

ARCHITECTURE THAT TRANSFORMS HISTORY:

**REFRAMING THE BIRTHPLACE OF
THE ATOMIC BOMB FOR A MORE
CRITICAL FUTURE**

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*REFRAMING THE BIRTHPLACE OF THE ATOMIC
BOMB FOR A MORE CRITICAL FUTURE*

A Design Thesis Submitted to the Department of Architecture and Landscape
Architecture of North Dakota State University

By
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In Partial Fulfillment of the Requirements
for the Degree of
Master of Architecture

Primary Thesis Advisor

Thesis Committee Chair

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abstract

Can architecture serve as a critical reminder to our present and future societies of the horrific potential of mass destruction?

Throughout history human beings have consistently engaged themselves in the act of destruction. Improvements continue to be made in our destructive methods, and when looking at where we are at today, we can see that we exist in a dangerous state of potential mass destruction. If we want to salvage our existence and avoid becoming nothing more than a trace on this planet, we must remember our mishaps and destructive behavior from the past as a collective, continuous species, rather than individual countries or specific groups of people and have a critical perspective of history. Learning from our past has tremendous power to teach us a lot about who we are now and where we might be going in the future. My thesis seeks to explore bringing forth historical references and various destructive elements through metaphors in the architecture to serve as a critical reminder of the past, a sort of warning to the human race, as well as the potential for peace.



Memories allow us to keep things alive even after they've passed. Whether its people, places or moments in time, humans have always found it necessary to retain what once was. Architecture has played a significant role in this effort from monuments focusing on names, heroes, and patriotism to abstract symbols of mourning and loss. But how will architecture continue to evolve in preserving collective memory? How will it allow history to become part of the present? And how can it serve as a motivating force for change? This is especially important when tackling some of the most important issues currently facing humanity, such as a nuclear disaster. By examining the significance of memory and forgetting throughout history and its relationship to life and death, this thesis looks to reframe or transform the birthplace of the atomic bomb from a site once responsible for producing an instrument of destruction, into a site that becomes an instrument of peace, healing and acknowledgment.

I have always been fascinated with the platform that architecture has in the world. It can range from basic shelter to representing an entire society, to connecting with the cosmos. Architecture is able to influence the world as time goes on, coming in contact with multiple generations of people and taking on different interpretations over time. Because architecture is experienced, it has the power to leave a lasting impression on this world for as long as it exists and even when its gone. I believe with the right intent, architecture can act as a medium to influence the world on certain issues.

I've been lead to address the topic of nuclear weapons and nuclear war through my personal interest throughout my life and with the current state of the world. There has been devastating potential in the past that has exposed how fragile our existance is even when its in our own hands. I have personally been moved by experiencing architecture and I know other have as well, so why not use the medium of architecture to create awareness of a serious current issue in our world today?

MEMORIAL/ MONUMENT/ MEMORIAL GROUNDS

I will create a memorial that demonstrates and represents the research I have gathered during the fall semester. Defining the typology as a memorial will act as a collective space comprised of the listed typological spaces.



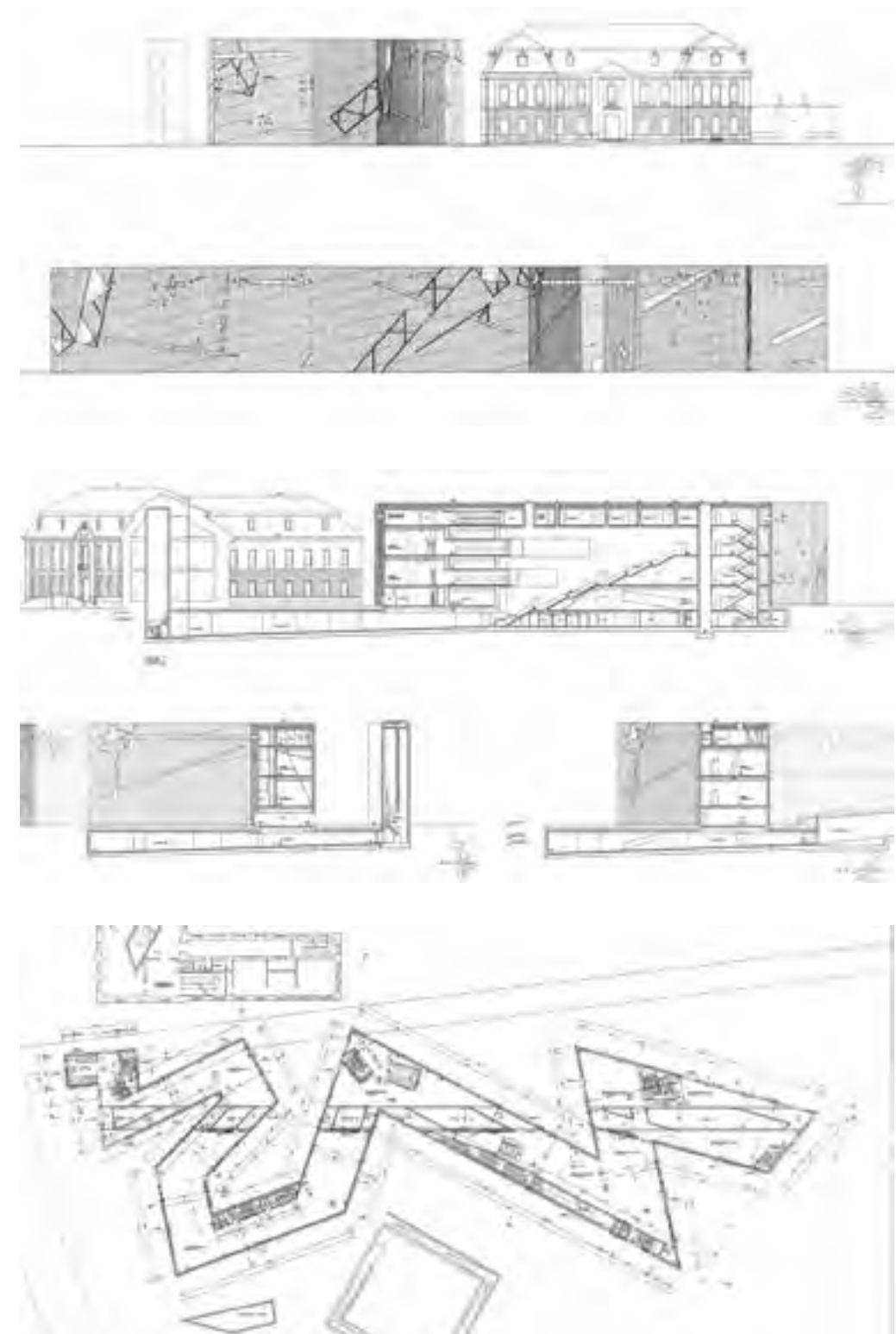
Jewish Museum
 Architect/ Designer: Daniel Libeskind
 Project type: Museum/ Cultural Site
 Location: Berlin Germany

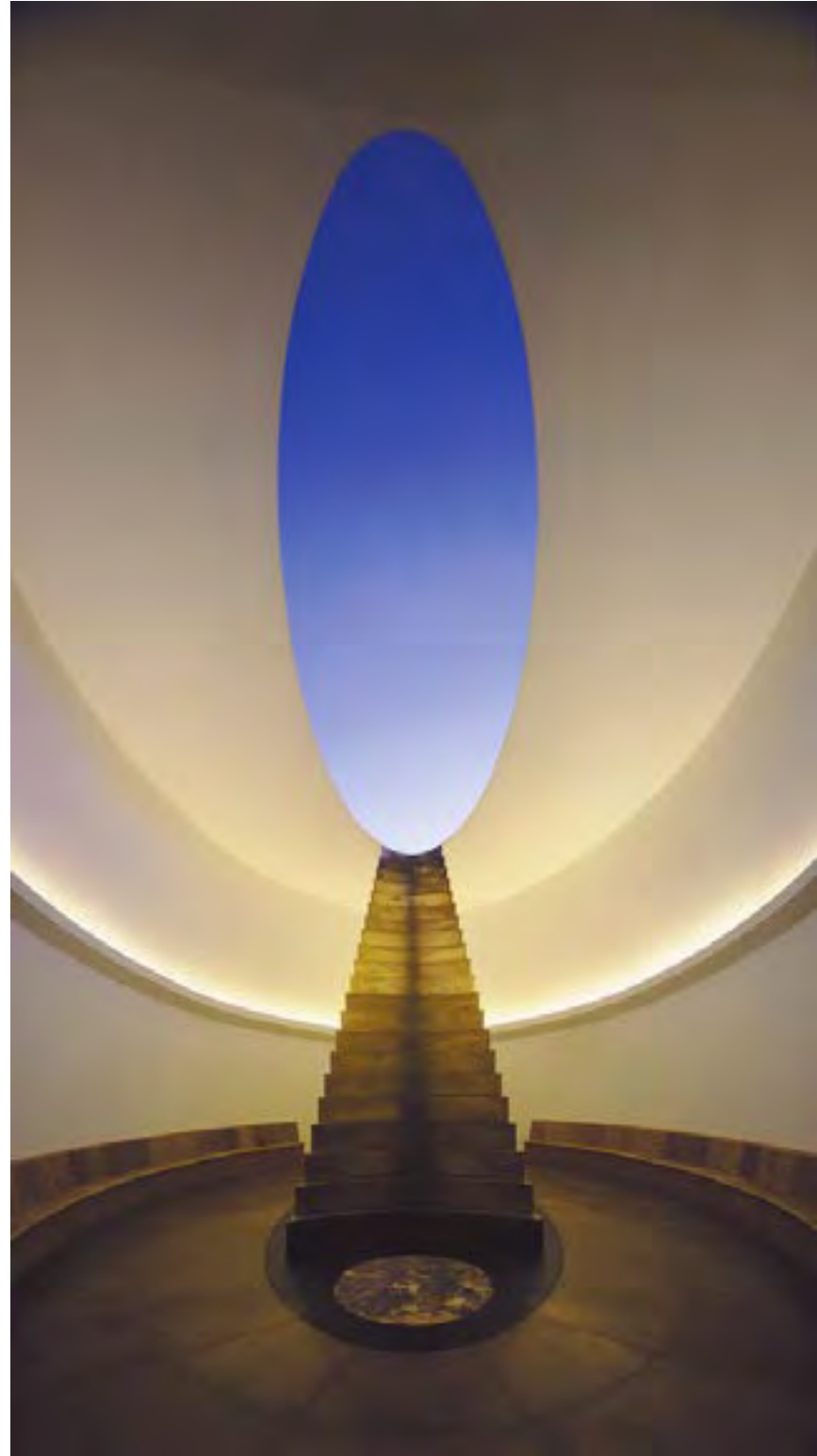
The Jewish Museum in Berlin was designed a year before the fall of the Berlin Wall and was entered into an anonymous competition organized by the Berlin government for an expansion of the original Jewish Museum which opened in 1933. The goal of the project was to exhibit the social, political and cultural history of the Jews and integrating the extreme impact of the Holocaust.

The building's form originates from a group of connecting lines between locations of historical events. These lines form the shape of an abstracted Jewish Star of David which stretch around the site and are frequent throughout the architectural experience through voids. The museum looks as though it is separated from the original museum but lacks any formal entrance. A visitor must enter the original museum building and then descend down a stairway into an underground corridor before coming to a crossroads with three different paths. Each path represents a different story. The first leads to the Holocaust tower which is a dead end. The second leads to the exterior of the building, into the Garden of Exile and Emigration, remembering those who were forced to leave Berlin. The third and longest path leads to the Stair of Continuity followed by the museum and exhibition spaces, representing the continuation of history.

As a visitor makes their way through the interior of the building following a zig-zag promenade. They experience a complex space made up of voids and dead ends, creating a sense of anxiety and disorientation. The space lacks any windows and change of materiality. Slivers of light appear throughout the interior producing the idea of hope existing in a dark and empty environment, similar to the experience of what the Jewish people had during WWII. A long 66' void makes its way through the museum where the ground is covered with 10,000 iron faces, acting as a symbol of the lives lost during the Holocaust.

Through metaphor and symbology, Libeskind is able to create a historic experience through architecture. Whether its with the circulation and how a visitor navigates through the building, objects and installations which people have to interact with such as the faces on the ground, or through playing with space and void in order to translate a specific feeling or atmosphere in years past. This building is also unique in a way that it preserves an existing building the same way it preserves and facilitates the memories and history of the Jewish people in Germany, but allows access for people who wish to learn more.



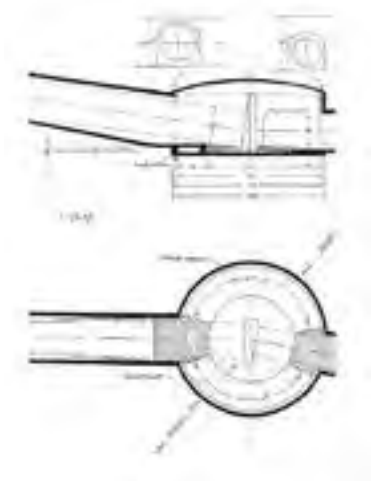
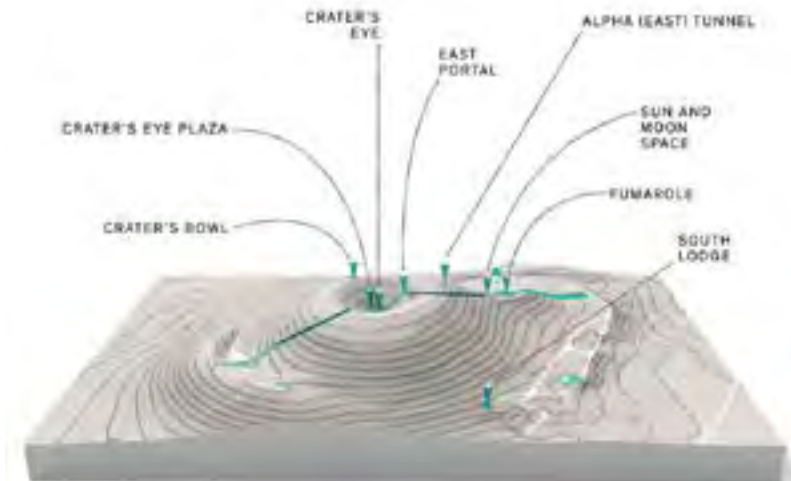
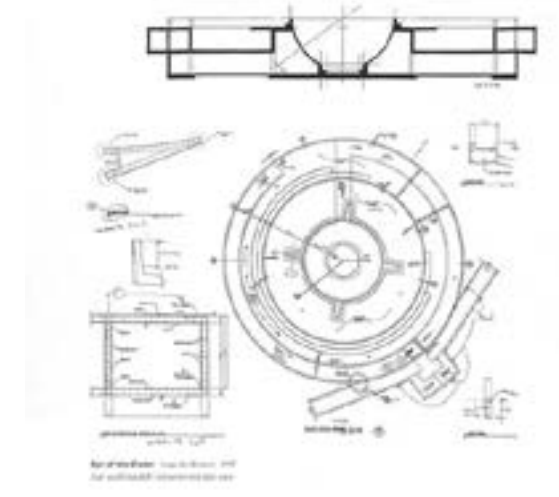
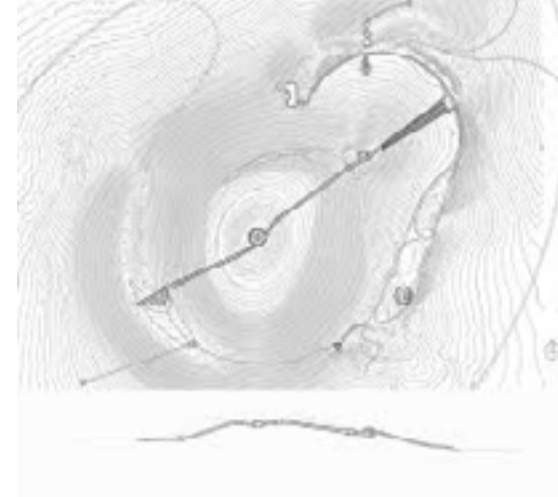
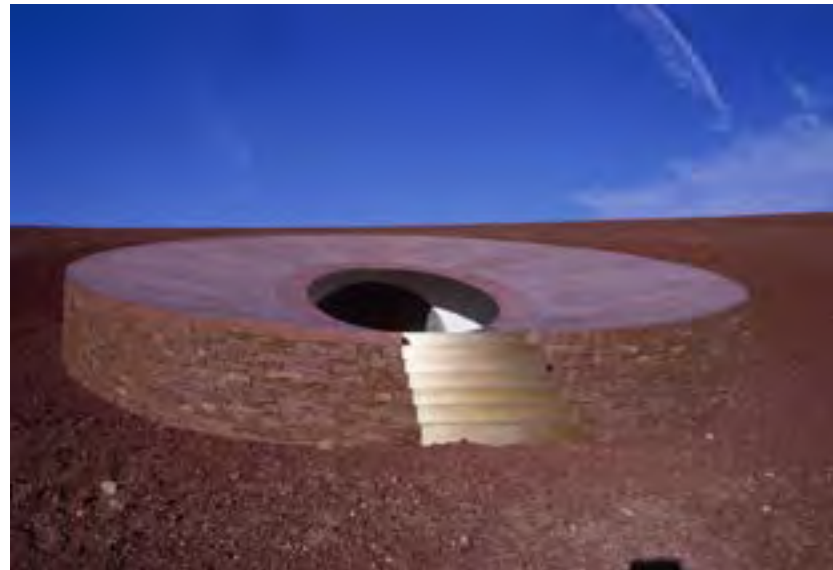


Roden Crater
 Architect/ Designer: James Turrell
 Project type: Observatory/ Gallery
 Location: Painted Desert Region, Arizona

Roden Crater is designed with the intent of being a multi cosmic, naked eye observatory. The idea drew from the inspiration of modern and historic monumental structures built by artists, priests and rulers. The crater represents a life long effort of research in human visual and psychological perception by artist James Terrell. This large scale work of art is a controlled environment used to experience and contemplate light.

During the planning and construction phase, various astronomers were used in order to figure out precise excavation and alignment of the tunnels and openings in the crater in order to observe celestial events and objects. There are a total of 21 viewing spaces and 6 tunnels with one stretching 854 feet. Each one of these spaces communicates with light and celestial events differently depending on the orientation. The Alpha Tunnel serves as a naked eye telescope to view the setting of the moon. Every 18.5 years, the moon reaches its northernmost and southernmost maximums known as a Major Lunar Standstill. Viewed through the tunnel, the southernmost moonset will form a reverse image on the west side of the image stone.

The Roden Crater is able to facilitate contemplation and provides a connection to the cosmos in a way unlike anything else. A visitor is able to experience nature from a wholesome perspective that provides a place of harmony. Traveling through the tunnels buried in the crater enhances the visitors experience with the tactile earth while the interaction with light and the cosmos from the view inside the crater successfully establishes an all around natural spiritual experience.





National Memorial for Peace and Justice
 Architect/ Designer: MASS Design Group
 Project type: Memorial
 Location: Montgomery, Alabama

The National Memorial for Peace and Justice was commissioned by the Equal Justice Initiative as America's first memorial dedicated to the history of enslaved black people and the terrorizing of lynching that took place. Along with the African Americans humiliated by racial segregation and burdened with contemporary beliefs of guilt and police violence.

The goal was to create a place for people to reflect on America's history of racial inequality. The site is situated on six acres, and contains over 800 steel monuments representing each county in the United States that experienced racial lynching. Soil was collected from each county as a way to start the process of the memorial. Each column is suspended from the ceiling with engraved names of lynching victims. Duplicates of each of the monuments lie in the memory bank outside of the primary structure. The corresponding counties are invited to engage in this process of acknowledgment and reconciliation by claiming their monument and placing it as a marker in their own community. Sculptures surround the memorial created by West African artist Kwame Akoto-Bamfo, as well as a Civil Rights sculpture dedicated to the women who sustained the Montgomery Bus Boycott, and finally a memorial that confronts current police violence. Visitors come in contact with replicas of slave pens, and first person accounts of the horrific conditions.

This project relates to my thesis in the way that the United States has done very little to recognize the lasting societal damage caused by our long history of slavery, which is similar to the lack of recognition given to the origin of the nuclear bomb and the destructive consequences it has led to in the last seventy years.

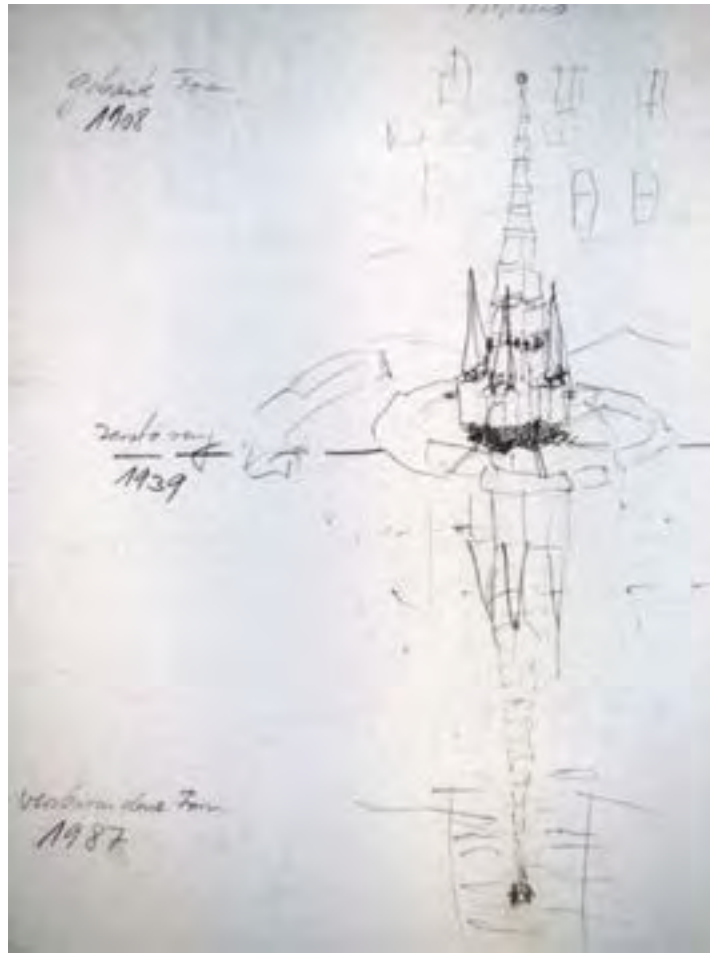


Aschrott Brunnen (Aschrott Fountain)
 Architect/ Designer: Horst Hoheisel
 Project type: Memorial/ Monument
 Location: Kassel, Germany



In 1908, one of Kassel's entrepreneurs Sigmund Aschrott, asked the City Hall architect to design a fountain for the new City Hall building. The fountain was shaped like an obelisk and made out of sandstone. Later in 1939, Nazis destroyed the fountain due to the fact that Sigmund Aschrott was a Jew. In 1963 the monument was again turned into a fountain after the Nazis had placed flowers over the empty basin of the fountain and adopted the name Aschrott's Grave by the locals. In December 1986, Horst Hoheisel was commissioned to restore the fountain. In his proposal for "restoration," Horst Hoheisel decided that neither a preservation of its remnants nor its mere reconstruction would do. Its pure reconstruction would have been no less offensive. The artist feared that a reconstructed fountain would only encourage the public to forget what had happened to the original. In the way of the counter-monument, therefore, Hoheisel proposed a "negative-form" monument to mark what had once been the Aschrott Fountain in Kassel's City Hall Square. Hoheisel described the concept as "a mirror image of the old one, sunk beneath the old place in order to rescue the history of this place as a wound and as an open question, to penetrate the consciousness of the Kassel citizens so that such things never happen again."

The fountain sculpture was rebuilt as a hollow concrete form after the old plans and displayed as a resurrected shape at City Hall Square for a few weeks before sinking it, mirror-like, twelve meters deep into the ground water. How does one remember an absence? In this case, by reproducing it almost literally. The negative space of the absent monument establishes its phantom shape in the ground. The very absence of the monument is now preserved in its precisely duplicated negative space.



The anti-monument approach by Horst Hoheisel I find clever. By using an almost literal concept in this project, the outcome is that much more powerful. We can see similarities in the World Trade Center Memorial in New York. By creating a void, the visitor is forced to come in contact with something that isn't there anymore. Not only the lack of form, but the literal void of victims or events. Rather than using a structure to remember an event in history, the absence of monument forces the participation of remembering and therefore develops a collective memory. This idea is what I am trying to achieve in my thesis.



1. Metaphors

Using to distant elements to represent an idea will help create differing interpretations throughout the project and allow users to connect in their own way.

2. Memory

Developing a collective memory for those who participate in the architecture will be important through various educational experiences.

3. Exhibition space

A space to facilitate art exhibitions specifically relating to war, destruction and peace.

4. Contemplation Space

Necessary for people to reflect independently and allow time for them to absorb what they just experienced.

5. Festivals and Crowds

An area to host large groups of people in order to share and express ideas through music, dance, speech or communal gatherings.

1. Veterans/ Family Memebers

Military Vets and their families looking to gain an alternative perspective on nuclear warfare, and will provide spaces of interpretation left up to the user. Each person will have their own experience and some may have conflicting ideas, but the idea is that there's a place that welcomes thought and contemplation.

2. Educators and Students

Teachers can bring their students on field trips as an educational experience. Not only to educate on history but to have a critical perspective on history. Students of all ages can benefit from learning through exhibits, artifacts and provided information.

3. Politicians

A visit to one of these sites could have lasting impacts on a political leader and potentially influence their ethics and decisions in office.

4. New Citizens/ Tourists

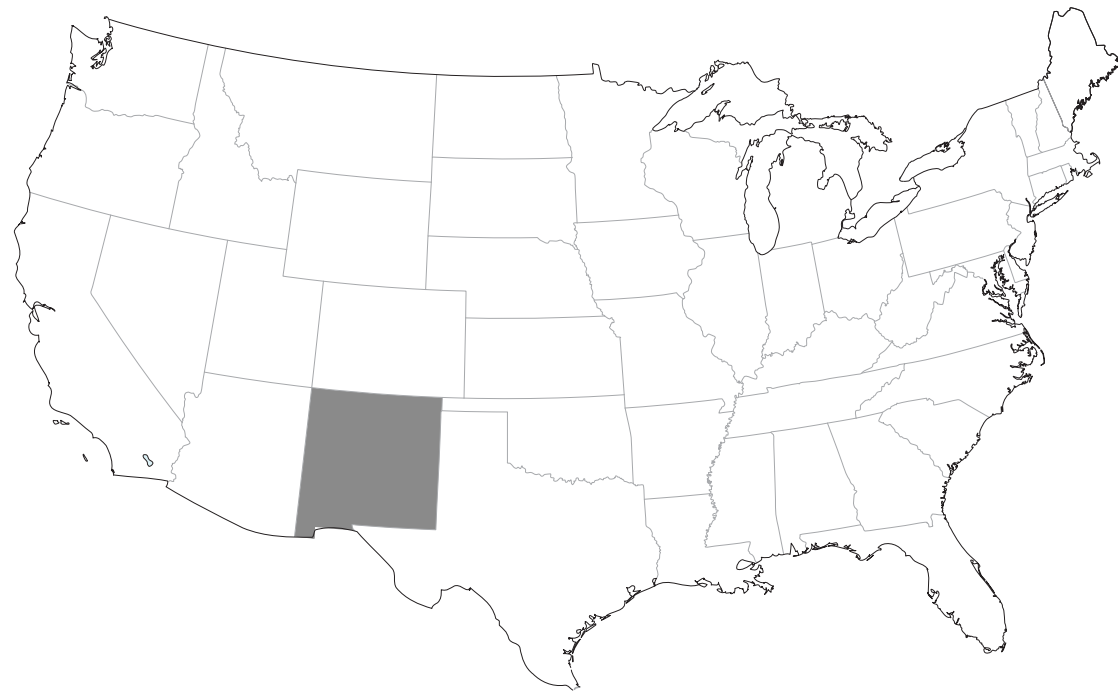
People that are new to America, or people just passing through can come to see that the United States is taking action and confronting their history critically through phisical memory. This could allow for people from other countires to see the effect of this project and leave with a sense of forgiveness and spread the mindset around their country.

5. Groups/ Crowds

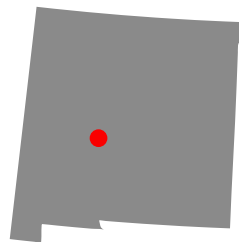
This project will be able to accomodate large groups of people from a few hundred up to tens of thousands. This will encourage collective participation, provide oportunities for events such as concerts, festivals, rallies etc., all in the name of peace.

TRINITY TEST SITE

The Trinity Test Site is located in the Jornada del Muerto desert about 35 miles southeast of Socorro, New Mexico and served as the testing grounds for the first atomic bomb detonation in the world on July 16th 1945 as part of the Manhattan Project. The site currently consists of a stone monument that stands at ground zero where the tower from which the bomb was suspended, and is open twice a year for people to visit.



Trinity Test Site,
New Mexico



The memorial is unique in that it is one of the few types of architecture whose fundamental function is not shelter but rather to feel and to remember. Humans have always needed something permanent and tangible to make sense of loss, to create a physical connection of stone and mortar between memory and the present. Memorial architecture offers a space where one can remember, mourn and try to make sense of intangible emotion. In many ways, the function of the memorial is to both soothe the pain of the present and to convince the world that the pain was not in vain, that it will live on somehow in collective memory and be passed on through generations and time. However, the way in which memorials are experienced differs vastly depending on the time that has passed since the memorialized event. When memorials are first built, or the designs first released, there is often controversy as emotions associated with the event run high. As time passes, however, memorials begin to evolve and take on new social functions. What began as a physical object to fill the void in social reconstruction becomes a way to reconcile history with the present. Memorials begin to take on new meanings as the events fade from individual memory and the architecture becomes much more open to interpretation.

The human race has done all it can to preserve our collective memory. Whether it's through documentation, museums, stories, photographs, music, art, architecture, data etc., and we are all a part of the cultural continuum. We are influenced from our past and we are a product of our past. We constantly are planning for the future and look back into our recorded history for guidance. It is this collective memory I am putting emphasis on, not just the memory itself, but the act of being critical of it. I will use memory as a medium with the help of metaphors to provide a critical perspective of a specific point in the history of the human race. These metaphors will take the form of material, experience, language, form and other various elements in order to provide the users a place of education, contemplation, and interpretation.

How architecture make people more critical of the past?

Can architecture change peoples perspective of history?

Can architecture provide initiative for people to take action?

Can architecture function as a reminder to the human race of our fragility?

Does architecture have the ability to save the world from nuclear war?

goals

The scope of this thesis project aims to create a critical reminder of the humanities destructive history, in hopes to influence the people of the present to choose peace over war, and to shed light on the fragility of our species. The existence of humanity and its collective memory is at stake. Through architecture, we have the ability to have a positive impact in order for us to continue moving forward.

The goal of this design is to provide the world with spaces and environments to confront our past through metaphores and representation and encourage interpretation, critical analysis and cultural participation.

In the end, this thesis is designed to demonstrate that architecture can be designed to influence the world by readdressing things of the past. It can represent something larger than itself and can act as a tool to improve the world. The final design will bring to light something that we should be concerned about now and into the future.

PROFESSIONAL

Professionally, I am hoping that I can pursue architecture the same way I approached this thesis project. I want to have an impact on the world through architecture and I want to be able to have the opportunity to do so once I am working at a firm. No matter the scale of the project or issue, I plan to go into future projects with the same passion I went into my thesis project with and improve the world one day at a time.

ACADEMIC

The academic goal of this project is to recieve and Master of Architecture degree at NDSU. Through this thesis process, my goal is to apply everything I have learned while in the architecture program and I hope that this thesis project can serve as a reference for future architecture students.

PERSONAL

My personal goal I have for the thesis project is to develop a project that I can continue to explore after school. Architecture can be inspiring and can have direct effects on the world. I wanted to create a thesis project that would project me out into the world and get me excited for what the future has in store. I want to create architecture that makes a difference and improves peoples lives.

plan for proceeding

DEFINITION OF RESEARCH DIRECTION

1. Theoretical Premise

How can architecture serve as a critical reminder of the past in order to encourage a better future?

My focus will be one analyzing architecture past and present that has provided people with a place to confront something controversial from humanity's past in order to either heal or become aware of the wrongdoings in history. Research will be done in the form of precedent studies.

2. Project Typology

Memorial/ Exhibition Space/
Museum/ Festival Space

Analyzing different approaches to these various typologies will help develop the most appropriate decision in my thesis. Areas of focus include metaphors, form, material, symbols, context of site, experiences of the users and the relationship to its intended purpose.

METHODOLOGY

During the design process, I will use established methods in order to influence design decisions. Methods such as historical, interpretative, qualitative and quantitative research, modeling, and the development of an artefact will be used when exploring the premises of my thesis project. The artefact will be used to display and represent a collection of interpretative knowlege that I have developed during the research phase of the thesis project and will also help influence design decisions during the design phase. The objective of the research is to be able to design through interpretation of language and through creating metaphores for meaning.

3. Historical Context

Understanding and explaining the evolution of war and how its lead to the use of nuclear weapons will be important. Investigating the uses and effects of memorials throughout history and how the idea of preserving memory has evolved will help influence my project

4. Site Analysis

Individual and collective investigations of the three sites will need to take place in order to produce the best possible design. Historical information as well as quantitative and qualitative research will also be necessary.

5. Programatic Requirements

Determining the size and program of these various projects will depend on similar case studies, as well as deciding what is possible and ultimately desired.

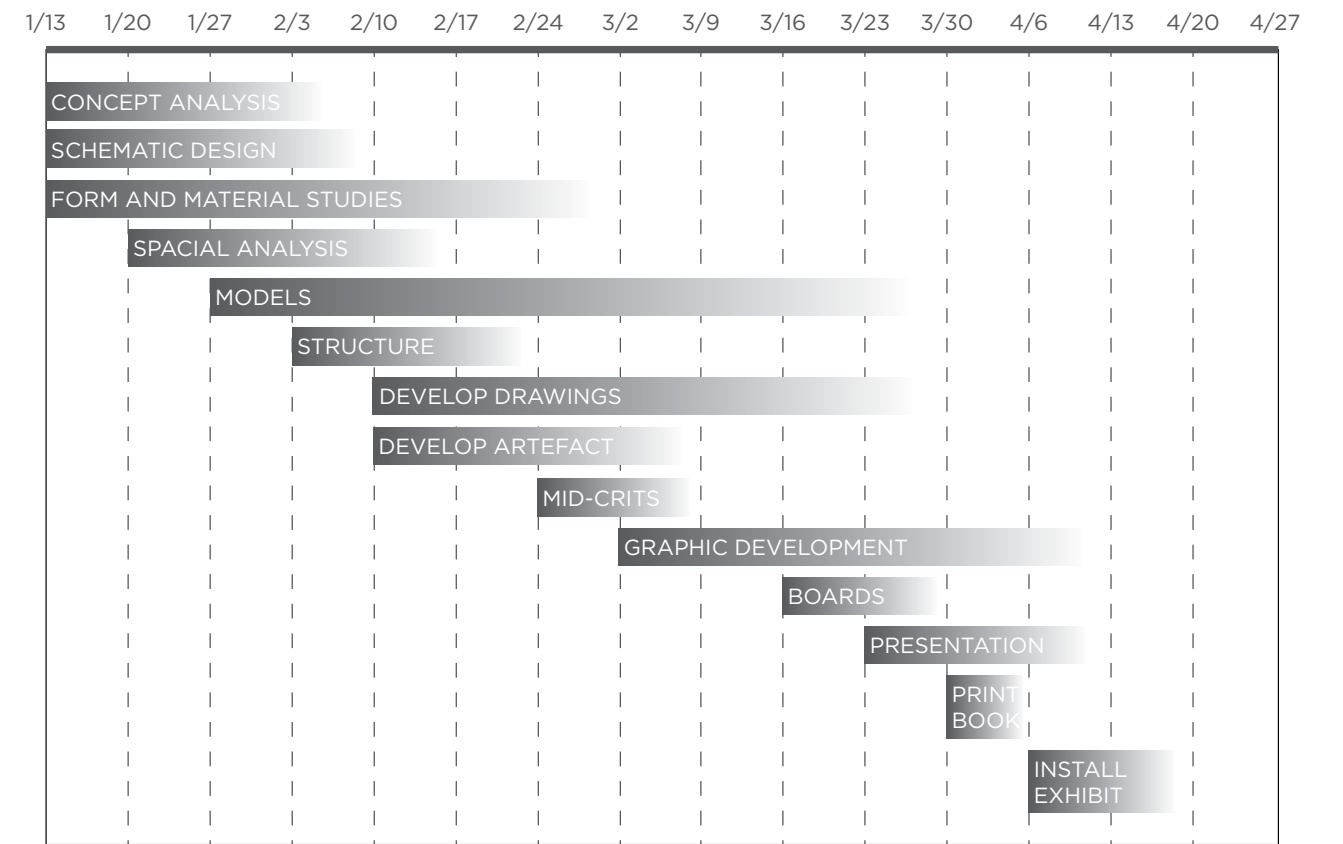
PROCESS DOCUMENTATION

The development of the design will occur through model making, material exploration, symbolic relationships from my research, and the site, along with form studies that derive from different elements from the sites, functionality considerations and structural techniques. This body of work will be preserved in sketchbooks, and physical models, and any images and research will be recorded and cited. Feedback from my instructor and peers will also be taken into consideration during critiques and recorded accordingly.

A final book will include all documented design process work as well as the final design solution. The final presentation boards will include drawings, images, graphics, and information regarding my final design solutions, and physical models will also be present showing the progression of the design process. An artefact representing my project will be created and installed in its own exhibition at the NDSU Memorial Union Gallery once the final presentations have concluded and a complete record of the thesis project will be submitted to the North Dakota State University Institutional Repository to be accessible by the general Public

Documentation will be a continuous process using the following methods:

- Writing
- Drawing
- Models
- Artefact
- Presentations
- Maps & Diagrams
- Research



Throughout history human beings have consistently engaged themselves in the act of destruction. Whether it's through religious or territorial conquest, genocide, irresponsible use of the Earth's resources, or above all, war. As a result of these different means of destruction, death or loss of life becomes the outcome, and once death has occurred, we are left with only memories of what once was. Conflict has always been a part of our human behavior, with war and destruction acting as the form of resolution. But war has evolved over time into something completely different than it once was. In order to comprehend war and destruction we must first understand how, when and why it changed and where it is today. We continue to improve our destructive methods, and if we look at where we are at today, we can see that we exist in a dangerous state of potential mass destruction. If we want to salvage our existence and avoid becoming nothing more than a trace on this planet, we must remember our mishaps and destructive behavior from the past as a collective, continuous species, rather than individual countries or specific groups of people in various times throughout history. In order to do this though requires an unbiased critical perspective of history. Learning from our past has tremendous power to teach us a lot about who we are now and where we might be going in the future. We are all aware of what can happen when history is misinterpreted, from countless examples throughout history. In order to improve our present state and encourage a better future, we must remember the devastation that has occurred on this planet and learn how to minimize or better yet, eliminate our destructive behavior so that the human race can avoid being a memory of once was.

Significance was given to memory through the invention of the art of memory by the poet Simonides. This was a method that enabled poets and orators to develop extraordinary powers of memory and remained an essential component of Western education for centuries. Legend has it that Simonides, while dining at the house of a wealthy nobleman after a chariot race, was called outside by two young men seeking an audience with him; after he exited, the roof of the banquet hall caved in and killed the people still inside. Shortly after, Simonides alone was able to name those who perished by remembering where he had seen them in the banquet hall, thereby identifying the dead so their families could commit their unrecognizable remains to a proper burial. Thus began the formal tradition of mnemonics. The dramatic episode that allegedly inspired the art of memory, essentially associates forgetting with death, and memory with life. The poet's memory allowed those killed in the tragedy a measure of life after death, ensuring that their names and reputations would survive in communal recollection. If he wouldn't have remembered the victims' names, they would have been consigned to oblivion rather than communal memory. It is from this tradition of mnemonics that forgetting is depicted negatively, and poses a threat to communal memory. Through the struggle of life over death, and metaphysical redemption over physical oblivion, memory symbolized life, action, productivity and presence, whereas forgetting signified death, passivity, bareness and absence.



REMEMBERING AND FORGETTING

This contrast between memory and forgetting, between life and death, descends from the Greek myth of Lethe and Mnemosyne. Lethe meant forgetfulness or concealment. Lethe was also the name of a river in Hades; drinking from it caused forgetfulness, and in some instances, souls would drink its water prior to reincarnation in order to forget their past. Mnemosyne in contrast not only personified memory, but was Mother of the nine Muses to Zeus. Memory in this sense is fertile, biologically, culturally, and artistically. Souls in Hades could also drink from the river Mnemosyne in order to enhance their recollections.

RIVER OF LETHE



RIVER OF MNEMOSYNE



TYPES OF HISTORY

Friedrich Nietzsche identified three types of history in his text *On the Uses and Disadvantages of History for Life*: monumental, antiquarian, and critical, each of which has their uses and abuses, and each of which must be brought into harmony with the others in order to serve, rather than to shackle, life.

Monumental History highlights on the great deeds of the past and forms this as the foundation of the future. It talks of actions done by people of the past which inspires and affects our present in every way. Our monumental past links the greatest moments in the history in such a way that it assures the present generations that greatness has been attained in the past and can possibly be attained again. The negative side to monumental history gives no insight about the causes, it only tends to talk about the effects, and thus blindly promotes an event even at the cost of the event. It simply attracts courageous and inspired men to foolishness and extremism by hiding the cause that led to it. If this kind of history goes in the wrong hands, empires tend to be destroyed, leaders are murdered, wars and revolutions are triggered, and the number of these events, that is, effects without adequate causes, keeps on increasing as monumental history is after all a chain linking past, present and future.

Antiquarian History is for those who admire the past and want to preserve it. An antiquarian person looks back at the lives of people in the past, and feels as if they are a part of that past, and feels thankful for their own existence. The advantage of antiquarian history is that it fosters a sense of rootedness, of tradition, and teaches people to love their home and country. But, the antiquarian sense of history of a person, community or culture has a very narrow field of vision. He loses his ability to distinguish between more and less things in his life by looking back at the past with rose colored lenses. An antiquarian perspective makes people believe that things of past have greater value than things of present.

Critical History is thus needed alongside with antiquarian and monumental methods of history for analyzing the past. Man must be able to take this great pile of history, analyze it and break it down in order to see the dreadful reality of human nature and history and condemn its authoritarianism. To do this not only requires the person to be self aware of oneself in history, but also of the very constructive nature of this history. Thus, from time to time, this same life which uses forgetting, demands the temporary destruction of this forgetfulness. We are not just the products of our previous generations, we are also the products of their deviance, passions, mistakes, and even crimes. When we condemn the past and consider ourselves released from them, we have not overcome the fact that we are derived from them. We create a new habit, a new instinct, a second nature, so that the first nature withers away. By being critical of the past and by widening our historical glance to find the bad as well as the good, that is, by having a critical approach to history with an active engagement with both remembering and forgetting, can guide man towards actions informed by this practice in the service of life.

Memory as a medium for preservation can be seen in various techniques such as stories, poems, letters, music, paintings, photography, monuments and memorials. Before photography, the memory of someone who was about to leave for reasons such as travel or war, was preserved by a painting, but before that, the technique of shadow tracing was used. A woman who was in love with a young man about to depart on a long journey, would trace the profile of his face, as his shadow was thrown upon the wall by the light of the lamp.



VALUE OF LIFE

War and destruction has without a doubt evolved over time with weapon technology and military tactics, but the most significant change that has ultimately lead to the effective and efficient killing in today's warfront doesn't necessarily have to do with war or technology but instead of the concept of the value of life. The French Revolution marked an end to a millennia of political systems premised on the notion of a sovereigns capacity for supreme judgement. After King Louis 16th lost his head, all human beings could be considered equal; no modern ruler after that time was believed to be divine. Every individual today is born with the universal rights of liberty, equality and fraternity, endowed with almost absolute free will and who must be totally responsible for his or her actions.

Despite the undeniable benefits for most human beings, there was also a tremendous cost to our humanity. We find it increasingly difficult to participate in rituals, the most important focal actions traditionally framed by architecture. As a result of this, the new mentality aimed to be fully in control, never hesitating to make full use of resources through increasingly more efficient instrumental methodologies. This new reality deemed to be totally other to us. This gave rise to a new dangerous uncertainties, such as the ecological crisis that is now taking place and taking a toll on our habitats, but also a more subtle crisis of participation for modern humans: a potential alienation from the worlds of nature and culture, resulting in a sense of purposelessness.

According to Giorgio Agamben, once we all become sovereign (like the kings of yore), we all become sacred, homo sacer, reduced to our biology. In early Roman religion sacer denotes anything "set apart" from common society and encompasses both the sense of "hallowed" and that of "cursed". The homo sacer could thus also simply mean a person erased from society and deprived of all rights and all functions in civil religion. Homo sacer is defined in legal terms as someone who can be killed without the killer being regarded as a murderer; and a person who cannot be sacrificed. The sacred human may thus be understood as someone outside the law, or beyond it. What becomes confusing with this is the difference between the common man, and the sovereign. The big question here is, how do we govern everyone if everyone is sovereign? Without the existence of feudalism and monarchy, how do we create order in society? To govern human beings reduced to their biology, equal in law and free to act, "democratic" regimes had to put in place rules, regulations and an apparatus of control, discipline, and surveillance to ensure order. Not surprisingly, their legislative and policing institutions often become corrupt. Even the most "open" governments become police states, and we find extreme manifestations of the cherished values of the French Revolution in economic corporatism, (liberty), communism (equality), and nationalism (fraternity), producing in their polarization the worst authoritarian nightmares of our last two centuries. Ultimately, this reduction to biology has devalued life and has given control of human life to the sovereign state. As a result, the sovereign state retains power and responsibility over the common man, and in turn is able to do as it needs or wants with the common mans life, using life more as a resource than anything else.

WWII was the deadliest military conflict ever and arguably the most destructive period in human history. An estimated 75-80 million people died which was around 3% of the world's population. Adolf Hitler and Nazi Germany attempted to conquer Europe, and during that time they were also in search of a way to annihilate the Jewish population from the planet. In order to put an end to the destruction, a collective effort was needed by allied countries. In an effort to end the war, the United States developed the nuclear bomb to drop on Japan as retaliation from the attacks on Pearl Harbor and to display its advanced military power to the rest of the world. The two nuclear bombs dropped on Hiroshima and Nagasaki killed upwards of 225,000 people and left the cities completely destroyed. The destructive and devastating effects of the two nuclear bombs are the only two examples in history where nuclear warfare was used in an attack. These bombs produced some of the most awful environments to have ever existed on Earth.



FIRST HAND ACCOUNTS OF HIROSIMA & NAGASAKI

Writer Yoko Ota: Having no point of reference for the bomb's absolute devastation, some survivors believed themselves to have been transported to a hellish version of the afterlife. The worlds of the living and the dead seemed to converge.

14 year old boy: "Night came and I could hear many voices crying and groaning with pain and begging for water. Someone cried, 'Damn it! War tortures so many people who are innocent!' Another said, 'I hurt! Give me water!' This person was so burned that we couldn't tell if it was a man or a woman. The sky was red with flames. It was burning as if scorching heaven."

A grocer: "The appearance of people was... well, they all had skin blackened by burns... They had no hair because their hair was burned, and at a glance you couldn't tell whether you were looking at them from in front or in back... Slide 27 Many of them died along the road—I can still picture them in my mind—like walking ghosts... They didn't look like people of this world."

Nagasaki survivor: On the day of the attack he was seven. He remembers an intense light in the sky and then the sound of a blast emanating from the city. Hours later, he says, came a snowfall like no other. Fragments of paper, banknotes and ash - and then a heavy downpour of black rain. "The rain felt greasy," he says. "We were wearing short sleeves and short pants. We were soaked in black. The taro roots glistened like oil. It rained so hard."



historical, social and cultural

Layers, stories and metaphors are what make up my artifact. Distance is created with the arrangement of different elements in my artefact, but there lies familiarity and closeness with the cranes, shadows and debris. The debris suggests something fell apart or was broken, the cranes can be recognized as something from Japanese culture, and the shadows cast on the wall provide interaction with something dark and always changing. Between the trinity of elements, room is left for interpretation. This is why stories are important to guide the viewer. Stories make sense of my artefact just as they do history. Stories allow for different perspectives and the ability to imagine. In the stories surrounding my artefact, imagination leads to empathy. This is how my artefact works. Sadako Sasaki was a Japanese girl who became a victim of the atomic bombing of Hiroshima when she was two years old. Even though she was exposed to intense levels of radiation, she survived for another ten years, becoming one of the most popular Hiroshima victims. She is remembered through the story of her folding one thousand origami cranes before her death. Ten years after the bombing, Sasaki developed swellings on her neck and behind her ears, and was diagnosed with leukemia as a result from the radiation exposure. She was eventually placed in a hospital for treatment. Shortly after being arriving at the hospital, a local high school club sent her room a bunch of origami cranes. Sasaki's father, told her the legend of the cranes which was believed that anyone who succeeds at folding 1,000 origami cranes, would be granted a wish. She set o to fold 1,000 cranes while in treatment and was able to reach the goal plus 300 more before she died at the age of 12.



historical, social and cultural

Sasaki was two years old at the time when the explosion occurred. She was blown out of the window of her house and was eventually found by her mother with no apparent injuries. While they were fleeing, Sasaki and her mother were caught in black rain. The black rain came from the rivers surrounding Hiroshima that were evaporated by the heat of the bomb's blast. The rain eventually condensed and fell as a radioactive shower. The mixing of irradiated carbon residue from citywide fires, combined with heat and thermal currents from the firestorms led to rainfall within 30-40 minutes of the bombings. This black rain reached ground level as sticky, dark, dangerously radioactive water. It not only My artefact seeks to bring forth these stories through the hovering flock of black cranes. This flock represents the historic and cultural trace that was left from the manifestation of the atomic bomb. The carbon stained cranes can be seen as a moment of friction between hope and destruction, and can serve as a reminder of the consequences of destructive behavior. While they hover over the canvas, their collective outline from the black rain leaves a permanent trace, while their shadow cast on the wall leaves a temporary trace, waiting to be preserved. The preservation of this temporary trace I believe if more critical than that of the permanent physical trace because that is where society can learn the most. The permanent physical traces can be perceived as is, and will always be there to remember, but the stories and first hand accounts of the victims require effort to last. This effort can be represented in the shadows cast on the wall. The shadows can be perceived differently as they move around and by who is viewing them. We learn more by interacting with the shadows than we do with the carbon debris on the ground. The shadows are the layers of stories we must preserve because those are what teach us the most. It is important for us to come in contact with these stories in order to interact with the past with a more critical perspective. The shadows on the wall can be interpreted by the viewer however they choose, but the tools (writing utensils) are there to preserve their interpretation for later viewers. Sooner or later, the shadow will disappear, and the only the trace or interpretation that will be left is that of the people before us.



As a result of the technological advancement during WWII and the development of the nuclear bomb, there was a need to acquire the level of technology from the rest of the world, specifically the Soviet Union and this led to an arms race with the United States. The arms race between the United States and the Soviet Union created terror across the world in fear of nuclear warfare and potential mass destruction. Since the dawn of the nuclear age 125,000 nuclear warheads have been built, 97 percent of them by the U.S. and Russia/Soviet Union. Two decades after the end of the Cold War there are still some 17,000 intact nuclear warheads around the world. In fact, it is believed that the U.S. and Russia maintain 1,800 nuclear warheads on ballistic missiles that are kept at high alert, meaning that they can be launched 5 to 15 minutes after the order is given. The readiness that is displayed with these weapons may give some people a sense of safety knowing that their country is ready at all times, but we must remember that as soon as one weapon is deployed, the urge to return fire would most likely be left in the hands of a man seeking retaliation. This idea of a nuclear weapon shootout becomes even more frightening when we look closer at the weapons, specifically missiles currently being developed. They are called hypersonic missiles and travel 5 times the speed of sound, having the ability to hit a target 6 minutes after being deployed. If we think about how quickly a decision would have to be made on how to react to such an attack we can assume that this scenario could have a catastrophic ending. It isn't just the speed and efficiency that continues to improve either.



If we take a look at this first map we can see the city of Fargo and an equivalent blast and damage radius from the first atomic bomb dropped on Hiroshima. Since then, the power of nuclear bombs has increased significantly over the years. In the second map, we can see the city of Fargo and an equivalent blast radius from the largest nuclear bomb ever tested by the Russians, and this was in 1961. And since both the United States and Russia recently pulled out of the Intermediate-Range Nuclear Forces Treaty (INF), a Cold War-era pact that prohibited land-based ballistic or cruise missiles, we should guess that there is no intention on eliminating nuclear weapons any time soon.

HIROSHIMA SIZED BOMB



LARGEST BOMB EVER TESTED



Noam Chomsky stated in a recent lecture that, "We can all admit we have major challenges as a human race as we move forward, any serious discussion of the future of humanity must begin by recognizing a critical fact that the human species is now facing a question that has never before risen in human history, a question that has to be answered quickly. Will human society survive for long? For 70 years we have been living under the shadow of nuclear war. Those who've looked at the record can only be amazed that we've survived this far. Time after time its come extremely close to terminal disaster. Sometimes minutes away. Its kind of a miracle we've survived. Miracles don't go on for ever. This has to be terminated and quickly."

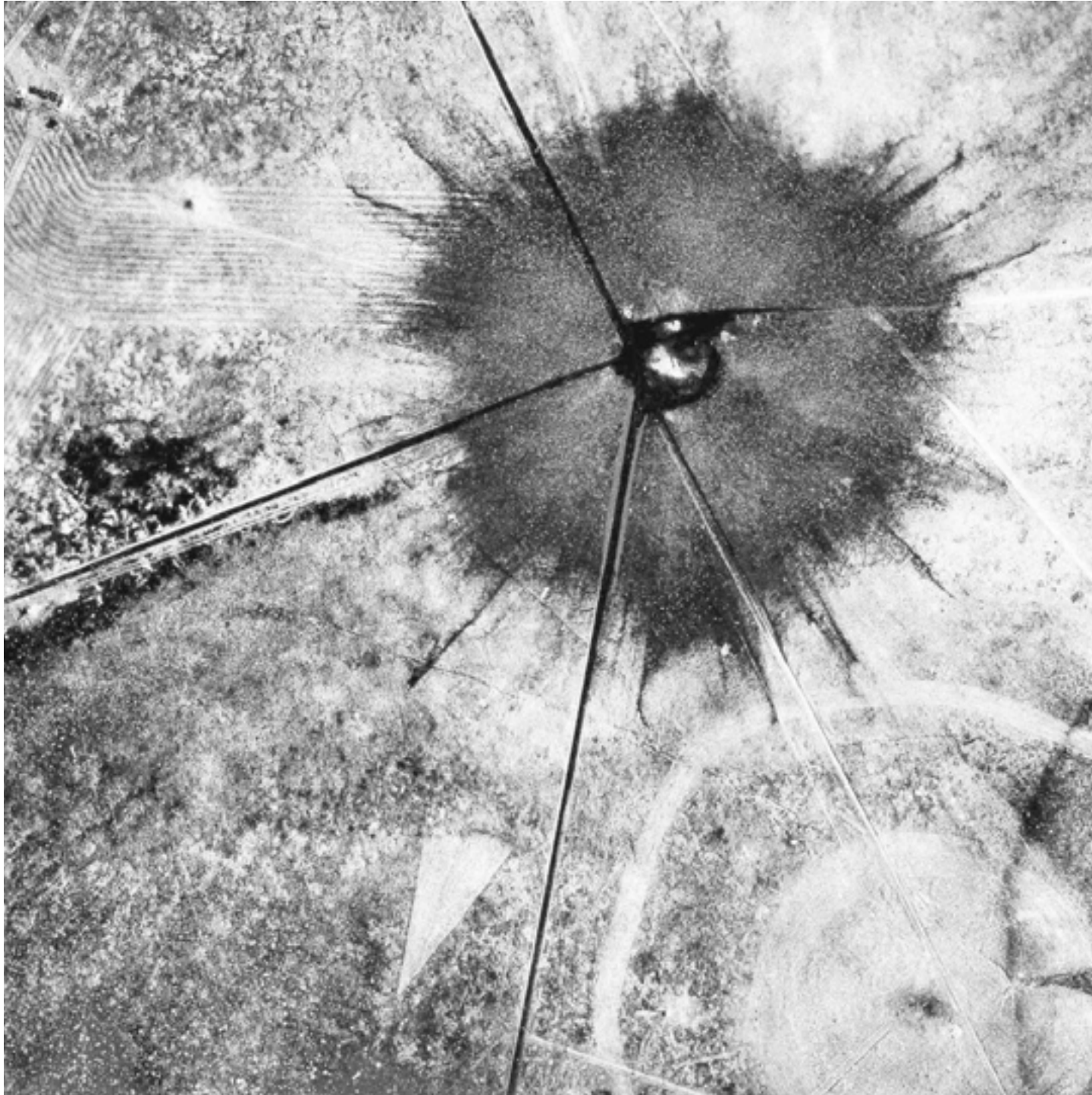
Its important that we pay attention to what's going on in our world in terms of politics and weapon development, and that we keep in mind the destructive capability of our species. We are just as fragile as we are powerful and we have the ability now to look back on our destructive behavior and be critical of it in order to preserve our existence. We've continued to preserve our collective memory as a human race and find that to be extremely important to us, but we put it all in jeopardy as we continue to develop efficient methods to destroy ourselves. Due to this destructive urgency it is crucial for us to show the same urgency in looking back into history and being critical of the times of mass destruction. Could we not have found a better resolution? Are we really at a point where it takes a nuclear explosion to set things right? It's understandable that some look at history different than others and perceive some parts of history as good, when in reality they were bad. But we all understand that our existence is important, that's why we've found it a priority to preserve our memory.

In order to move forward and make progress as a human species, I find it extremely important to provide opportunities for collective accountability of the destructive behavior in our past. This will serve as a critical reminder to future generations of the devastating potential of their own kind, in hopes that we can continue to preserve our collective memory and remain on this planet. The most effective way of doing this through the medium of architecture is by the combination of museum and memorial.



site analysis

J. Robert Oppenheimer, Director of the Los Alamos Laboratory during the Manhattan Project, called the site "Trinity." The Trinity name stuck and became the site's official code name. It was a reference to a poem by John Donne, a writer cherished by Oppenheimer.



site analysis



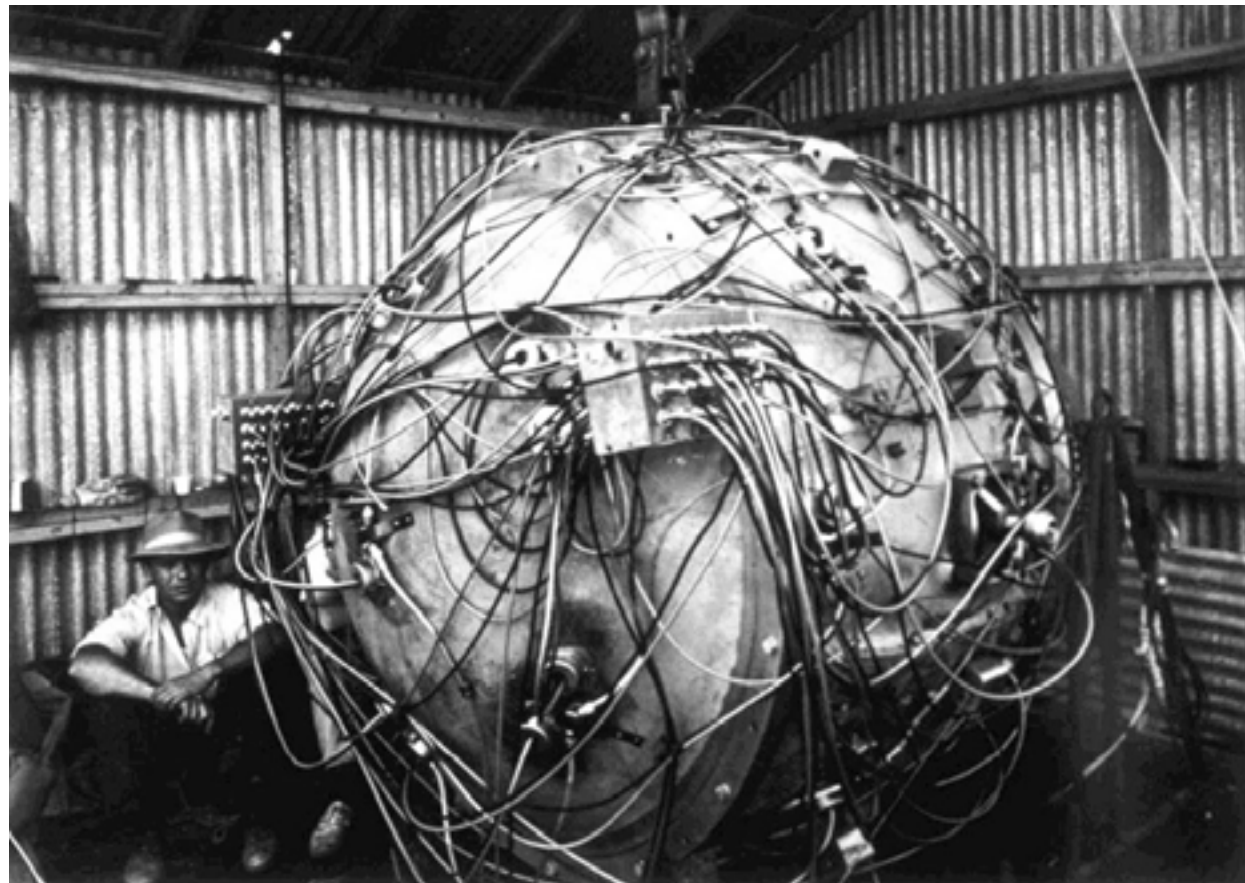
The nuclear device detonated at Trinity, nicknamed "Gadget," was shaped like a large steel globe. Like the Fat Man bomb dropped on Nagasaki, it was a plutonium implosion device.

One unique device that appeared at the Trinity site in the days leading up to the test was Jumbo. Jumbo was a massive cylindrical steel container. Its production was ordered, at a cost of \$12 million, by General Leslie Groves as a containment vessel, because of concerns that the test would not be a success. The plan was for the plutonium core to be imploded inside Jumbo. In the event that the Gadget "fizzled," or did not properly detonate, Jumbo would preserve the bomb's rare plutonium for future experimentation.



By the time final preparations for the test were underway, however, scientists were confident that the test would work and so Jumbo was not used. Instead, it was suspended from a steel tower 800 meters from ground zero during the test. The tower was destroyed, but Jumbo remained intact. After the war, the Army blew the ends off Jumbo in an unsuccessful attempt to destroy it, and today its remains can be seen at the Trinity Site.

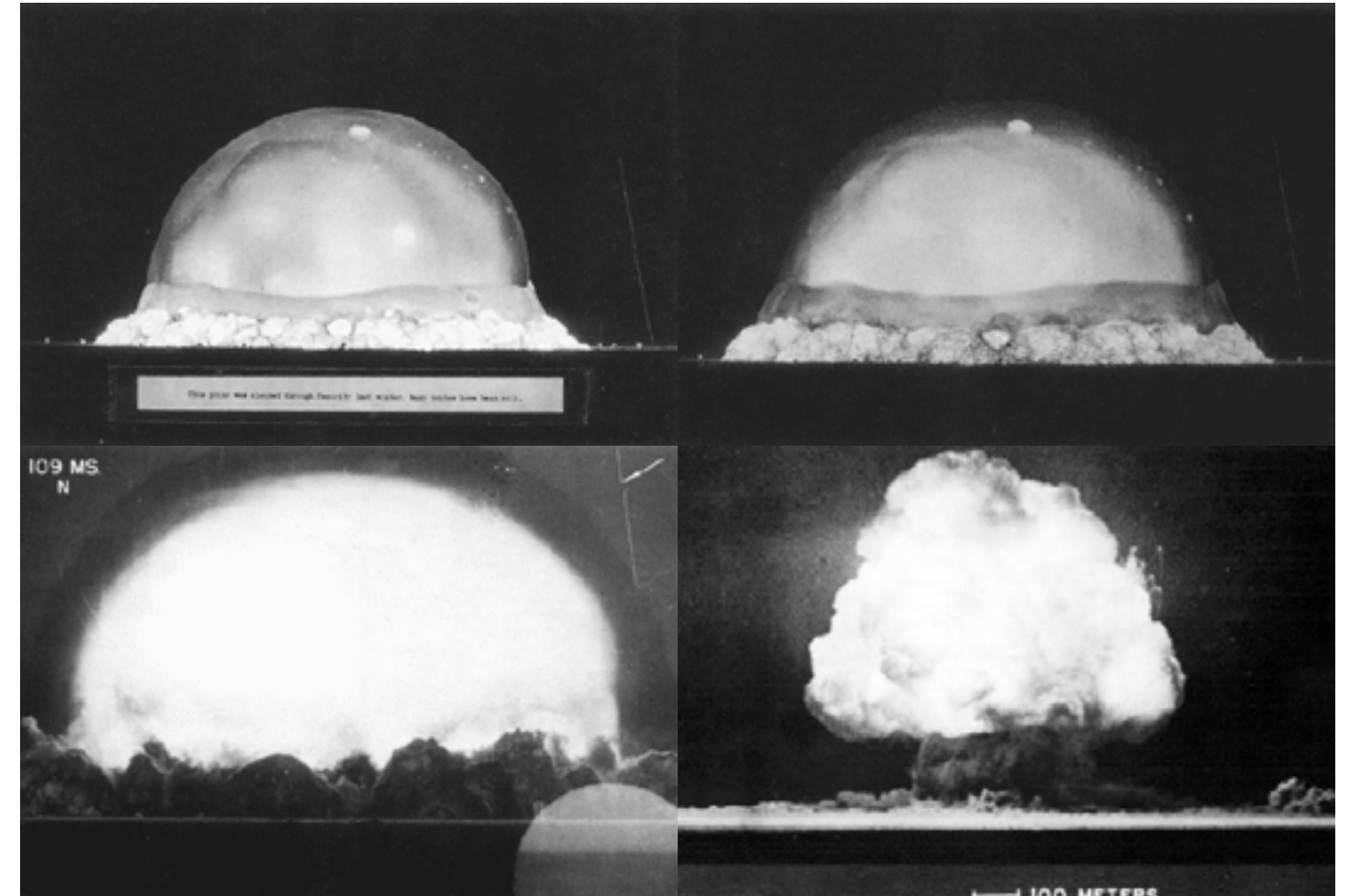
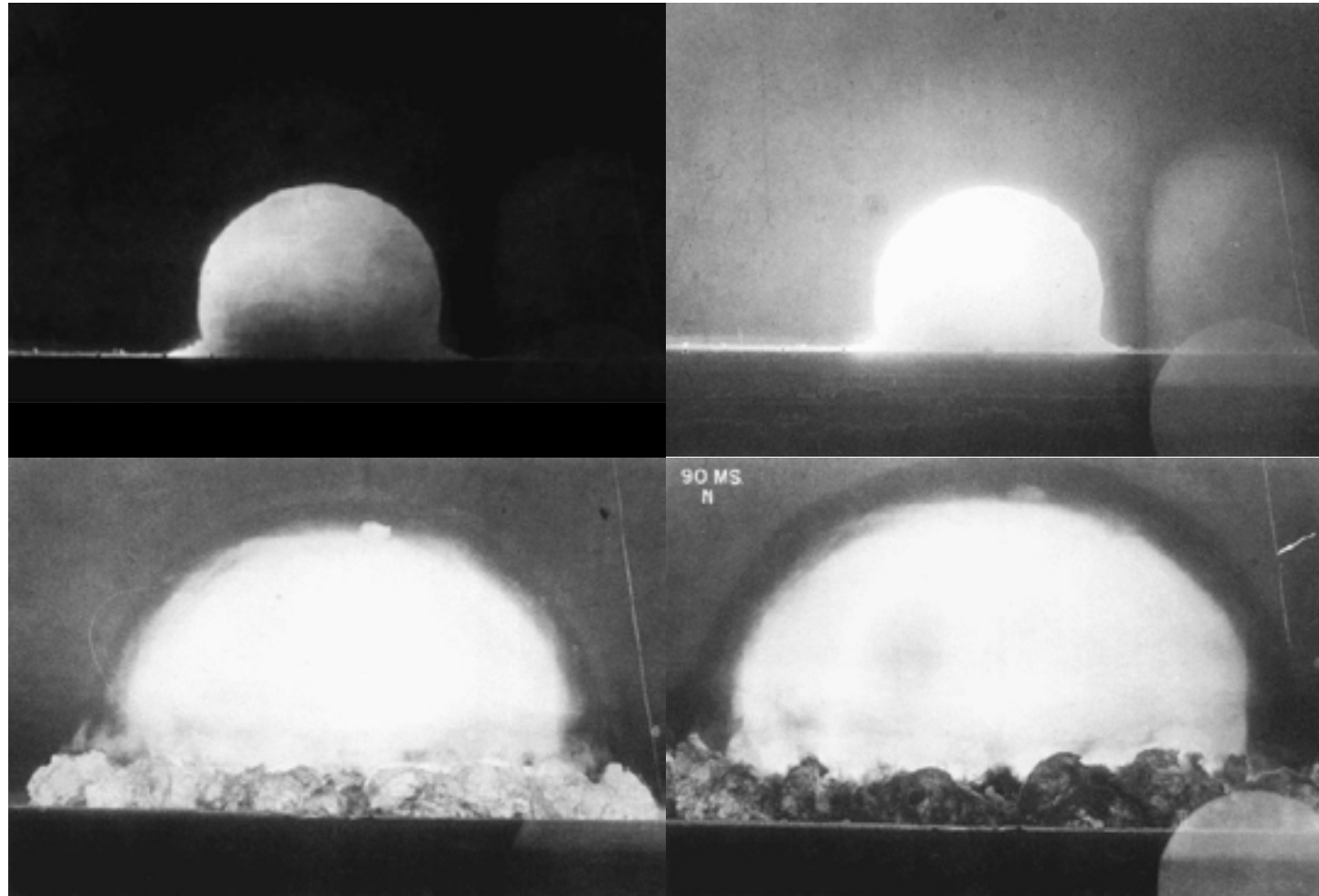
News of the success of the Trinity test was initially limited to those Manhattan Project scientists who already had knowledge of the atomic bomb, despite the fact that the explosion was felt in cities throughout the state. Officially, the cause was reported as the accidental detonation of a bunker containing a number of high explosives and pyrotechnics. Only after the atomic bombings of Japan was Trinity's true nature made known.



TRINITITE

The explosion annihilated nearly all of the 100-foot metal tower from which the bomb was dropped and created a crater of a radioactive green glassy substance known as trinitite, which is today prized as a collector's item. Radiation levels at the site remain about 10 times as high as natural background radiation. After being closed to the public for many years, the Trinity Site was declared a National Historic Landmark district in 1965 and was listed on the National Register of Historic Places in 1966. It is now open to visitors on the first Saturdays of April and October.





CLIMATE

The site, which is located in the Jornada Del Muerto Desert, was chosen for its isolation, flat ground, and lack of windy conditions. Manhattan Project leaders also considered sites elsewhere in New Mexico, as well as in Texas and California.

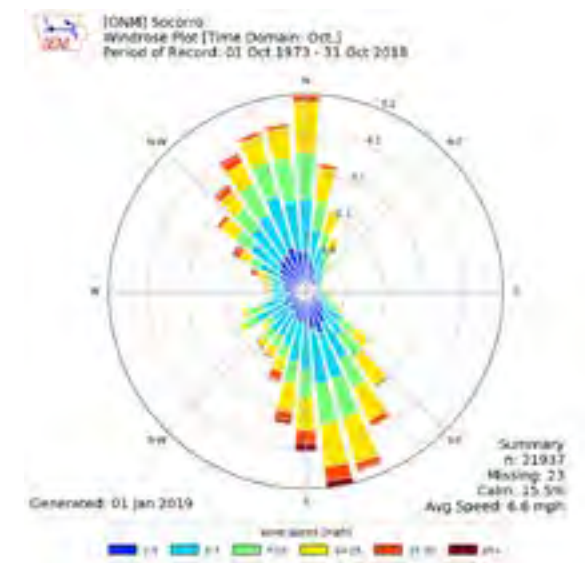
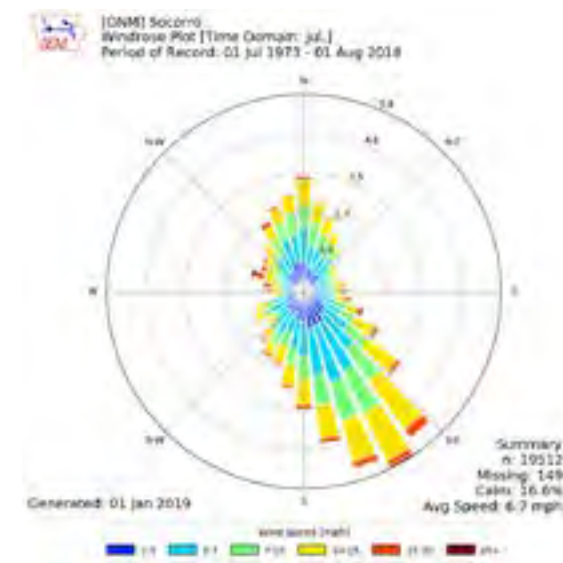
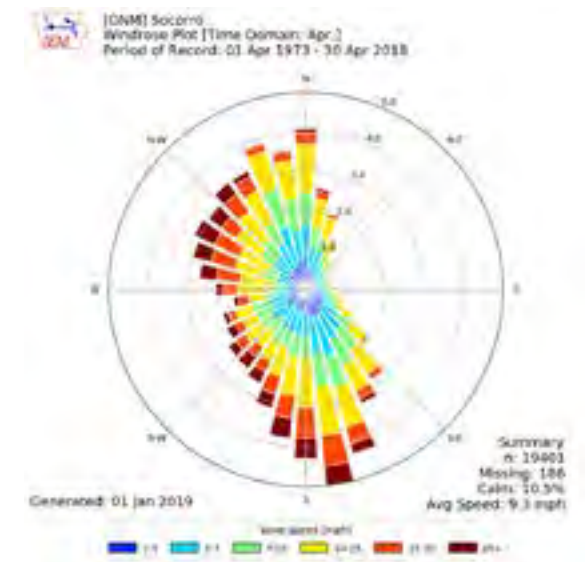
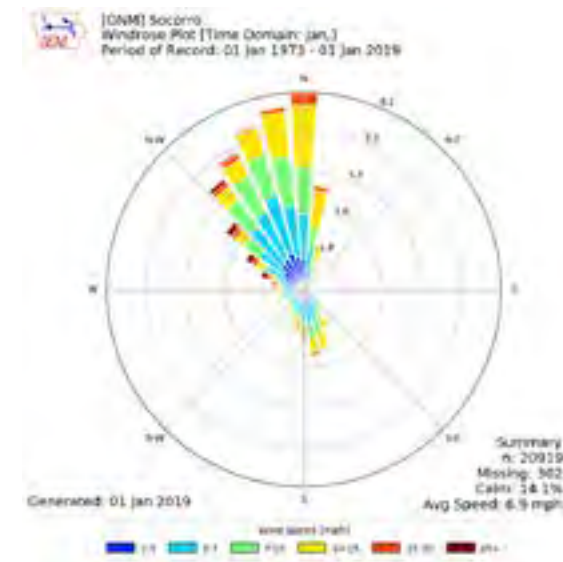
	Jan	Feb	Mar	Apr	May	Jun
Average high in °F:	52	59	67	75	83	91
Average low in °F:	22	26	32	39	47	55
Average precipitation in inch:	0.47	0.31	0.51	0.39	0.59	0.59
Days with precipitation:	-	-	-	-	-	-
Hours of sunshine:	-	-	-	-	-	-
Average snowfall in inch:	0	1	0	0	0	0

	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	92	89	84	73	61	51
Average low in °F:	61	59	51	40	29	22
Average precipitation in inch:	1.61	2.05	1.54	1.1	0.55	0.55
Days with precipitation:	+	+	+	+	+	+
Hours of sunshine:	-	-	-	-	-	-
Average snowfall in inch:	0	0	0	0	0	4

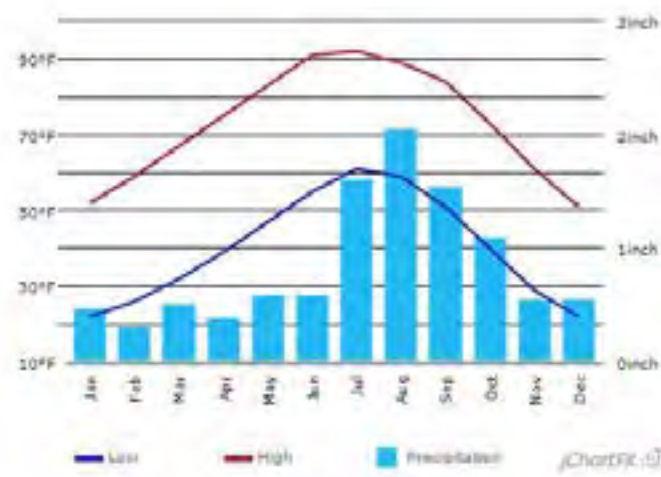
Socorro weather averages

Annual high temperature:	73.1°F
Annual low temperature:	40.3°F
Average temperature:	56.7°F
Average annual precipitation - rainfall:	10.25 inch
Days per year with precipitation - rainfall:	-
Annual hours of sunshine:	-
Average annual snowfall:	3 inch

WIND ANALYSIS



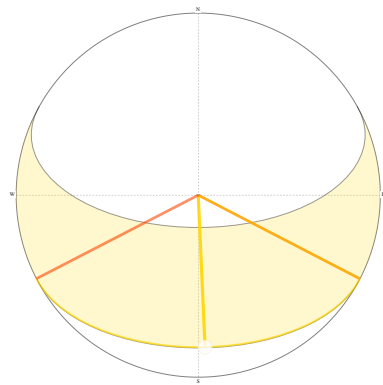
Socorro Climate Graph - New Mexico Climate Chart



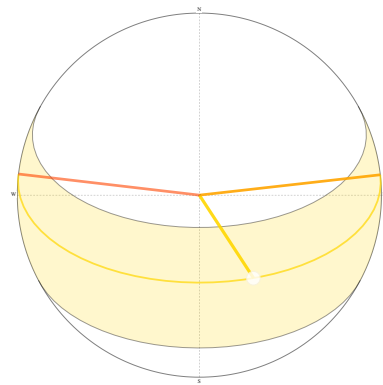
SUN ANALYSIS

Below are sun path diagrams for the Trinity site for the months of January, April, July and October. The elevation diagram on the next page show the Trinity site with two section cuts going through the site labeled A and B. Below the map shows the section cut views of the land. Section A tells us that the site is situated in a fairly flat valley with a steep mountain range to the east. Section B shows that there is an increase in elevation to the north and declining slightly to the south, indicating that the site is in somewhat of a large crater.

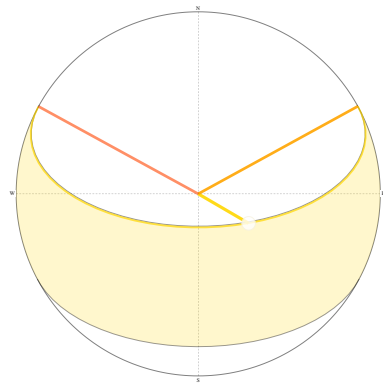
JANUARY 1



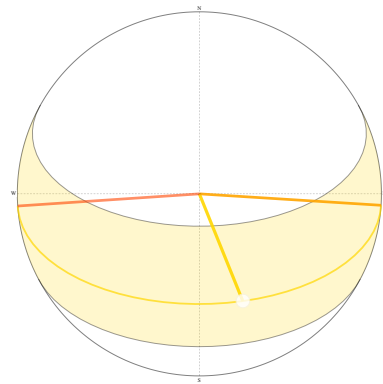
APRIL 1



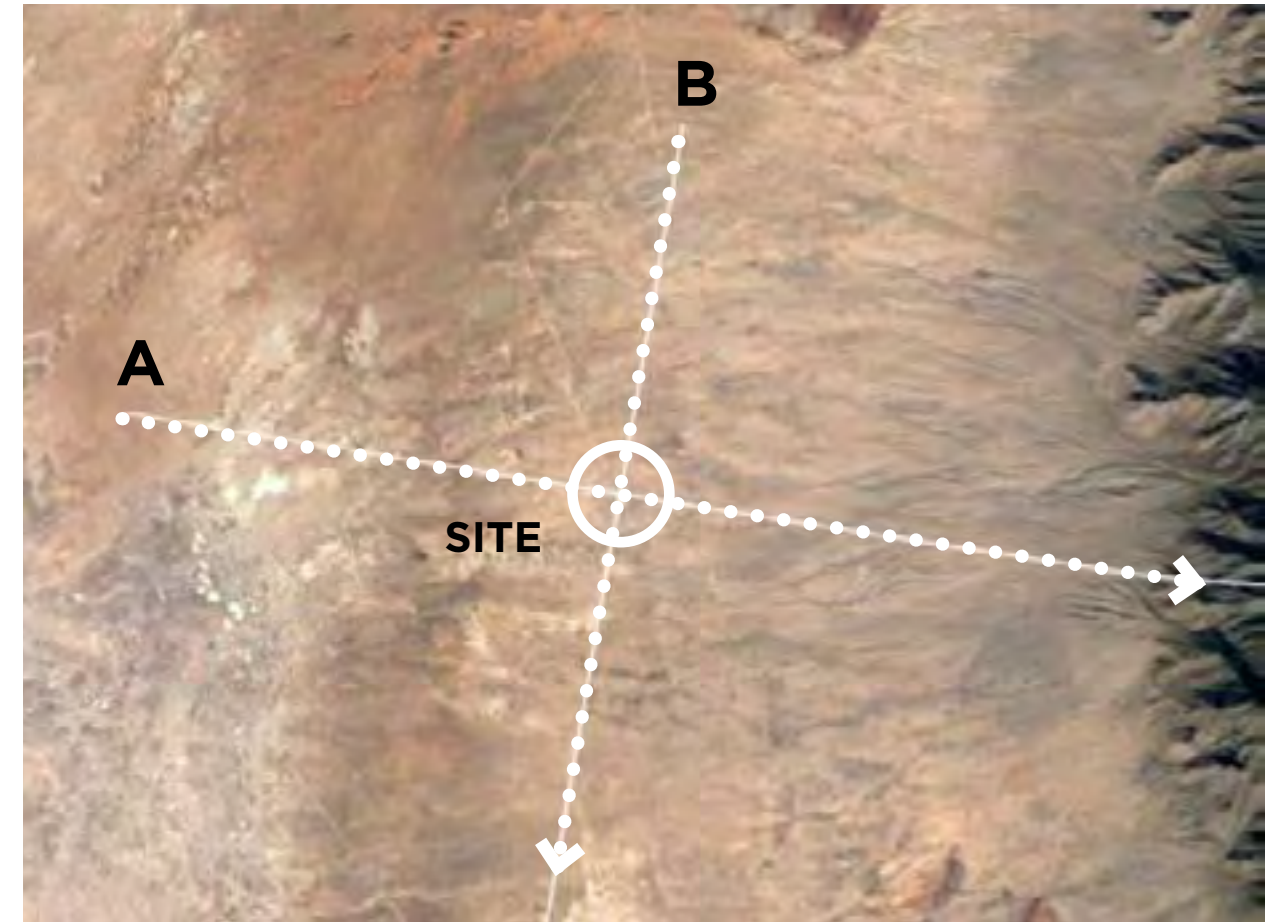
JULY 1



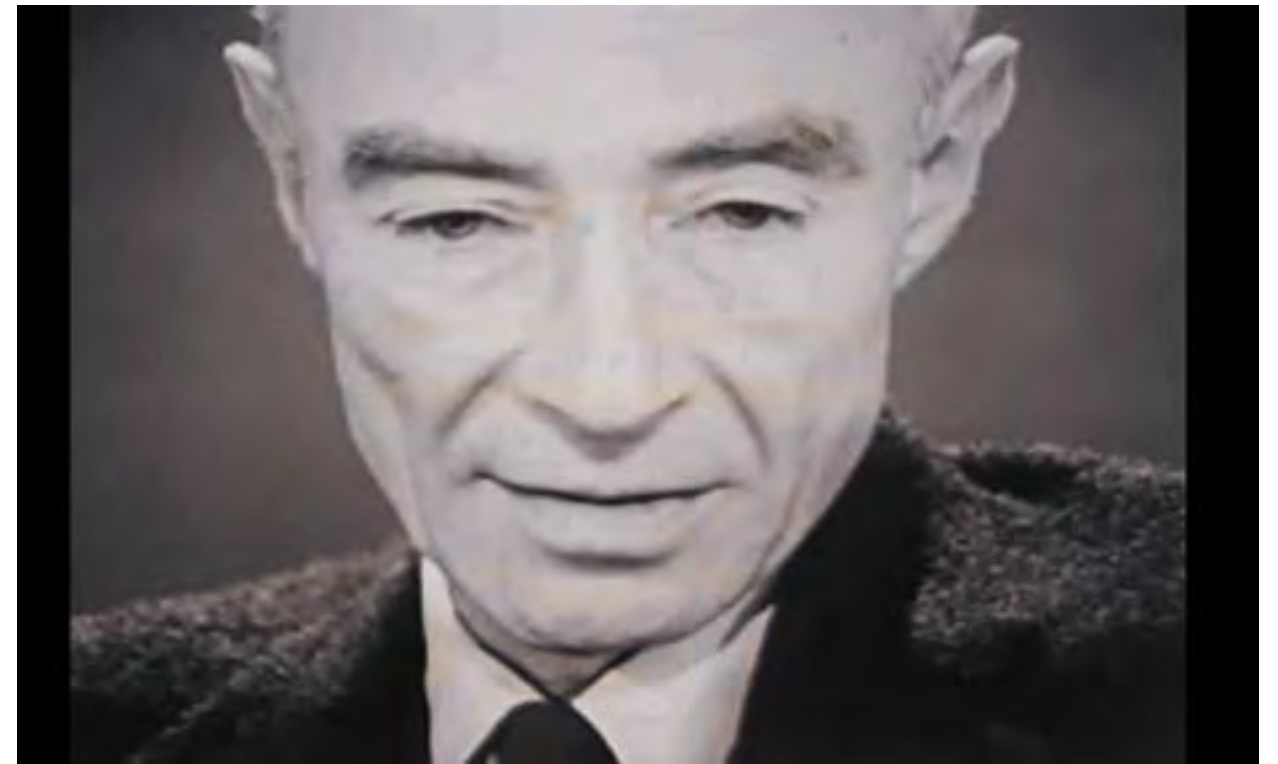
OCTOBER 1



SITE ELEVATIONS



By using memory, or memorial as a medium through architecture, the goal is to provide a reminder to everyone of how powerful the human race has become over the last 70 years in terms of destruction, and how that power, when used for destructive methods, is able to expose the fragility of our species. During the time of the development of the first nuclear weapons, many saw it as a means to end WWII, but others, specifically those who developed the nuclear weapons saw it as the beginning of the end. Almost every scientist who worked on developing the first atomic bomb also known as the Manhattan Project, signed a petition to not drop the atomic bombs on Japan. But the person who was supposed to give the petition and letter to the president had opposing thoughts. As Robert Oppenheimer, also known as “the father of the atomic bomb” witnessed the first detonation of a nuclear weapon on July 16, 1945, He stated, “We knew the world would not be the same. Few people laughed, few people cried, most people were silent. I remembered a line from a piece of Hindu scripture saying: ‘Now I am become Death, the destroyer of worlds’. I suppose we all thought that one way or another.”

ROBERT OPPENHEIMER

My thesis project will be made up of four main spaces: tower void, greenhouse, shelter for trinitite, and seed and harvest buildings. Collectively, these spaces will form the memorial grounds at Trinity. Different spaces and environments to accomodate various activities.

TOWER VOID

The tower void will serve as a reminder of the original tower that existed during the first nuclear bomb test. The bomb suspended from the tower just before it was detonated 100 feet above the ground. The tower will be a place of contemplation and will include different elements of memory, as well as incorporate my artefact.

GREENHOUSE

The greenhouse will host various plants and trees related to the bombings in Hiroshima and Nagasaki as a way for objects from the destination to have a place at their origin.

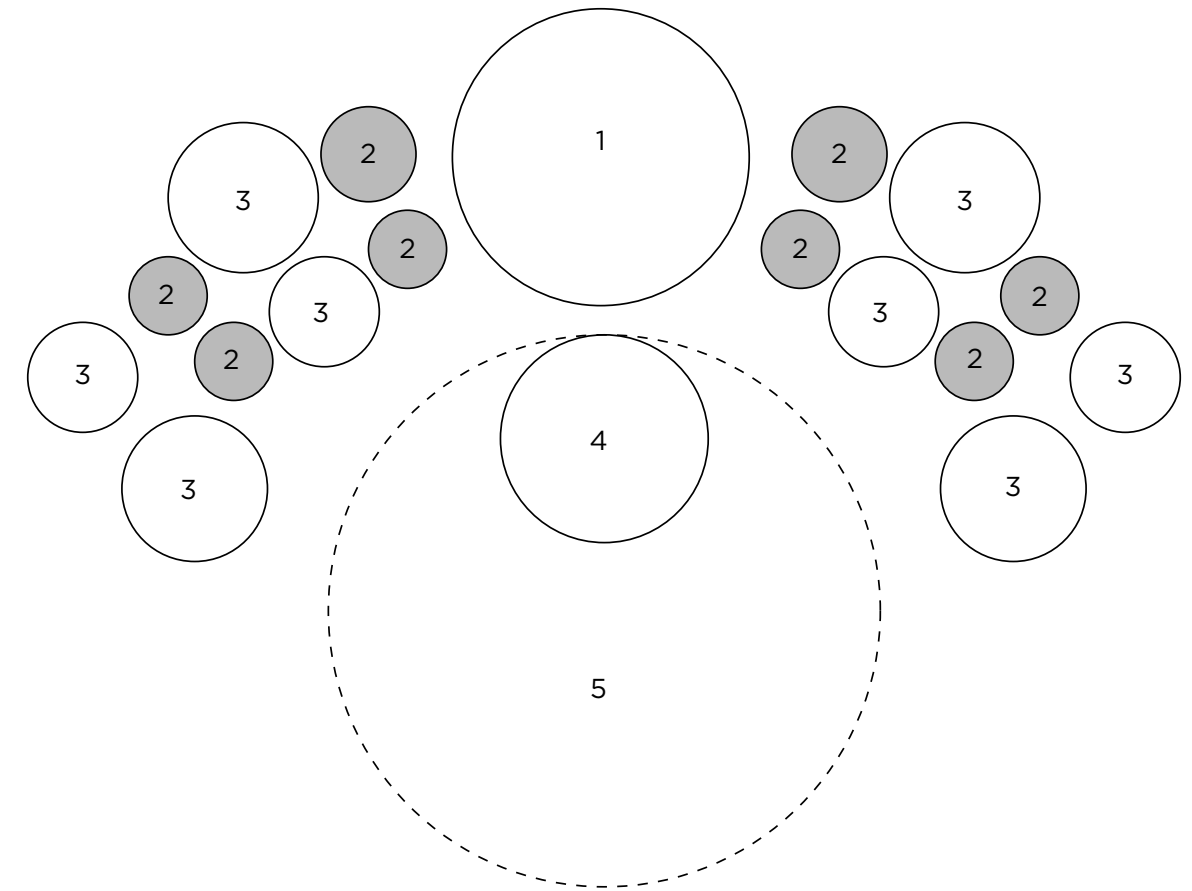
TRINITITE SHELTER

The Trinitite Shelter will protect the section of trinitite from the original crater at the site, and will be a place for visitors to come in contact with the radioactive material.

SEED/ HARVEST BUILDINGS

The Seed and Harvest buildings will facilitate participation from the visitors. It will be a place to hold sunflower seeds during the winter months in order to be planted in the spring. These buildings will serve more as warehouses than anything but play a signiificant role in allowing visitors to contribute to the transformation of the site.

SPACE PLANNING



1 - MUSEUM

2 - EXHIBITION/ GALLERY SPACES

3 - INTERIOR GATHERING SPACES

4- EXTERIOR GATHERING SPACE

5 - MEMORIAL/ GARDEN/ MONUMENT

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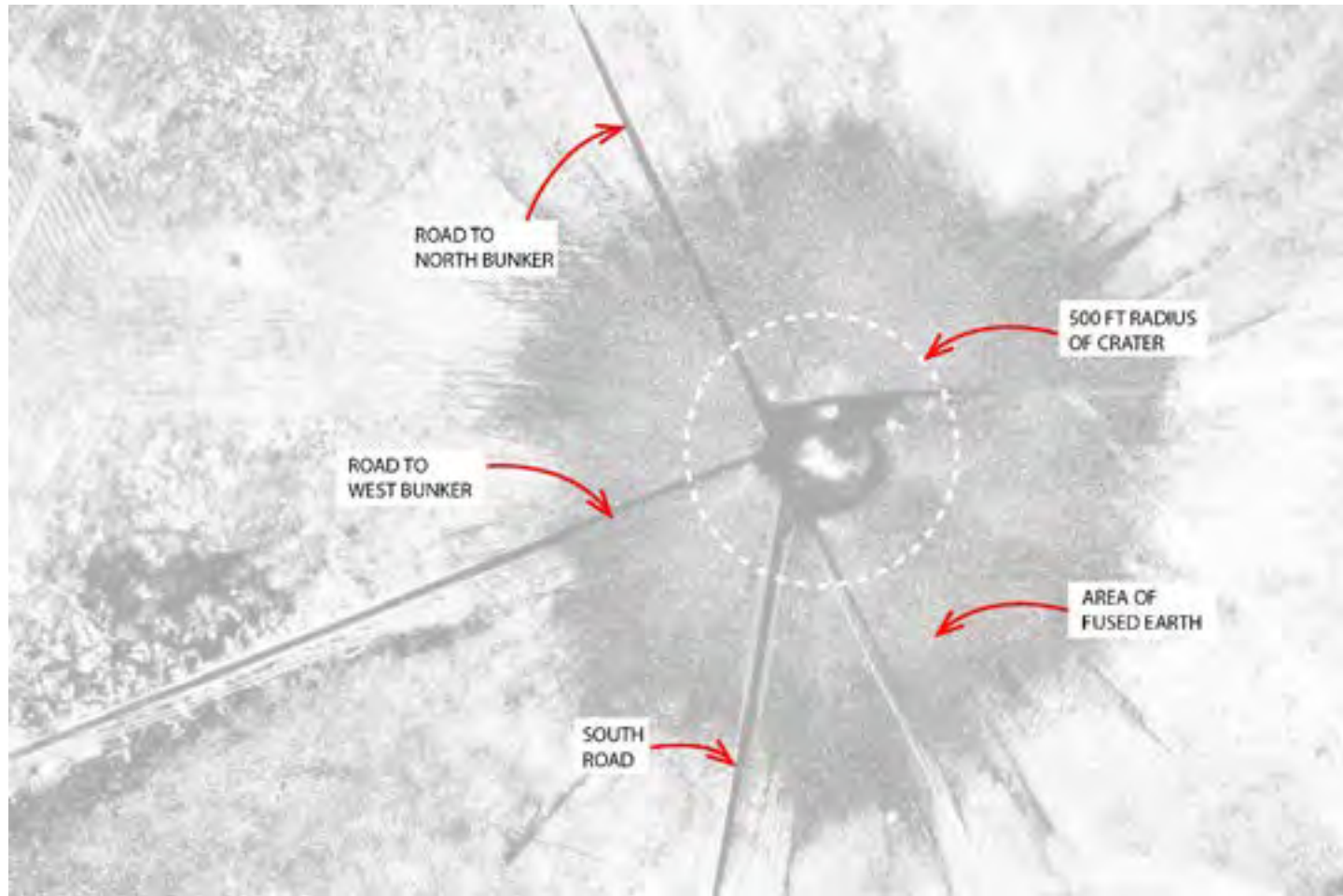
Weather averages Wendover, Utah. (n.d.). Retrieved from <https://www.usclimatedata.com/climate/wendover/utah/united-states/usut0270>

Young, J. E. (n.d.). *Memory and Counter-Memory*. Retrieved from <http://www.harvarddesignmagazine.org/issues/9/memory-and-counter-memory>.

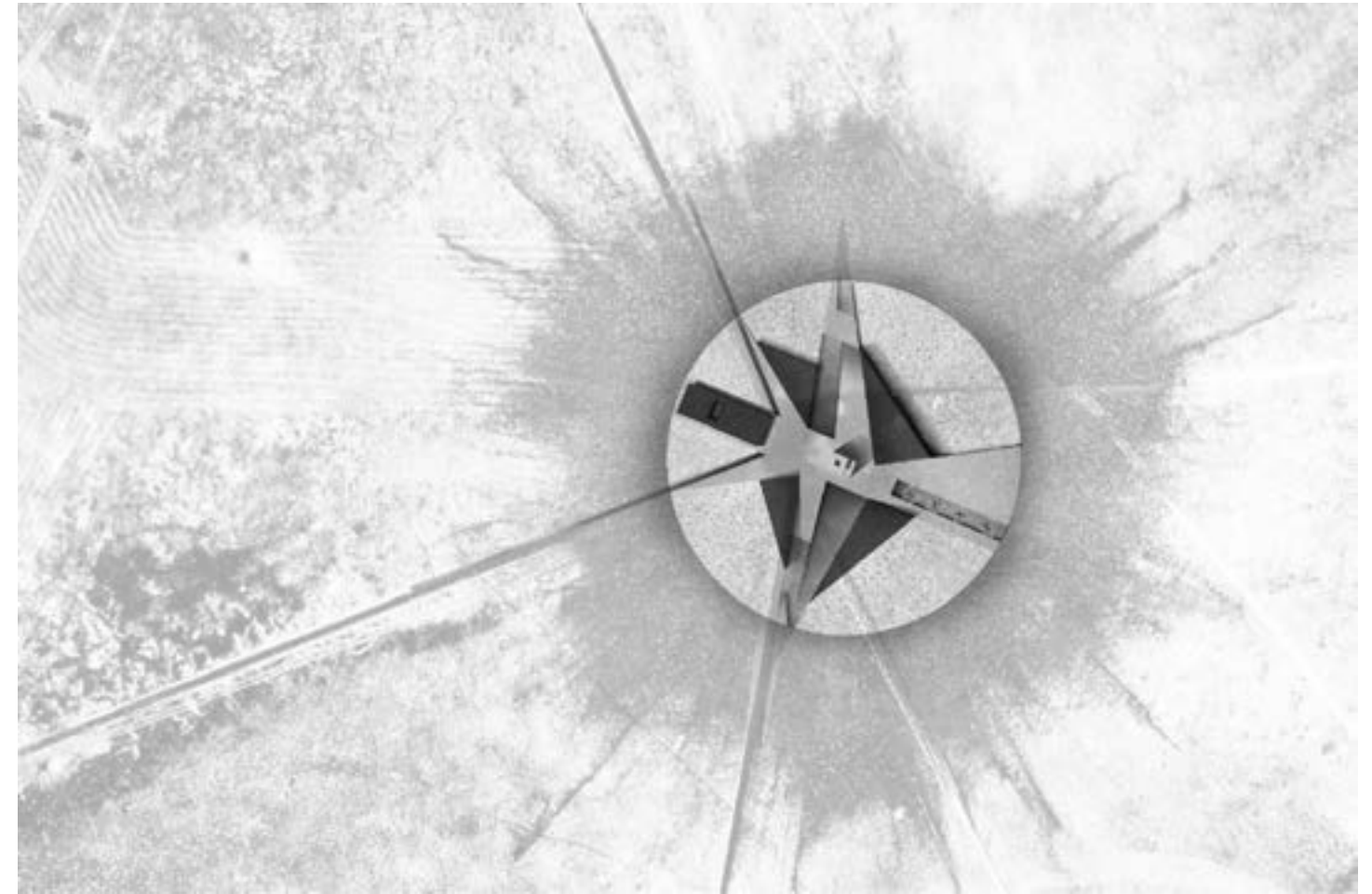
The Trinity site is currently located on an active military missile range and is only open for visitation two days out of the year. The first week in April and the first week in October. Visitors are able to walk the grounds of Trinity and observe photographs and ruins from what was left after the blast. What was once ground zero for the most destructive and powerful weapon ever created, I now intend to be the memorial grounds of the trinity test site. The grounds look to provide various spaces to encounter stories from the past, original site ruins, and the ability to contribute to the transformation of the site.

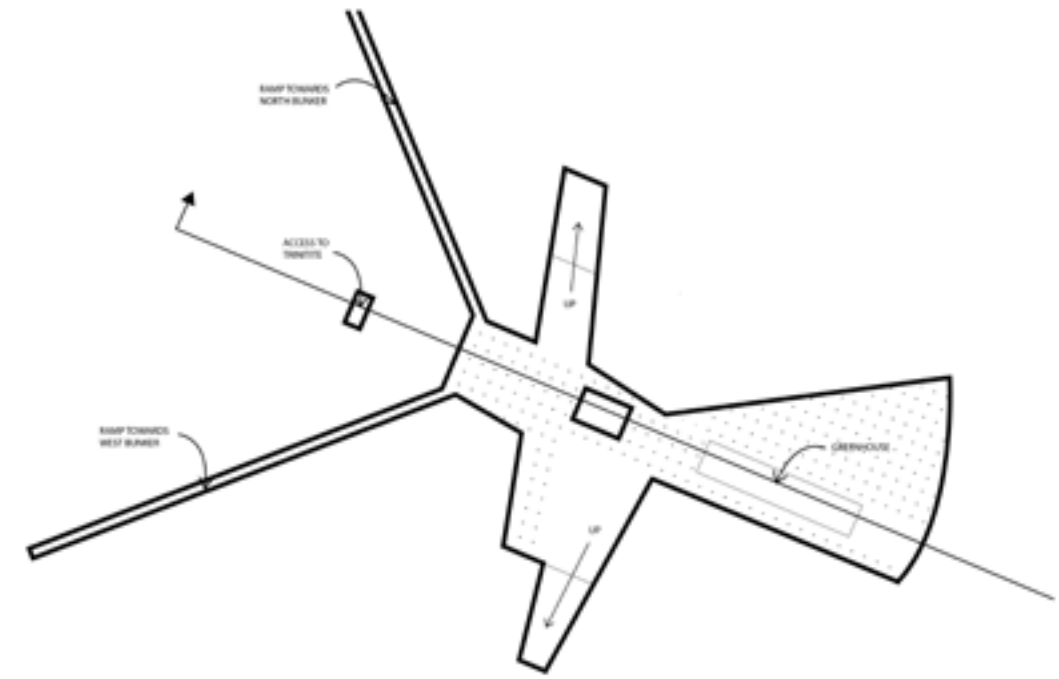
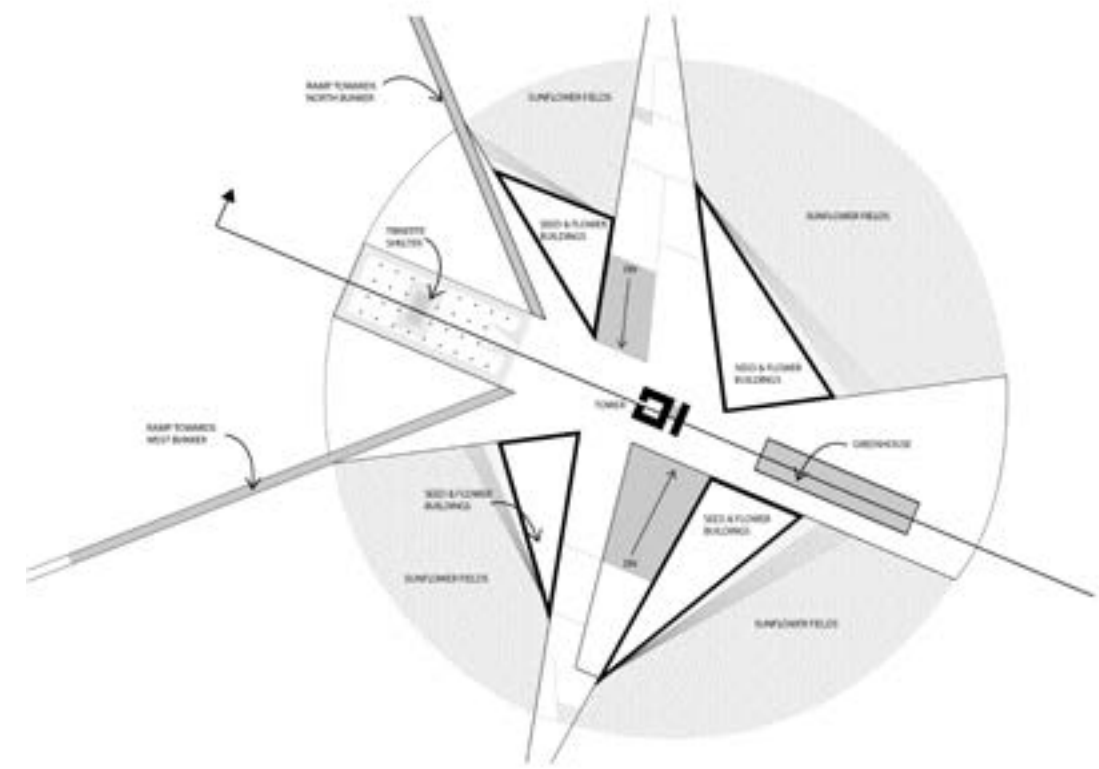


If we look at a plan of the area shortly after the blast, the idea was to use existing information to act as determining elements for how the site took shape. The south line is the road which scientists and engineers took to and from the site during the installation of the bomb and still serves as the main road to access the site. The two other lines extend out to the north and west observation bunkers that once existed. All of the roads lead to the center of the site where the tower that suspended the bomb stood.

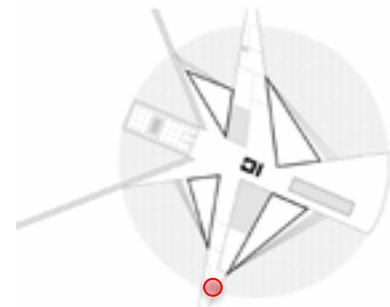


From an aerial view, the proposed plan resembles that of a fallen origami crane, letting it serve as a reminder to all air force pilots flying above of the significance of the site.

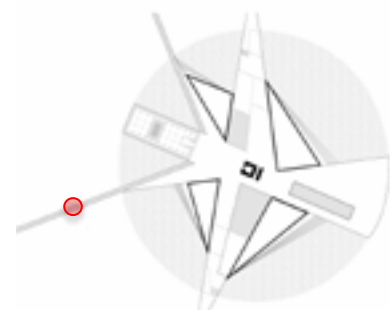
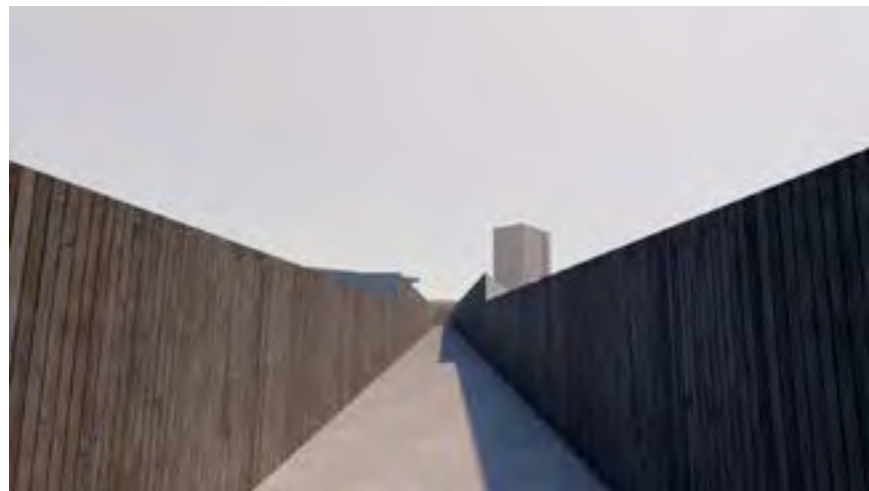




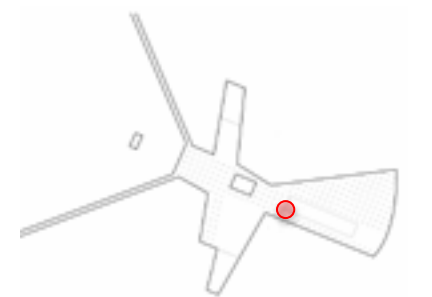
In order to get to the site,visitors are escorted by a military vehicle behind a caravan of cars to a parking lot that is a quarter mile away from the site. Once the car is parked, they walk from a parking lot located south of the site on a path going north that eventually leads them to a small set of descending stairs entering the site.

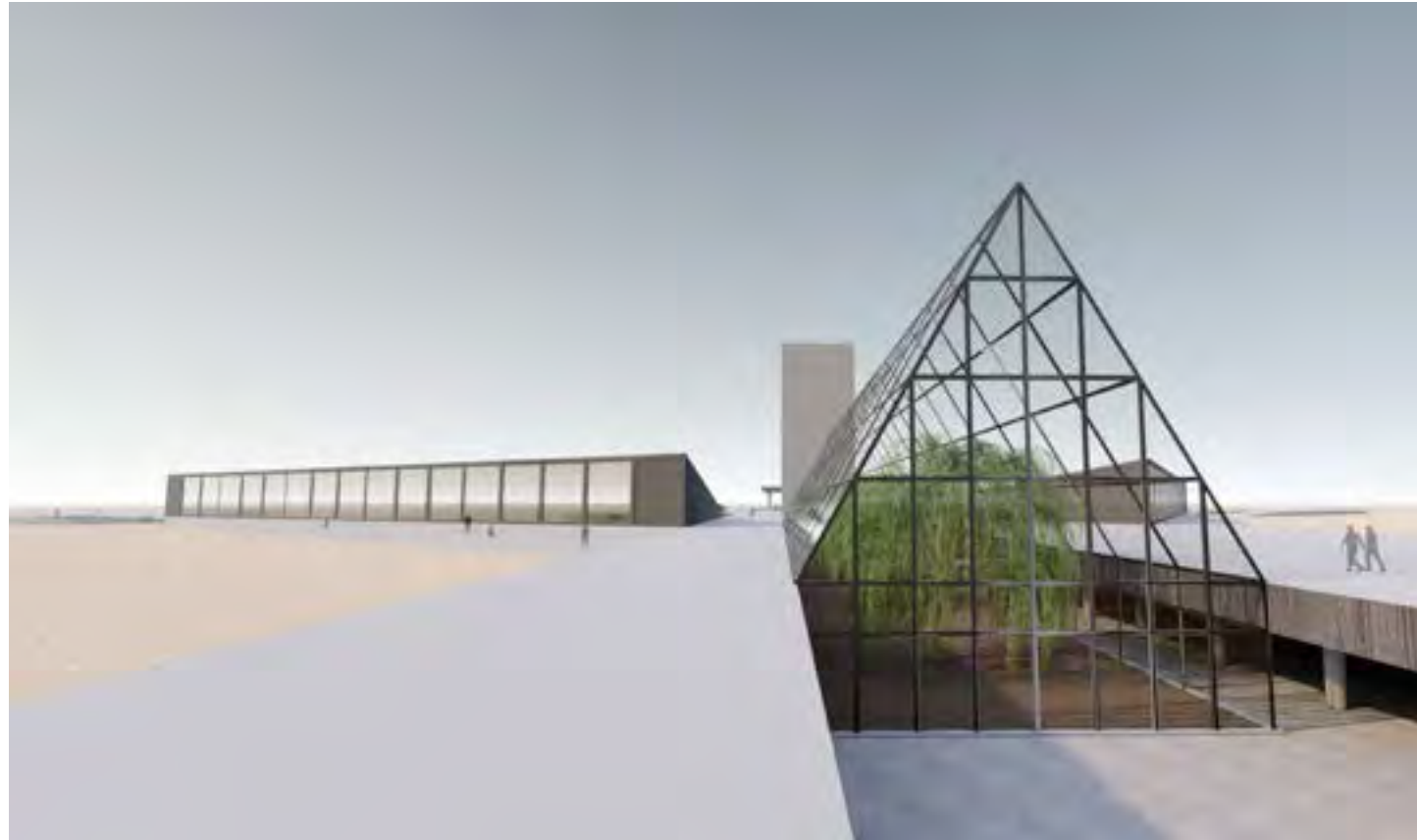


From this point, visitors are able to wander the grounds, encountering different spaces along the way. If the visitor decides to take the ramp to the lower level, they find themselves entering a dark space that could create feelings of discomfort.

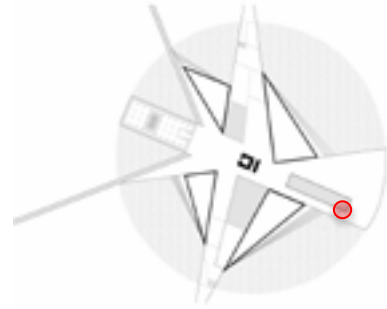


The low ceilings and charred walls display graphic images, stories and first hand accounts from various victims from Hiroshima and Nagasaki. While underground, the visitor might see light penetrating down from various openings coming from the level above. One of these areas where light reaches the lower level is the greenhouse that protrudes up to the level above.

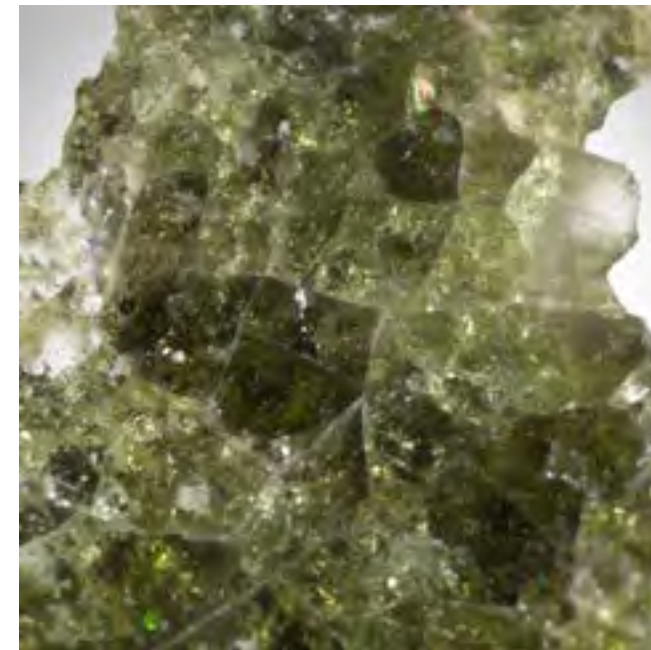




Within this greenhouse stands four weeping willow trees descended from the seeds of the few trees that survived the bombs in Japan. The trees provide a sense of hope and life while surrounded by an atmosphere of death and destruction.

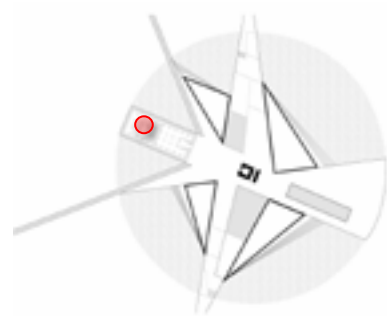


As the visitors go back up above ground they might find themselves walking over to the trinitite shelter. After the test bomb was detonated, a fireball rose into the air bringing the desert sand with it. While in the air, the fireball was so hot that it melted the sand into a liquid and gas form which produced a green radioactive glass that fell as rain and covered the surrounding area.





The trinitite is protected behind thick glass panels that allows people to walk on top of it and interact with the radioactive material.

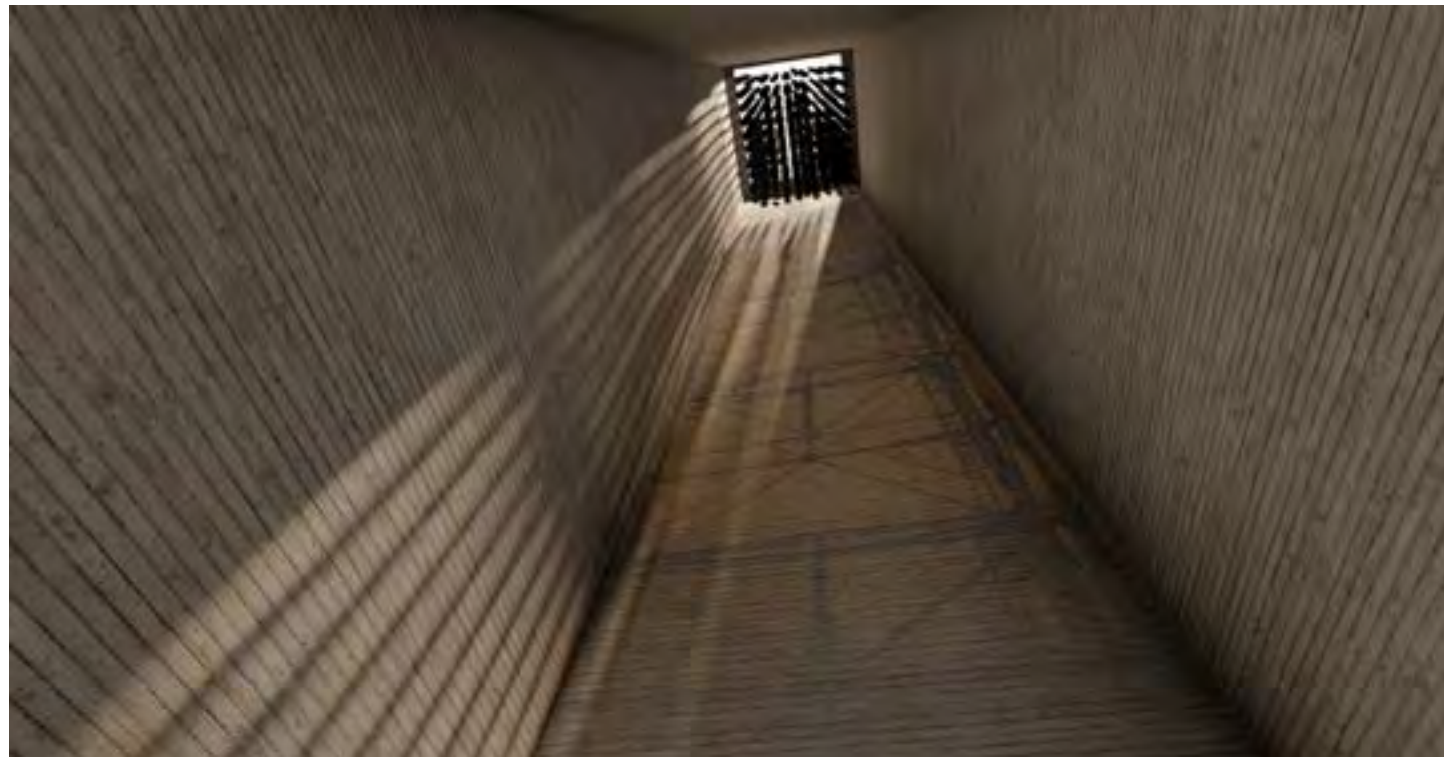


Towards the east, visitors will approach a concrete tower where the original tower once stood before being vaporized by the bomb.

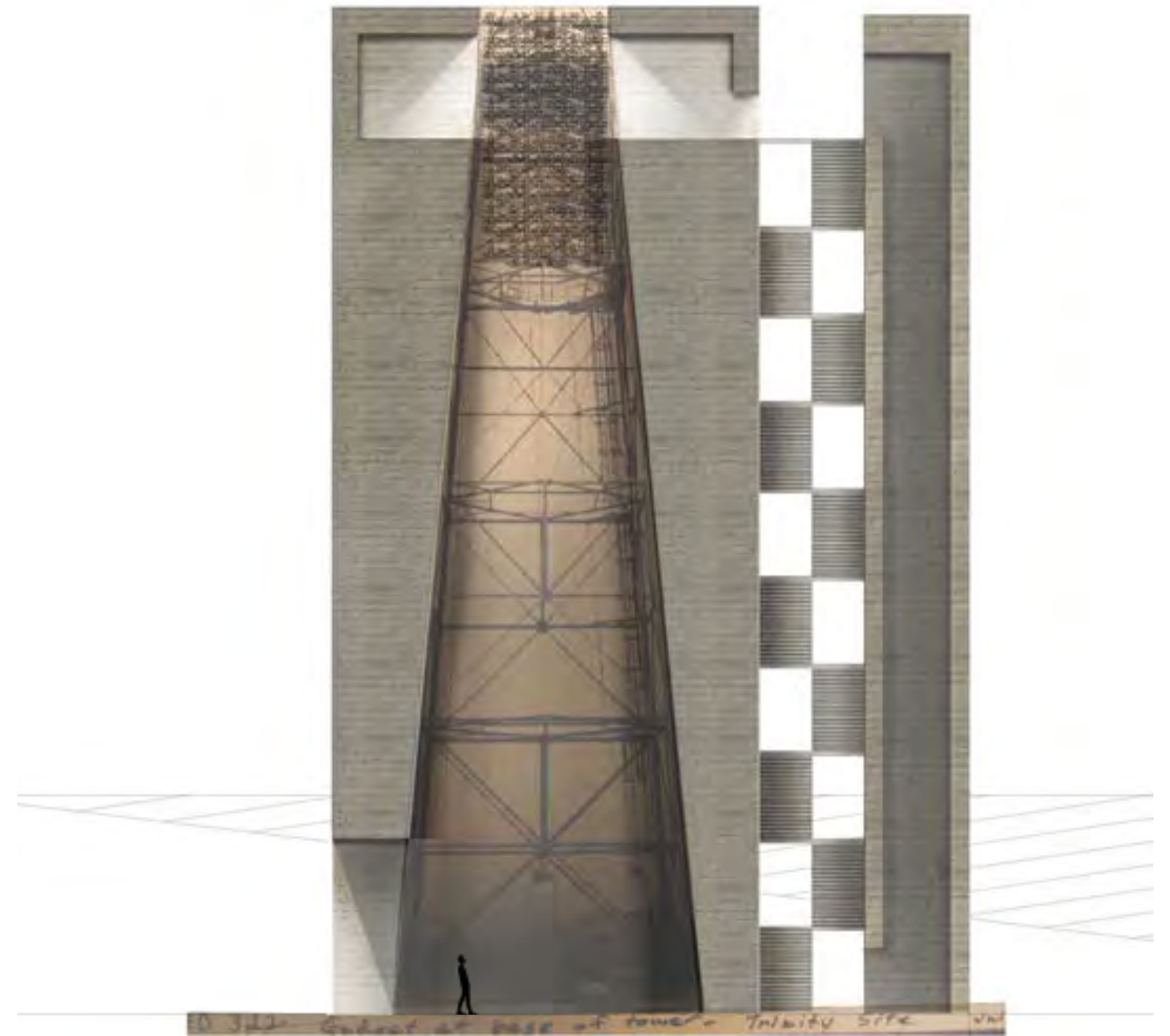




After entering the ground level entrance, the empty interior forces the visitor to look up or down. On the ground lies the remains of the footings of the tower that once stood.



Looking up leads to an opening at the top of the tower along with something suspended obscuring the view of the sky.



When we look at a section cut of the new tower we notice that the void inside is that of the original tower from the time of the blast.



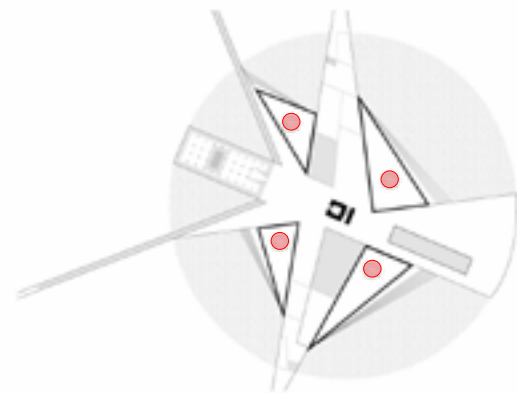
Once the visitor reaches the top of the tower, they enter the room and see 1000 origami cranes made of lead suspended in the exact space where the bomb was prior to the explosion. It is here that my artefact makes an appearance along with the story of the 12 year old girl, and the black rain. The flock may be perceived as filling the void within the tower, or perhaps fleeing out the top trying to escape.



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Depending on the time of year, the structures serve various functions. If visited in the fall, the structures will be empty serving as a place to collect and process the sunflowers growing throughout the site. If visited in the spring, seeds will be scattered on the floor ready to be planted on the site. The sunflower has the unique ability to filter out radiation from the earth's soil and has been planted at various nuclear fallout sites around the world such as Fukushima, and Chernobyl as a method to purify the soil. By allowing the visitors to actively participate in the planting, harvesting and processing of the sunflowers, it gives everyone the opportunity to contribute to the transformation of the site.



In closing, I want to say that the memorial in architecture is unique in that it is one of the few types of architecture whose fundamental function is not shelter but rather to feel and to remember. Humans have always needed something permanent and tangible to make sense of loss, and to create a physical connection of stone and mortar between memory and the present, and that is what this thesis aims to do.



SECOND YEAR

FALL SEMESTER - CHARLOTTE GRUBB
TEA HOUSE
MONTESSORI SCHOOL

SPRING SEMESTER - CINDY URNESS
DANCE SCHOOL
COMMUNITY DWELLING

THIRD YEAR

FALL SEMESTER - PAUL GLYE
MIXED USE BUILDING
VISITORS CENTER

SPRING SEMESTER - REGIN SCHWAEN
VISITORS CENTER
LIVEABLE PARKING RAMP

2

3

FOURTH YEAR

FALL SEMESTER - BAKYR AHMED
HIGH RISE

SPRING SEMESTER - MARK BARNHOUSE
MIAMI OCEAN BARRIER

FIFTH YEAR

FALL SEMESTER - STEPHEN WISCHER

SPRING SEMESTER - STEPHEN WISCHER

4

5

personal identification



Tyler Gefroh

