength and reasonable weight. Additionally, I chose aluminum pulley wheels that have been industrially manufactured, ensuring a true and centered motion for the v-belts to operate.

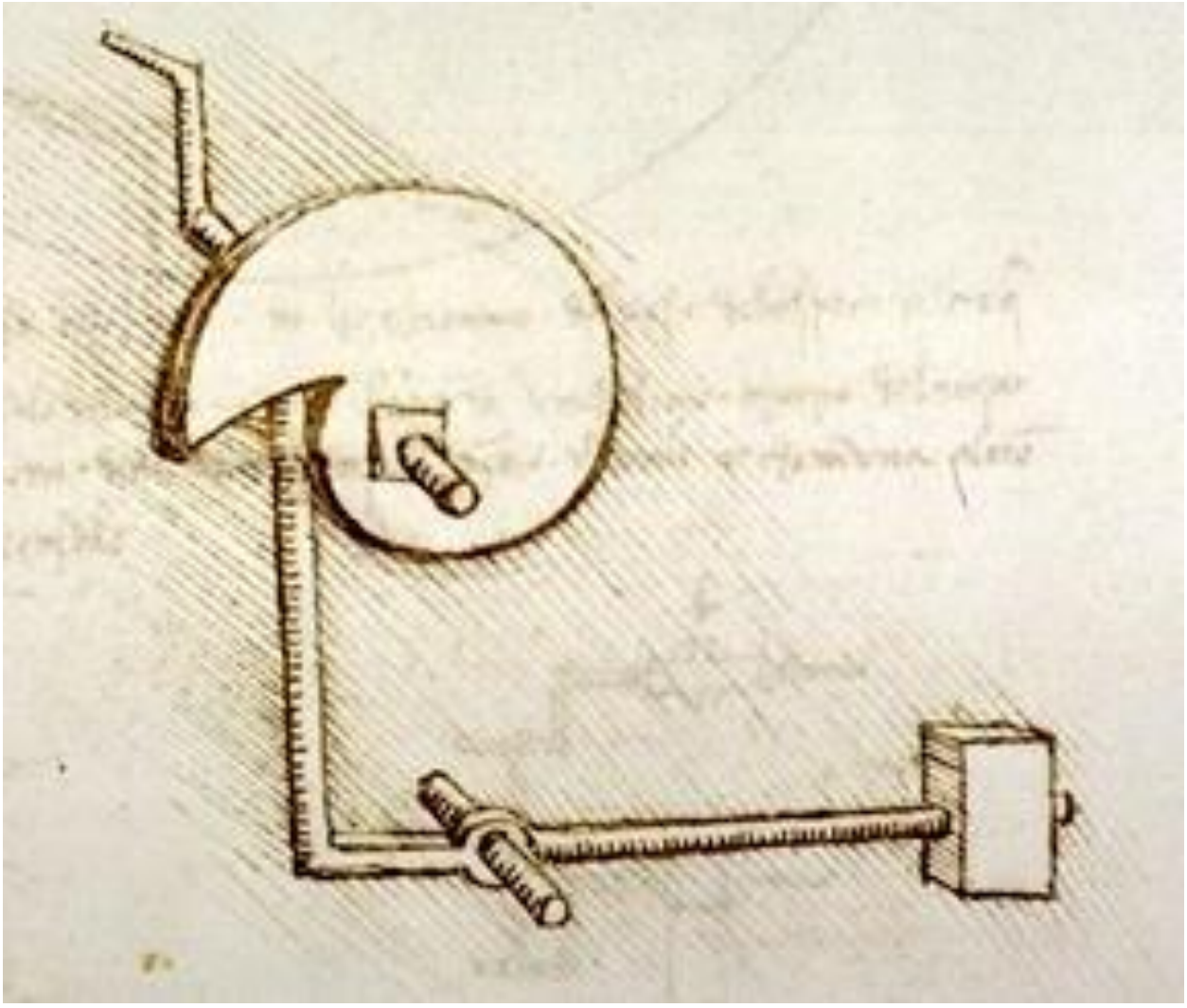

Figure H: Leonardo da Vinci's Cam Hammer

Not having been trained in engineering or metal manipulation techniques such as welding, grinding and finishing, the fruition of the project had unpredicted difficulties. The design of the hammer functioned appropriately on paper, but when translated to the metal frame it began to buckle under the stress of the pulleys. I revised this inexperienced mistake with reinforcing cross beams. Additionally, when I began to pulverize my first sculpture a few of my tack welds broke and needed to be repaired. Also, the cam follower attached to the arm bar of the hammer derailed which caused the snail cam to seize up, causing unexpected delays in the pulverizing of the

ceramic sculpture. Ultimately, the kinks have been resolved and the machine runs true. The resulting effort created a machine that will crush a sculpture down to a fine powder. Below, is the final Deconstruction Machine in use. (Figure I)

Figure I: Deconstruction Machine

APPENDIX C

Glossary

1. Silica- Flint, quartz. Glass-former.
2. Alumina- Refractory material and viscosity agent.
3. Feldspar- Naturally occurring mineral in crystalline rocks.
4. Sintered- The fusing of clay body and glaze surface.
5. Calcined- The action of heating a material to a temperature that causes it to burn off organic material.
6. Bone Dry- All physical water has been driven out of the clay.
7. Slake- To put dry, unfired clay in water and dissolve.
8. Bisque- The initial firing of raw clay to burn out physical water, chemical water, and to make the clay into a material that will not slake down in water.
9. Mason Stain- Used to color glazes, slips or clay bodies.
10. Underglaze-Commercial product that is like a slip, with colored clay.
11. Slip- Mixture of clay and water which can be colored with oxides and stains to be used for decoration.