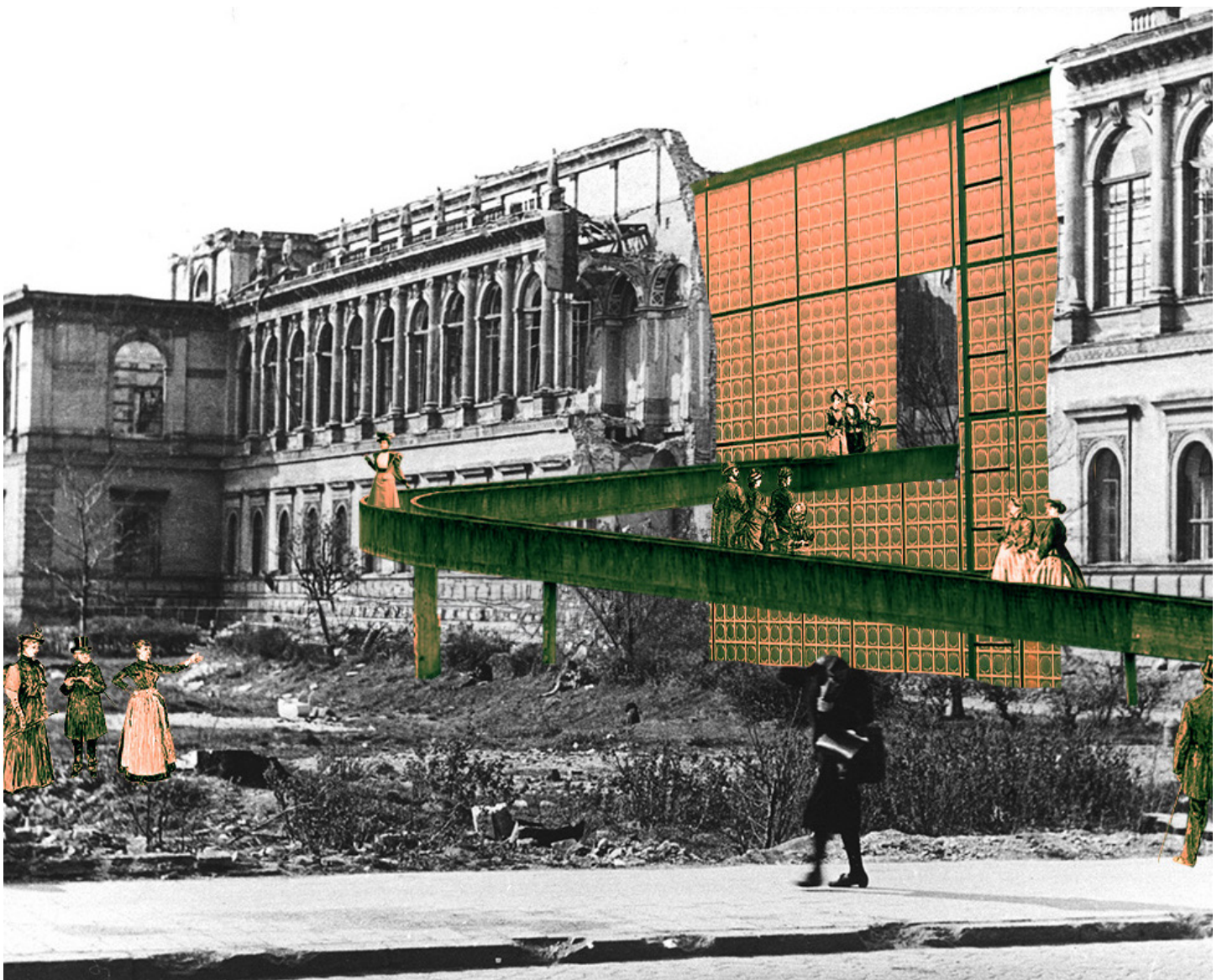


Architecture at War

Rebuilding After Destruction

Joseph Palazzolo



Architecture at War, Rebuilding After Destruction

Joseph Robert Palazzolo

Thesis submitted to the faculty of
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Master of Architecture
in
Architecture

Kevin W. Jones, chair
James R. Jones
Andrew Gipe - Lazarou

April 30th, 2024
Blacksburg, Virginia

Keywords: Architecture, War, Memory, Rebuild, Destruction

Architecture at War, Rebuilding After Destruction

Joseph Robert Palazzolo

ABSTRACT

War is a perpetual shadow cast over human history. It brings forth unparalleled destruction, leaving behind a wake of devastation that scars both the land and its people. Its relentless march leaves cities in ruins, families torn, landscapes transformed and the built environment obliterated. War affects an individual, a community and a country's identity. Destruction both leaves a memory and shapes it.

The process of rebuilding raises complex questions:
How do we rebuild after that has which been destroyed?
What should be rebuilt?
Is rebuilding necessary?

There are no easy answers and the choices made will reverberate through generations, influencing what endures in collective memory and what is forgotten. This thesis aims to explore the relationship between memory, destruction and architecture.

Architecture at War, Rebuilding After Destruction

Joseph Robert Palazzolo

GENERAL AUDIENCE ABSTRACT

War is relentless in its destruction and it affects both the people and the land. It has a profound effect on a country and its people, destroying cities, landscapes and the built environment. War has an enormous impact on an individual, a community and a country.

A few questions need to first be addressed:

Where do you begin?

What should be rebuilt?

How do you rebuild?

There are no easy answers, however central to any endeavor to rebuild is the role of memory. This thesis aims to explore the relationship between memory, destruction and architecture.

ACKNOWLEDGMENT

To my committee for their guidance
To my family for their support
To my friends for their encouragement
To countless others who were a part of this journey

Thank you

“The past is never dead, It’s not even past.”

William Faulkner

TABLE OF CONTENTS

Abstract	iii
General Audience Abstract	v
Acknowledgment	vii
Introduction	13
The Building	19
The Fifth Principle of Rebuilding	29
Proposition I - Circulation	35
Proposition II - Memorialization	47
Proposition III - Unification	65
Conclusion	89
References	91
Appendix	97



INTRODUCTION

The destruction of architecture can occur through various means, whether by human actions or natural forces.

- 1. Demolition:** When architecture is intentionally destroyed, typically to make room for new constructions, eliminate hazardous structures or renovate existing ones. This process is controlled and purposeful, serving specific objectives.
- 2. Nature:** Architecture can be overwhelmed by the powerful forces of nature, such as hurricanes, storms and floods. The damage inflicted can range from superficial, rendering buildings unsafe or to complete destruction.
- 3. Weathering:** Over time, all architecture is subject to weathering, a gradual inevitable process of deterioration. From the moment buildings and structures are built, they begin their journey toward its assured decay.
- 4. War:** Architecture destroyed by war suffers from deliberate and intentional malicious destruction. This differs from controlled demolition because in war, buildings are specifically targeted, with the intention of inflicting harm.

Despite the diverse causes, the outcomes tend to be similar. What makes architecture destroyed by war distinctly different from the others?

Figure 1: Destruction of architecture

Architecture, War and Memory

Exploring the Indispensable Connection

Destruction both leaves a memory and shapes it.

Memory is what ties us to our sense of place, our cultures and where we come from. The term *Genius loci*, "the spirit of the place," used by the Romans refers to the experiential and expressive aspects through which we perceive and interact with different locations. Architecture itself significantly contributes to the creation of a sense of place. As Hannah Arendt argues, "the reality and reliability of the human world rests primarily on the fact that we are surrounded by things more permanent than the activity by which they were produced." The destruction of one's environment, therefore, can lead to the loss of one's shared memory and consequently, a disorienting effect on one's life and connection to a place.

Throughout history, the destruction of architecture has accompanied the triumph of one civilization over another, or resulted from deliberate attacks on buildings and cities. These attacks have symbolic power, which is why strikes against them have been used by terrorists when there is no direct military gain. The impact of September 11th stands as a personal testament for me. The twin towers not only symbolized New York City, but also represented the economic prowess of the United States. Their collapse had an immediate and profound effect on both the American and global psyche. Similar attacks on places of collective importance have occurred worldwide.

"The belief that the destruction of the physical fabric - as distinct from human lives - has the capacity to demoralize is immensely strong."

During WWII, carpet bombing campaigns were extensively carried out by both the Allied and Axis powers on cultural and civilian centers aimed to undermine citizens' morale, and shatter their resilience. In Syria and Iraq, many of its ancient structures, including temples and arches, were deliberately demolished by ISIS as part of their campaign to erase pre-Islamic history. In Tibet, countless monasteries and traditional Tibetan homes and buildings have been demolished in a

forced attempt to exert control over Tibetan culture and identity. The built environment and our architectural heritage is intricately connected as architecture is the tangible expressions of a culture's values, beliefs, traditions and way of life.

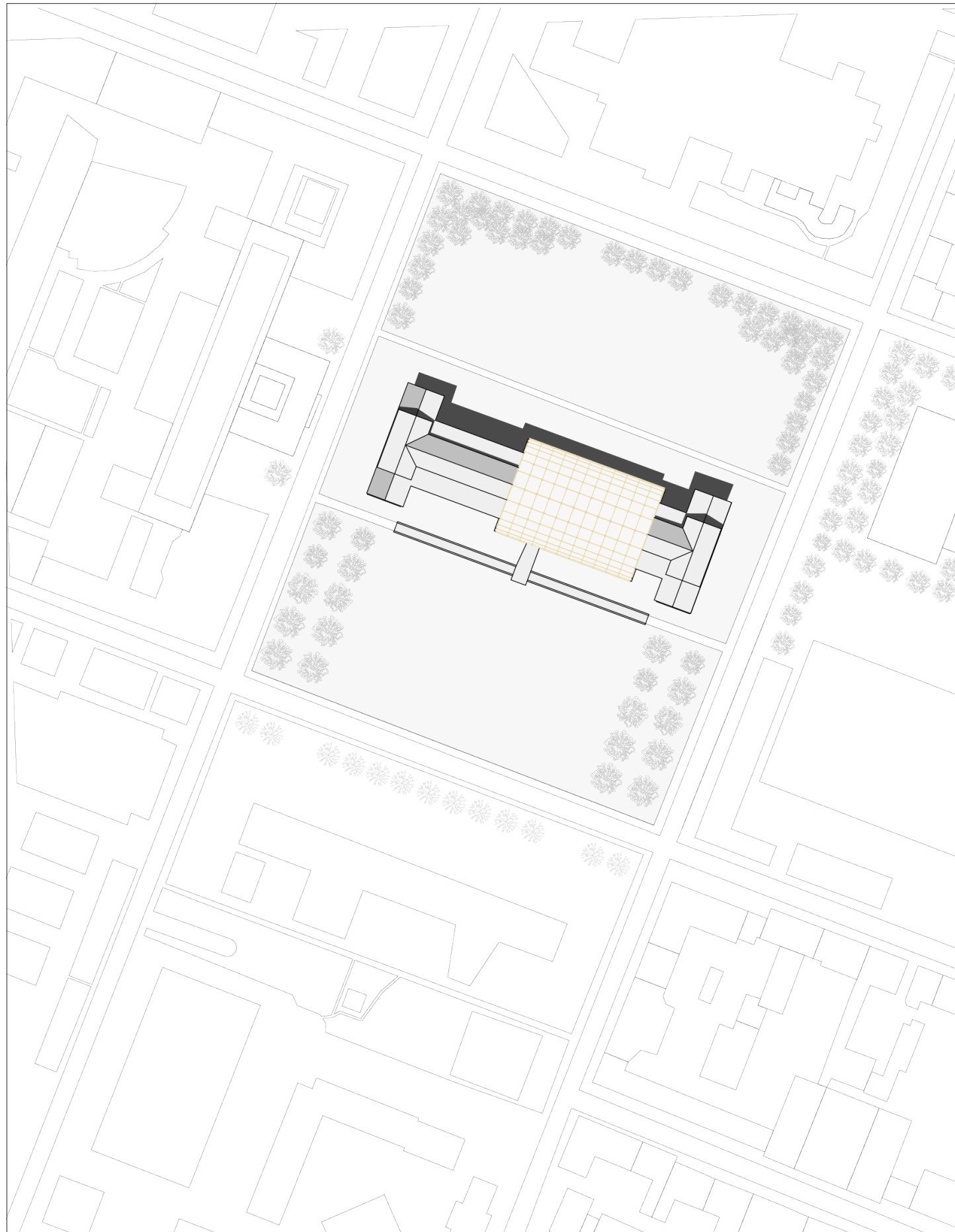
The process of rebuilding after destruction due to war or attacks raises complex questions. How do we rebuild after that which has been destroyed?

In the case of the World Trade Center, a new tower was rebuilt as a symbol of hope for the future, while its height of 1,776 feet serves as a historical tribute and remembrance of the past. The two lost buildings' footprints were transformed into a memorial, preserving the memory of the event and the lives that were lost. Like phantom limbs, we can imagine the towers as they once stood, yet their absence remains as an enduring presence.

"How much to commemorate and remember and how much needs to be forgiven and forgotten?"

How does one rebuild?
What should be rebuilt?
Is rebuilding necessary?
Whose stories are told?
Who gets to decide?

The role of community participation in rebuilding after the devastation of war is necessary, as it ensures that the voices of those most affected by the destruction are not only heard but actively involved in shaping the reconstruction process. Engaging with local communities, understanding their needs, aspirations, and lived experiences becomes the cornerstone upon which meaningful architecture is built.



THE BUILDING

The Alte Pinakothek is in Munich, Germany. It is a museum, built in the mid 1800s, which became a model for museums worldwide. It was partially destroyed during the bombings of WWII. Even though it has since been rebuilt, it's destroyed state during the war will serve as the object of this thesis exploration.

Public buildings like museums play an important role in the built environment. Not only do they preserve culture and heritage, holding objects that are both culturally and historically significant, but the building itself also becomes an important culturally-significant object. Museums act as community spaces and hold importance of civic pride and identity. The destruction of these buildings can have a significant impact on the community and the process of rebuilding after destruction due to war or attacks raises complex questions.



Figure 3: Alte Pinakothek WWII

Architectural Insights

Exploring Lebbeus Woods' Principles of Post-War Reconstruction

Lebbeus Woods was an American architect, known for his imaginative drawings, deconstructed buildings, and dystopia-like landscapes that balance science fiction with architecture. He co-founded the Research Institute for Experimental Architecture and he produced a series of drawings and writings devoted to war and architecture. His exploration was ignited by the bombing of Sarajevo in 1992.

Woods outlined three principles that emerged from his research into post-WW2 reconstruction.

The first principle: "Restore what has been lost to pre-war condition."

The idea is to erase the effects of war and return to a form of "normalcy." To imagine the city, not as a place ravaged by war, but rather as what once was. We can see this in cities such as Warsaw (although technically it wasn't restored as it was, but a reimagined version of the city based on paintings done by Bellotto), Bruges, and Dresden.

The second principle: "Demolish the damaged and destroyed buildings and build something entirely new."

According to Woods, the new could either be radically different from its predecessor, or an updated version of the pre-war norm.

The first two principles reflect the desire of city inhabitants to get back to normal and forget the traumas they experienced. In using these methods to rebuild, there is an emphasis on forgetting. To erase the effects of war and to get back to "normal." However, according to Woods, "The pre-war normal no longer exists, having been irrevocably destroyed, Still, this does not mean that many—even most—people will not desire to do so. In such a society, wise leaders are needed to persuade people that something new must be created—a new normal that modifies or in some ways replaces the lost one, and further, that it can only be created with their consent and creative participation." For him, this calls for the emergence of a new reconstruction principle.

The third principle: "The post-war city must create the new from the damaged old."

The ordinary buildings, offices, apartments, etc., should be transformed from the familiar old to the

unfamiliar new. "Symbolic structures, such as churches, synagogues, mosques and those buildings of historical significance that are key to the cultural memory of the city and its people, must also be salvaged and repaired."

During my research, I realized there might be a crucial, albeit often overlooked, fourth principle that really exists between the second and before the third. It's not a new principle of reconstruction, but rather one that was used post-WWII, although in much rarer instances and only with a select few buildings.

The fourth principle: Leave the demolished building as is in its ruined state.

In rare instances, rebuilding doesn't conform to the first two principles, but instead, the destroyed building is preserved in its devastated state, serving as the sole reminder amidst a city's reconstruction. Such is the case with the Genbaku Dome in Hiroshima, or the Kaiser Wilhelm Memorial Church, in Berlin.

In the endeavor to rebuild a city, I believe that all four of these principles should be considered. The collective memory of a place is as susceptible to destruction as its physical structures. Thus, it is important for the inhabitants to feel some sense of familiarity with the rebuilt city. This underscores the importance of restoring what has been lost to its pre-war condition. However, that doesn't mean its pre-war condition can't be modified, as exemplified by the Reichstag in Berlin. In 1955, it was rebuilt without its dome due to structural concerns. In the late 90s, further renovations were introduced, a space for the new parliament and a modernized glass dome where Germans citizens can look down on their government. A symbol for the new, unified Germany.

Perhaps symbolic interventions like those witnessed in the Reichstag are integral to a city's healing process. The blending of the new with the familiar, and the new from the damaged old, could help facilitate recovery and renewal.

Could there be a fifth principle?

architecture rebuilt

Understanding the principles of reconstruction - looking to examples

1. The World Trade Center Memorial, NYC, USA

The world trade center memorial adheres to both the second principle and a modified version of the fourth principle. Not only does it symbolically rebuild anew, but it leaves the footprint of the former tower transforming it into a memorial.

2. Genbaku Dome, Heroshima, Japan

Genbaku dome was one of the only surviving structures following the nuclear bomb drop in Heroshima. The structure was left as it is, adhering to the fourth principle while the surrounding area was turned into a park with a museum.

3. Stari Most Bridge, Mostar, Bosnia and Herzegovina

Stari Most Bridge was completely destroyed during the Bosnia War. It was rebuilt as it once stood embodying the first principle.

4. The City of Le Havre, Le Havre, France

The City of Le Havre was heavily destroyed during WWII. Adhering to the third principle, it was rebuilt in a new way resulting in a new urban landscape that blended modernity with it's historically legacy. Landmark integration and prefabrication construction.



Figure 4: World Trade Center Memorial



Figure 5: Genbaku Dome



Figure 6: Stari Most Bridge

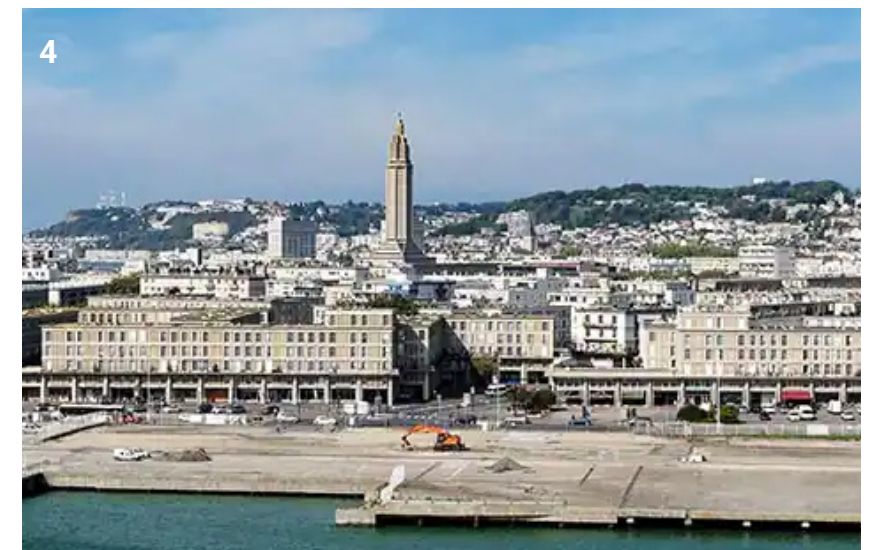


Figure 7: City of Le Havre

a critique on rebuilding

Could it have been done differently?

The Frauenkirche is located in Dresden, Germany and was completely destroyed during WWII. The city decided to rebuild the church as it was, using the original 1720 plans. The rebuilding efforts started in 1993 and lasted until 2005. It was rebuilt with as many of the original materials as possible. The stones were carefully documented and the builders relied on thousands of old photographs, memories, and old purchase orders. Fire and patina cover the older stones making a stark difference between the two. It became a symbol for the reunification of Germany, post-Cold war.

What if instead of rebuilding what existed, it took historical references and rebuilt them anew. The past becomes a new future, re-imagined.

The Stari Most Bridge is located in Bosnia and Herzegovina. It was originally built in 1566 and in 1993, during the Croat-Bosniak war it was completely destroyed. Immediately calls for reconstruction began to reconstruct the bridge identically.

What if instead the bridge provided a new way for the residents to interact, if it became a place to come together, and create new memories.

The Pentagon is located in Arlington, Virginia and was built in 1943. In 2001, part of the southwest side was destroyed in a terrorist attack. Immediately plans for reconstruction happened with the goal to reoccupy the outermost ring of the rebuilt section by September 11th, 2002, a year from the initial attack.

What if instead the space became a park with pathways and reflection points for people to remember the people who lost their lives. To provide a retreat infused with life and nature.

destroyed

today

re-imagined



Figure 8: The Frauenkirche during WWII



Figure 9: The Frauenkirche today



Figure 10: Stari Most Bridge during war



Figure 11: Stari Most Bridge today



Figure 12: The Pentagon during reconstruction



Figure 13: The Pentagon today



a critique on rebuilding

destroyed

today

re-imagined

Could it have been done differently?

The Alte Pinakothek was built in 1836 in a Neo-Renaissance style. It became the model for museums in Germany and Europe. It was severely damaged by bombing in WWII, and reconstructed and reopened in 1957. The goal of rebuilding was to ensure that the building remained true to its original architecture.

What if instead of rebuilding the damage was left as is and the space reoccupied. In reoccupying the space,

What if the damage was left as is and an addition was added bringing what was once confined behind walls outside to the public.

What if instead of rebuilding true to its original architecture, something new was added contrasting what already existed. A new entrance allows for a new experience of the space.



Figure 14: Alte Pinakothek WWII

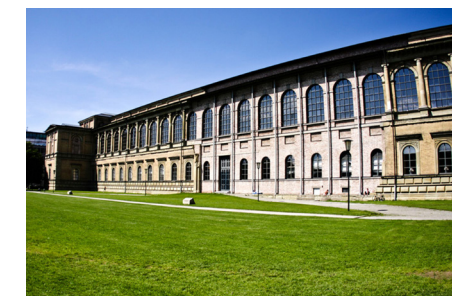
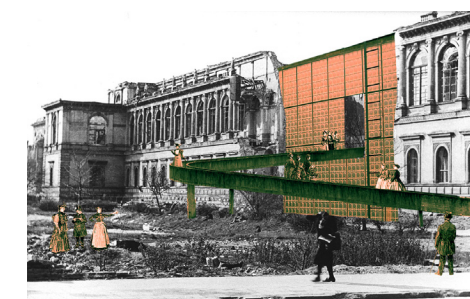
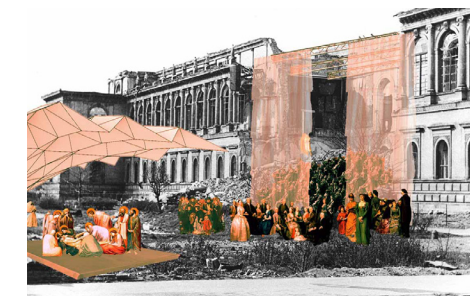
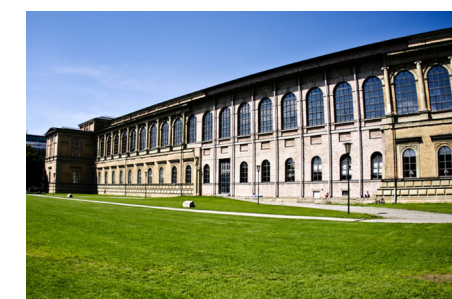
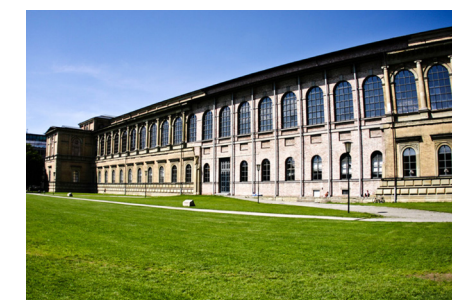


Figure 15: Alte Pinakothek today



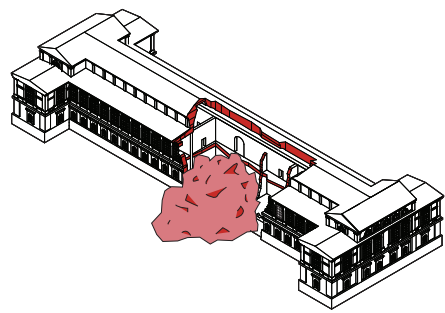


THE FIFTH PRINCIPLE OF REBUILDING

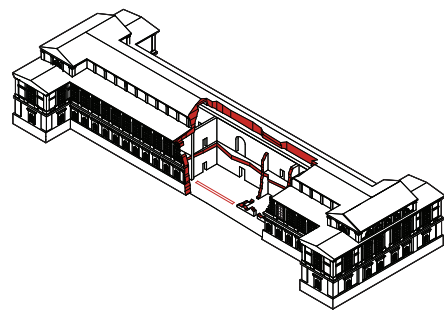
Lebbeus Woods outlined three principles of reconstruction. During my investigation, I came across another approach which was to leave the building in its ruined state. I'm proposing a fifth principle, which is **to preserve the building in its ruined state, while utilizing remnants of the old to guide and inform the new**. By re-purposing the destroyed section and space and imbuing it with a new way of interacting, a connection with the past event that led to its ruin becomes established. These interventions serve as a bridge between the past and the future. Transformation through remembrance.

Destruction is a violent act. It doesn't follow rules and it doesn't care for what already exists. It's unrelenting and it instantaneously changes the built environment. However, through a series of interventions it's possible for the inhabitants to feel some sense of familiarity through these interventions that aim to both physically and symbolically connect the divided histories and spaces. The past informs the present through a series of related elements that form a unified intervention.

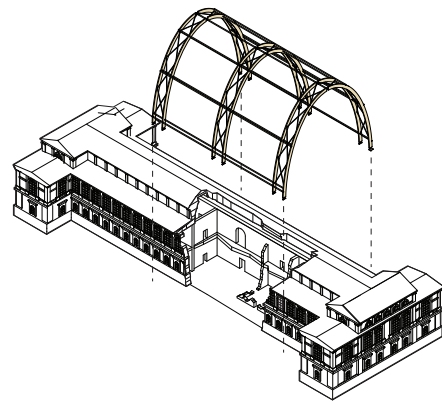
the proposal



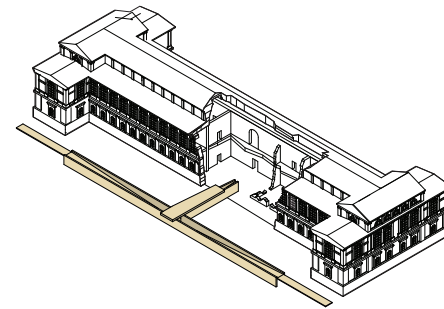
1. Destruction to building



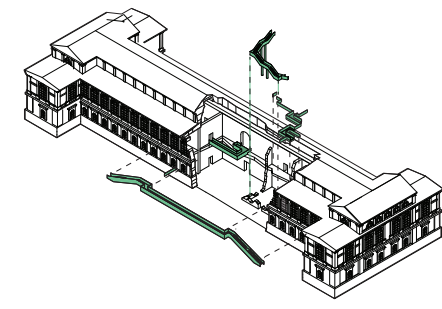
2. Destroyed section is left as is and cleaned up, small structural support and stabilizers added



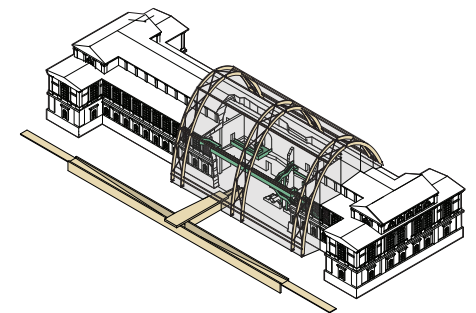
3. Enclosure added
-destruction preserved
-new envelope contrasts the existing structure



4. New entrance added
-entrance follows the path of the rubble
-rubble is repurposed into gabion ceiling

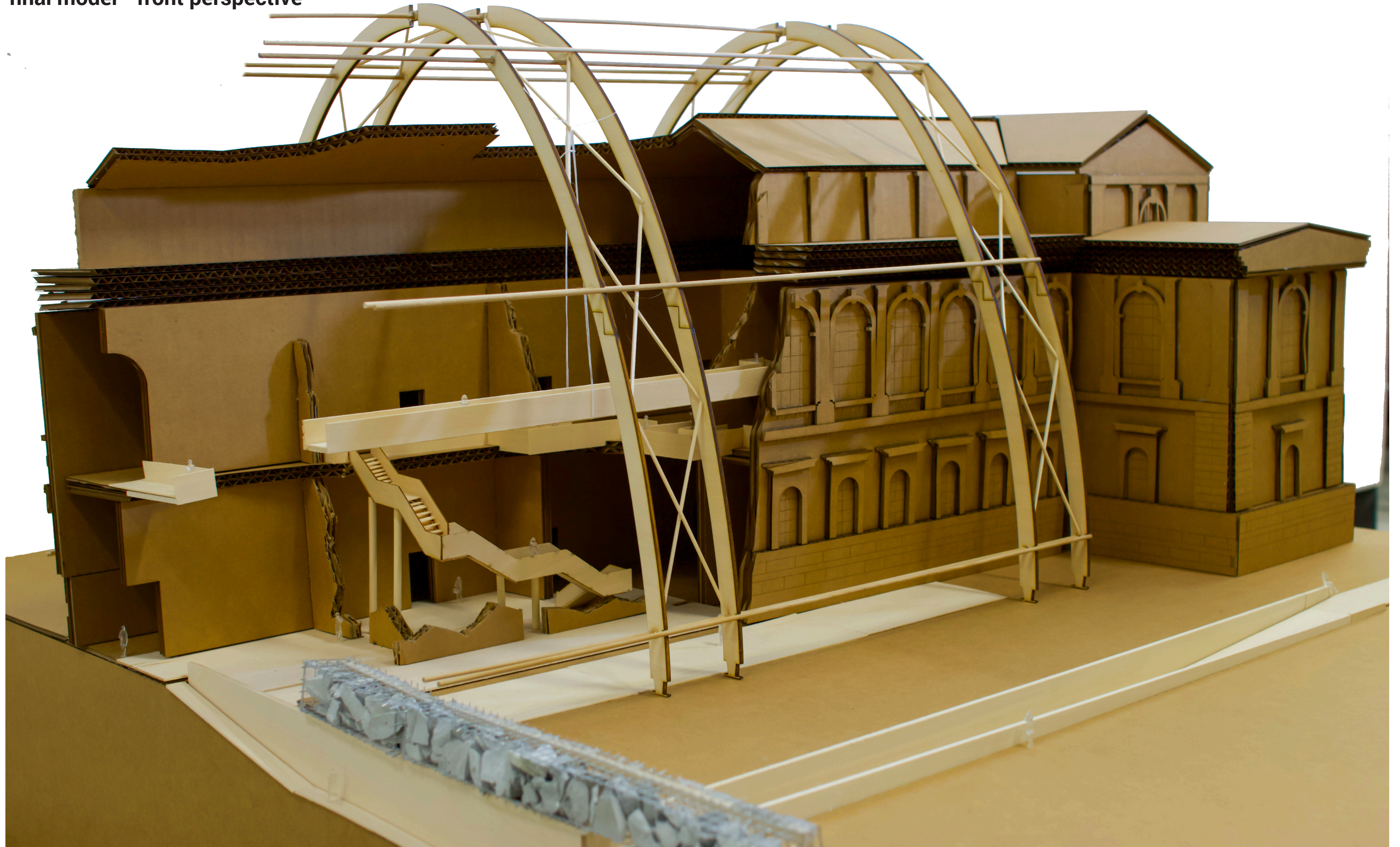


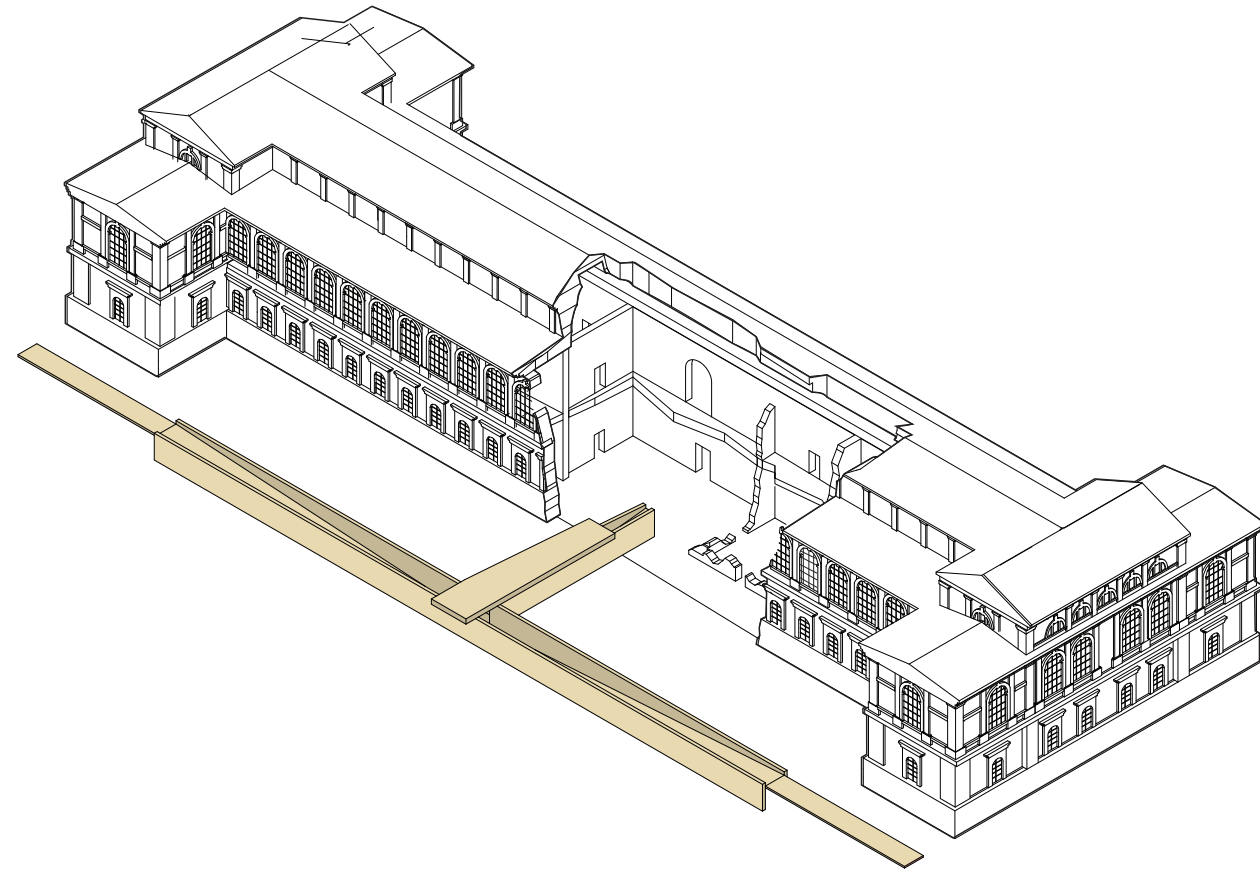
5. Interior interventions added
-thresholds guide the new
-they are the starting points for new pathways and stairs
-new interventions lead to new interactions



6. Memorial and new space created
-two former spaces become one
-views outward and inward open the space to the public
-space becomes memorialized

final model - front perspective





PROPOSITION I - CIRCULATION

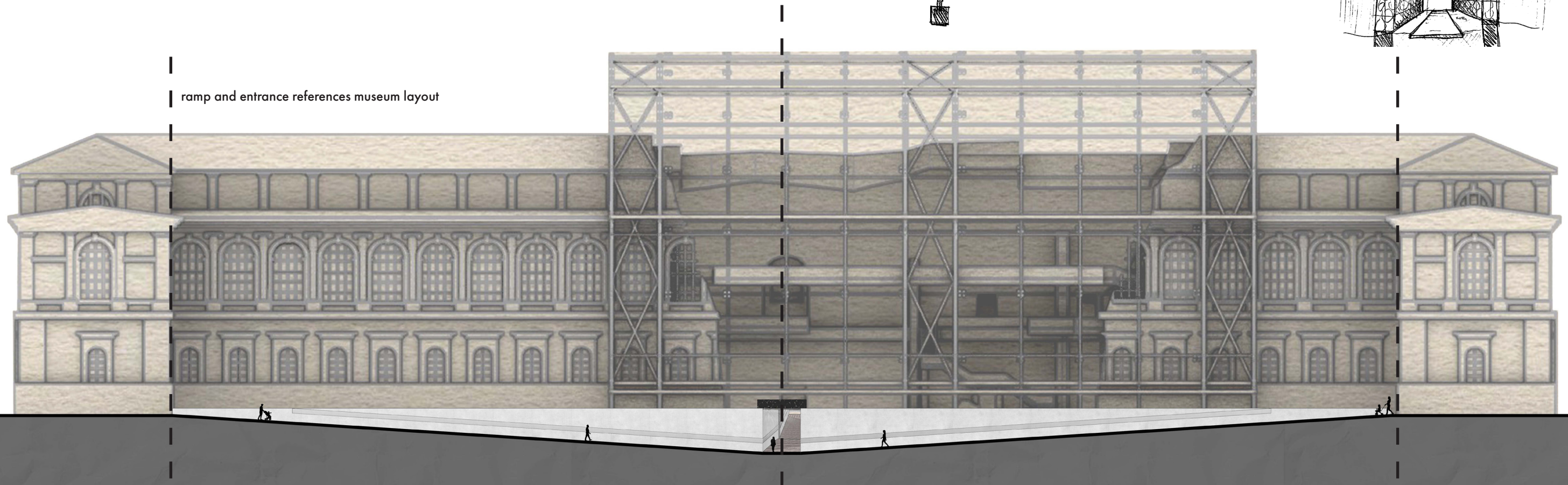
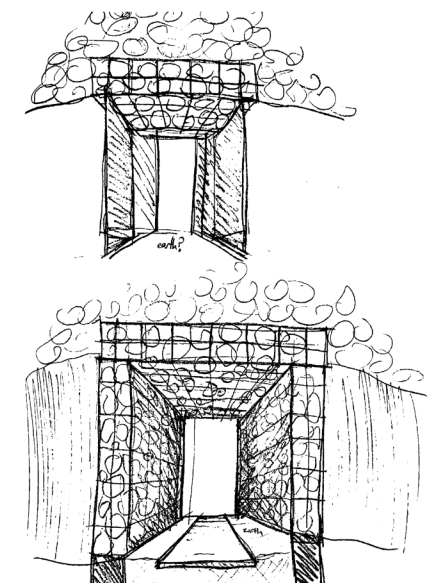
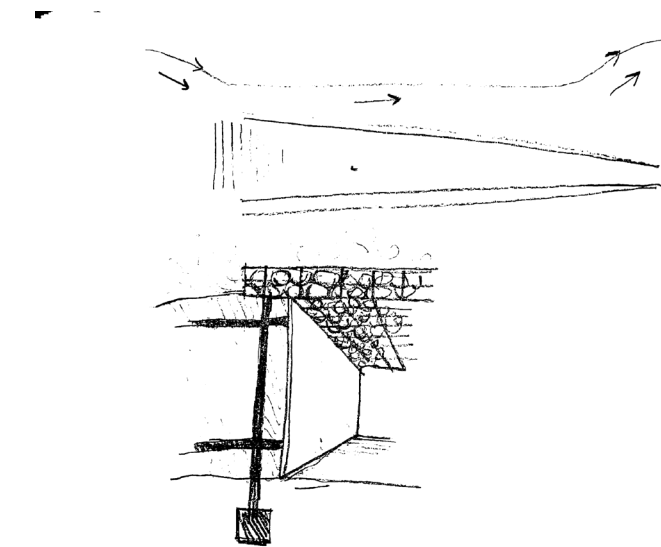
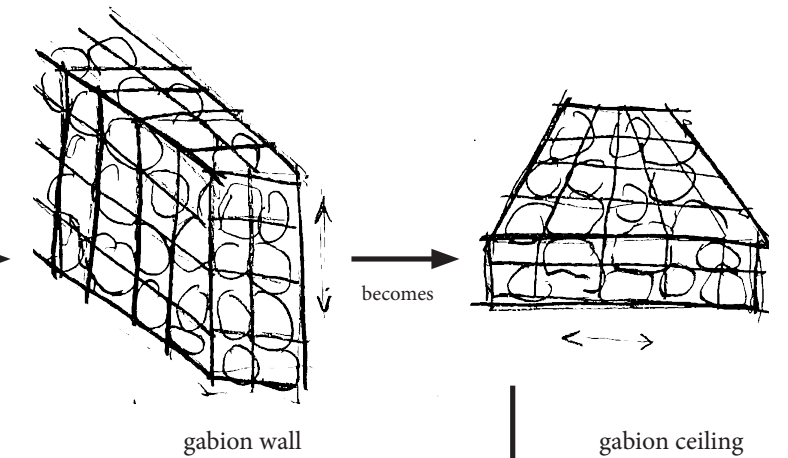
The significance of accessing a space is equally as important as the way in which a visitor engages with it. The entrance stands as the first interaction the visitor has with the space and it should exist within the broader context of the building. In the partial destruction of the Alte Pinakothek the rubble creates a directional path of destruction extending away from the museum, which becomes the starting point for the new entrance. As the aftermath is cleared, the rubble finds new utility in a gabion ceiling, integrated into the redesigned entrance of the museum.

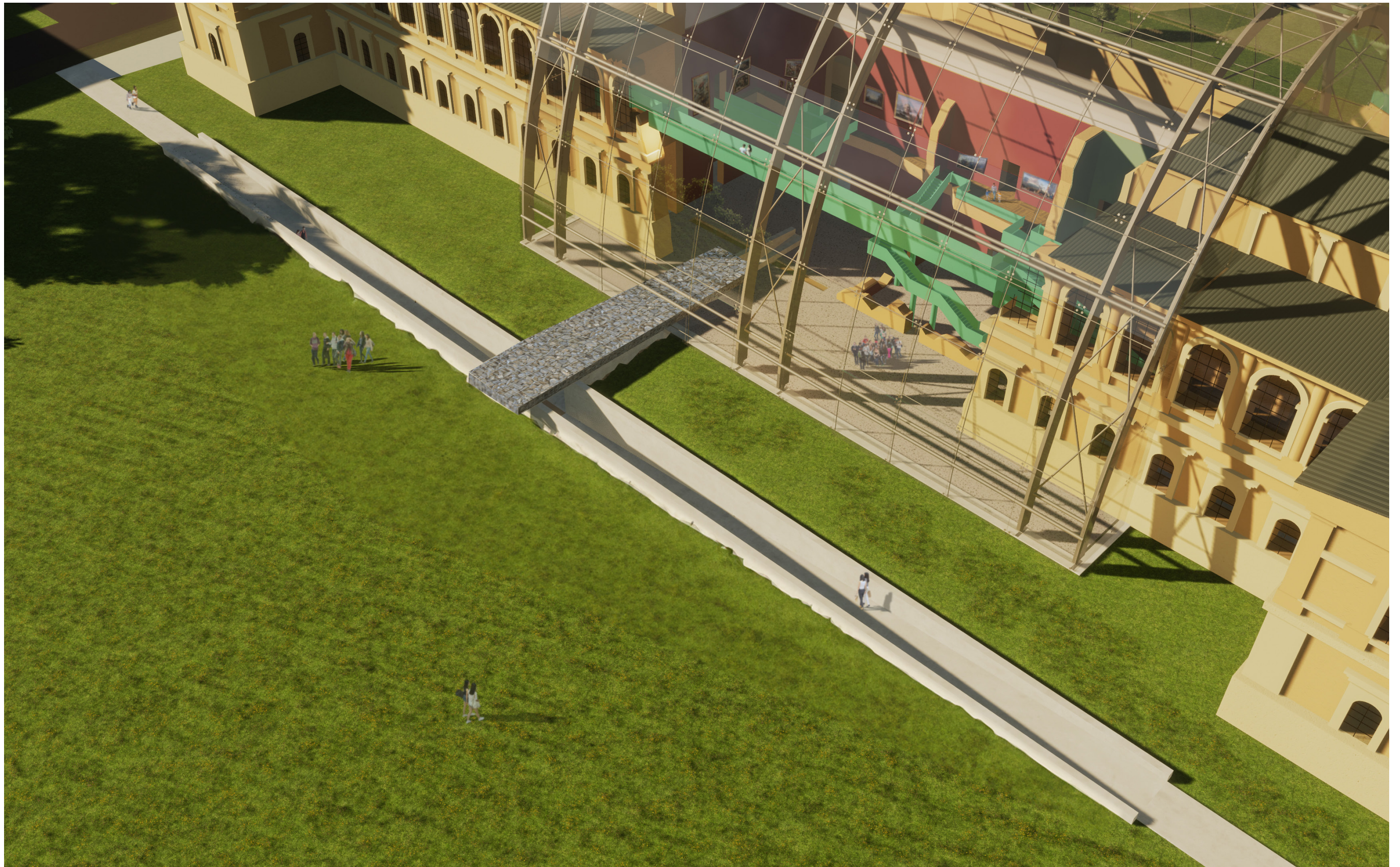
interventions added - entrance

The new entrance, which starts below ground level, follows a slow ascent along the path of the rubble, culminating in the reclaimed space of destruction. Accessing the entrance involves a slow gentle decline, which gradually obstructs the museum from view.

The smooth surface of the concrete walls and floor, punctuated only by the construction joints, which sets the rhythm, serves as a contrast to the highly ornamented façade of the museum. At the bottom, the museum entrance bisects the ramp, appearing jarringly. It is a sensory experience. The rubble-filled gabion ceiling lets dappled light into the space, giving the illusion of being buried while a striated concrete floor makes the visitor aware of the steps they are taking. As they walk through the space, the slight incline brings them closer to the gabion ceiling.

As they ascend up the ramp the gabion ceiling abruptly ends and they emerge into the cavernous space of the destruction.

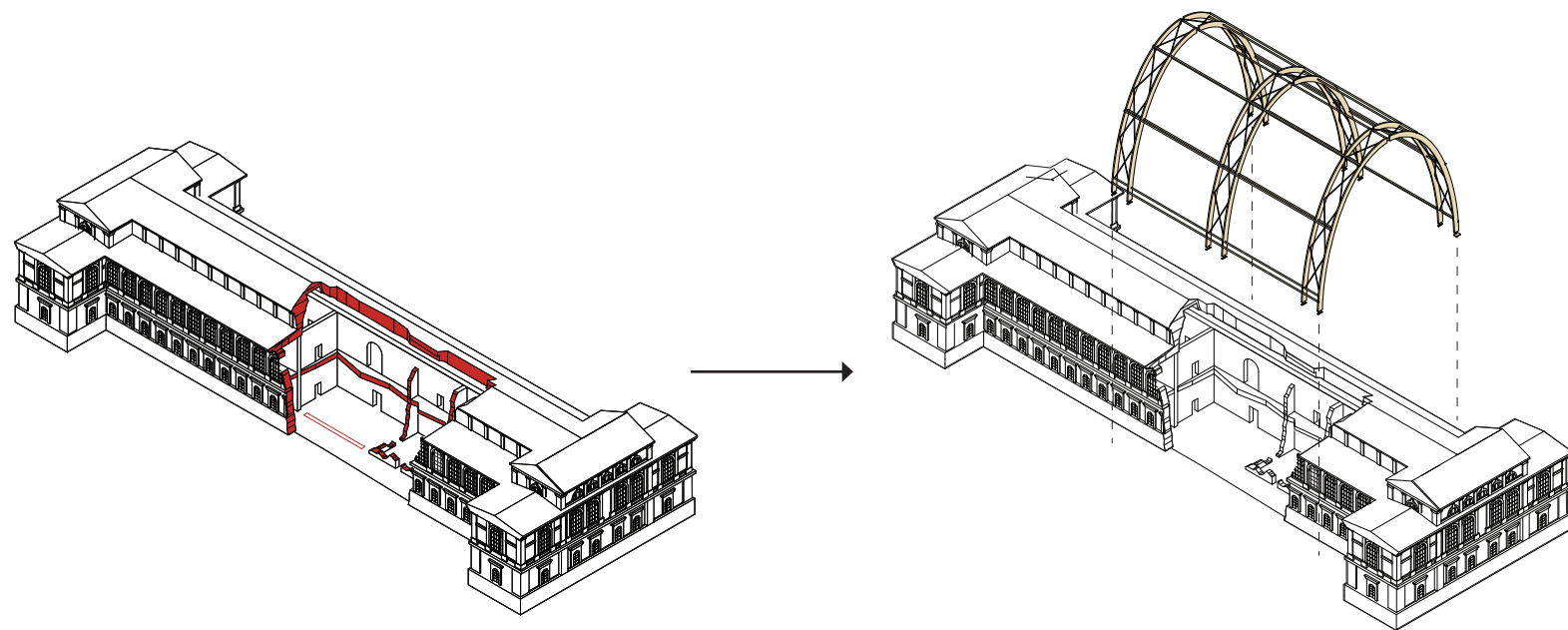












PROPOSITION II - MEMORIALIZATION

Memorials serve as an anchor to the past, to the events that happened and to the people that were lost. They are a narrative of human experience ensuring that lessons from the past and people are not forgotten. They stand as tangible testaments, offering spaces for reflection, remembrance and reverence. Memorials embody collective memory and serve as touchstones for future generations. They bridge the chasm between past and present, allowing us to exist with one foot in each.

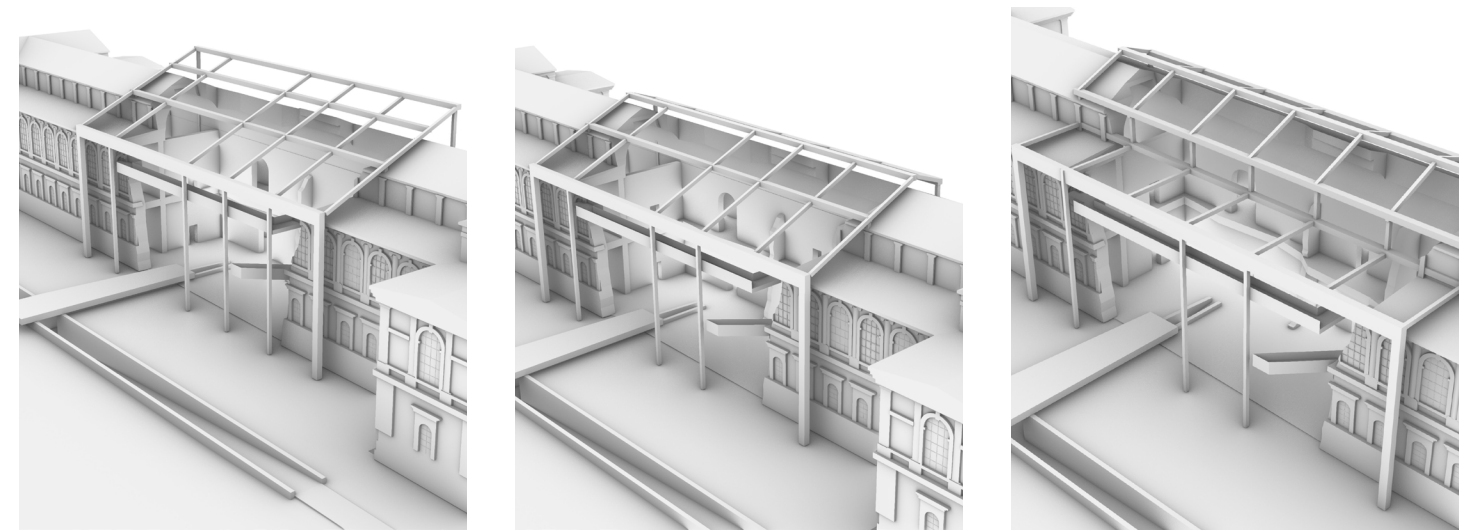
Acknowledging the destruction, it is left as it is and cleaned up to a degree. A key moment frozen in time, the act of destruction and the damage done will become memorialized, enshrined so that future generations will not forget what happened. Cleaning up the space will make it inhabitable again. However, cleaning does not erase the physical evidence of the previous. Ghost traces of the former space, walls that leave a trace on both the ground and the ceiling, a scar varying in depth and thickness.

enclosure

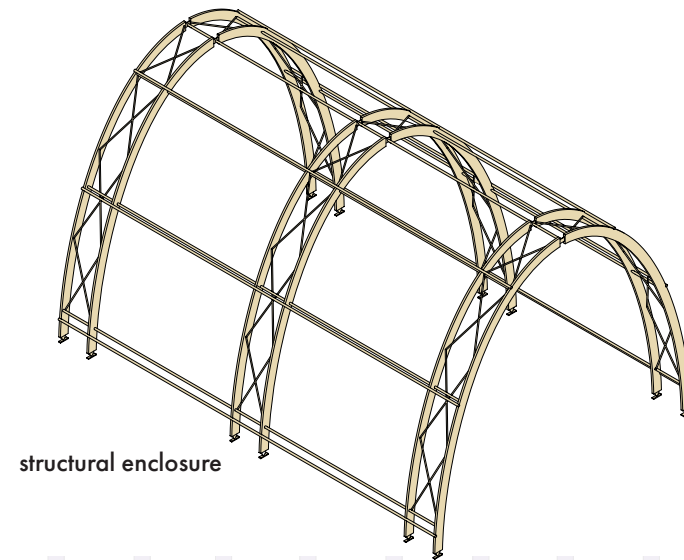
The destruction is preserved, contained yet visible.
Preserved and memorialized.

The simplicity and modern elegance of the enclosure contrasts against the ornamental, historic neo-classical façade. The transparency serves to acknowledge the destruction and allows for those on the outside to see in and those within to see outside, blurring the boundaries between the two and enhancing the connectedness of the spaces. The art that once adorned the walls, re-adorns the wall and those on the outside are given access to what's on the inside, bridging the interior with the exterior, unifying both.

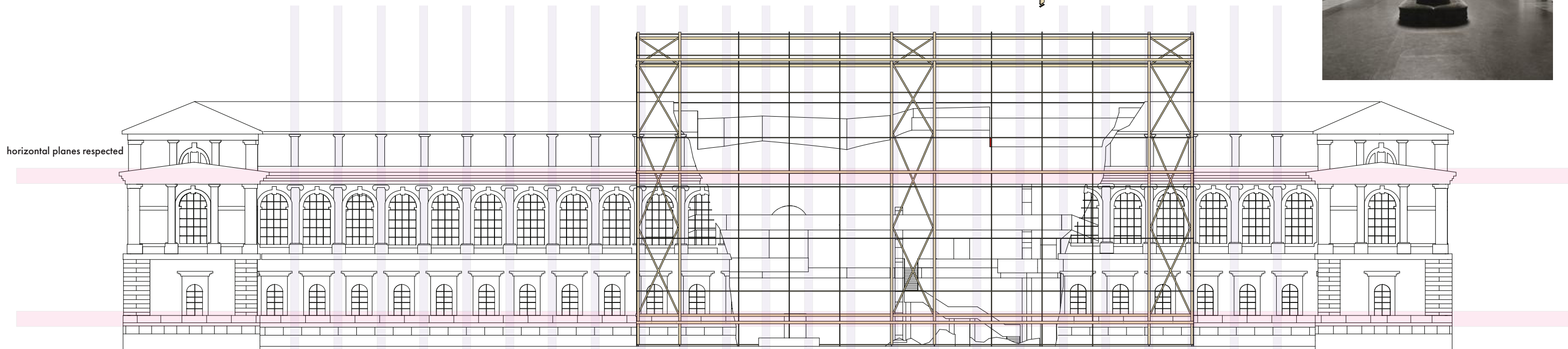
The structural components of the arches are placed in intervals so that they correspond to the rhythm of the columns on the façade. The inherent properties of glass offer a dynamic interplay with moments of transparency, glimpses of the interior are revealed in appropriate solar conditions, or at night when the interior is respectfully lit, creating a dynamic experience.



enclosure form finding - not enough contrast, too similar to the original roof, rather than being it's own thing, horizontal truss divided the view and distorted the effect



structural enclosure



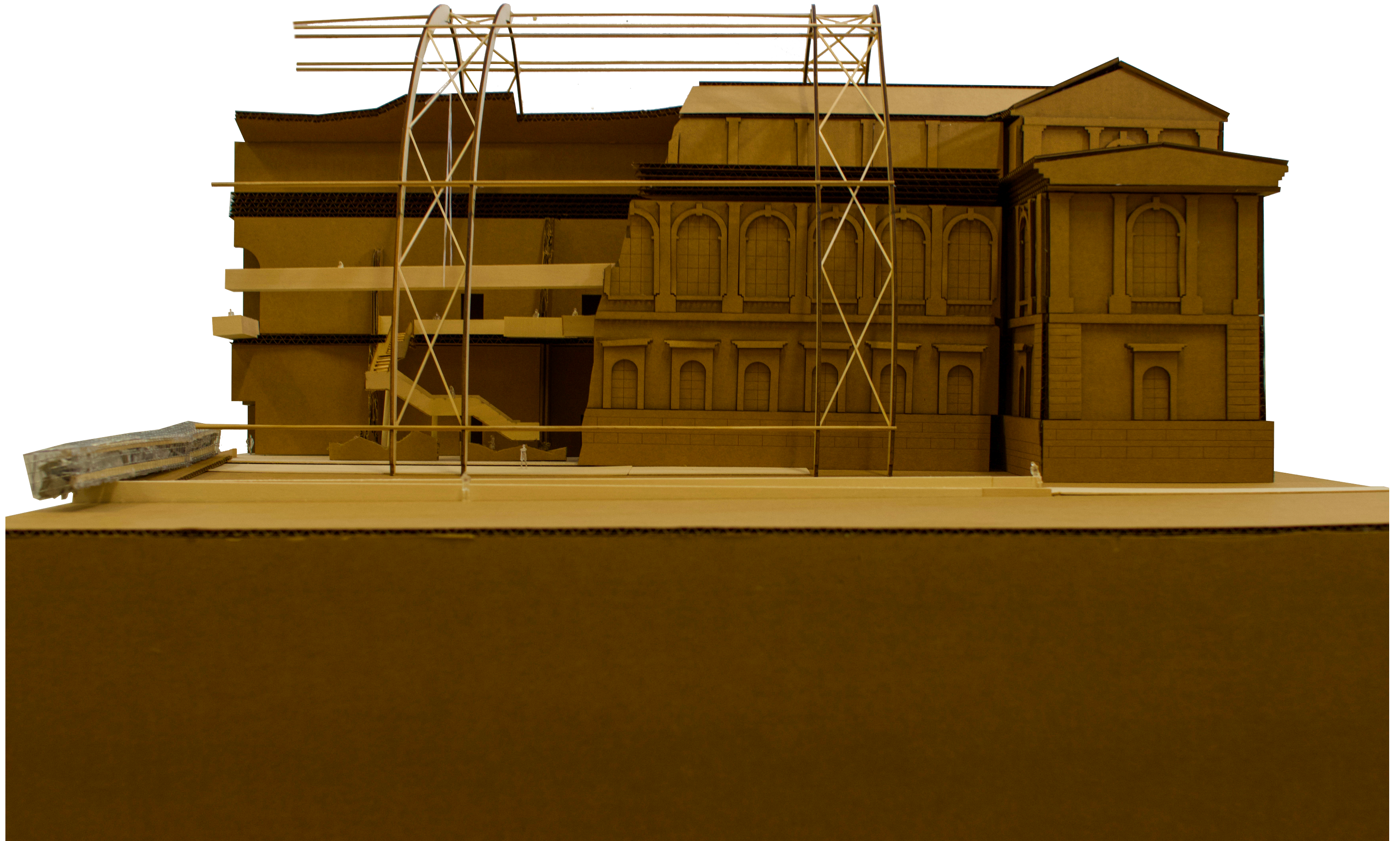
horizontal planes respected

column rhythm preserved





final model - front view



memorialization

Studies of architectural responses to tragedy

To investigate the ways that architecture can respond to tragedy and help people along their journey from devastation to reflection, three studies were undertaken. At the heart of these explorations were a focus on the human experience and what one feels as they move through the space.

1. Christchurch Earthquake Memorial, Christchurch, New Zealand

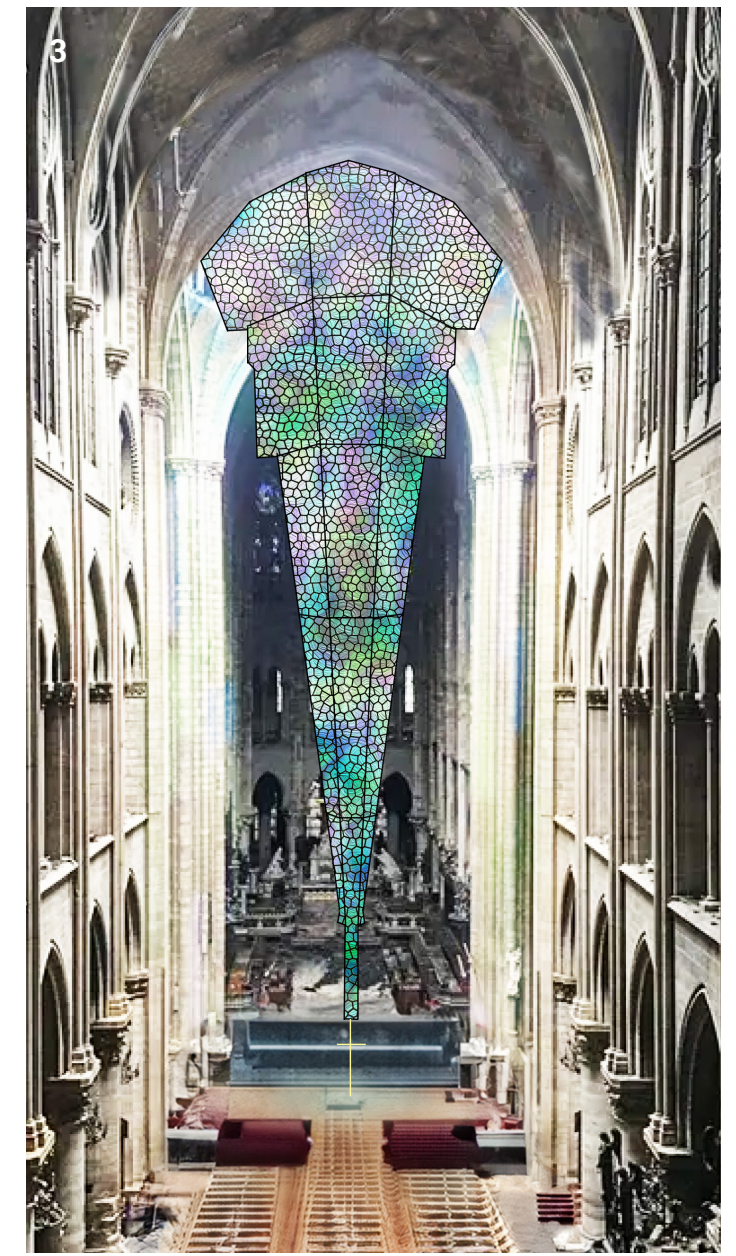
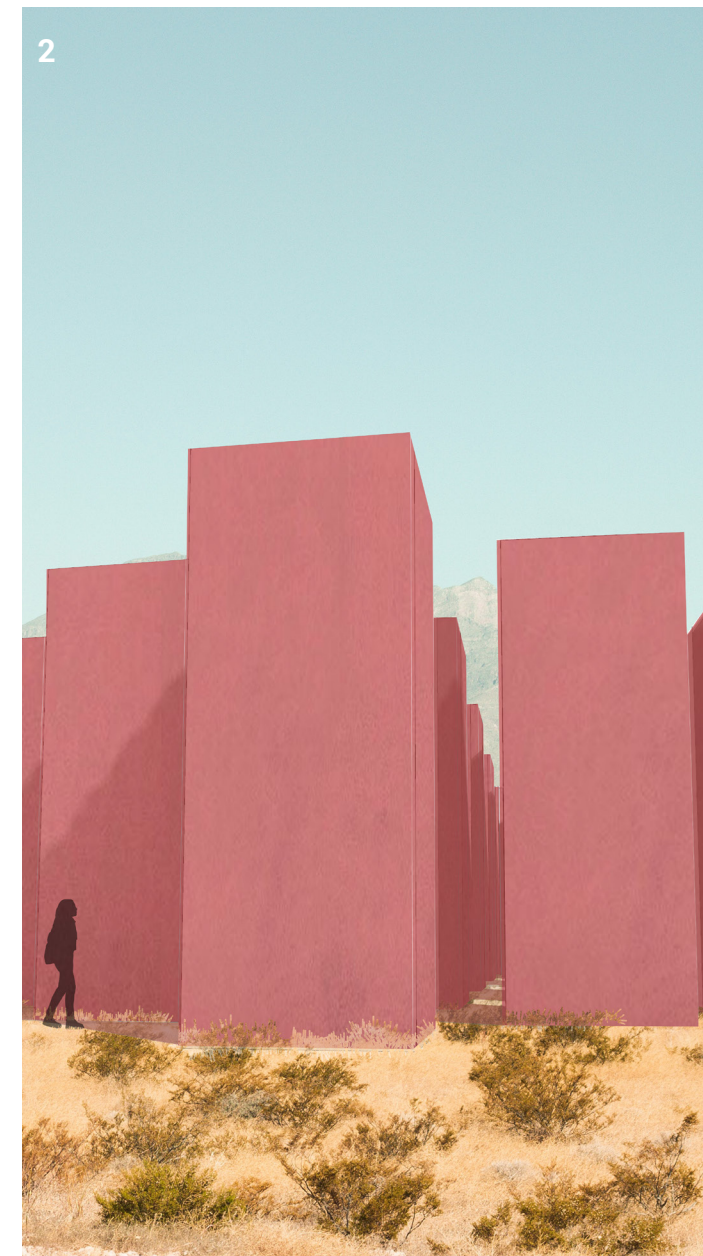
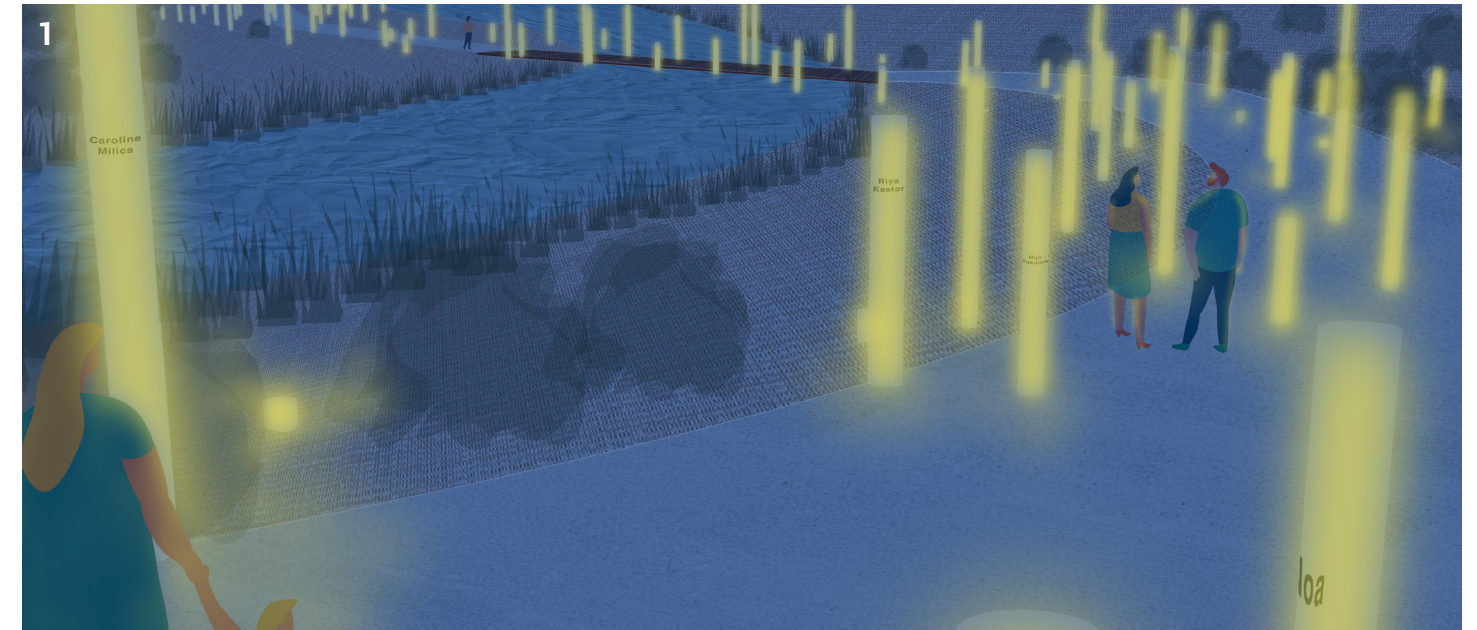
In February of 2011, the destruction of Christchurch occurred due to a series of earthquakes on a previously unknown tectonic fault. The result was 80% destruction of the city and 185 fatalities.

2. The Last Nuclear Bomb Memorial, New Mexico Desert

The prompt advocates for a ban on nuclear weapons, tasking participants with creating a memorial on a decommissioned nuclear weapon testing site.

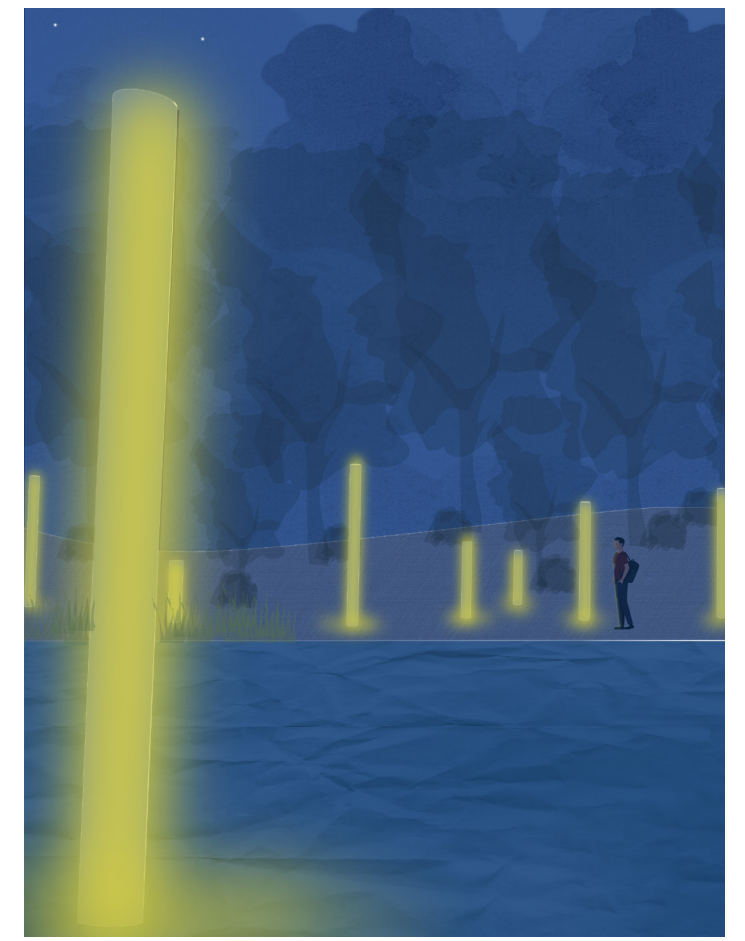
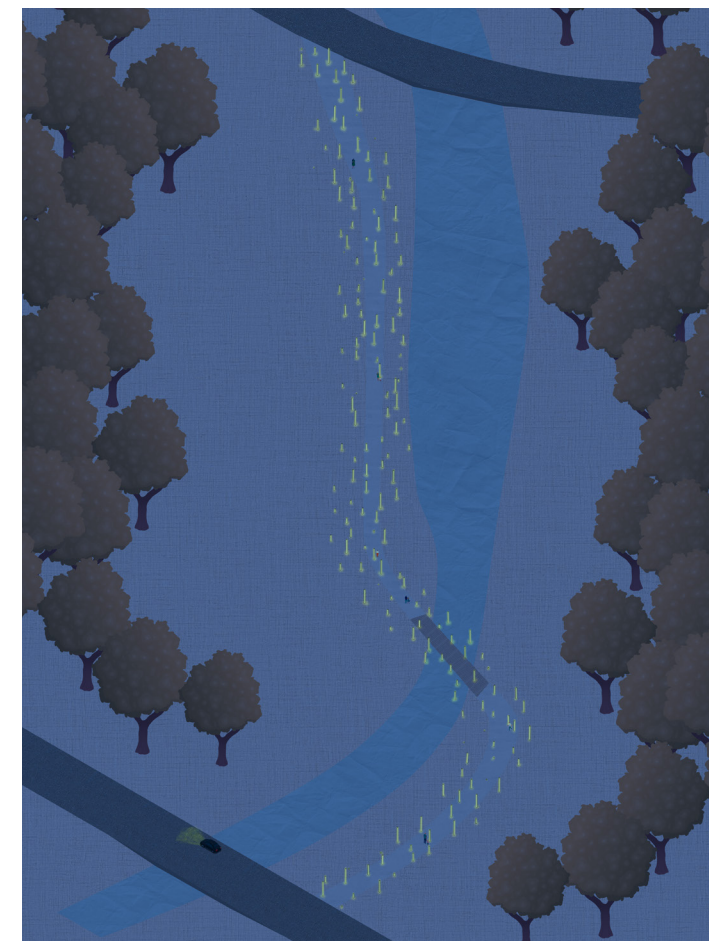
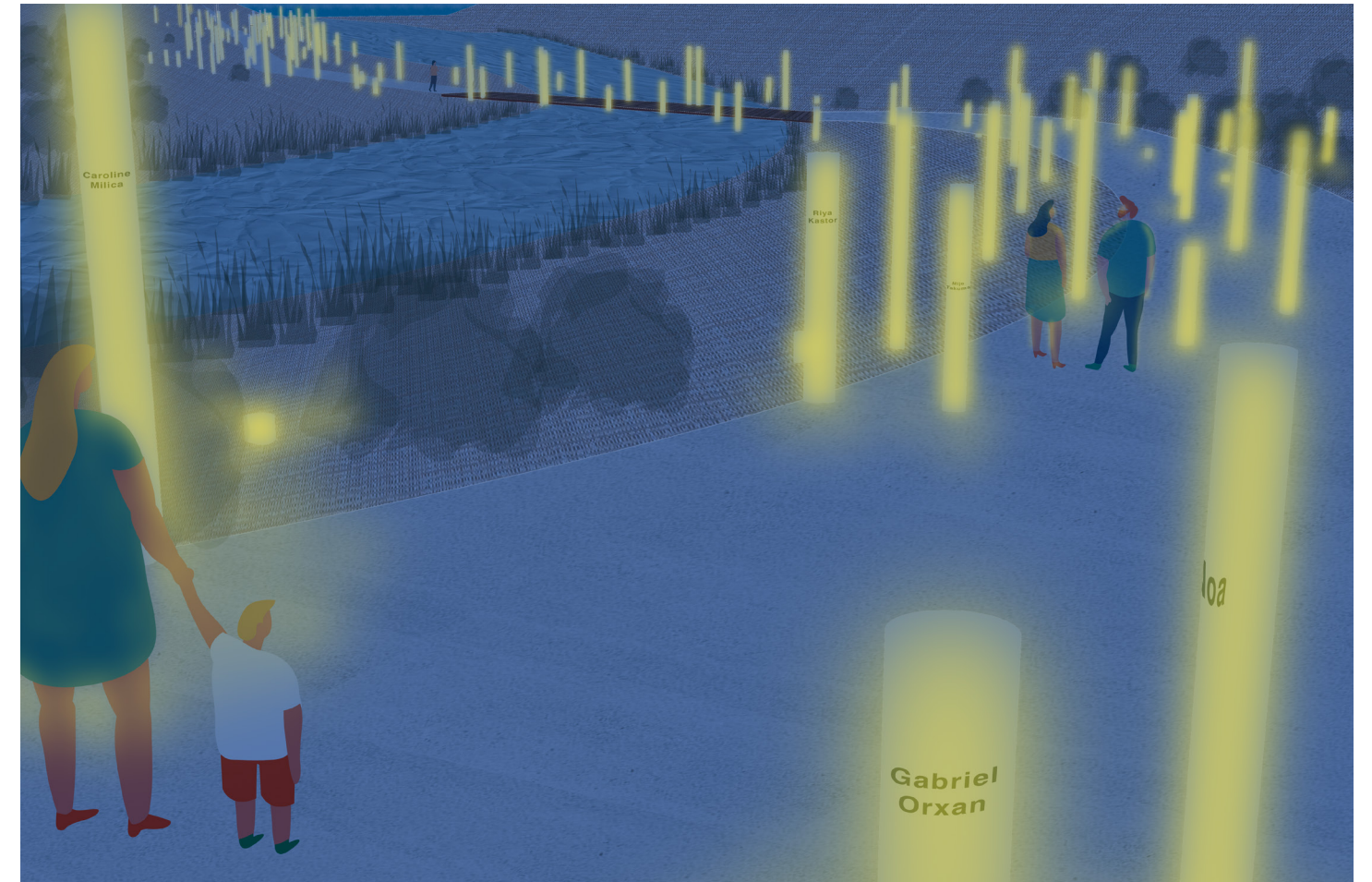
3. Notre Dame Spire Rebuilding, Paris, France

In April of 2019 a fire tore through the wooden attic of Notre Dame. The wooden timbers known as “the forest” was beyond saving and the spire eventually collapsed. In the immediate aftermath, France’s President Emmanuel Macron launched an international architectural competition to redesign the spire, “giving the medieval building a spire suited to the techniques and challenges of our time.” However, immediately, the French Senate passed a bill requiring the reconstruction be faithful to its “last known visual state” and aborted the competition, with plans to rebuild the spire as it was.



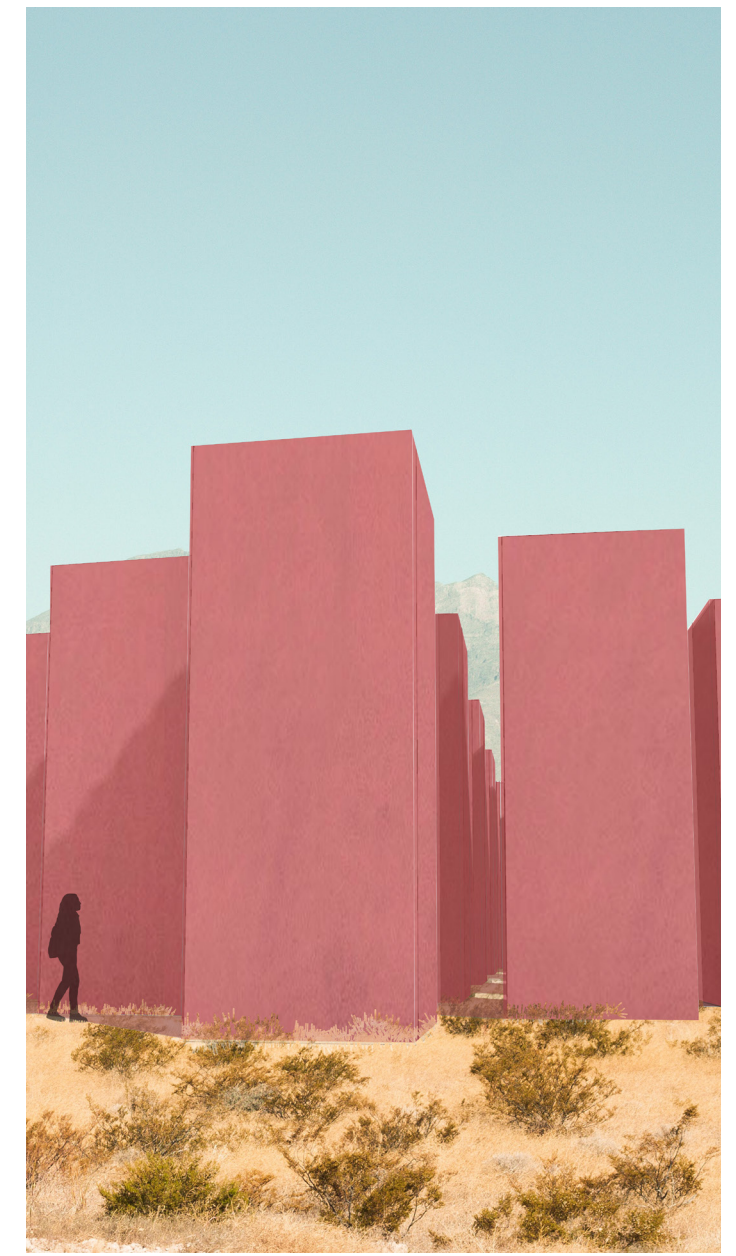
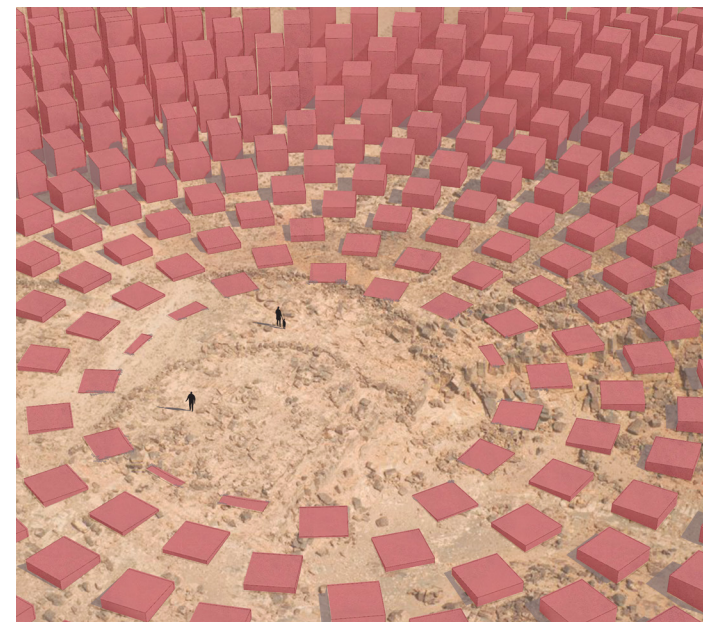
Christchurch Earthquake Memorial

The site for the memorial is located on the Avon River, a green space between Montreal Street bridge in the west and the bridge of Remembrance in the east. The memorial, symbolically and physically unites the two sides of the river and the city. A pedestrian path, adorned with 185 unique columns representing the 185 people who died, exist within and around the path. At night these columns emit light, symbolizing the lost lives. The design not only pays tributes to the victims, but also creates a connected space for reflection.



The Last Nuclear Bomb Memorial

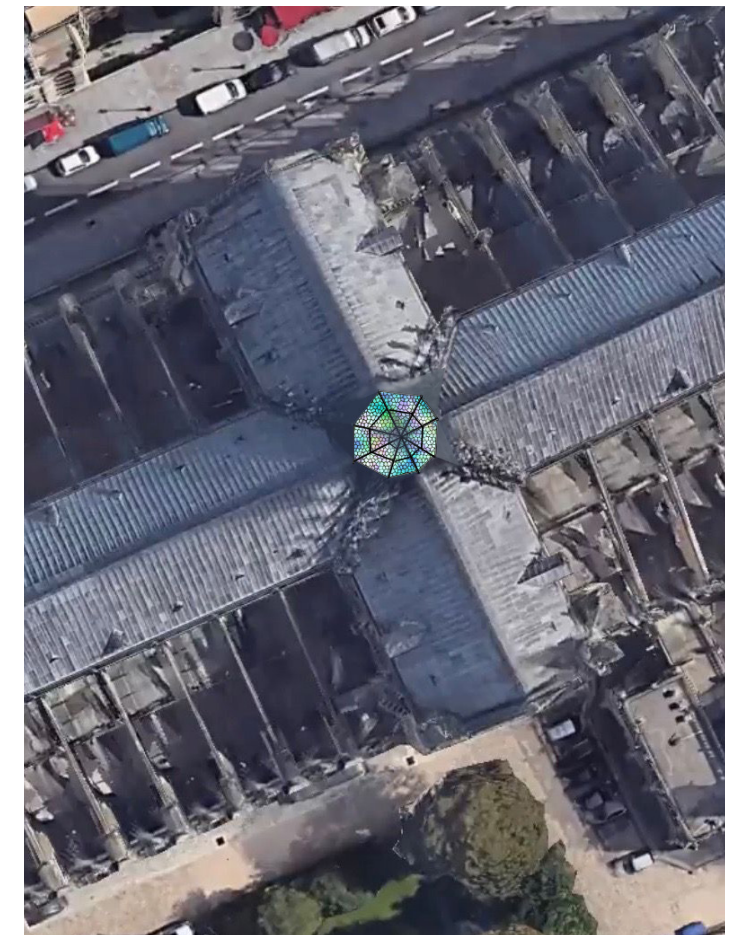
The site for the memorial is in New Mexico. The memorial aims to immerse visitors in the powerful and devastating impact of a nuclear bomb. The width of the memorial corresponds to the blast radius and its height mirrors the detonating height in the atmosphere. Red clay rammed earth pillars rise from the ground, both from the earth and man, a symbolic connection to the atomic bomb. As one walks toward the center, visitors feel the blast effects on the pillars until reaching a central wasteland, conveying the gravity of nuclear devastation. Understanding through remembrance.

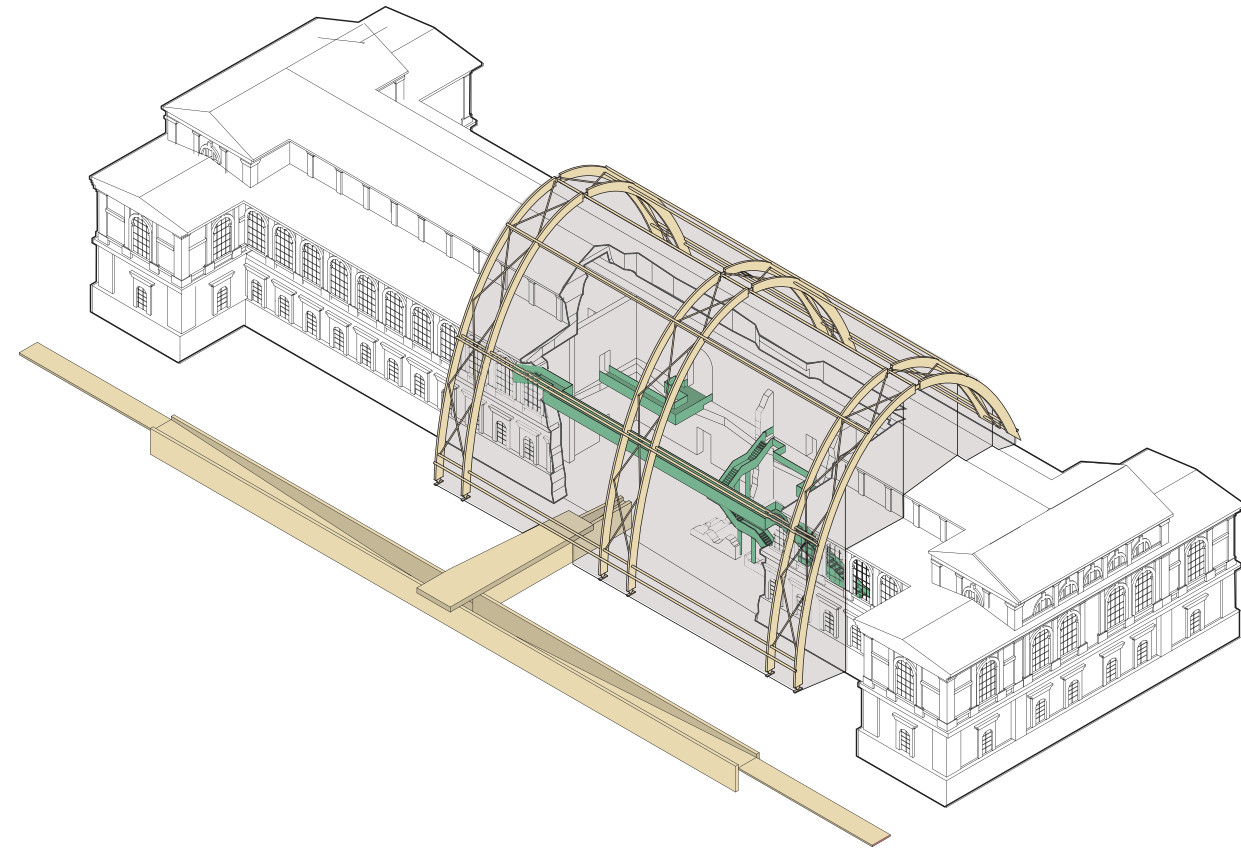


Notre Dame Spire Rebuilding

The fire created an opportunity to envision Notre Dame in a new light for future generations. The proponents for rebuilding it as it was, miss the dynamic aspect of a building over its lifetime. Rebuilding solely to maintain a nostalgic fantasy undermines the purpose of the reconstruction process.

My proposal for the spire is to inverse what existed. Instead of trying to recreate what already existed, create something new reminisce of what was. An inverted stained-glass spire that exists in the space of the previous, but instead of reaching up to the heavens, it brings the heavens into the church, culminating into a cross at the pulpit. The result is an interior bathed in a kaleidoscope of colors.





PROPOSITION III - UNIFICATION

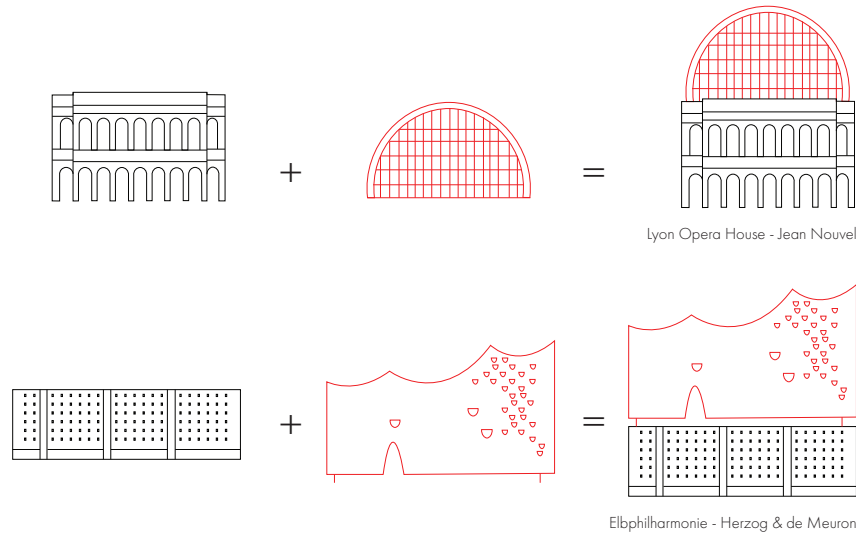
The unification of the past and present unfolds through a series of deliberate interventions that respect the old while embracing the new. By occupying a space that once existed, these interventions serve as bridges across time. The memory of past events is realized through these interventions, grounding inhabitants in a series of shared experiences infusing the space with a profound sense of continuity. Echoes of the past resonate alongside the present moment.

The Mathematics of Reuse

Addition

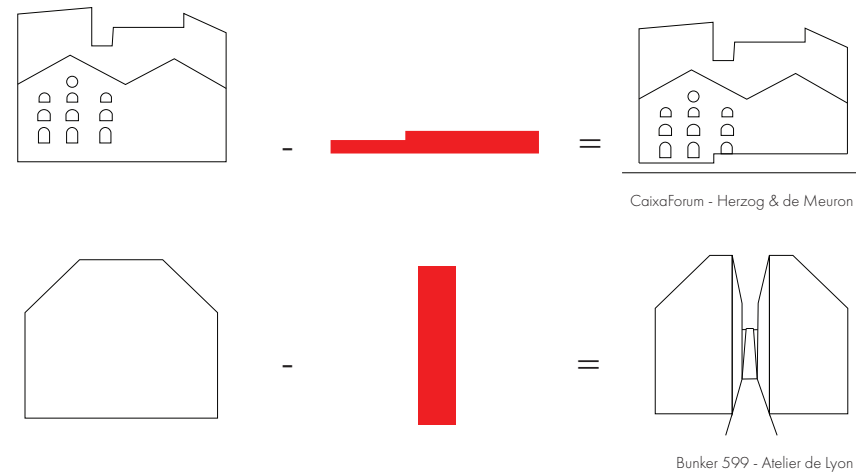
Addition includes single elements, either vertically or horizontally that extend the spatial dimensions of their hosts. They are distinct volumes that expand the confines of the old.

For semi-ruin hosts it can come in the form of many small interventions that when completed add to a complete whole.



Subtraction

Subtraction includes the removal of a part of the host structure. It can be deliberate or unintentional. It raises the question of authenticity and which layer should one consider as authentic?



Summation

Summation includes the addition of a series of related elements that are not discrete volumes - stairs, walkways, ramps, balconies, etc, but added together form a unified intervention to a host structure.

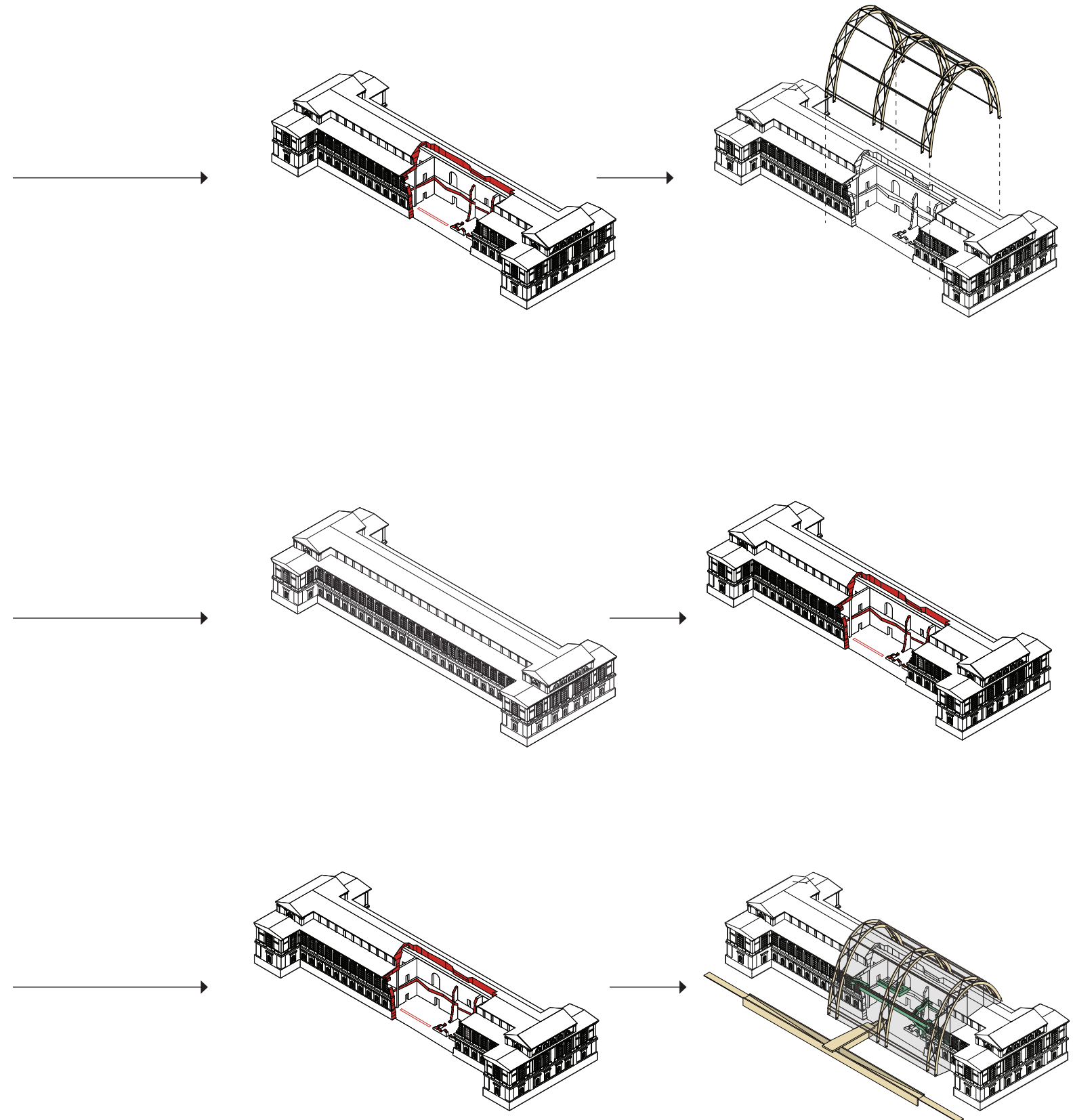
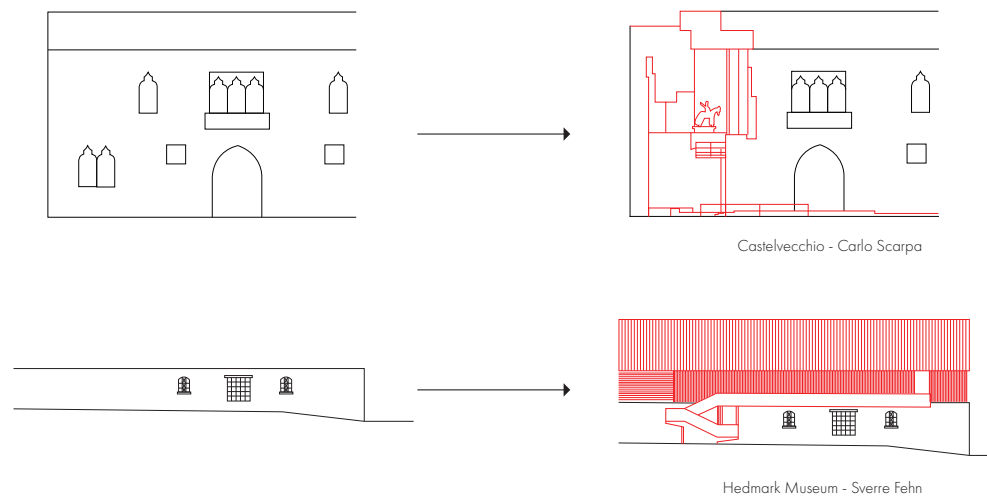


Figure 15: Mathematics of Reuse. Adapted from Adaptive Reuse by Liliane Wong

interventions added - interior

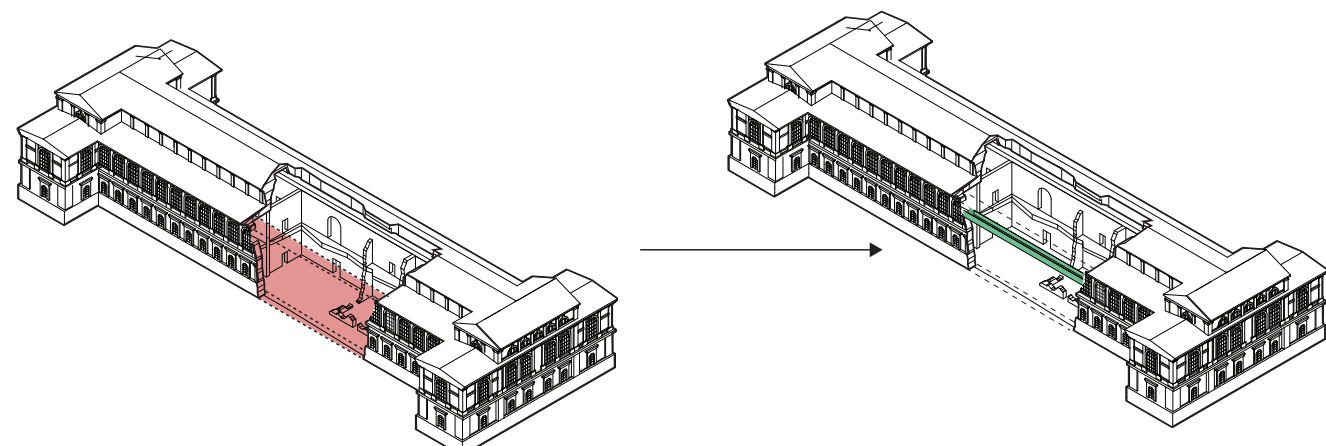
What used to be two spaces divided, becomes one.

A light filled sanctuary for the public. A place to be occupied and used. For families to gather, for friends to meet, or for tourists to rest. Providing memories of the event and of the building's history, remnants of the former walls are left in their destroyed state while the fully destroyed ones can still be seen as an imprint on the floor.

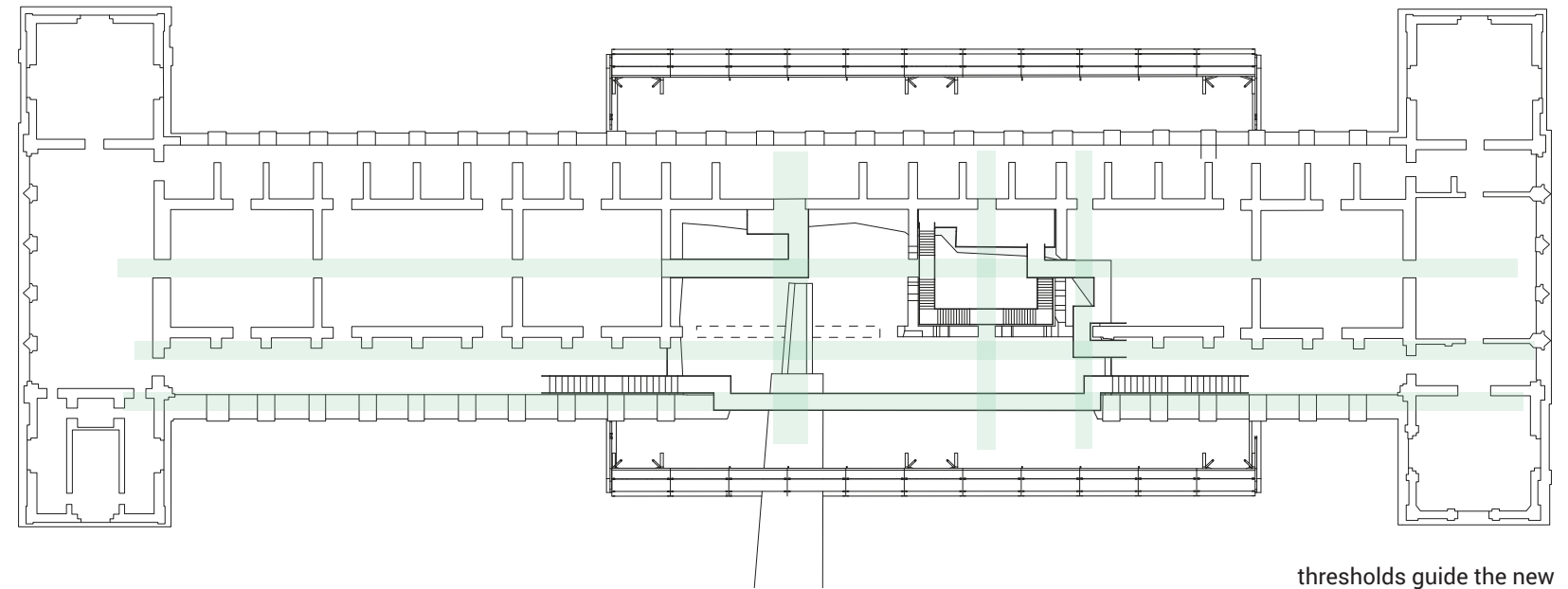
A new staircase serves as both a physical and symbolic connection between the divided spaces, juxtaposing the old and the new.

Raised walkways bridge former areas and also invite visitors to inhabit and perceive the space anew. They exist in the memories of the former building, following the paths of the doorways or walls that once existed.

In occupying a space that once existed, visitors are compelled to engage in introspection and reflection, forging a deeper connection with the site's narrative.

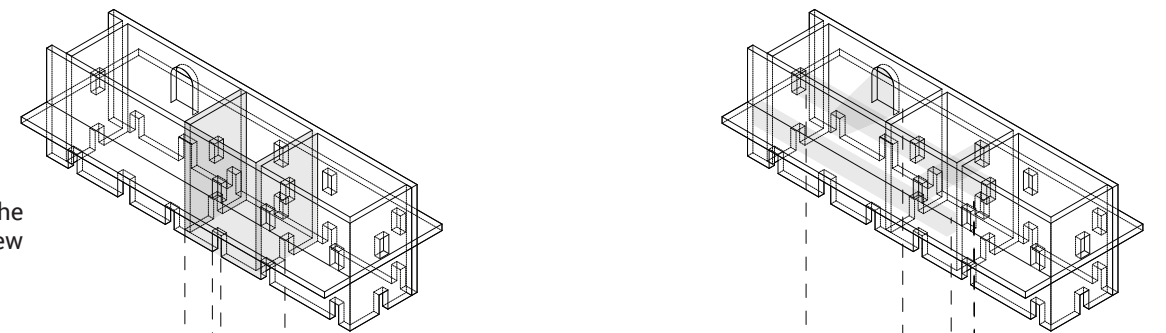


walkway inhabits the former facade

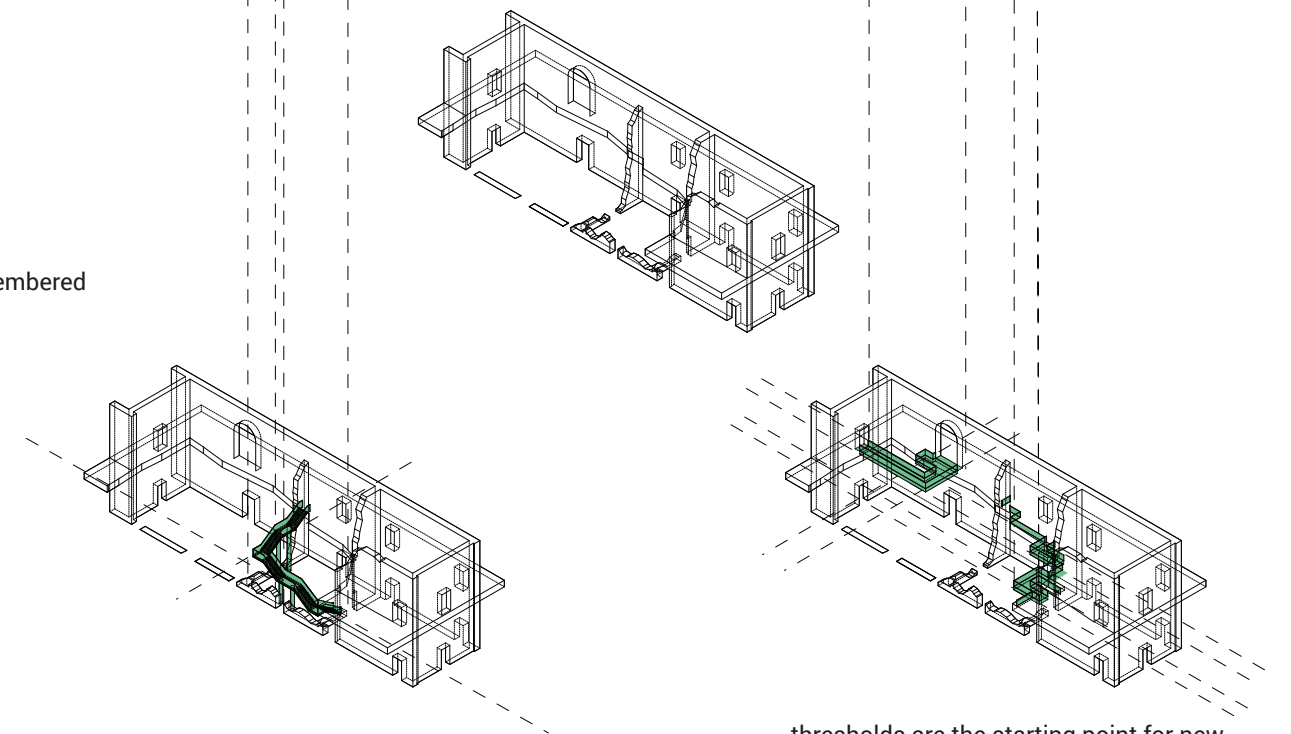


thresholds guide the new

the ghost traces of the past become the starting point for the new

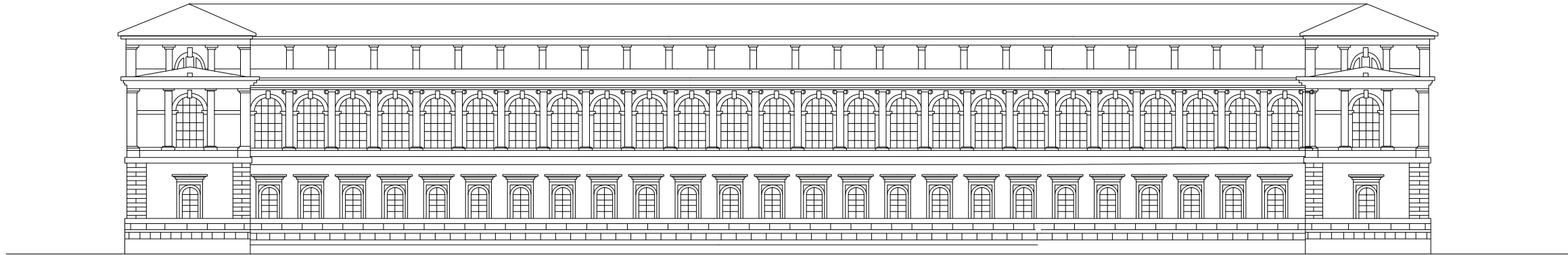


what was destroyed gets remembered

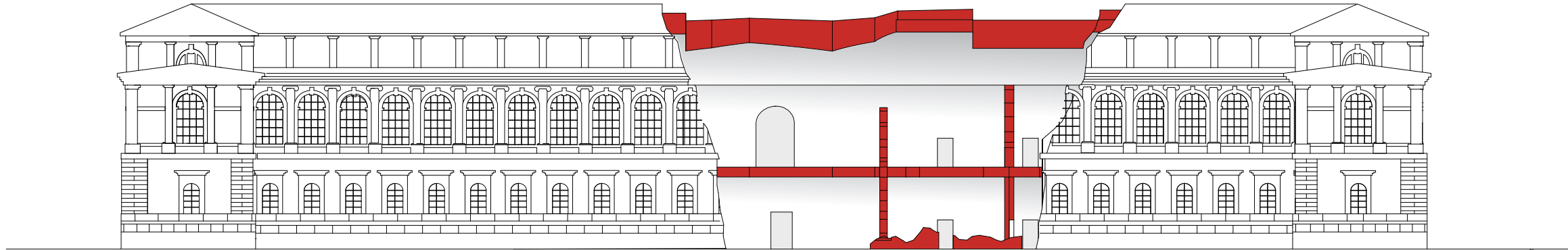


thresholds are the starting point for new walkways and stairs

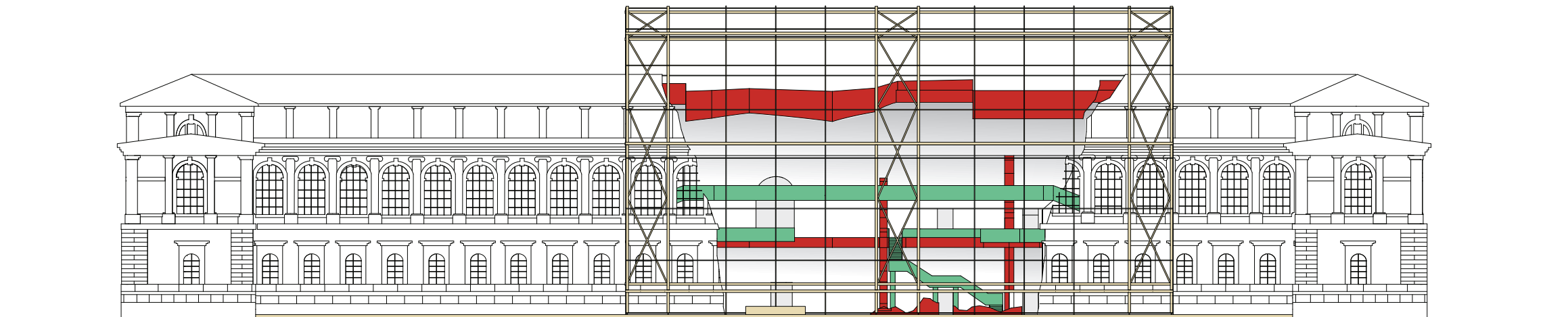
elevations



Pre-Destruction

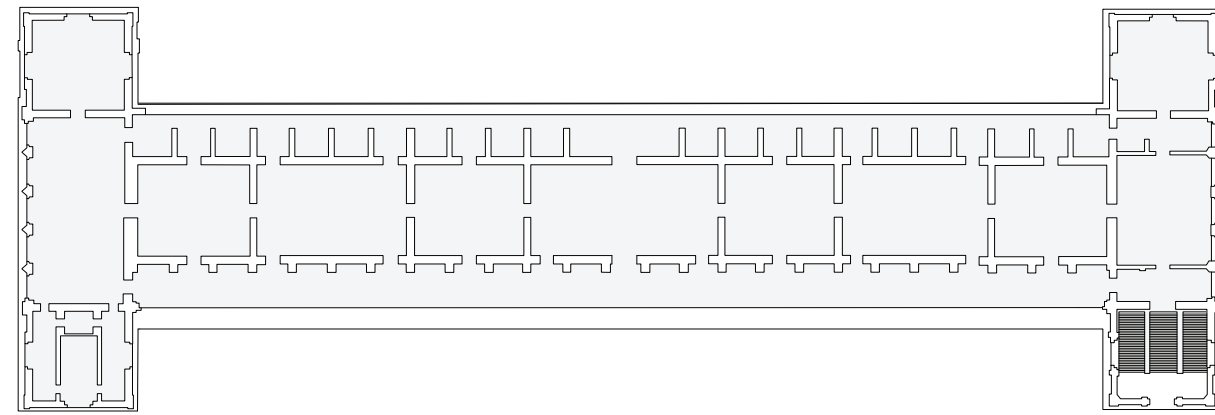


Destruction

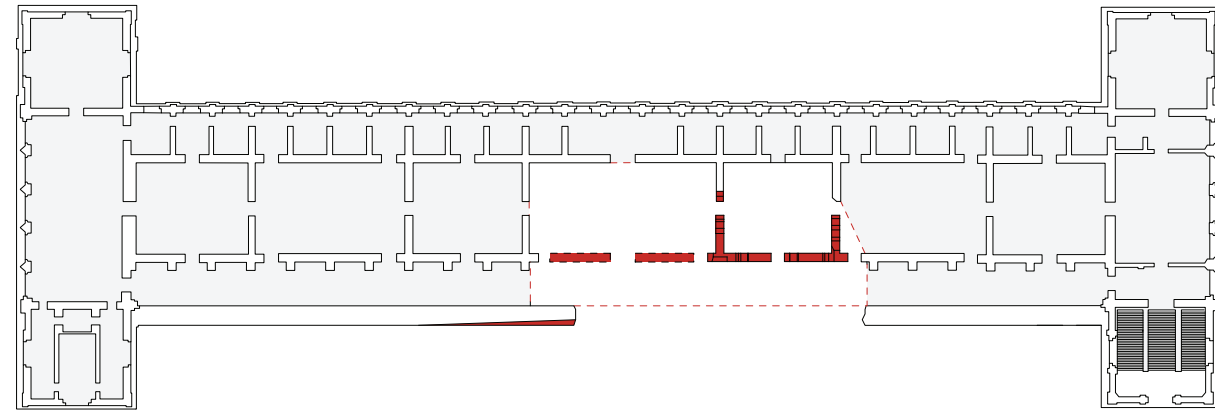


Post-Destruction

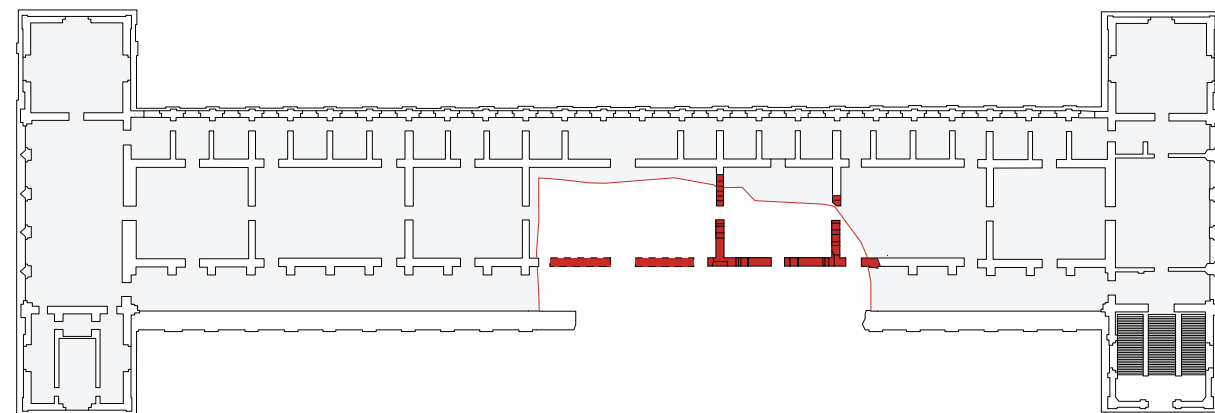
plans - pre-destruction



Pre-Destruction

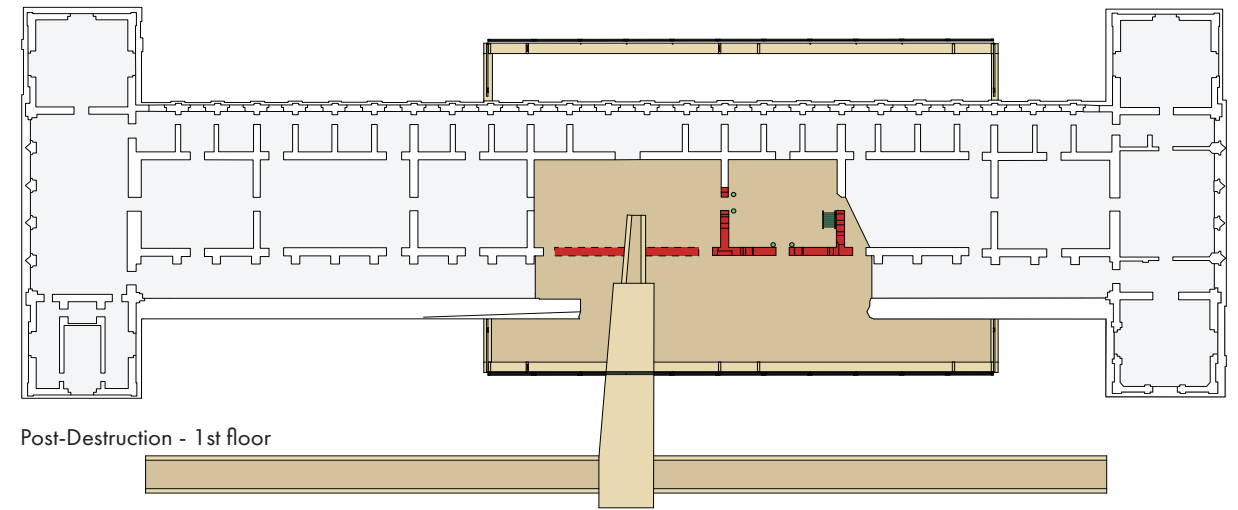


Destruction - 1st floor

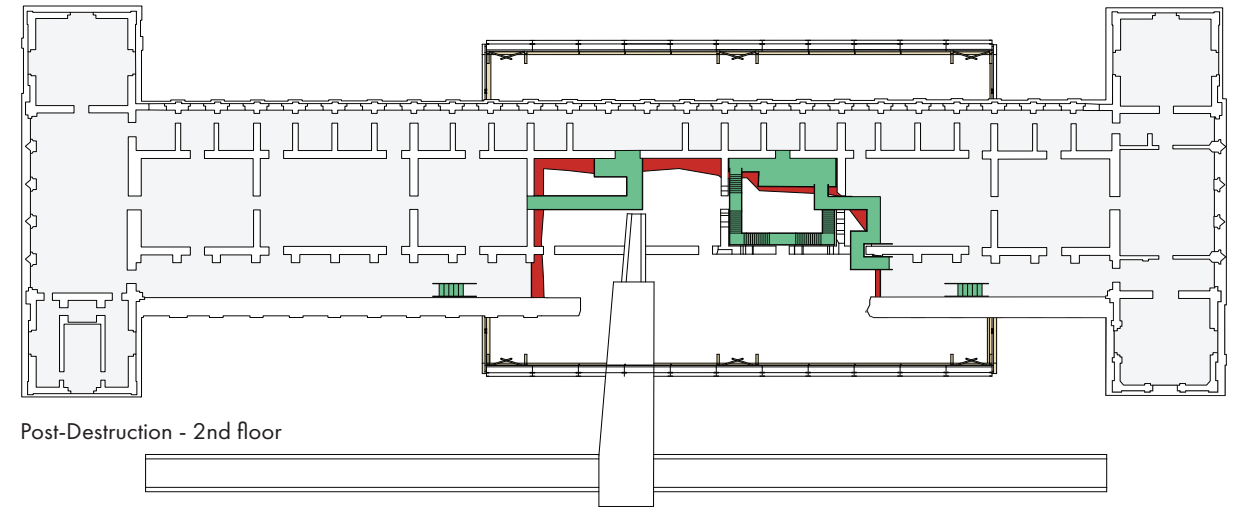


Destruction - 2nd floor

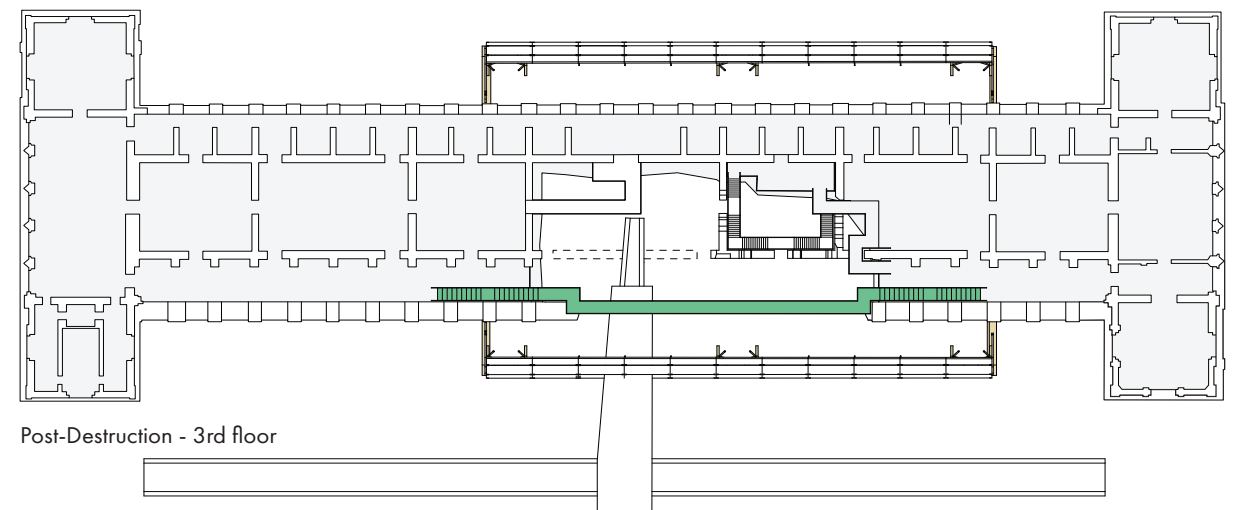
post-destruction with interventions



Post-Destruction - 1st floor



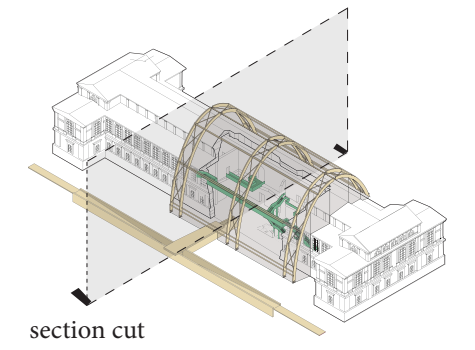
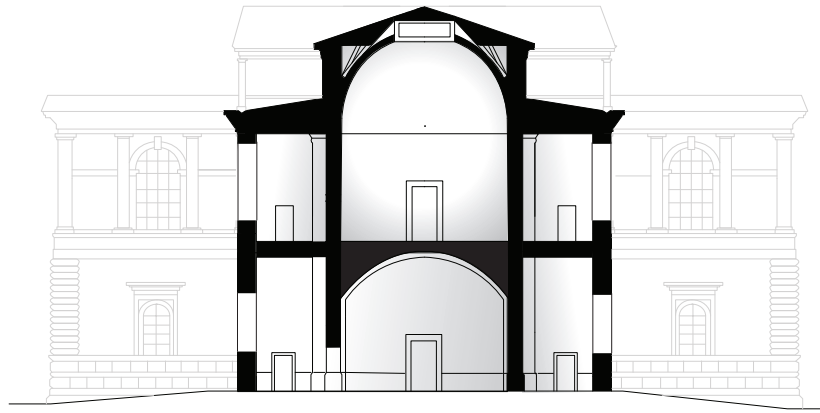
Post-Destruction - 2nd floor



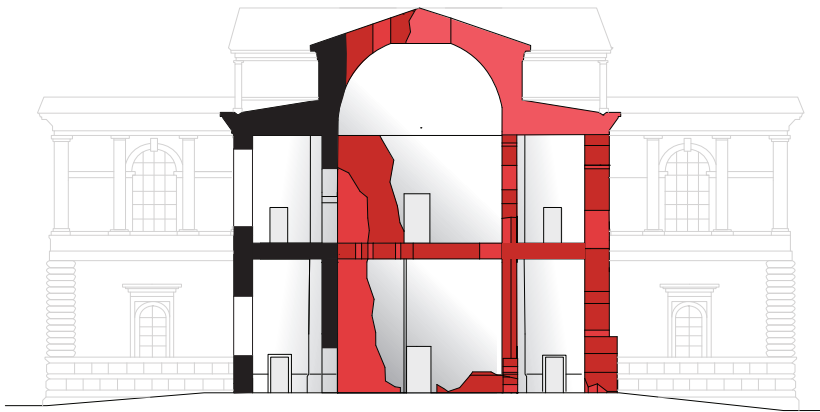
Post-Destruction - 3rd floor

sections

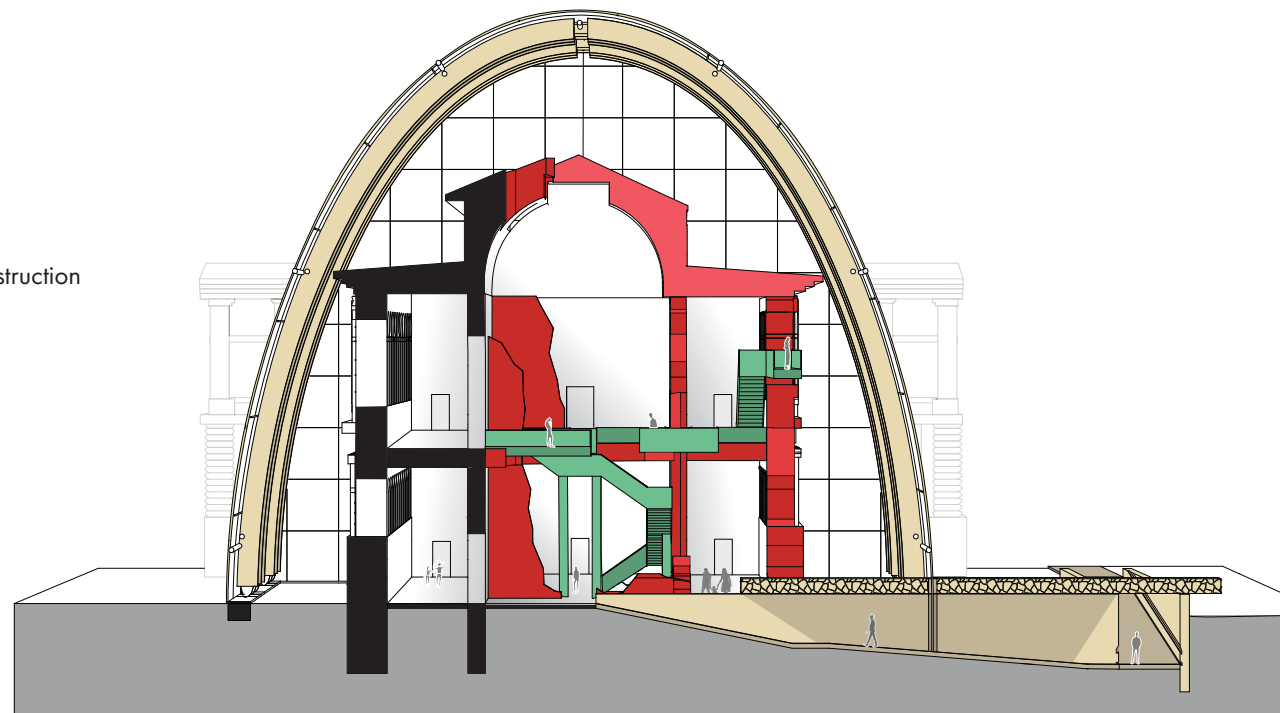
Pre-Destruction



Destruction



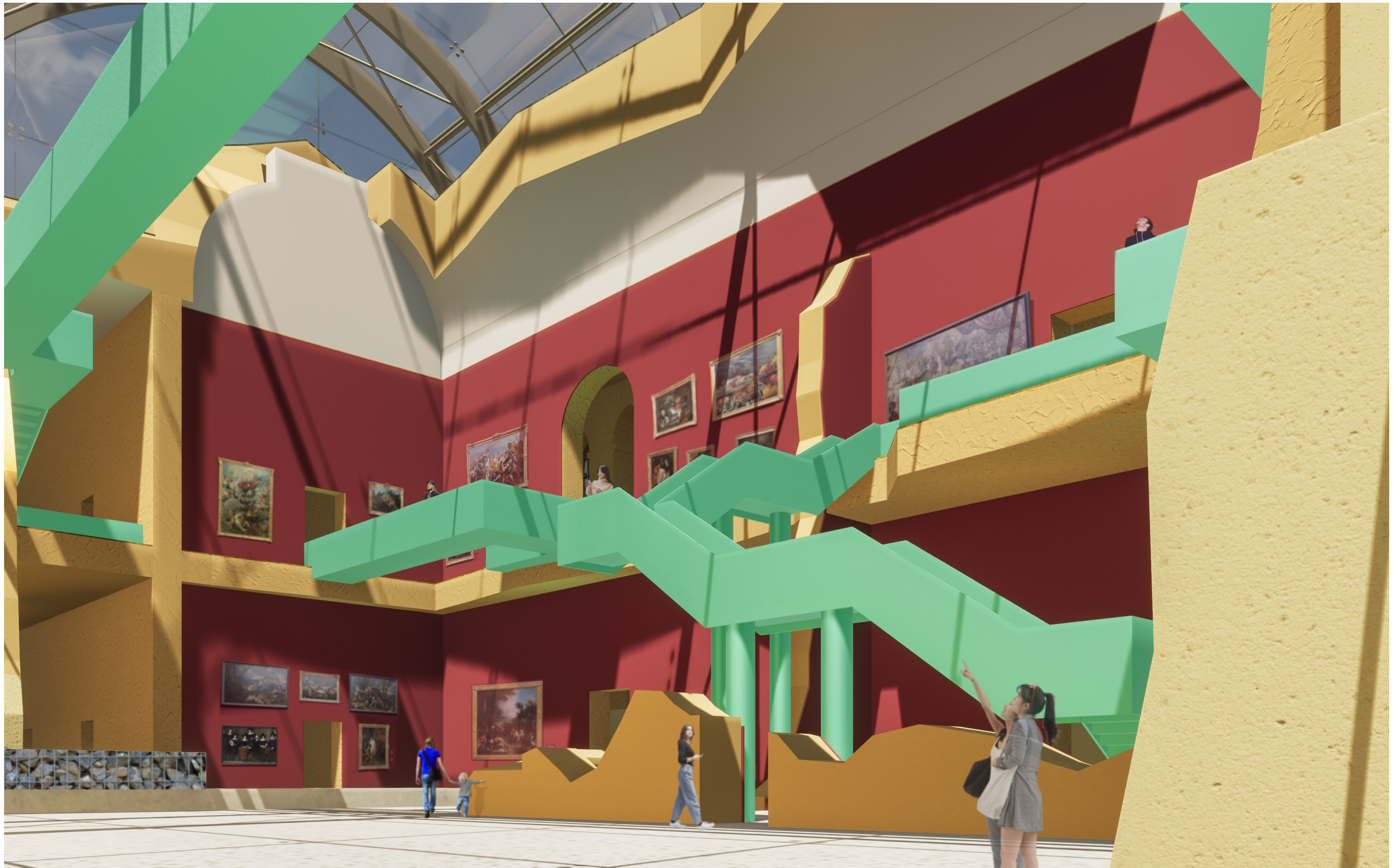
Post-Destruction

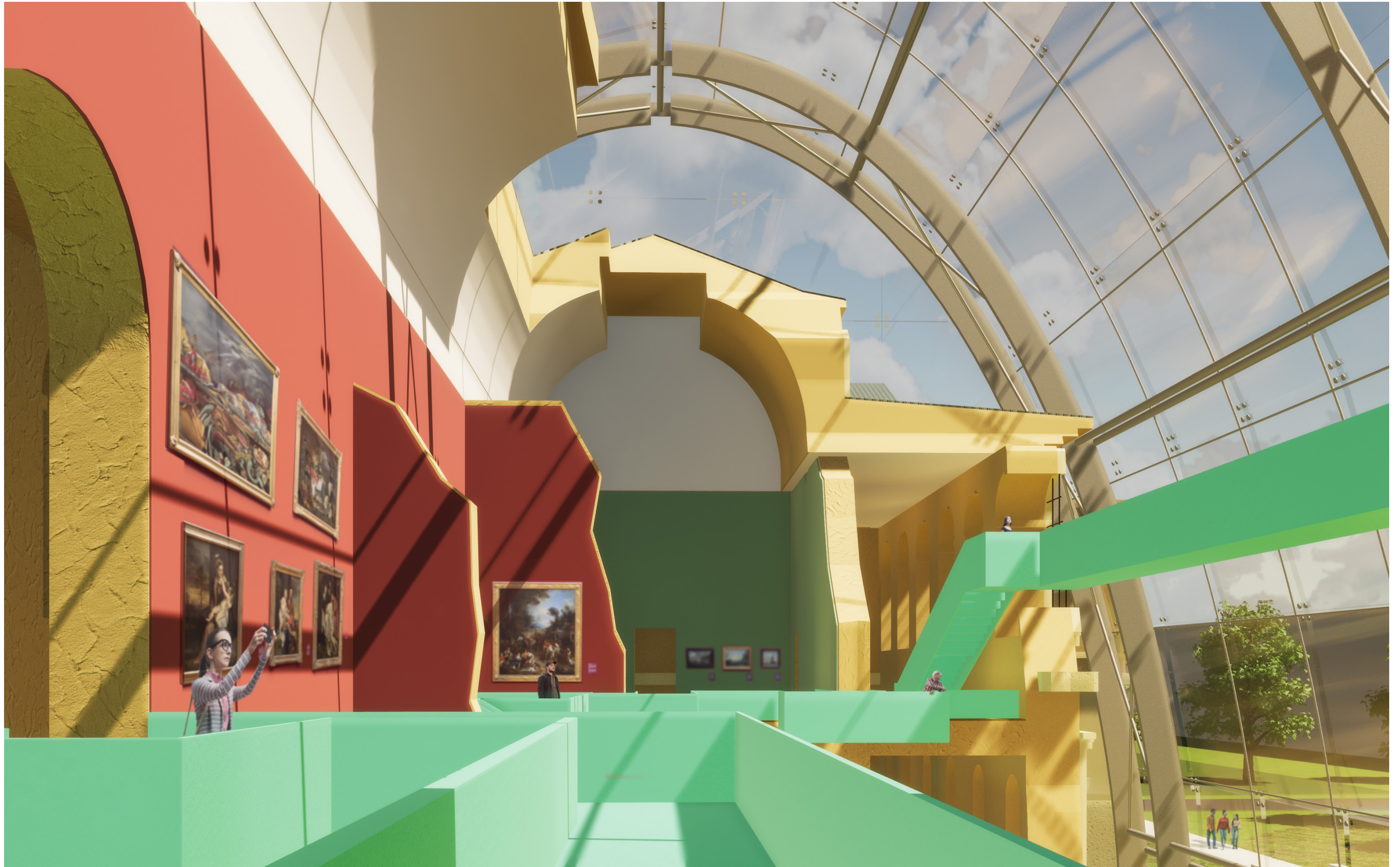


final model - section view

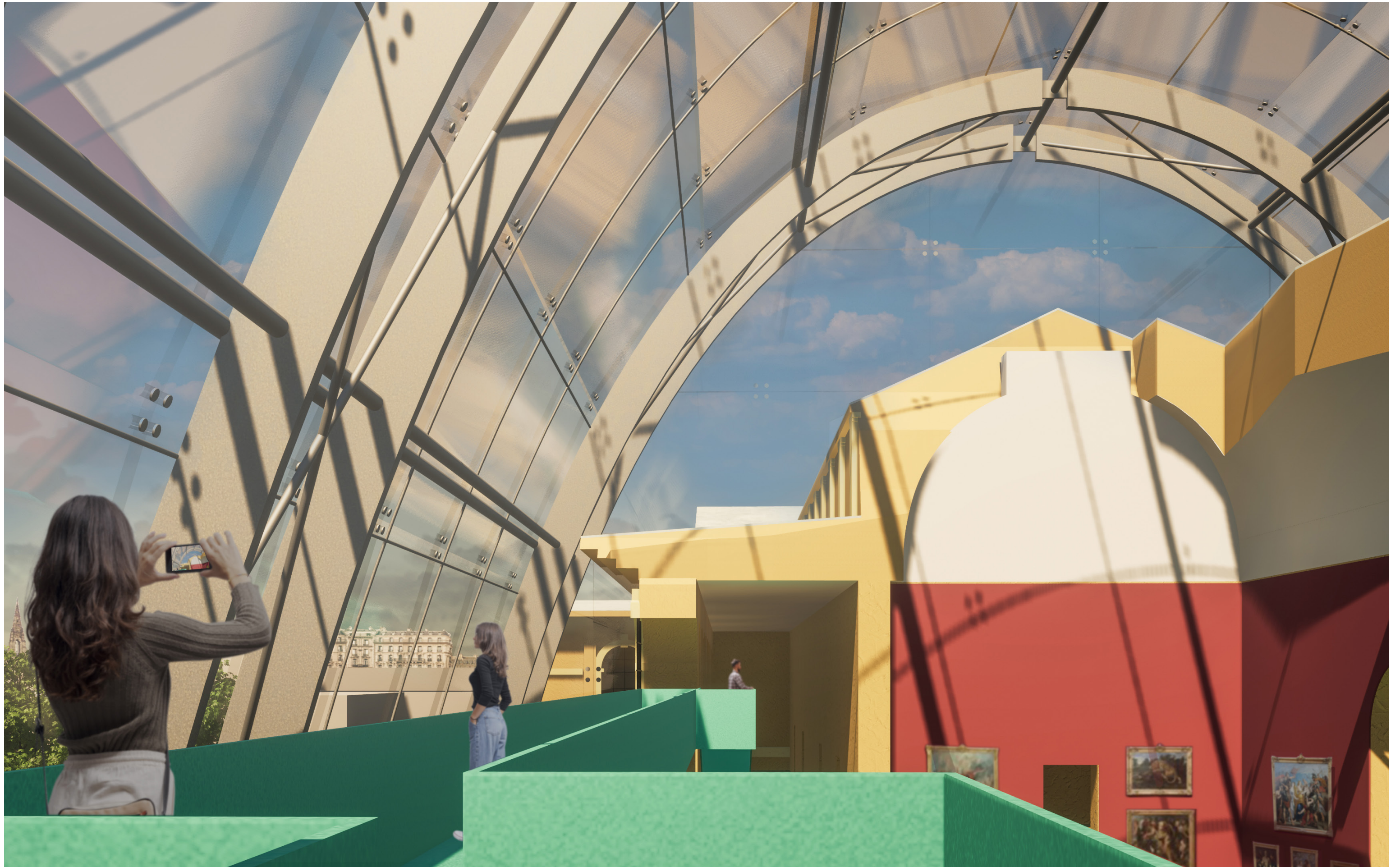
what used to be two spaces divided,
becomes one.











24-Hour Exterior Timelapse



<https://youtu.be/NOMYYbHFMDs>

CONCLUSION

War unfortunately continues to persist as a part of human nature. When I started my thesis, the war in Ukraine dominated global and U.S news cycles. As my thesis progressed, a new conflict erupted in Israel and Palestine and is currently ongoing as I write this. The imperative of rebuilding after such devastation is ever more pressing today. The initial step involves an analysis of the extent of destruction inflicted upon a building, structure, or the built environment.

This thesis attempts to propose one such approach to rebuilding: preserving the building in its ruined state, while utilizing remnants of the old to guide and inform the new. By enshrining the act of destruction and its damage, the memory of these events becomes immortalized for future generations. Interventions are key to bringing life back into the destroyed space. The aim of these are twofold: to honor the building's history and to let it serve as a compass for the new. These new interventions are meant to integrate within the existing space, offering visitors a new perspective while preserving the essence of what came before it.

Architecture does not exist in isolation, but as a reflection of the people it serves. Therefore, the involvement of communities in the planning and rebuilding efforts is not only beneficial, but essential. Their intimate knowledge of the cultural heritage, and social dynamics inform decisions that resonate deeply with the collective identity and memory of the place. They are the ones who decide if something should be rebuilt, or left as it. Should it be enshrined or erased. Through participation, rebuilding becomes a collaborative endeavor, weaving together the threads of memory, remembrance, and hope, ensuring that the rebuilt environment belongs to its inhabitants.

Ultimately, this thesis aims to continue the larger discourse on the critical importance of post-conflict reconstruction. While the site in Munich, Germany served as the object my investigations, it also serves as a foundation for application in similar contexts.

REFERENCES

REFERENCES

Beaver, Robert. *The Destruction of Memory : Architecture at War*. London. Reaktion Books. 2016.

William Faulkner, *Requiem for a Nun* (London: Chatto & Windus, 1919)

Woods, Lebbeus. 2011. "WAR and ARCHITECTURE: Three Principles." *LEBBEUS WOODS*. December 15, 2011. <https://lebbeuswoods.wordpress.com/2011/12/15/war-and-architecture-three-principles/>.

Wong, L. (2017). *The Mathematics of Reuse*. In *Adaptive Reuse: Extending the Lives of Buildings*. Birkhauser.

IMAGE CITATIONS

FIGURE 1
P.10

Destruction of architecture

Eddy, M. (2020c, February 14). How Dresden looked after a World War II firestorm 75 years ago. *The New York Times*. <https://www.nytimes.com/2020/02/13/world/europe/dresden-germany-anniversary.html>

FitzMaurice, Stephen. "Check Your Portland Home's Flood Risk." *Real Estate Agent PDX*, 13 July 2022, realestateagentpdx.com/check-portland-homes-flood-risk/9866.

Girbes, G., & Santora, M. (2023a, August 8). Russian missile strikes in Pokrovsk, Ukraine, kill 9 and wound dozens more. *The New York Times*. <https://www.nytimes.com/2023/08/08/world/europe/russia-ukraine-pokrovsk-missiles.html>

González, Victor. "Why Do They Build Wooden Houses in the United States in Areas With Devastating Tornadoes?" *Theweather.com | Meteored*, 14 Dec. 2023, www.theweather.com/news/trending/why-do-they-build-wooden-houses-in-the-united-states-in-areas-with-devastating-tornadoes.html.

Harris, Jack L. "It Takes Years to Fully Recover From Big Storms Like Sandy." *Route Fifty*, 13 Apr. 2021, www.route-fifty.com/infrastructure/2019/07/it-takes-years-fully-recover-big-storms-sandy/158149.

Hiroshima Peace Memorial. (n.d.). https://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial. https://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial#/media/File:Genbaku_Dome04-r.JPG

Kustura, A. B. (2021). *Bosnian War- A Brief Overview*. Remembering Srebrenica. <https://srebrenica.org.uk/what-happened/bosnian-war-a-brief-overview>

Leatherbarrow, D., & Mostafavi, M. (2001). *On weathering: The life of buildings in Time* pg. 94. MIT Press

"Opuszczony Ośrodek Wypoczynkowy Maciejka - Ustroń - Urbexy.pl - Gdzie Na Urbex?" *urbexy.pl*, 12 Aug. 2021, [urbexy.pl](https://urbexy.pl/miejsce/opuszczony-osrodek-wypoczynkowy-maciejka)

Reliving Sarajevo's siege under lockdown. (n.d.). *Institute for War and Peace Reporting*. <https://iwpr.net/global-voices/reliving-sarajevos-siege-under-lockdown>

FIGURE 2
P.14-15

Architecture destroyed by war

ABC News. (n.d.). *The Syrian conflict in photos*. <https://abcnews.go.com/International/photos/syria-conflict-in-photos-20112474>

Acheson, C. (2018). *Mostar, Bosnia — Travel is beautiful*. *Travel Is Beautiful*. <https://www.travelisbeautiful.com/blog/2017/6/1/mostar-g7fx-jznkd>

Beesley, K. (2016, March 28). *PHOTOS: Ancient City Of Palmyra After ISIS Was Driven Out*. *NPR*. <https://www.npr.org/sections/thetwo-way/2016/03/28/472143732/isis-pulls-out-of-palmyra-leaves-destruction-in-its-wake>

Buddhas of Bamiyan. (n.d.). *UNESCO World Heritage Center*. Retrieved August 25, 2023, from https://whc.unesco.org/uploads/thumbs/news_2253-1000-667-20210311100310.jpg

Eddy, M. (2020a,b,c February 14). How Dresden looked after a World War II firestorm 75 years ago. *The New York Times*. <https://www.nytimes.com/2020/02/13/world/europe/dresden-germany-anniversary.html>

Exarchopoulos, S. (2022). *Wonderful Monuments Destroyed By War | 7 Cultural Sites Damaged or Destroyed by War*. *GHD*. <https://www.greecehighdefinition.com/blog/7-cultural-sites-destroyed-by-war>

File:Warsaw Old Town 1945.jpg - *Wikimedia Commons*. (1945). https://commons.wikimedia.org/wiki/File:Warsaw_Old_Town_1945.jpg

Girbes, G., & Santora, M. (2023a, August 8). Russian missile strikes in Pokrovsk, Ukraine, kill 9 and wound dozens more. *The*

New York Times. <https://www.nytimes.com/2023/08/08/world/europe/russia-ukraine-pokrovsk-missiles.html>

Hiroshima Peace Memorial. (n.d.). https://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial.
https://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial#/media/File:Genbaku_Dome04-r.JPG

Kustura, A. B. (2021). Bosnian War- A Brief Overview. Remembering Srebrenica.
<https://srebrenica.org.uk/what-happened/bosnian-war-a-brief-overview>

Limited, A. (n.d.). Killyhevlin hotel/bomb. Alamy Images. <https://www.alamy.com/stock-photo-killyhevlin-hotel-bomb-105837780.html?imageid=EE40A244-526F-4B38-8F0D-C2ECEB4302FD&p=309366&pn=1&searchId=db16014a9a1a3f56cb7c974e9e687238&searchtype=0>

Reliving Sarajevo's siege under lockdown. (n.d.). Institute for War and Peace Reporting.
<https://iwpr.net/global-voices/reliving-sarajevos-siege-under-lockdown>

Times, N. Y. (2023a, August 24). Russia's war in Ukraine, in photos. The New York Times.
<https://www.nytimes.com/article/war-images-ukraine-russia.html>

Times, N. Y. (2023b, August 24). Russia's war in Ukraine, in photos. The New York Times.
<https://www.nytimes.com/article/war-images-ukraine-russia.html>

Times, N. Y. (2023c, August 24). Russia's war in Ukraine, in photos. The New York Times.
<https://www.nytimes.com/article/war-images-ukraine-russia.html>

Times, N. Y. (2023d, August 24). Russia's war in Ukraine, in photos. The New York Times.
<https://www.nytimes.com/article/war-images-ukraine-russia.html>

Times, N. Y. (2023e, August 24). Russia's war in Ukraine, in photos. The New York Times.
<https://www.nytimes.com/article/war-images-ukraine-russia.html>

Wikipedia contributors. (2023). Coventry Cathedral. Wikipedia. https://en.wikipedia.org/wiki/Coventry_Cathedral#/media/File:Coventry_Cathedral_2018.jpg

FIGURE 3,13
P.17,25,33

Alte Pinakothek WWII

Pinakotheken, [@Pinakotheken], (2015, March 25) Heavily damaged during WWII, the Alte Pinakothek was rebuilt by Hans Dollgast in 1957 [Tweet]. Twitter. <https://twitter.com/Pinakotheken/status/580634335914651649>

FIGURE 3,13
P.17,25,33

World Trade Center Memorial

Wikipedia contributors. "National September 11 Memorial and Museum." Wikipedia, 15 Apr. 2024, en.wikipedia.org/wiki/National_September_11_Memorial_%26_Museum.

FIGURE 5
P.21

Genbaku Dome

Hiroshima Peace Memorial. (n.d.). https://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial.
https://en.wikipedia.org/wiki/Hiroshima_Peace_Memorial#/media/File:Genbaku_Dome04-r.JPG

FIGURE 6
P.21

Stari Most Bridge

"Stari Most." Wikipedia, 15 Apr. 2024, en.wikipedia.org/wiki/Stari_Most.

FIGURE 7
P.21

City of Le Havre

Norwegian Cruise Line. "Paris (Le Havre), France Go Local - as a Local in Modern Le Havre Excursion | Norwegian Cruise Line." Norwegian Cruise Line, www.ncl.com/shore-excursions/LEH_57/Go-Local-As-a-Local-in-Modern-Le-Havre?destination=Europe+Cruises%2CTransatlantic+Cruises&port=LEH&sort=searchWeight&sortOrder=asc&perPage=12.

FIGURE 8
P.23

The Frauenkirche during WWII

Hill, By Jenny. "Dresden's Firebombing Haunts Rebuilt German City." BBC News, 13 Feb. 2015, www.bbc.com/news/world-europe-31448992.

FIGURE 9
P.23

The Frauenkirche Today

Dresden Frauenkirche 022.JPG - Wikimedia Commons. commons.wikimedia.org/wiki/File:Dresden_Frauenkirche_022.JPG.

FIGURE 10
P.23

Stari Most Bridge

Admin, Seo, and Seo Admin. "The Old Bridge at Mostar (Stari Most) – Relive the History - Bosnianvoyager." Bosnianvoyager - Transfer agency Sarajevo, 7 Mar. 2023, bosnianvoyager.com/the-old-bridge-at-mostar-stari-most.

FIGURE 11
P.23

Stari Most Bridge today

Wikipedia contributors. File:Mostar - Bosnia and Herzegovina - Stari Most 03.jpg - Wikipedia. 1 July 2007, en.wikipedia.org/wiki/File:Mostar_-_Bosnia_and_Herzegovina_-_Stari_Most_03.jpg.

FIGURE 12
P.23

The Pentagon during reconstruction

Construction Business Owner Magazine. "The Secrets to the Pentagon Renovation Program's Success." Construction Business Owner Magazine, 11 Sept. 2014, www.constructionbusinessowner.com/management/secrets-pentagon-renovation-programs-success.

FIGURE 13
P.23

The Pentagon today

Connolly, Brynne. "Firm Pentagon 'No' to Polish Plan to Send Jets to Ukraine." Boston News, Weather, Sports | WHDH 7News, 10 Mar. 2022, wvhd.com/news/firm-pentagon-no-to-polish-plan-to-send-jets-to-ukraine.

FIGURE 14
P.235

Alte Pinakothek today

Il Perugino 2023. "Alte Pinakothek - Munich - Il Perugino 2023." Il Perugino 2023, 23 Jan. 2023, www.perugino2023.org/en/perugino-bio/alte-pinakothek-munich.

FIGURE 15
P.60

Mathematics of Reuse. Adapted from Adaptive Reuse by Liliane Wong

Wong, L. (2017). The Mathematics of Reuse. In Adaptive Reuse: Extending the Lives of Buildings. Birkhäuser.

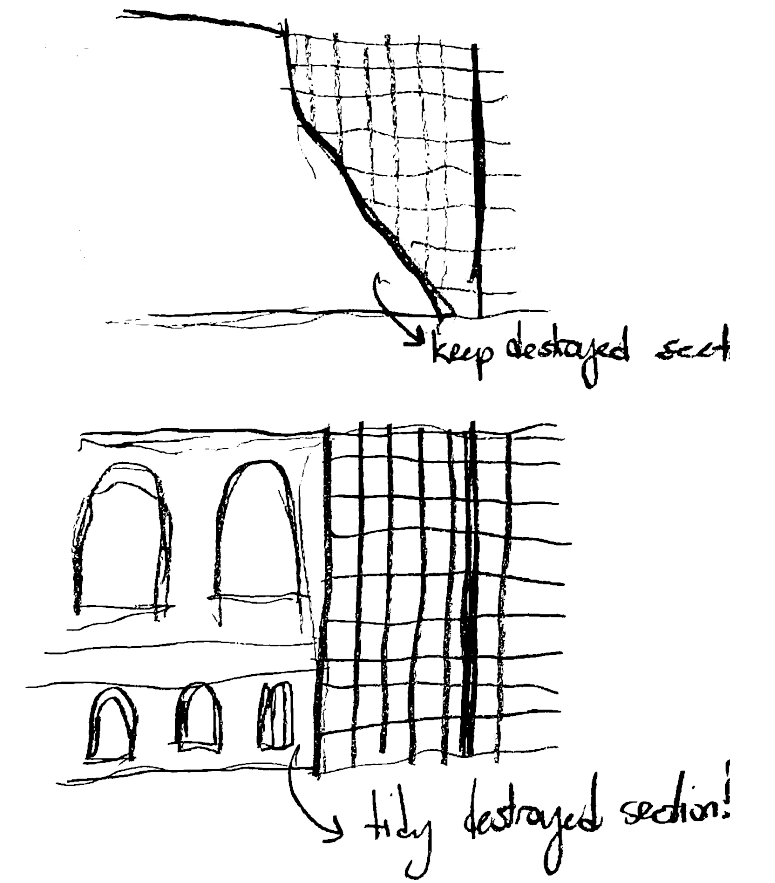
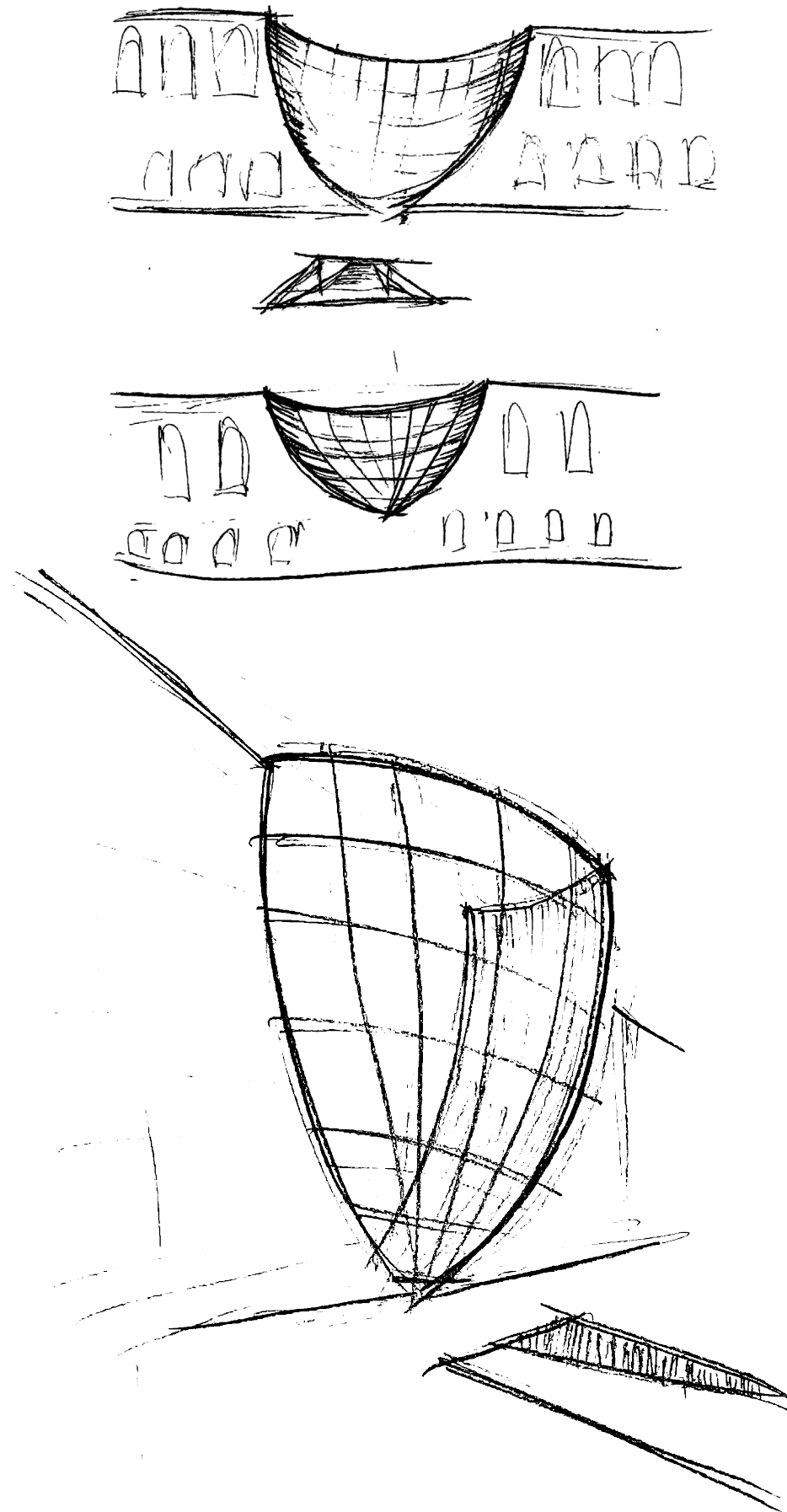
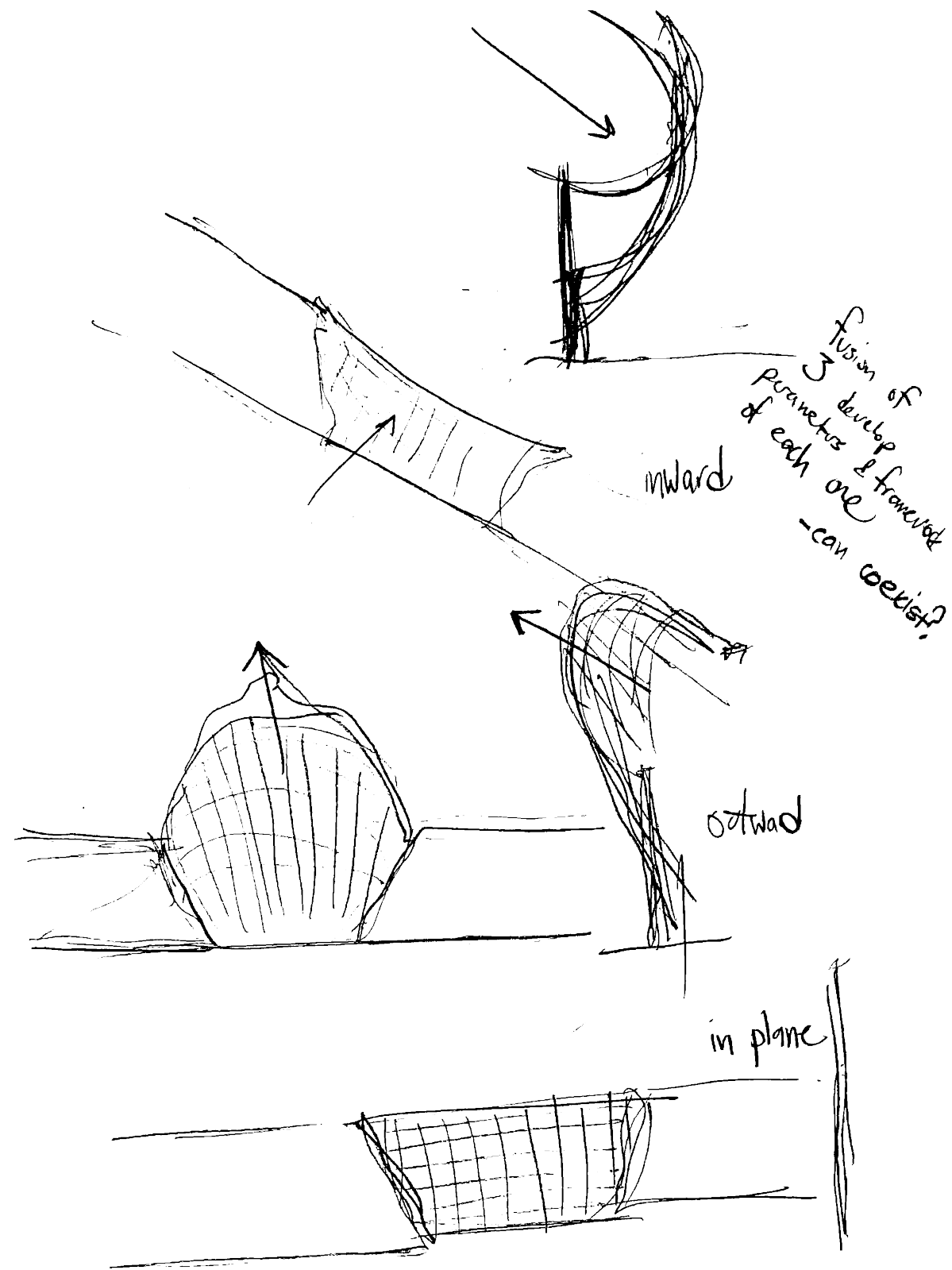
APPENDIX

entryway ramp sketch models

These sketch models were idea generators for what the final entryway ramp came to be.



sketches - enclosure

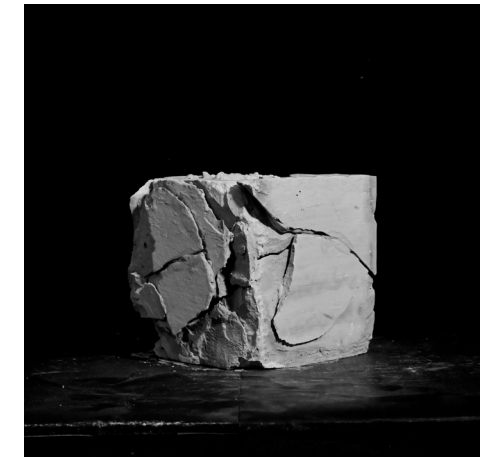
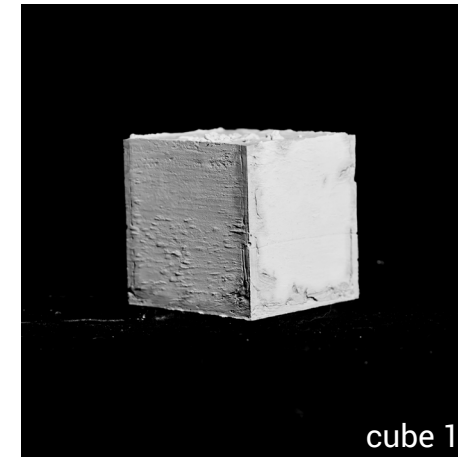


an exploration in rebuilding - destruction of three cubes

In an effort to understanding rebuilding methods the destruction of three cubes was undertaken. They were dropped from 15 feet to create randomized destruction. A different rebuilding technique was used for each one.

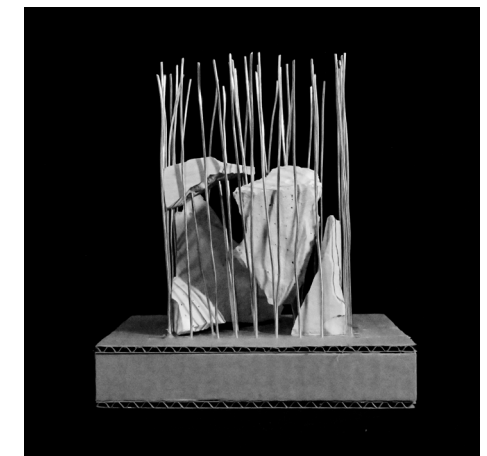
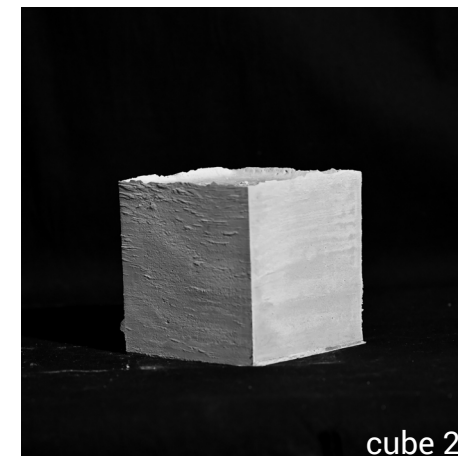
Cube 1

My goal was to attempt to reconstruct the cube using the destroyed pieces. It was an impossible task. What remains is a scarred fragmented remnant of the original. The cube is rebuilt with the destroyed pieces.



Cube 2

I aimed to "rebuild" the broken cube using modeling wire, bringing it back with an ephemeral impermanence. They behave like ghosts, making the viewers question whether or not what they're seeing actually exists. The former cube is implied by the destroyed fragments with the new.



Cube 3

The intent was to use epoxy resin to fill in the gaps of the broken pieces creating a new cube from the fragmented remnants. The cube is remade from the old with the new and the destruction is preserved

