

S H A N E D U N L E V Y

# ON ORNAMENT

A CATHOLIC CEMETERY FOR PHILADELPHIA

ALEXANDRIA, VIRGINIA

THESIS SUBMITTED TO THE FACULTY OF VIRGINIA  
POLYTECHNIC INSTITUTE AND STATE UNIVERSITY  
IN PARTIAL FULFILLMENT OF THE DEGREE OF  
MASTER OF ARCHITECTURE IN ARCHITECTURE

**FEBRUARY**

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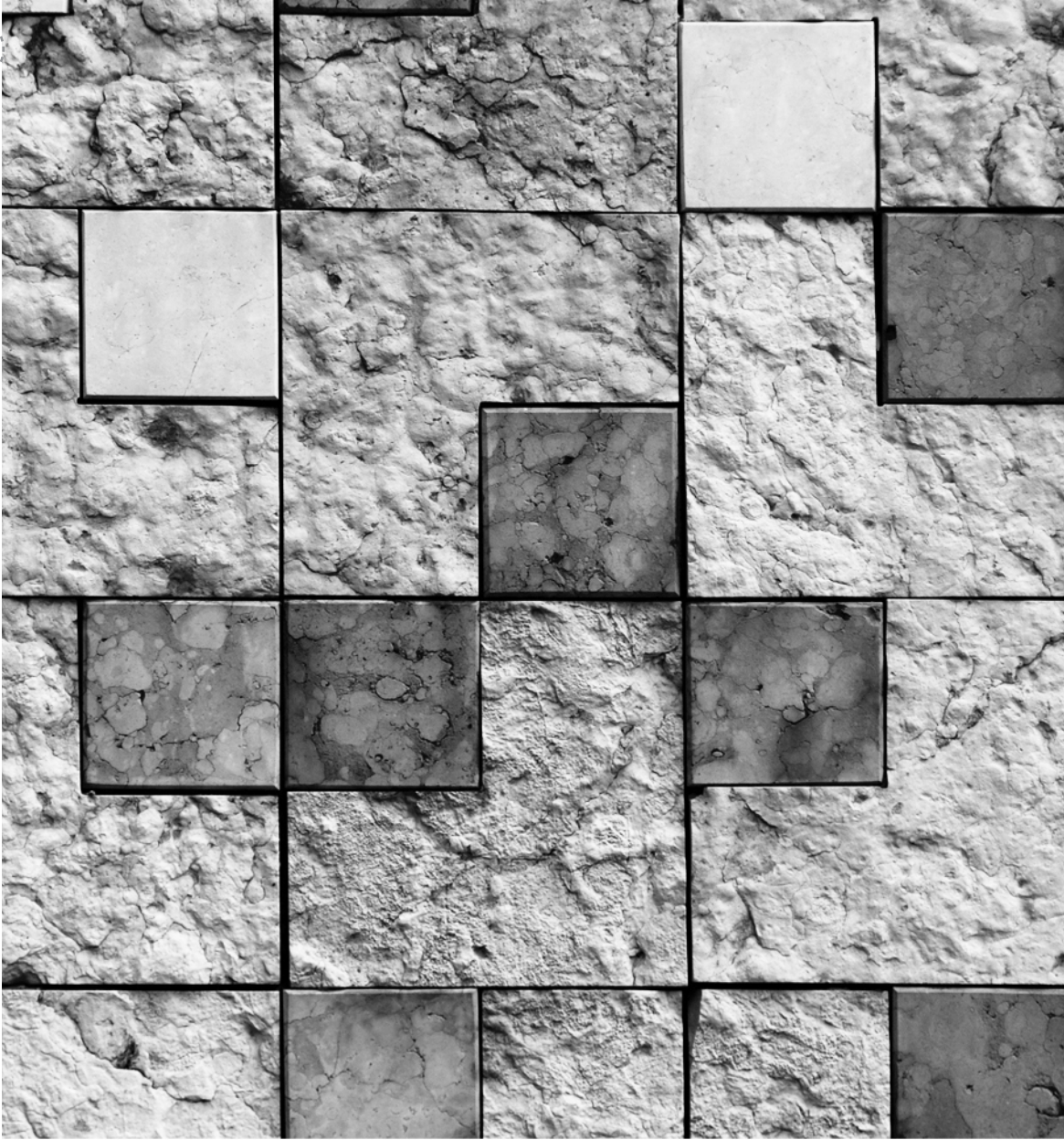
**2011**

M A R C I A F E U E R S T E I N - C H A I R

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The practice of architecture exists because man has sought shelter from the forces of the world he finds himself. It is wonder of this same world that has caused him to shape his rooms from age to age. In every instance, he recreates the world within the world with the materials of that world. It is the marks, the cuts, the juxtaposition, and the joining of these materials in which ornament dwells. It is present wherever man has shaped material for construction. It is a whisper when homogenized, and it is a trumpet blast when varied. This thesis will delve into the making of ornament, and my love for it.

My first cognizant encounter with architecture, was my fascination with the sculpted stones of the gothic cathedrals. It was the ornament that caused me to be fascinated and to remember. So for this thesis, I sought to imagine walls worth remembering. I wanted to touch every material with my mind's eye so that it might be a gift for others. I wanted to ornate.

It seemed best for the design to be sacred and to be in an urban setting. I also thought that the presence of time and aging might help the thesis. I came to choose the program of a catholic cemetery in Philadelphia. I hoped to explore what meaningful marks and arrangements of materials I could impart to this ephemeral world.



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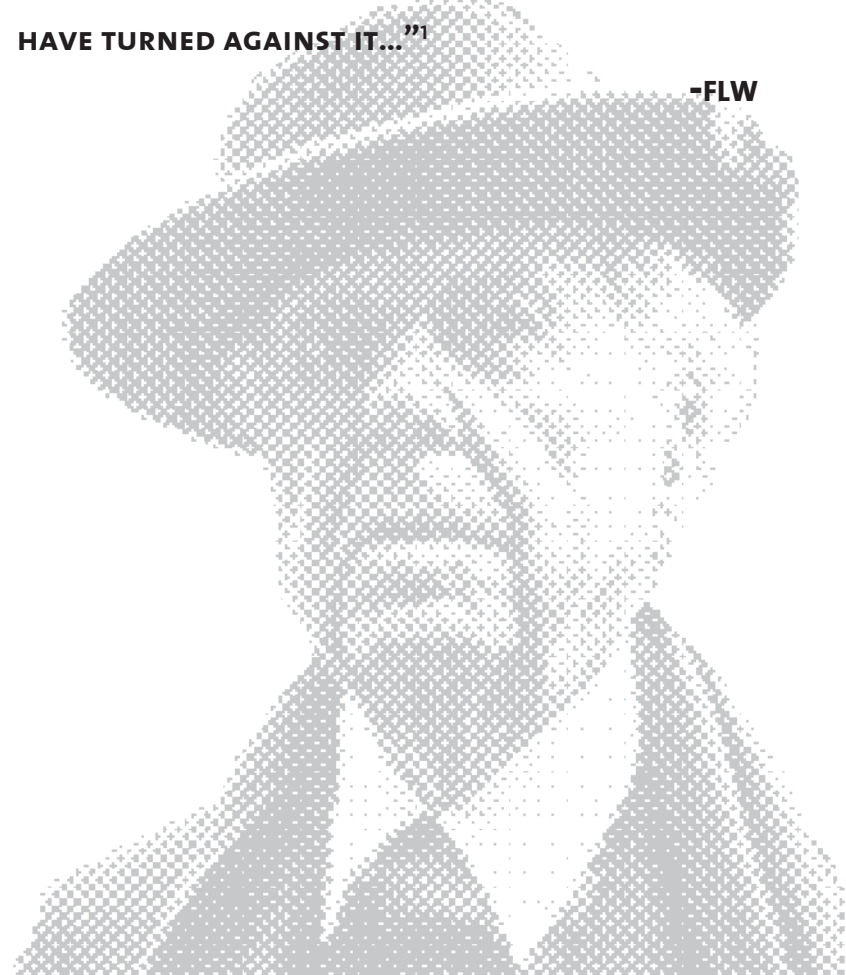
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**“AN ELEMENT (ORNAMENT) SO HARD TO UNDERSTAND THAT MODERN ARCHITECTS THEMSELVES SEEM TO UNDERSTAND IT LEAST WELL OF ALL AND MOST OF THEM HAVE TURNED AGAINST IT...”<sup>1</sup>**

**-FLW**



1. Frank Lloyd Wright, “In the Nature of Materials: A Philosophy,” in *Architecture Culture 1943-1968: A Documentary Anthology* (1943), 41

Ornament is arguably the most confused subject of contemporary architecture. It became even more apparent to me while researching in the library, and coming across titles like “Ornament and Sin,” by Adolf Loos, and The Lost Meaning of Classical Architecture, by George Hersey. One title states that one is creating an act against God by designing ornament, and the other says that there is a lack of understanding of ancient architecture’s ornament. Even recently as I am writing this book, I came across a new technology that uses a laser to engrave designs into a brick, but the project I saw used the technology to make the brick look like wood. A clever friend said, “A brick building that looks like a wood building... and next... a wood building that looks like a brick building!” I think the confusion comes from the fact that our society can build almost anything, and because of this it has taken focus on replicating almost everything.

Plastic can be made to look like wood, stone, or metal. Homes can be made to look like castles, manors, or “old.” It was, and is this desire to achieve a look through design, or to design a style, that inspires many modern or contemporary architects to reject what they think is ornament. “Form follows function,” were the words of Louis Sullivan, and many architects after hearing those words seem to think that function is the driving force of form. This literal interpretation was evident in the modernist period, which tried to avoid replicating styles, and in fact became a style. However, when one looks at the work of Louis Sullivan, they will find that in his waning years he took effort to draw the plates for A System of Ornamentation. The writings with the drawings show that he wanted to communicate his most inner beliefs in his designs. I was inspired not only by the imagination and pure brilliance of the drawings, but also by the story behind the book. He was ill, and his practice was failing, but he still felt compelled to leave behind his works and beliefs for those after him.

While I can not say that Sullivan’s story was the inception for this thesis, it did help to generate it. I wanted to design beautiful ornament that was tied to my beliefs and those of others. I hoped to design architecture that not only worked as the setting for life, but also offered the opportunity to meditate on life. I came to choose the program of a Catholic cemetery because I have never found anything more meaningful than the way people pray and care for the deceased in the hope that we will be with them again. The Corinthian column was conceived upon seeing a loving memento placed on a grave.<sup>1</sup> I am convinced now, more so than ever, that ornament is tied to love, whether it is the architect’s love of construction, love of material, or love of the user. So, with the help of my research in architectural theory, cemeteries / columbariums, catholic burial, making, and sacred geometry I embarked on the long and arduous process of designing.

1. Vitruvius, *The Ten Books of Architecture*. trans. by Morris Hicky Morgan. New York: Dover Publications, INC., 1979



# RESEARCH



ARCHITECTURE  
in the 20th Century

MINI-DIA



**ELEVEN PAGES ON ORNAMENT**

There is perhaps no more intimate and confused subject in architecture as ornament. Frank Lloyd Wright even wrote, “An element (ornament) so hard to understand that modern architects themselves seem to understand it least well of all and most of them have turned against it...”<sup>1</sup> People of all social classes and educational background have with little doubt some position on the necessity or beauty that ornament brings to a work of architecture. While the architect composes and judges architecture by many criteria, most of these being abstract concepts such as light, proportion, geometry, form, and function to name a few, those without design education will readily identify objects in the design that are material and decipherable. These tangible things are sometimes the door handles, wall paneling, column bases, capitals, or sculpted thresholds. What I find fascinating about these examples is that these designed parts are essential to the completion of the building, that is, the project would be incomplete without the part. The architect sometimes uses these parts to express the structural system of the design. That is, the architect communicates the forces the building carries to the ground. Take the elements of the Corinthian column for instance; does the capital or the base not carry the weight to the ground? The capital expresses where the weight is transferred from the beam to the column, and likewise, the base expresses the transference of weight from the column shaft through to the ground, or plinth. Further analyzing the column, one can see that the fluting of the shaft, the curving of the base, and the sculpting of the capital do not add to the structural stability of the column, but at the same time, these designs do not hinder the load transfer. It is as Alberti says, “When we gaze at the wondrous works of the heavenly gods, we admire the beauty we see, rather than the utility we recognize.”<sup>k</sup> The architect can also design the outer shell of the building to be an ornate, moving membrane. The works of Louis Sullivan are excellent examples of how one should appropriately cloak the building. The analogy of the cladding of the building to the skin of the body is most useful, and will allow one to imagine the qualities of the building to be expressed through the design of the ornament. With these examples in mind the reader should realize the connection between ornament and function. In the Catholic Church, the priest cannot hear confession without wearing his stole; without this cloth he is unfit to perform his service to the faithful.

<sup>k</sup>Leon Battista Alberti. *On the Art of Building in Ten Books*. trans. Joseph Rykwert, Neil Leach, Robert Tavernor (Cambridge: The MIT Press, 1988), 155

Though this is a non-architectural example, one should realize that the cultural meaning of things shapes their function, rendering a body incomplete with its absence. In architecture, this is the realm of ornament. What a beautiful tool for the imagination of the architect, that a building is not complete without the appropriate dressing. However, this understanding of ornament in architecture has been tarnished. Interpretations of Adolf Loos's writings, mainly his "Ornament and Crime," have propelled designs that try to expel ornament from architecture. Also, the misinterpretations of Louis Sullivan's writing on form, function, and ornament have given numerous architects grounds for stripping their buildings of any material design or imagination. With this perception, the terms are thought of as separate entities. But if you read his works you would know that he believed that structure and ornament were one and enhanced one another.<sup>K</sup> It is as if one were to speak of the body, personality, and soul as separate. This is true only in death, and perhaps this is why architecture designed with this thinking always leaves me feeling dead. Because of the contemporary thinking of these subjects being divorced of each other, ornament has become something superfluous and expensive. So how then is the architect to overcome this thinking in order that the design may be imaginative and inspiring? Simply designing with the thinking that form, function, and ornament are one will ultimately lead to an ornate building. This is not to say that the all buildings must be extremely ornate, but it is a statement about the necessity of ornament. Imagine the Corinthian column again without the base or capital; the structural integrity of the design would be jeopardized, and the continuity of design would also become broken. If the columns of the Pantheon were steel columns, engineered to the most efficient use of material, the portico would become something completely else, and, without much doubt, it would be a bizarre, disturbing experience. I would liken it to a bride wearing a thirty foot train, a veil and a bra. Less is not always more. One cannot stress enough the importance of propriety and prudence in architecture and the architect. Man is fortunate though. Despite the Modernist movement, there have always been protests to the obliteration of ornament. Homogenization is dull and uninspiring, while variation brings the heart delight and stirs the imagination. I believe that it is the presence of Eros in the design of ornament the fills it with romance. The Corinthian capital was even created because of a loving act for a fallen maiden. The story was told by Vitruvius, who gives us the first explanation on the origin of architecture and ornament. I will not begin the body of my writing with the origin of ornament, because I must first develop a definition for the reader.

<sup>K</sup>Louis Henry Sullivan, "Ornament in Architecture," in *Kindergarten Chats*.(New York: Dover Publications, INC., 1979), 189

The Oxford English Dictionary (OED) defines ornament: Ornament: An accessory or adjunct, primarily functional, but often also fancy or decorative; (in pl.) equipment, trappings, furniture, attire. The OED definition states that ornament is primarily functional, but the reader will find that in all architectural cases ornament wedded with form as well. Even the designs of the Brutalist facades, no matter how plain, are “no less ornamental than egg-and-dart.”<sup>k</sup> The OED cites the French word *ornement* as the etymological beginning for our contemporary ornament. *Ornement* means something serving to adorn, decorate, or embellish. But, a more accurate history for the architectural definition of ornament comes from the Roman verb *ornare*. Coomaswamy writes, “*Ornare* is primarily to ‘fit out, furnish, provide with necessities’ (Harper) and only secondarily to embellish.”<sup>2</sup> So the architect designs the ornament with purpose, and meaning; the embellishments are dessert. We see this in chair railings and moldings; these devices protect plaster walls from being damaged and they can be any number of designs or materials. Probably the most wonderful quality of the architectural definition of ornament is that it is completed with form, function, and meaning. The same way that spoken words are tied with meaning, the sensual qualities of ornament are also.<sup>3</sup> It is this narrative quality that ornament possess that validates the metaphor of poetry often used. However, the reader should realize that poetry is a tool for the poet to communicate that which is poetic, the same way that architecture is a communicator of poetics. Architecture and ornament cannot be poetry, because they are their own form. The same way that painting and sculpture are not poetry, but communicate poetics. However the metaphor is useful, and often used. Frascari states, “A plot with the appropriate details becomes a fully developed and successful ‘tale.’”<sup>4</sup> Though he is using the terminology of details, I will explain how details are in fact ornament. The same way that carefully chosen words can create poetry or a fantastic tale, a prudent architect choosing ornament carefully can create architecture. The meaning of the ornament must be fitting to the time that it is designed. If an architect were to choose an egg-and-dart molding today, it would be superfluous, because the ornament would have no relation to the whole of the design; it has a meaning from a different time and culture that does not apply to today’s beliefs. Devoid of its meaning it becomes purely aesthetic, and thus decoration.<sup>5</sup> However the architect might meditate on the quality of the room, or the geometry of the building and design a motif for the molding. He might empirically choose a wooden board proportioned to the size of the room and materially composed with the rest of the design. So I would define ornament as a part harmoniously wedded with form, function, and meaning communicating and completing the overall design of the building.

<sup>k</sup> Frank Lloyd Wright, “In the Nature of Materials: A Philosophy,” in *Architecture Culture 1943-1968: A Documentary Anthology* (1943),

Looking back in history we can see that in the Greek and Roman temples there existed, and, fortunately, exists a very sophisticated system of ornamentation. However, because of their success and poeticism, the following civilizations were too enamored by them to create ornament of their own. Neo-Classicists interpreted the temples simply by aesthetic judgment, and claimed the proportions to be the most beautiful. The architects of the Capitol building in Washington DC and many others, without doubt had read the writings of Vitruvius. The survival of his writings is a blessing, but it did not come without some curse. If it is read as a guide for designing architecture rather than a rule book, there is great benefit from it. He gives us the story of the origin of the Corinthian capital. The architect Callimachus discovered at the tomb of a Corinthian maiden a basket with an acanthus plant growing through it. He drew this collage of sorts, and he continued his investigation until the Corinthian capital was born.<sup>6</sup> This story shows us the importance for the architect to always be ready to seize the moment for design. Callimachus was able to project architectural design in an assemblage of things that had no architectural relation. An architect of any era can and should use this technique. Vitruvius continues his writing with the origin of ornaments in the temples. He says that the triglyphs originally were the protective covering for the tie beams of the primitive wooden temples.<sup>k</sup> So, he says it was an expression of the underlying structure. However, the triglyphs were not dictated to the location of the tie beams in the later developed stone temples. They had to be composed in relation to the columns in the elevations. Again, designing ornament to express the structural system is a communicative tool that can be applied to any era, but the architect must be aware of when other criteria influence the composition of such ornament. Though we can learn from the examples of Vitruvius, I believe the origin of ornament is more firmly grounded in the writing of George Hersey. He writes that the first Greek temples were trees, and the faithful would adorn these temples with the animal parts of sacrifices, and spoilia of wars. Later the trees would be substituted with the stone temples that we know.<sup>7</sup> It is interesting to cite the connection between the tree and the architectural column. The Greeks adorned the tree, or column, and Alberti wrote, "In the whole art of building the column is the principal ornament without any doubt..."<sup>8</sup> So, in ornaments primal beginning, it was used as a way to communicate with the gods. The Greeks would adorn the temples in order that they would be safe and prosper. They truly believed that the ornament would save them. Another interesting finding that Hersey writes is about the scotia molding. The name comes from Σχοτία, the goddess of darkness and underworld things. The shadows cast by the scotia molding were perceived to be a dense, dark vapor filled with the souls of the dead.<sup>9</sup> The perception goes along with the adornment of the temples, with the bones and remains of the sacrifices. Therefore, all the parts of the temples were communicating their sacrificial quality, even the shadows! So, it was through the desire to communicate and please the gods that originated ornament.

<sup>k</sup>Vitruvius, *The Ten Books of Architecture*, trans. Morris Hicky Morgan (New York: Dover Publications, INC., 1960), 107

There was a commonality in the theory and practice of ornament from the times of the Greeks to the time of the Baroque, but this practice changed during the times of the Enlightenment. With the introduction of historical design and aesthetics, the architecture of previous eras became to be known as the ideal. Therefore, architects began to replicate the gothic, roman, and classical style. The Corinthian columns became the “perfect” structural component for houses, libraries, and government offices. That is, the structural device that held the souls of the sacrificed in its shadows was used in buildings that did not even have a connection with death. The ornament had become divorced of its meaning. As was stated before, things purely of aesthetic value are “decoration.” Though it is not a scholarly resource, Dictionnaire.com is a good indicator of societies understanding of words meanings. This website defines ornament as something added to beautify something. It was with this understanding that Adolf Loos said, “Ornament means wasted labor and therefore wasted health.”<sup>k</sup> Loos’s condemnation was not with the ornament of which I am writing. That is, ornament understood to be communicative design synonymous with form and function. He rather was against the designs of his time that were mere replications of styles of the past. He was a proponent of architecture and material to be what they are, not made to look like something else. He said satirically that his generation was incapable of producing a new ornament.<sup>10</sup> I find it ironic to pair Loos’s writing with that of Sullivan:

The possibilities of ornamentation, so considered, are marvelous; and before us open, a vista, conceptions so rich, so varied, so poetic, so inexhaustible, that the mind pauses in its flight and life indeed seems but a span.<sup>11</sup>

If you look at Loos’s architecture, you can see that he does have love for ornament. Taking a look at his Looshaus you can see he composes materials to reveal their own qualities. The veins in the green marble are no less ornamental than the flutes on the columns of the orders. The only difference is that nature made the veins and man-made the flutes. Even the modernists, with their building-as-a-machine concept and simplified concrete finishes, employed ornament despite their spoken protestation against it. It is for this reason that Wright believed that if architects could not design according to his organic beliefs, it would be better for man to continue to build machines, rather than “the festering mass of ancient styles.”<sup>12</sup> I find that this statement truly shows the importance of ornament in design, because Wright valued the correlation of the modernists designs to their theory over the naïve replication of “styles,” despite his disposition to the machines neglect of nature, time, and place. The replications of styles, that sadly still takes place today, not only are designed without the connection to their meaning, but tragically, the ornament has nothing to do with the way the building is constructed. And I do not say that it would be better if these buildings were built in stone, because the constructional techniques of today and the skill of the craftsman are not suited for sculpted monolithic structures. We, in the United States and most of the world, do not have the culture of sculptors that can complete a Corinthian column in a reasonable fashion. One of Loos’s concerns with “ornament” was the time that the laborer had to invest to complete the design. So, just as there is disapproval of designing “styles,” there is also criticism of labor intensive work, which leads my writing to the economic implications of ornament in design today.

<sup>k</sup> Adolf Loos, “Ornament and Crime(1929),” in *Ornament and Crime Selected Essays*, trans. Michael Mitchell (Riverside: Adriane Press, 1998), 171

As I mentioned before, the architect must practice prudence when designing his buildings, and when it comes to economic requirements there is no exception. In the 21st century we fortunately no longer have slave labor as they did in ancient times. Yet, even when the labor was free, we know that the Greeks polished the sections of walls of the temples closest to the eye more brightly and used less energy on the sections further away.<sup>k</sup> So we see a prudent judgment based upon effort and effect. Polishing the stone that was further away would not enhance the luminosity of the wall. In doing this, the energy of the workers could be conserved for better use. The Greeks considered the energy of the workers was considered, where as today architects consider the money of the client. What is interesting with economic factors in architecture is that they are no less a criteria than form and function. Alberti organized his treatise with four books being on ornament; he titled the books ornament and ornaments to sacred, public, and private buildings. He makes a point to categorize these types of buildings and their appropriateness for ornament. That is, a sacred building should possess more ornament than a public building, and a public building should possess more ornament than a private building.<sup>13</sup> It would then seem that the architect should design his building to the limits set by the financial status of the client. The house for a public school teacher should not be built with the same materials, or amount of ornament, as one for a wealthy parish church. This is a hard lesson for some to understand, because some might subject that I am diminishing the value of the school teacher's home, or even worse, the school teacher himself. The reader should realize that it is not the price of material, or the amount of ornament that gives value to the design, but rather the appropriate use of both in accordance to form and function. I would never say that one deserves a better design than the other, but that all clients deserve a delightful work of architecture that fits them and the site most appropriately. So, it should be desired that with the given materials, one should strive for the best design.

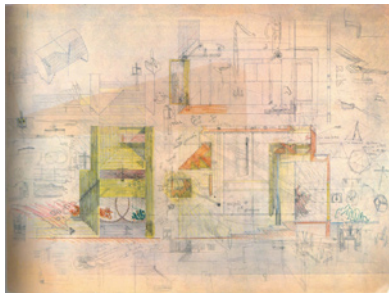


Figure 1  
*Carlo Scarpa: the Complete Works*

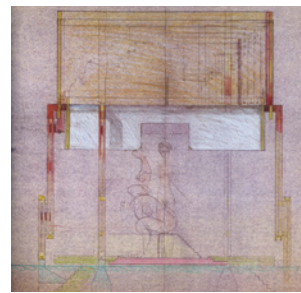


Figure 2  
*Carlo Scarpa: the Complete Works*

<sup>k</sup> Leon Battista Alberti. *On the Art of Building in Ten Books*. trans. Joseph Rykwert, Neil Leach, Robert Tavernor (Cambridge: The MIT Press, 1988), 178



Alberti clearly states what gives value to a design; he says, "It may be observed that a common material skillfully treated will be more graceful than a noble one piled up in a disorderly manner."<sup>k</sup> I must emphasize again, what is a common theme in this essay, the requirements of economy do not omit the influence of culture and meaning. Furthermore, economy affects the appropriateness of material and ornament, but it is not the only factor. There are cases in which the individuality of the client or site may affect the material choice and the amount of ornament more so than the economic limits of the project. Yet still society has the view that ornament is something expensive and superfluous. We know that it is not the case that ornament means more money in design; however, the advancement of technology and the modularization of materials have made it more difficult to design ornament without economic impact. Those that have designed cabinets know the struggle with the dimensions of the plywood sheet. A twenty-four inch depth fits better into the eight foot by four foot sheet than a depth of twenty-five inches. The architect is now responsible to design with the understanding of the modular dimensions. It would benefit architecture profoundly if the modularization of materials happened after the architect decided the dimensions. That is, factories could adjust to the customization of products more readily without much price difference. I can recall a product meeting with a sales representative that mentioned her company's production of a ten foot square, pyramidal skylight that was significantly less than one of nine feet. It gave me great pleasure when she said that some architects refused to change their design to fit the larger opening, this meant there are architects that do not design solely on economic factors. However, it would be much nicer if the nine foot opening would cost less than the ten foot opening. Technology should not be considered a hindrance on design, but actually a wonderful tool that opens more possibilities for ornamentation. Laser cutters and CNC machines can greatly reduce the amount of manual labor and thus price. However, they have their own qualities and limitations, but this is merely a new factor for the architect to control. The architect must design the final work to communicate that it was made by a machine rather than a human, and this requires no more money, just more prudence by the architect.



Figure 3  
Louis Sullivan Guaranty Building

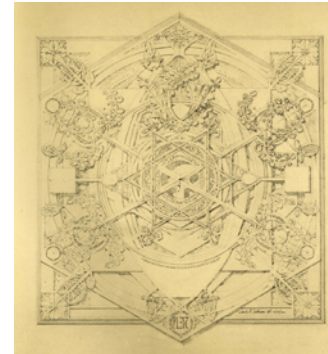


Figure 4  
*A System of Architectural Ornamentation*

<sup>k</sup> Leon Battista Alberti. *On the Art of Building in Ten Books*. trans. Joseph Rykwert, Neil Leach, Robert Tavernor (Cambridge: The MIT Press, 1988), 164

Now that I have discussed what constitutes ornament, I would like to discuss what I believe to be the two types of ornament: that which expresses structure, and that of cladding. I will first explain ornament that expresses the structural system of architecture. Wright describes ornament as “the expression of inner rhythm of Form.”<sup>14</sup> When ornament successfully expresses the structure, the form, structure, and ornament become one in a beautiful harmony. Through the empirical judgment of the architect the design achieves individuality. The architect must be sensitive designing this ornament, because, just as one person’s physical accents do not match that of another, a building’s ornament should differ from that of another building. The decision of the architect can only rightly be made through experience. Whether it is the experience from numerous years of work, or the result of a diligent study through drawing and modeling the architect must choose carefully. All architects can learn from the rigorous process of Carlo Scarpa. One can see in figure 1 Scarpa’s curiosity; he believes in nothing unless it is drawn.<sup>k</sup> He has centered a technical elevation, section, and plan of his entrance to the Brion Tomb, and he has even used crayon to express the quality that he sees in the material. Surrounding the central drawings are his investigations of the stepping of the concrete, the geometry of the interlocking circles at the end of the passage, and the lines of perspective upon entering the space. By the way he has formed the concrete, Scarpa has made it possible to understand the thickness of the concrete. The structure becomes understood as fifteen steps or eleven steps. When one sketches this on site, the steps become a useful scale, and one realizes the geometry of the whole structure. The stepping also communicates directly the process of making concrete. That is, the structure was poured into a form constructed of wooden boards and the presence of the material remains after the form is taken down. Scarpa also used steel to make the openings on the far end of the entrance that was necessary to withstand the weight of the fluid uncured concrete. The design of the opening expresses the power of concrete and goes further to express the union of man and woman, or even fire and water, because one ring is fitted with blue tile and the other with red tile. The red and blue circles interlock to form the mandola, a union upon which one can meditate. All of these ornaments take place in a concrete structure. We can also look at Scarpa’s tectonic structures to see how ornament expresses it. In figure 2 you can see how he has taken a simple four column canopy and turned it into something magical. Focusing on one column, we can see that he has broken it in two, designing a joint for the member of the water and the member of the sky. This move really expresses the transference of the load from the wooden canopy to the ground under the water. It visually seems as if the columns would slide past one another, and they would if not for Scarpa’s ornate joint. This decision becomes all the more interesting knowing that the canopy is a meditation pavilion in his tomb. The connection of heaven and earth could be said to exist in the joint. So, again we see the ornament communicating meaning while functioning. One should note the difficulty to separate the traits of ornament, because as it is expressing the structure, it is the structure and still communicating meaning as well.

<sup>k</sup> Francesco Dal Co, “The Architecture of Carlo Scarpa,” in *Carlo Scarpa the Complete Works*. (New York: Rizzoli International Publications, INC., 1985), 53

I have discussed ornament as structural expression, and now I would like to proceed by writing about ornament as cladding. Though this type of ornament does not function to help the building stand, it is no less functional because the building must be enclosed. There may be no other architect that was more opportunistic with the skin of the building than Louis Sullivan. His terracotta tiles that dress the Guaranty Building blend so harmoniously that it is as if you could see its breath. As you can see in figure 3, he even solves the difficult situation of the corner with his imaginative design. The wood and terra flow together, and they hardly contrast because they speak the same language. They seem to be from the same family or of the same origin. And this is precisely how one should view the building, because, in addition to the beauty we see in his geometric tiles, Sullivan communicates his most inner beliefs through the ornament. Sullivan believed that “man’s-ego-power” could make building transcendental like nature.<sup>k</sup> Again, we see that the ornament is providing a function to the building while still communicating meaning. The terracotta protects the building and the occupants from the weather, and every part of the skin is realizing Sullivan’s transcendentalist beliefs. The building is the beautiful, individual tree that sprouts from the seed germ; form, function and ornament are one.<sup>15</sup> If we focus on Sullivan’s drawing in figure 4, we again see the architect acting with prudence. Though we do not see the same investigative sketches that Scarpa uses, we do see Sullivan’s control of the thickness of the end material. He does not draw the geometry and organic patterns two dimensionally, but he draws on the paper as if he were sculpting the terracotta himself. The shadows are cast by an imagined light, and he even uses different lead weights for the depth of the cut! Though I show a plate of one ornament centered its page, it is important that the reader know that when designing a cladding system the ornament should be one with the surface rather than something attached.<sup>16</sup> The reader could imagine the outer shell as the skin on a human hand. The skin flows over the muscles, tendons, and bones of the hand while still maintaining its uniformity. The human skin even expresses the function of the hand; it wrinkles where the knuckles bend and where the palm folds, and it even changes texture so we may grasp things! Furthermore, the skin expresses the underlying structure of the skeleton, and Sullivan’s ornament in the Guaranty Building is no exception. In the elevations of the building mentioned above, the Bayard-Condict Building, and the Wainwright Building Sullivan used the cladding to express the underlying iron frame structure. The iron cannot be exposed to the elements, but with the ornament the structure can display itself in the elevation. Though it does not participate in the transference of load (other than its own in weight in the case of the brick), the ornament does express the structure. Again, even though I order the ornament into two categories, one must notice that the ornament still communicates meaning, form, and function.

<sup>k</sup>Louis Henry Sullivan, *A System of Architectural Ornament* (New York: Rizzoli International Publications INC., 1990), 128

I would say that the romance of architecture dwells in the ornament. I will explain my belief with this short story:

A young man sitting in a contemporary building stares at his computer frozen and dull. There are no windows. The walls are white. The ceiling is oppressive, low and a slightly more dingy white. The light is sterile and fluorescent, hiding all shadows except for the dark corners where the wall meets the ceiling. He has shaven all the hair on his body, and he wears only white shoes, white socks, white pants, and white shirts without buttons. He types the letter “a” all day. His voice always is at the tone A, and he speaks only the word A. He leaves his work to his apartment one level up in the same building, room A in hallway A. He enters the room and enters his bed no more than one step from the door. He takes off his shoes, and pulls his white covers over him. He sleeps and dreams of nothing but a white page.

Surely this is hell. This a-world exists with no imagination or variation. How important is sunlight, shadows, color, texture, air, melody, and language? One of the most delightful things in our life is living among all these sensuous experiences and communicating our perception with others. The sharing of experience is one of the most intimate and pleasing facets of this world. The Oxford English Dictionary defines romance as being characterized by the subordination of form to theme, and by imagination and passion. So, if we desire romance in our world, shouldn't then our buildings possess a romantic character. Should not our buildings be able to communicate as humans do? It is a fantastic thought to think that one may enter five buildings on a street and experience five new worlds, yet they all belong to the one that we live. It would seem that it is the architect's responsibility to communicate through his design. The building should be brimming with narrative. Loos writes, “A woman who spends eight hours a day standing at the loom in the deafening noise of the factory feels pleasure, deliverance even, when from time to time, a colored thread appears.”<sup>k</sup> Why should architects not have the colored thread pass through their loom, and why should they not have the pleasure of variation in their design? Though Loos writes this in order to distinguish the difference of needs for the poor and aristocrat, I would argue that those of all social classes should be able to utilize their imagination in their work. The architect should not be limited to the scale of his design. A wall can be so much more than white plaster board. In the construction of today, we go to great length to hide the pieces of drywall that make up an interior wall. Is it wrong to express the parts that make up the whole of the wall? I would argue no, and I would go further to say that the architect has the opportunity to express more of his imagination. The Romance in ornament can best be described by Louis Sullivan's beautiful writing:

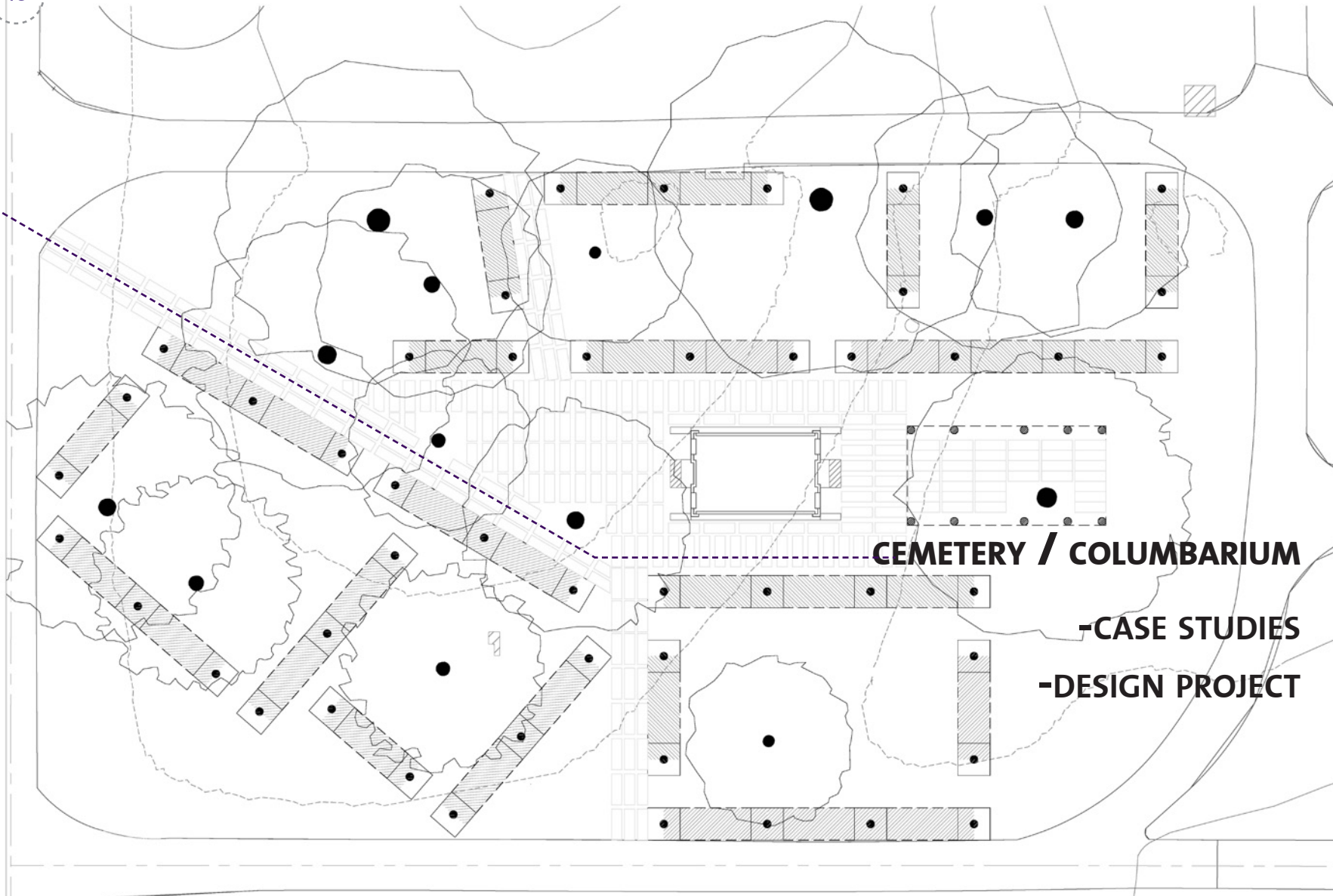
“We have in us romanticism, and feel a craving to express it. We feel intuitively that our strong, athletic and simple forms will carry with natural ease the raiment of which we dream and that our buildings thus clad in a garment of poetic imagery, half hid as it were in choice products of loom and mine will appeal with redoubled power, like a sonorous melody overlaid with harmonious voices.”<sup>17</sup>

<sup>k</sup> Adolf Loos, “Ornament and Education(1924),” in *Ornament and Crime Selected Essays*, trans. Michael Mitchell (Riverside: Adriane Press, 1998), 186a

I believe that one can better understand the relationship of beauty and function that is ornament by comparing it with our human relationship with food. We eat so that our bodies may be enriched, so that we may continue in this world to work, play, and love. We find great pleasure in this, and every culture has developed a palate so that the ritual of eating may be more pleasing. Yet, we caution ourselves against an excess of food, because it eventually leads to bad health, disease, and death. Therefore, eating for pleasures sake defeats its purpose of enriching one's life and keeping one healthy. The same can be said for ornament. Ornament always has a purpose, some function it serves, and it is beautiful. The ornament serves us and enriches our lives, but never solely for aesthetics. It is for this reason that St. Thomas Aquinas condemns the excess of ornament and not a richness.<sup>18</sup> Morally sound, Nature shows to us how we may proceed with our designs. Would the rose look at its flower as beautiful? Or, would it rather see its head as the manufacturer of pollen and the attractor of the bee, which will plant its seed in the neighboring flower so that the rose's existence might continue? The tree does not change its leaves in autumn so that it may beautify the mountain side. It, in fact, begins to starve its leaves so that it may conserve energy in the coming winter. And again, its flowers in the spring are not to display its beauty, but rather to communicate that this is where it will feed the insects so that they might germinate the other flowers. And does our lovers eyes exist so that we may gaze into their beauty? Or are they for her to gaze into ours? Or rather is this where the soul displays itself to us. It is with this understanding of the union of function and beauty that the architect should design. It is the desire to communicate that we should proceed.<sup>k</sup> That we may ornate.

# THAT WE MAY ORNATE

<sup>k</sup> Ananda K. Coomaraswamy, "Ornament," *Art Bulletin* Vol. 24 No. 2 (1939), 382



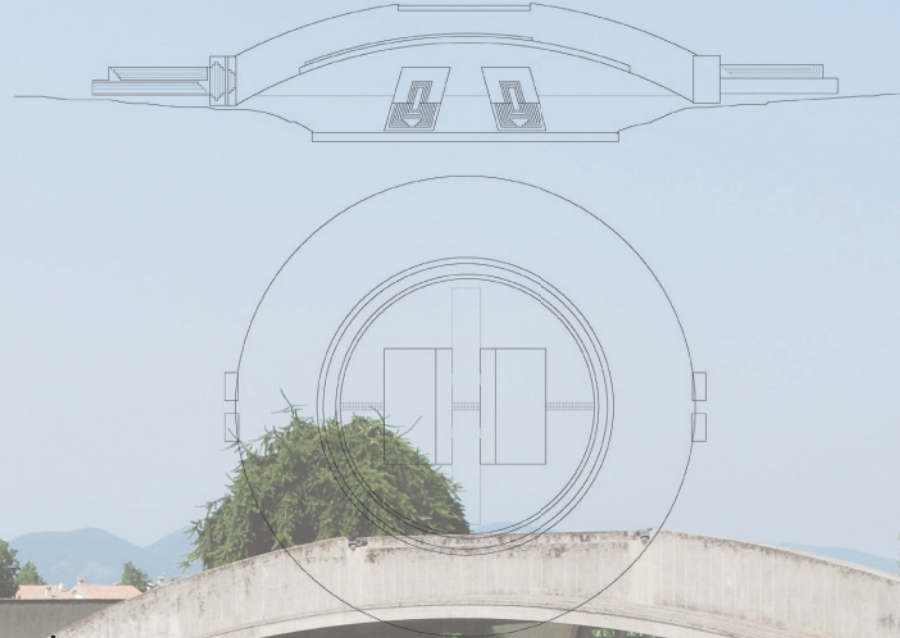
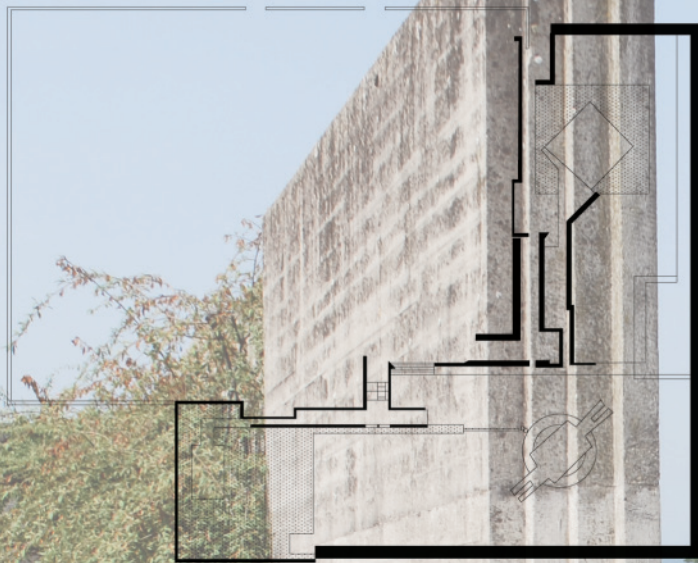
**CEMETERY / COLUMBARIUM**

**-CASE STUDIES**

**-DESIGN PROJECT**

A few things I took away from Scarpa's Brion Tomb:

- there was a place to pray, worship and visit the deceased
- there were sensitive thresholds in the project
- he oriented the couple east-west, different than the cemetery walls
- he expressed the construction of concrete with a stepping motif and board formed wood markings

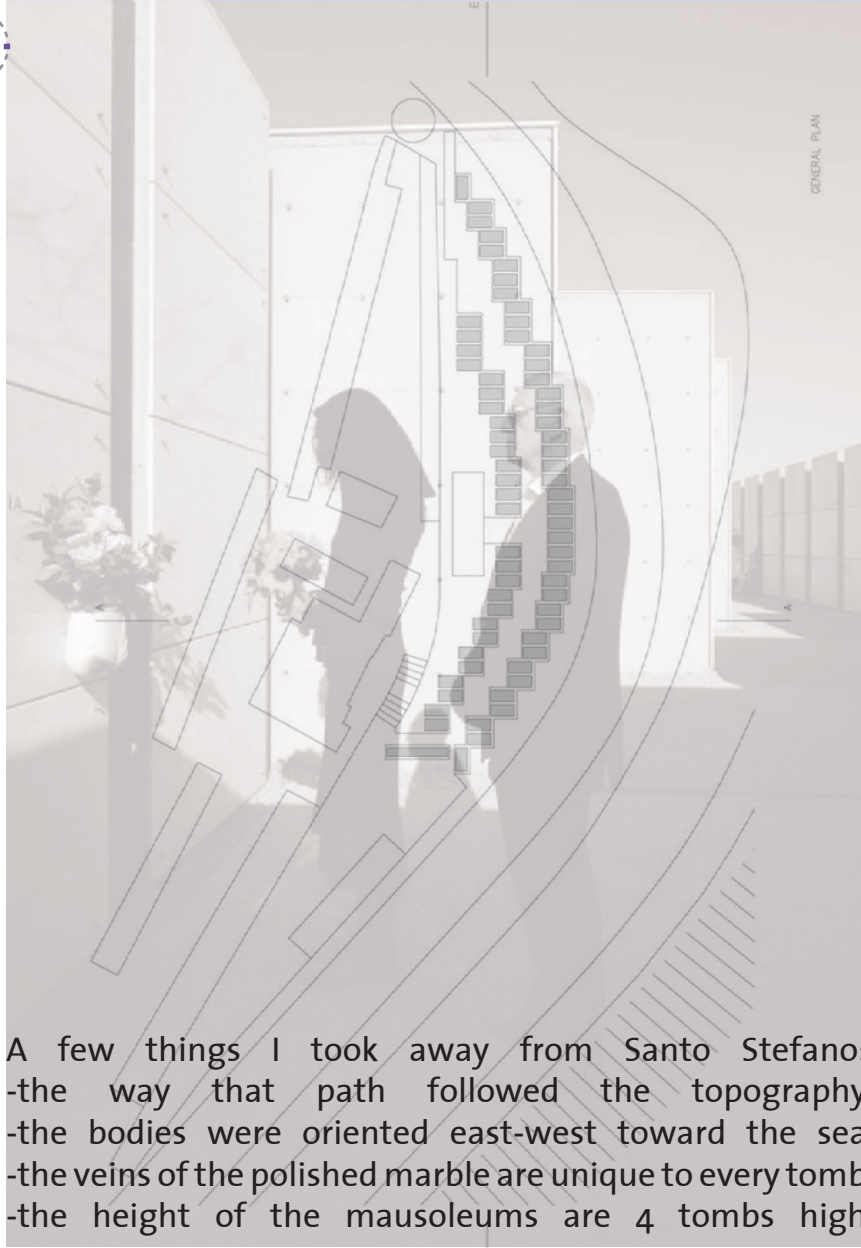


A few things I took away from Rossi's San Cataldo Cemetery in Modena, Italy:

- he used iconic forms as a way to establish position in the cemetery
- he used density so that the project would hold many generations of the city
- he designed a few elements then repeated and arranged them in a way that makes them unique
- he used a rigid x and y axis to order the site





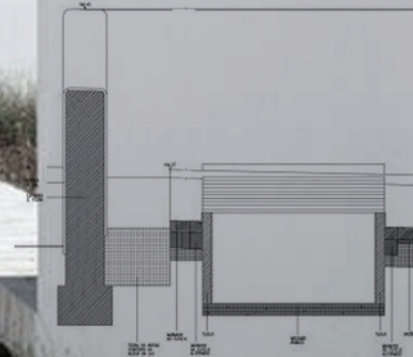
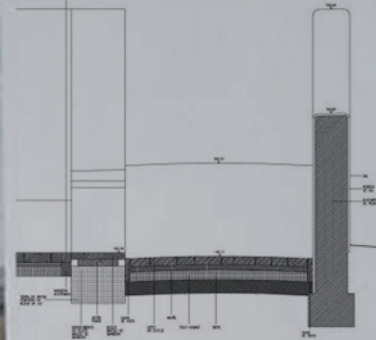
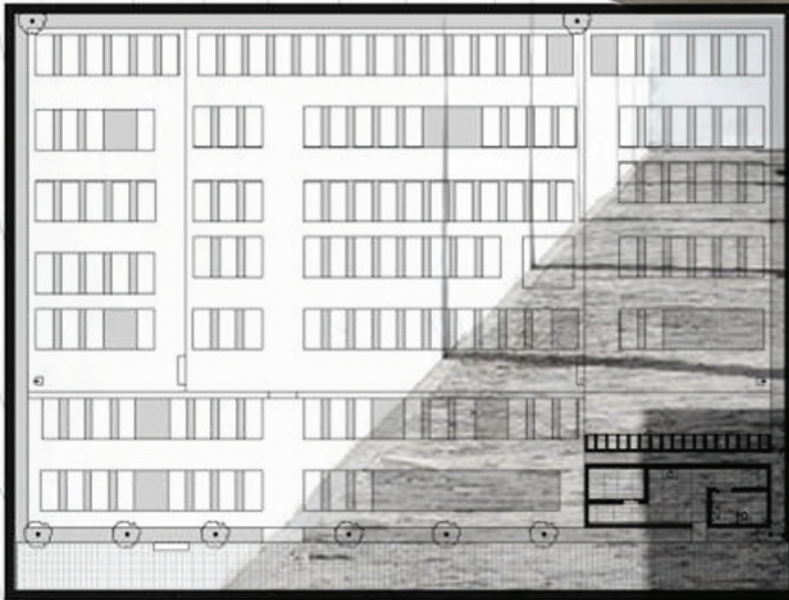


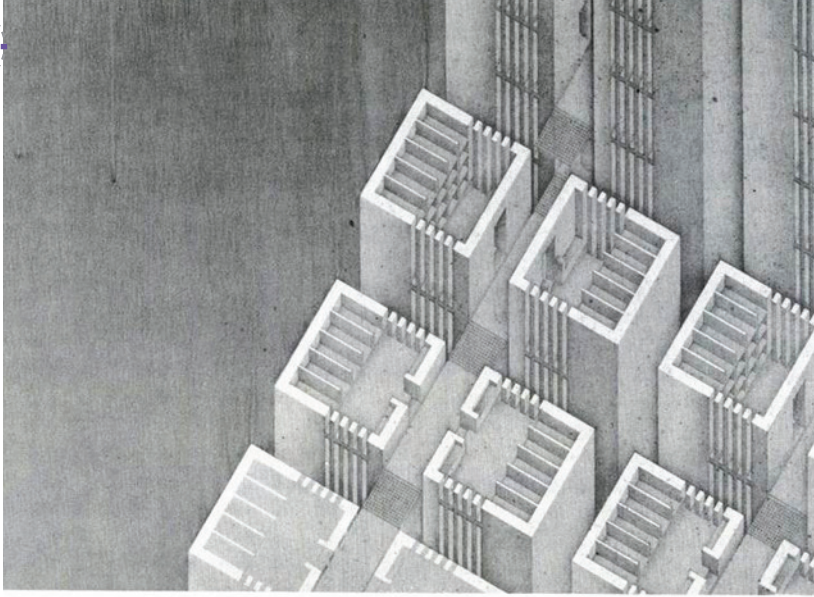
A few things I took away from Santo Stefano:

- the way that path followed the topography
- the bodies were oriented east-west toward the sea
- the veins of the polished marble are unique to every tomb
- the height of the mausoleums are 4 tombs high

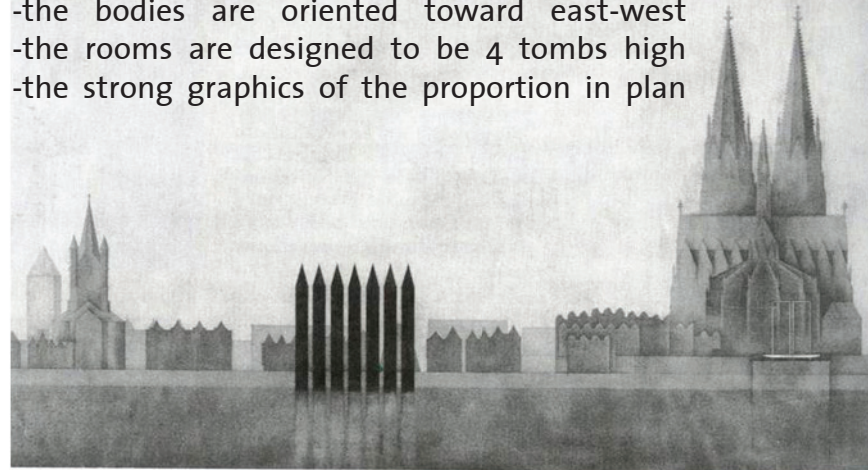


- A few things I took away from Luz Cemetery:
- the bodies were oriented in the east-west direction
  - the use of cypress trees at the entrance
  - the design of the path that separated the path from rest
  - the height of the exterior wall that selected views

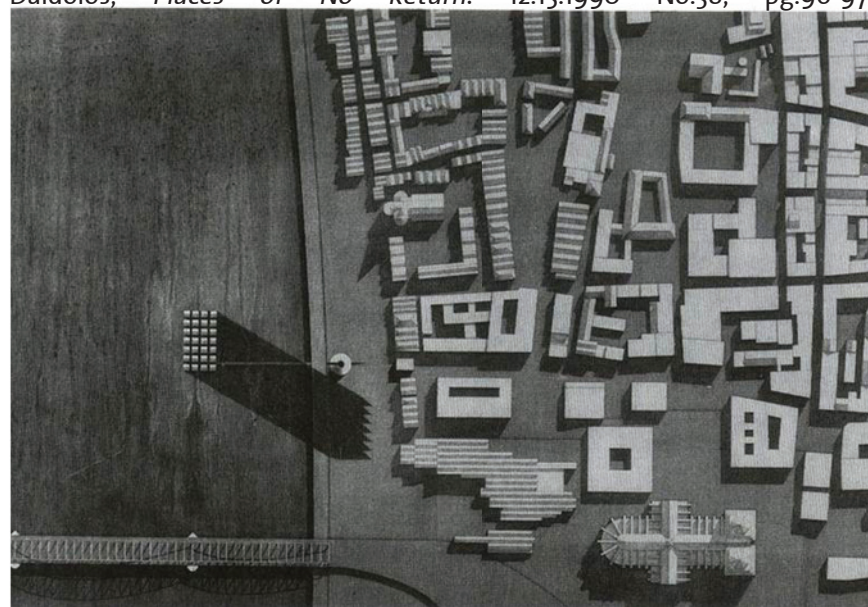
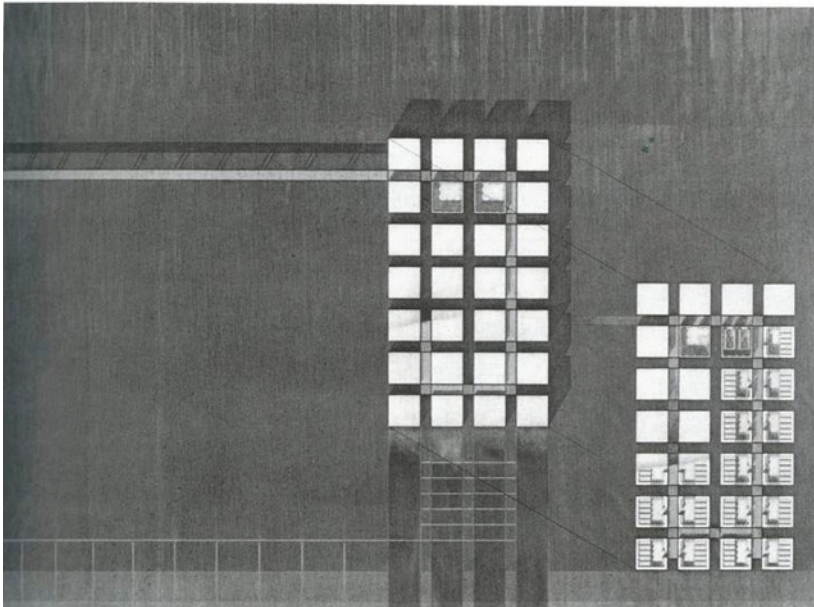




A few things I took away from Funeral Island:  
 -the ambitious imagination of towers in water  
 -the long journey from the entrance to the tomb  
 -the bodies are oriented toward east-west  
 -the rooms are designed to be 4 tombs high  
 -the strong graphics of the proportion in plan



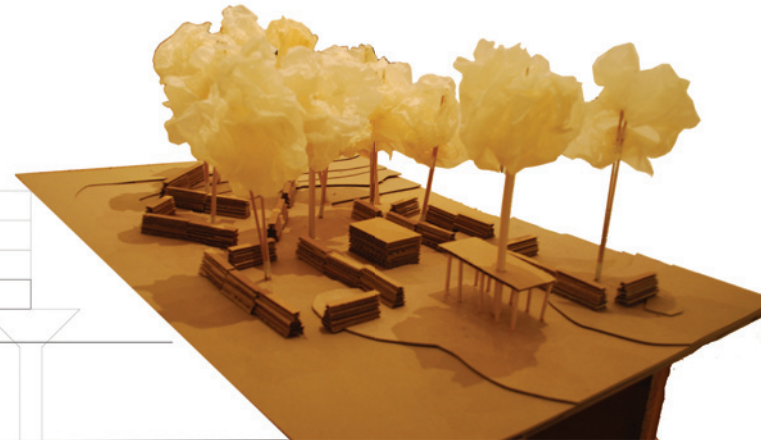
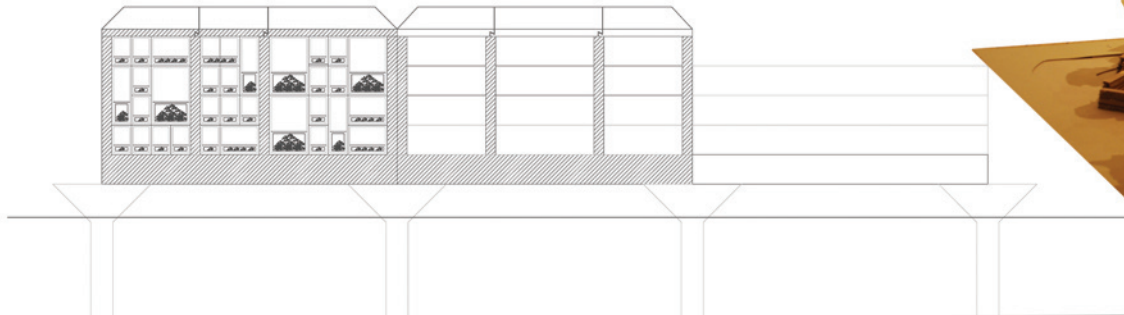
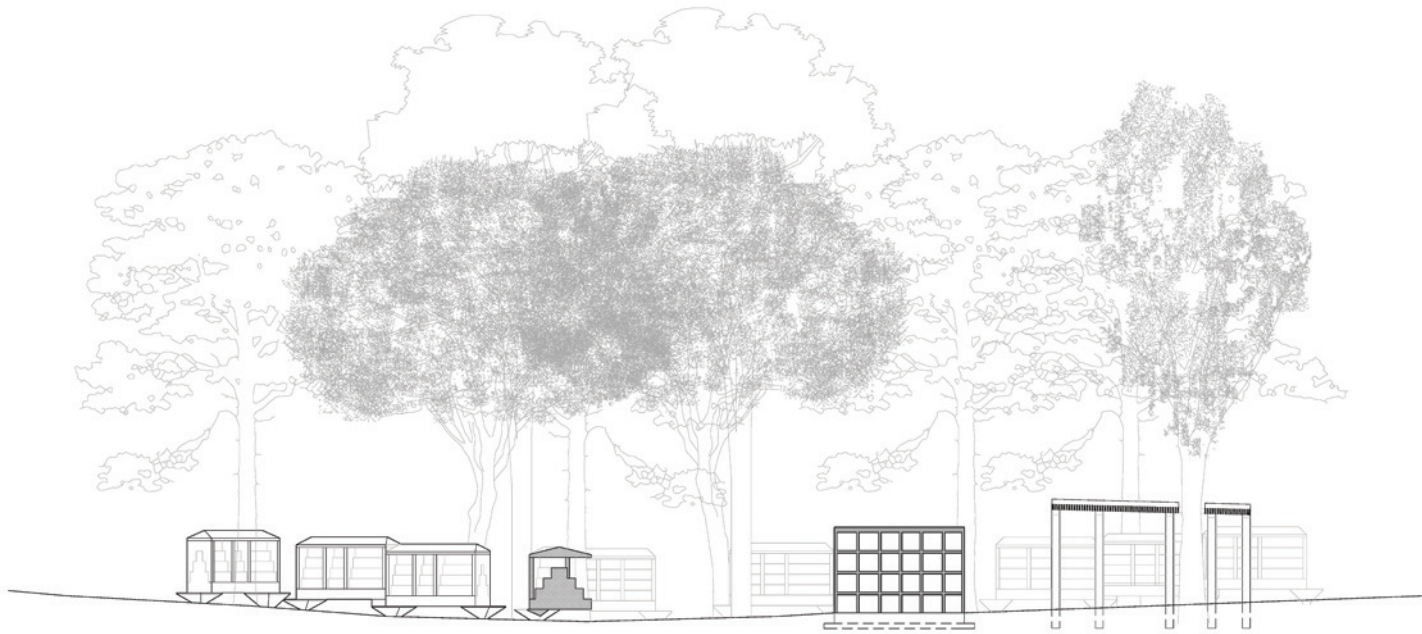
Daidolos, *Places of No Return*: 12.15.1990 No.38, pg.96-97



## DESIGN PROJECT

In the spring of 2010 I joined a class that was to design a proposal of a columbarium for a cemetery in Herndon, Virginia. The research led the studio to the connection between the columbarium and the dovecote. A dovecote being a tower that contains niches for doves to dwell, and a columbarium being a structure to hold the urns of the cremated. My design sought to express the individuality of each person in the niches, while fitting into an ordered system. The final design became a series of walls arranged to create rooms with trees as well as a path to a chapel. The niches were of three kinds, that could be placed anywhere on the walls. The site had large trees and an existing mausoleum.

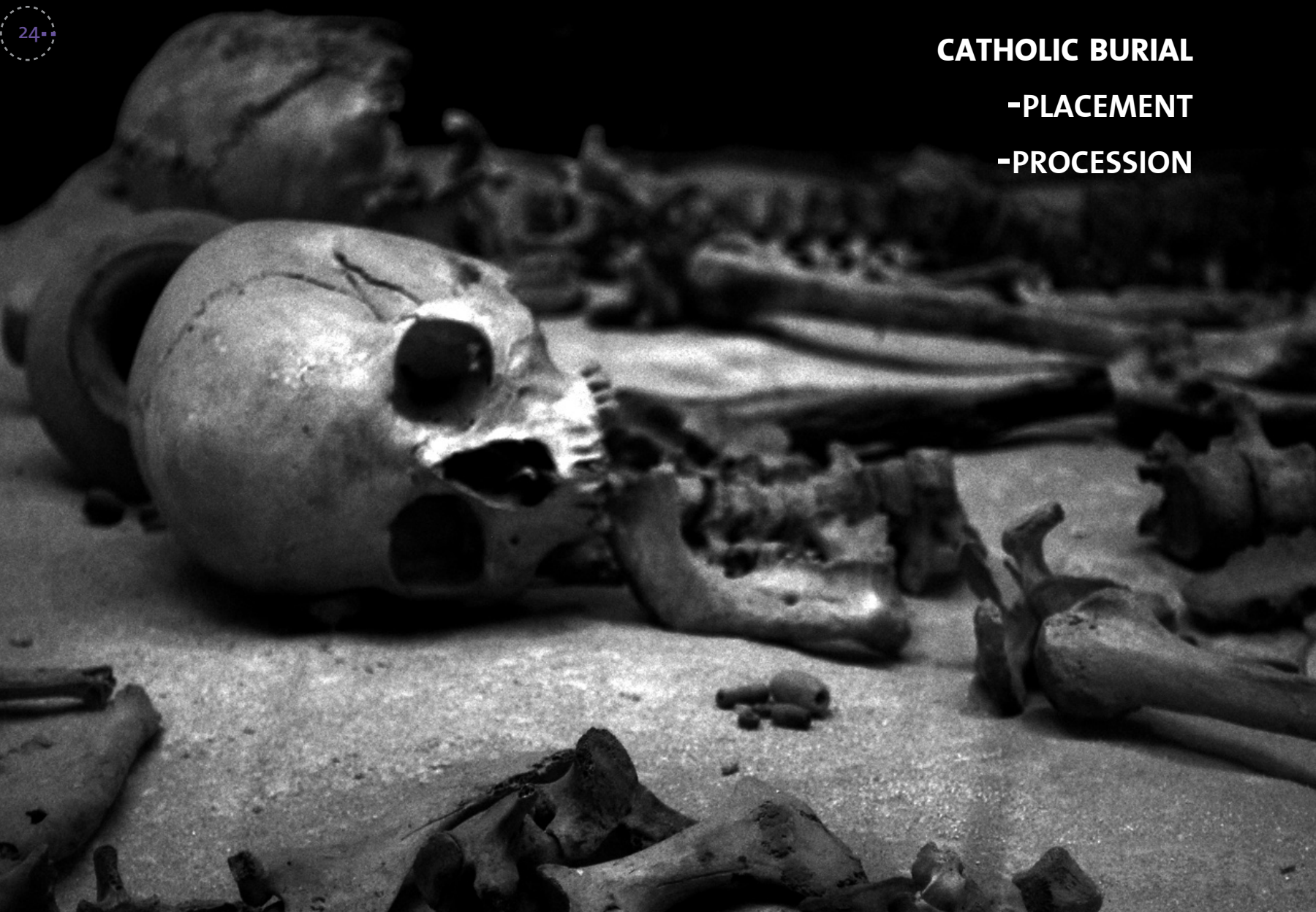




# CATHOLIC BURIAL

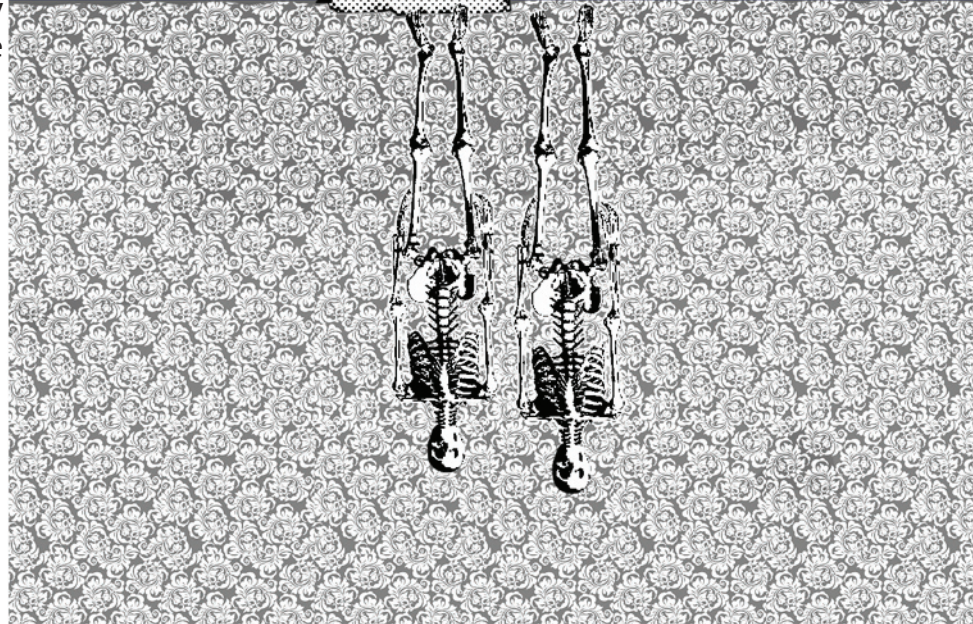
-PLACEMENT

-PROCESSION

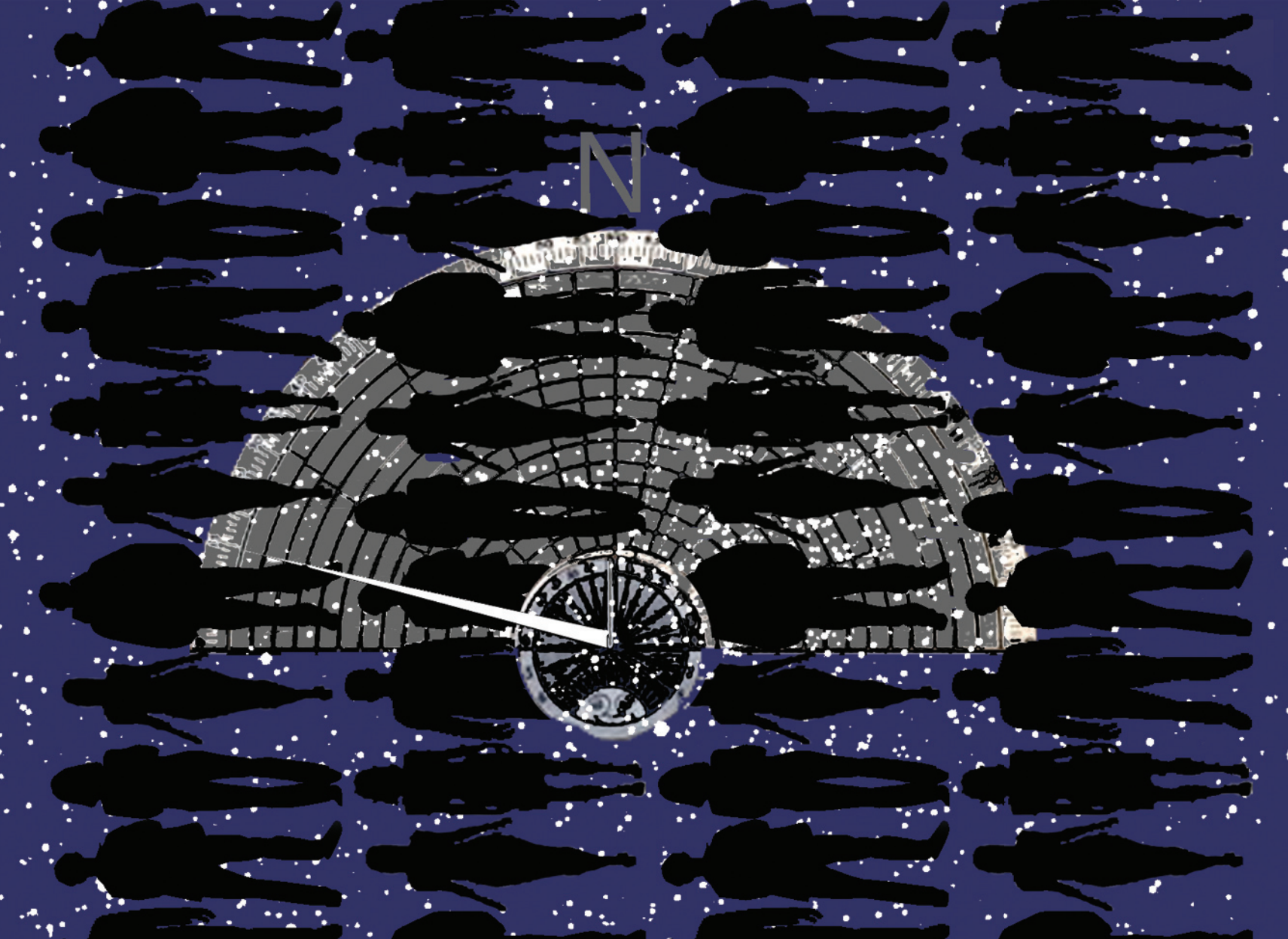


The Rituale Romanum states several instructions pertaining to Roman Catholic burial. I found that these instructions had architectural potential as they related to movement in time, orientation, and propriety of location. I decided to create collages as a way to make these words into images. There are collages for the appropriate burial of laity, priests, married couples, baptized infants, and the 5 steps of funeral procession.

The married should be interred in the same way they were wedded at the altar. The groom being on the right side of the bride. Their feet should face east.



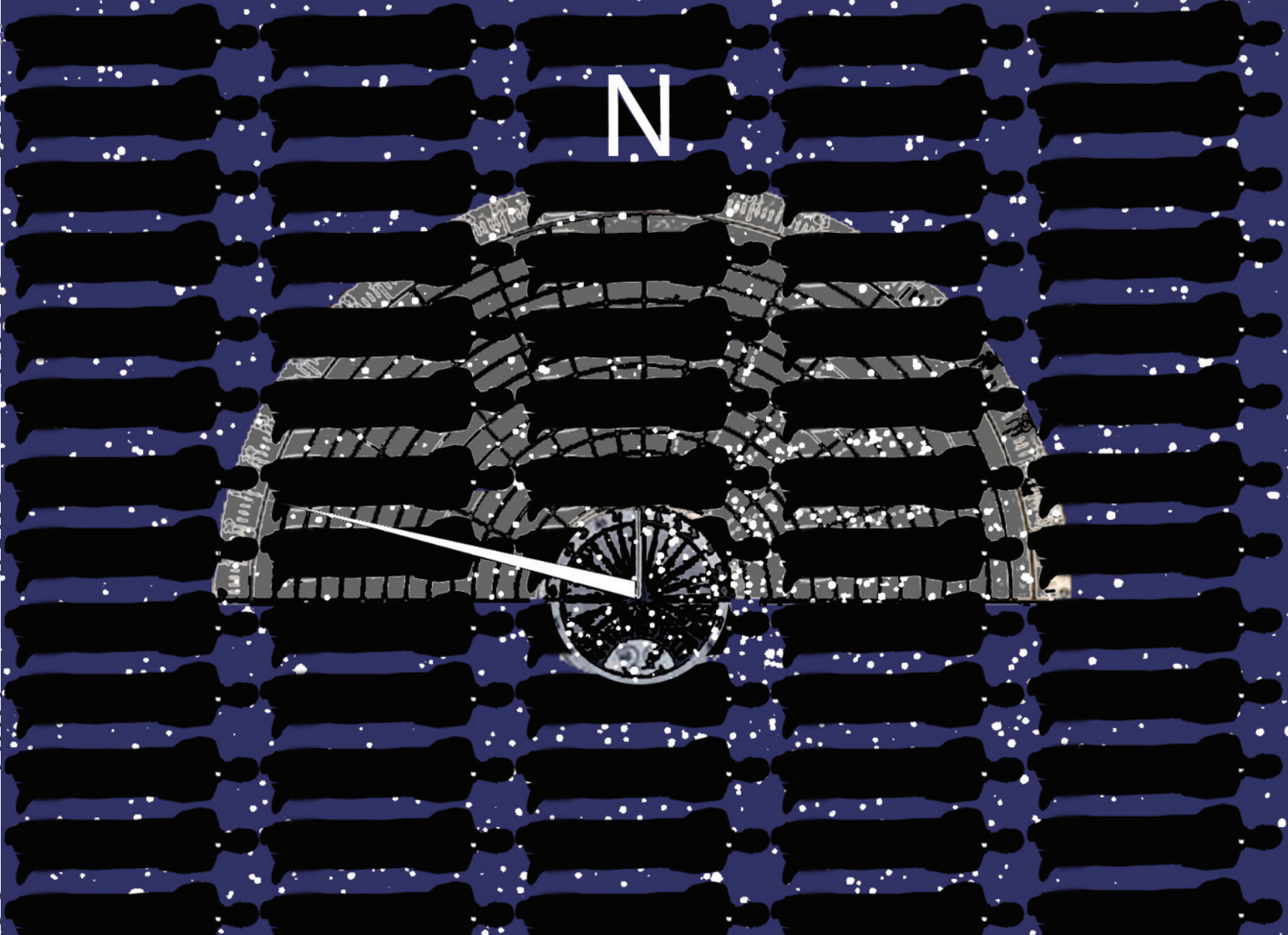
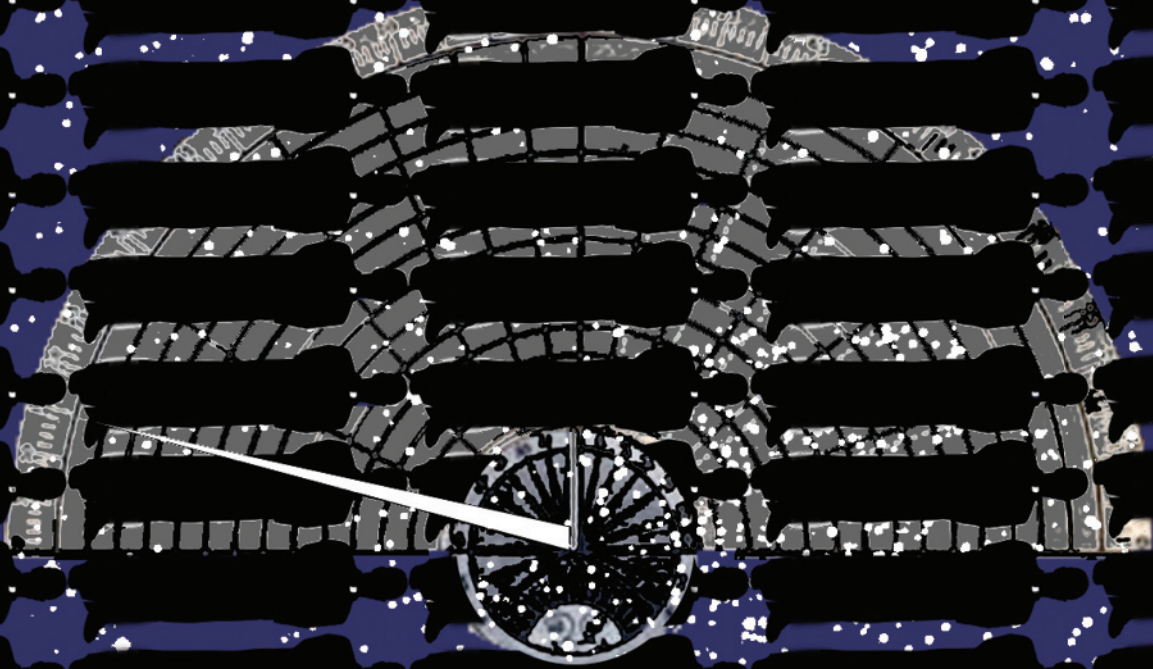
BURIAL OF THE LAITY: BODY ORIENTED SO THAT FEET FACE EAST

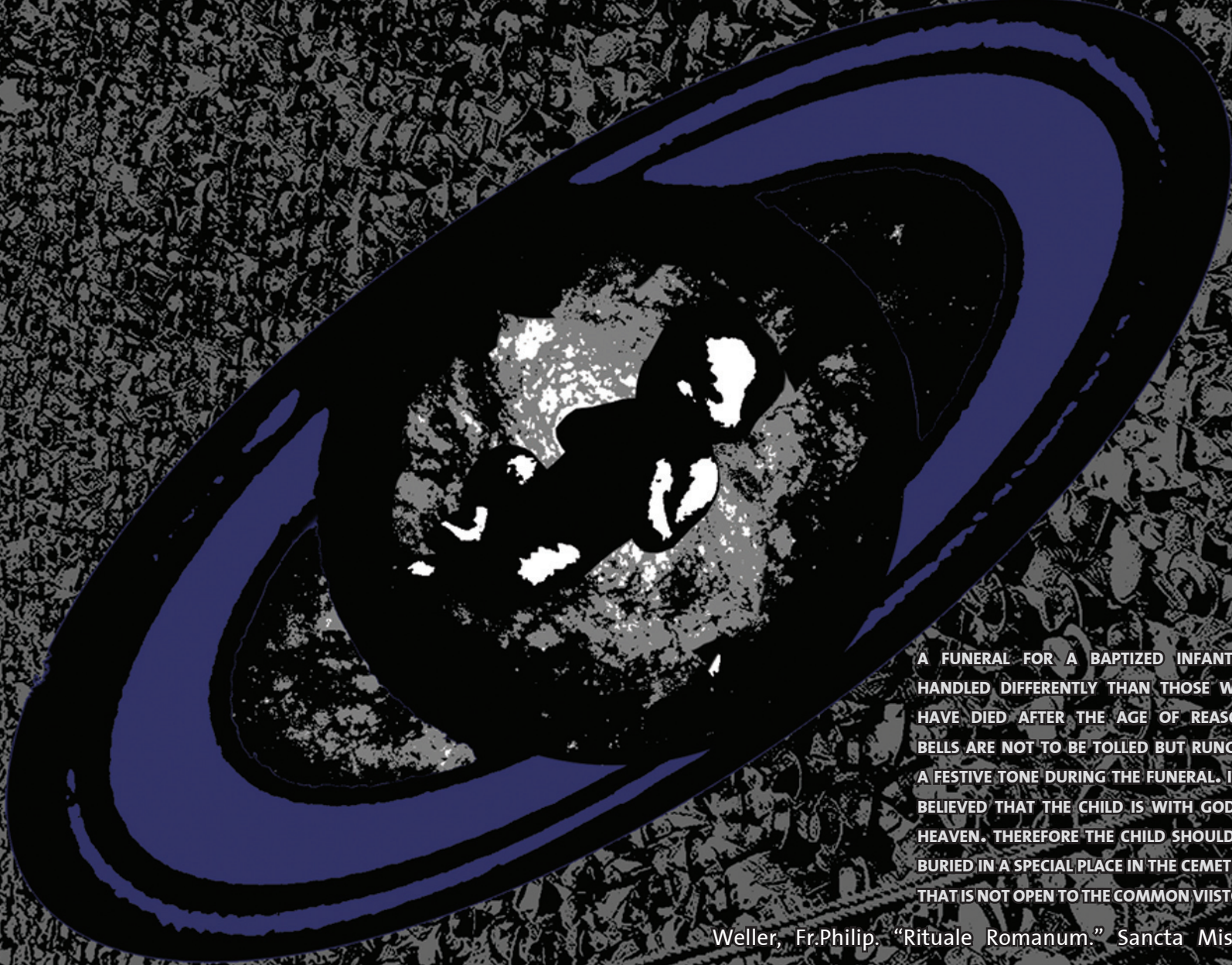




BURIAL OF PRIESTS: BODY ORIENTED  
SO THAT HEAD FACES EAST

N





A FUNERAL FOR A BAPTIZED INFANT IS HANDLED DIFFERENTLY THAN THOSE WHO HAVE DIED AFTER THE AGE OF REASON. BELLS ARE NOT TO BE TOLLED BUT RUNG IN A FESTIVE TONE DURING THE FUNERAL. IT IS BELIEVED THAT THE CHILD IS WITH GOD IN HEAVEN. THEREFORE THE CHILD SHOULD BE BURIED IN A SPECIAL PLACE IN THE CEMETERY THAT IS NOT OPEN TO THE COMMON VISITOR.

Weller, Fr. Philip. "Rituale Romanum." Sancta Missa.

THE FIRST STAGE OF THE FUNERAL PROCESSION TAKES PLACE AT EITHER THE DECEASED'S HOME OR A SUBSTITUTED FUNERAL HOME. PRAYERS ARE SAID HERE FOR THE DECEASED AND THE DECEASED'S FAMILY. IN THE INSTANCE OF AN OPEN CASKET, THIS WILL BE THE LAST TIME THAT ONE WILL SEE THEIR LOVE'S FACE.



THE SECOND STAGE IS A PROCESSION FROM THE HOME TO THE CHURCH . THE BODY IS CARRIED BY HEARSE AND THE PRIEST LEADS THE PROCESSION. HE STARTS THE ANTIPHON: “THE BONES YOU HAVE CRUSHED SHALL REJOICE” THE CHANTERS READ PSALM 50.



THE THIRD STAGE IS A CELEBRATION OF THE MASS. THE DECEASED IS PLACED IN THE CENTER AISLE WITH THEIR FEET FACING THE ALTAR, OR THEIR HEAD IF THE DECEASED IS A PRIEST. SPECIAL PRAYERS ARE SAID OR CHANTED FOR THE SOUL OF THE DECEASED.

# 3 THE MASS



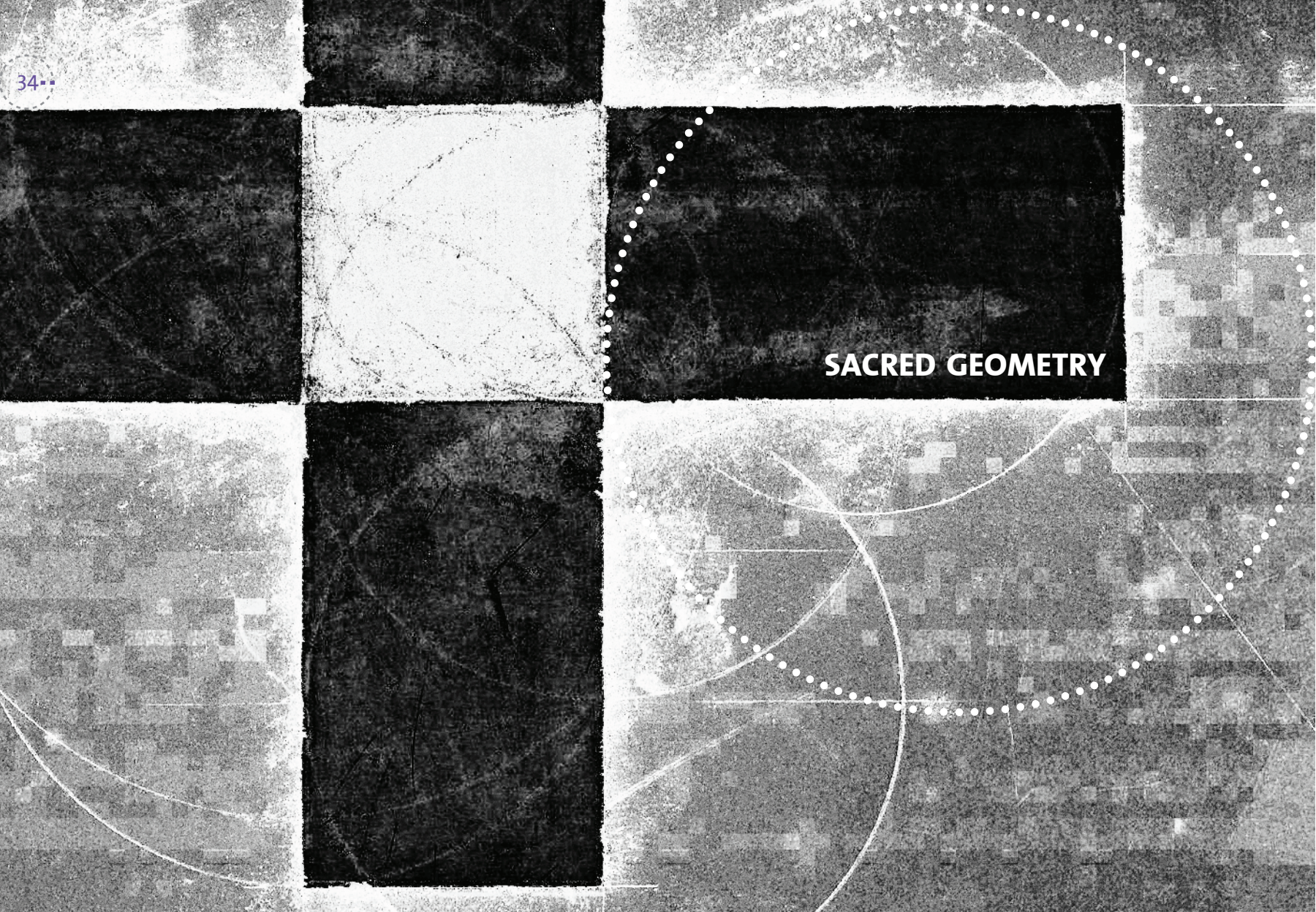
AFTER THE FINAL BLESSING OF THE PRIEST THE CORPSE IS TAKEN OUT OF THE CHURCH BY THE PALLBEARERS. THE FAMILY AND THE FRIENDS FOLLOW BEHIND THE DECEASED ONE LAST TIME TO THE SITE OF THE TOMB. WHEN ARRIVING THE PRIEST BLESSES THE GRAVE AND PRAYERS ARE SAID AGAIN FOR THE DECEASED AND THE MOURNERS. THE CORPSE IS PLACED IN THE GRAVE.



AFTER THE FINAL PRAYER THE CONGREGATION MAY PLACE A MEMENTO ON THE GRAVE. THE FUNERAL IS OVER AT THIS POINT AND THE CONGREGATION LEAVES THE PLACE OF THE TOMB WITH THE MEMORY THAT WILL LEAD THEM BACK. THE TOMB WILL BECOME A PLACE WHERE THEY CAN COME TO REMEMBER THE LIFE OF THE LOVED ONE, AND ALSO TO PRAY FOR THAT LOVE ONE'S SOUL.

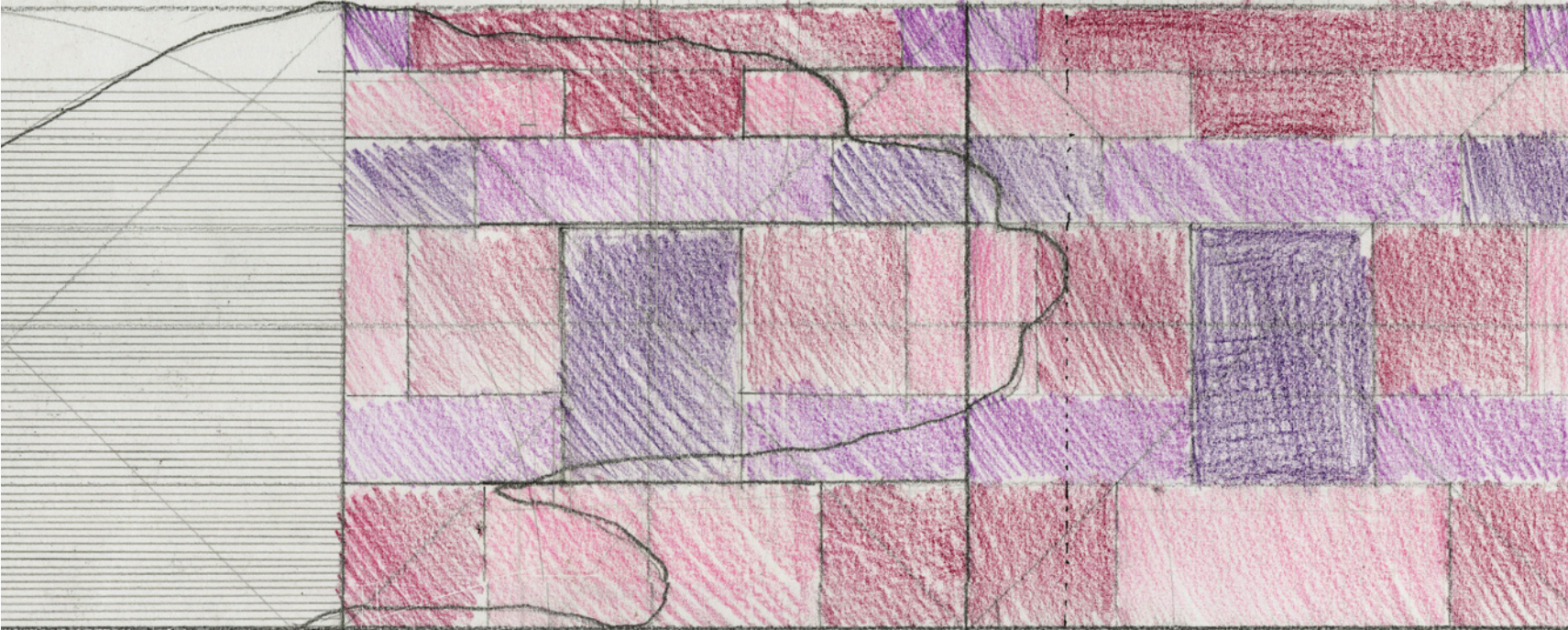


**SACRED GEOMETRY**



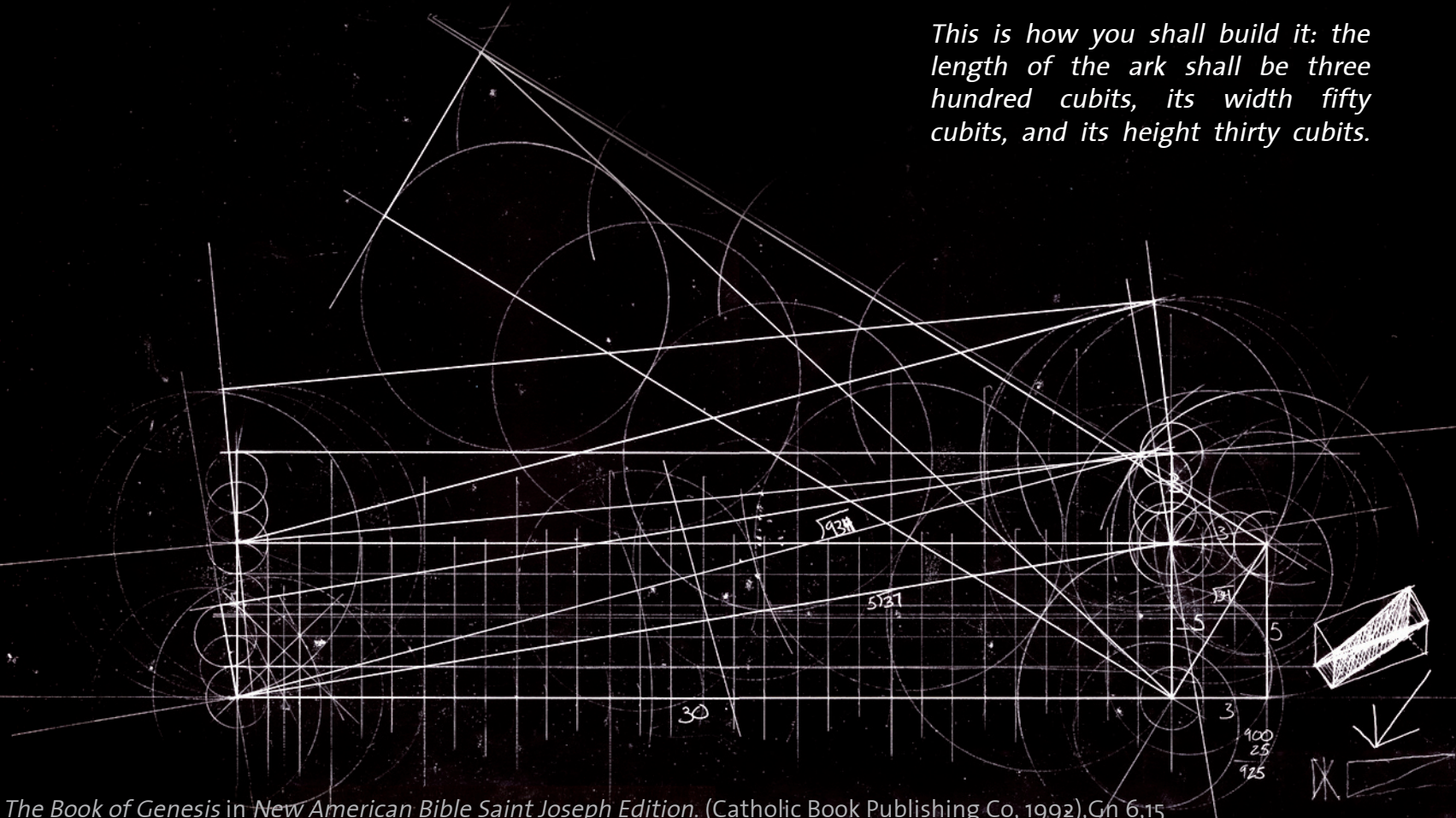


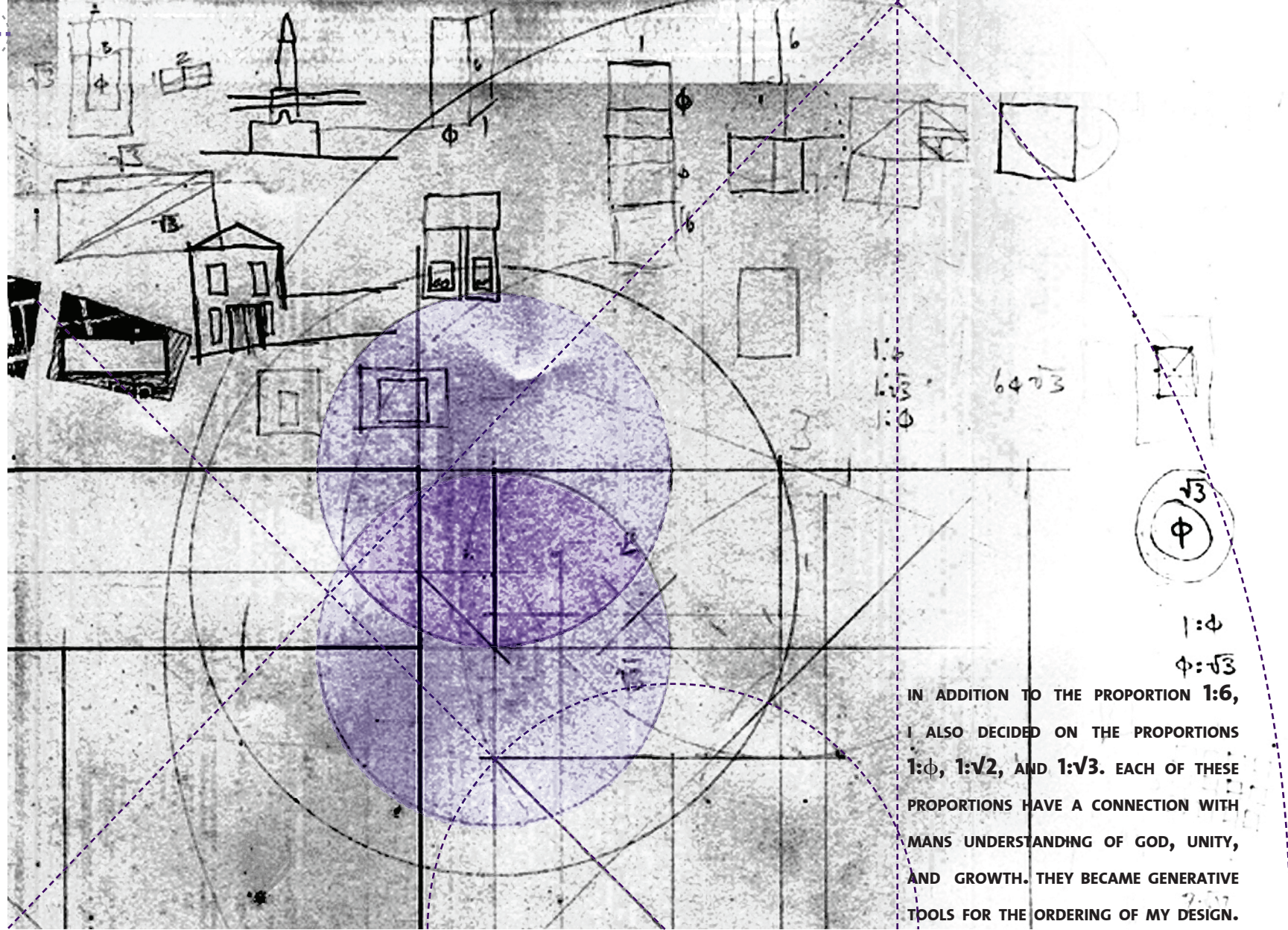
$$\frac{7\frac{2}{3}}{2\frac{1}{6}}$$



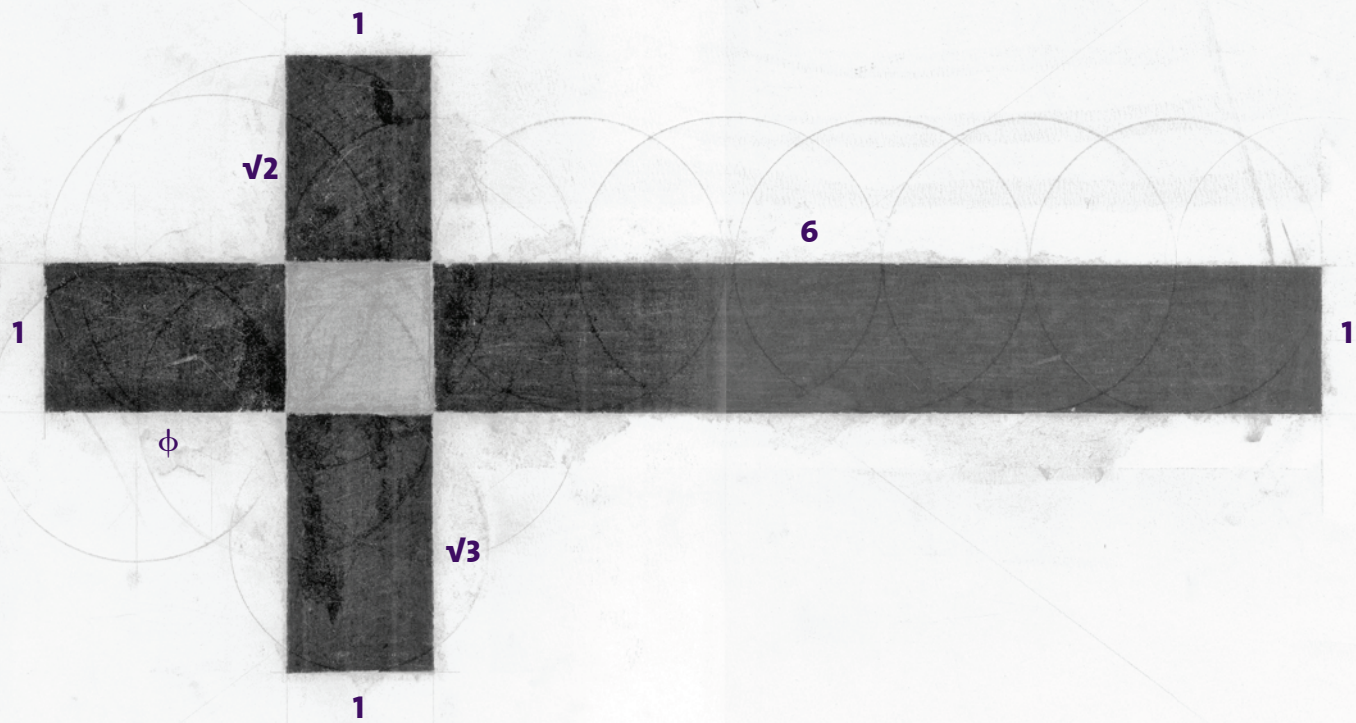
In the beginning the only proportion that was consistent in my design was 1:1, that is the square. My committee urged me to find reason for it. Paul suggested that I look at the story of Noah and the ark for inspiration. While this advice led me to numbers given from God to man through scripture, in my reading of *Sacred Geometry: Philosophy and Practice* I learned that God has given numbers to man through geometry as well. It is the truth in division, relation and unity that has caused man to attribute certain proportions in his designs over the years. As a result of these truths man has ascribed meaning to these numbers as well.

*This is how you shall build it: the length of the ark shall be three hundred cubits, its width fifty cubits, and its height thirty cubits.*

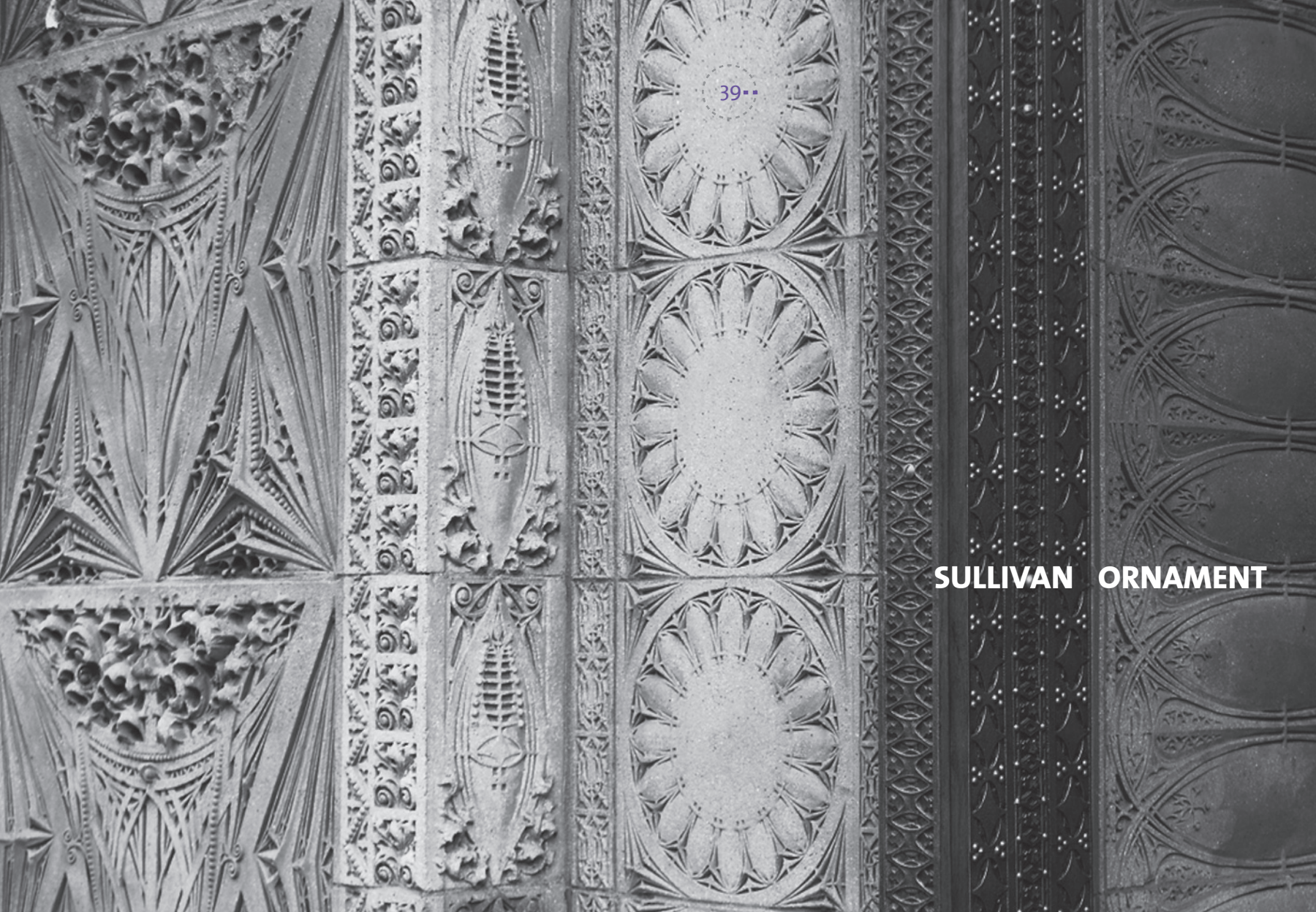




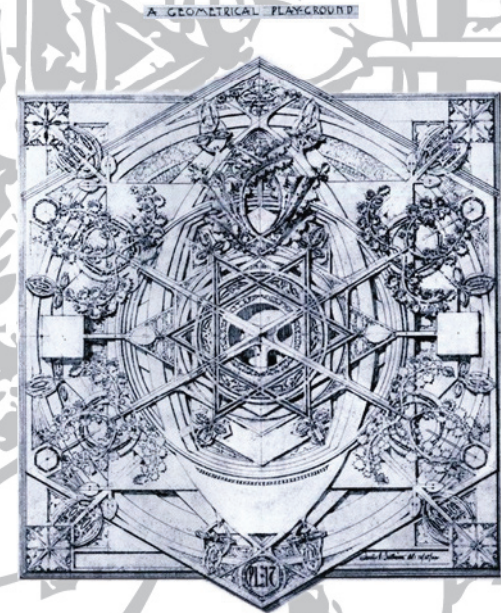
IN ADDITION TO THE PROPORTION 1:6, I ALSO DECIDED ON THE PROPORTIONS 1:φ, 1:√2, AND 1:√3. EACH OF THESE PROPORTIONS HAVE A CONNECTION WITH MANS UNDERSTANDING OF GOD, UNITY, AND GROWTH. THEY BECAME GENERATIVE TOOLS FOR THE ORDERING OF MY DESIGN.

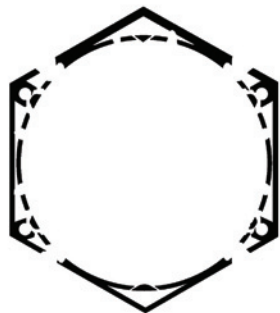
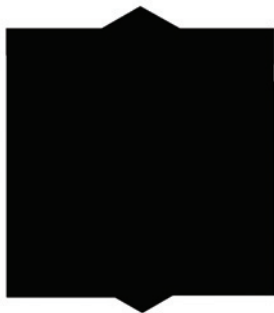


**SULLIVAN ORNAMENT**



As a side project , I decided to investigate modern methods of creating ornament. I used this drawing by Louis Sullivan from [A System of Architectural Ornament](#) and tried to convert it into digital information. I traced the drawing in autocad and looked closely at Sullivan's shadows in order to decide how deep the cuts should be. I came out with thirteen layers that were to be cut on the CNC. While I did successfully create cuts into wood, the pressures of time moved me to use a lasercam and chipboard as the form work.











This is the final result of my efforts.  
A 24"x24" plaster ornament cast  
in a chipboard formwork.



# THE PROJECT

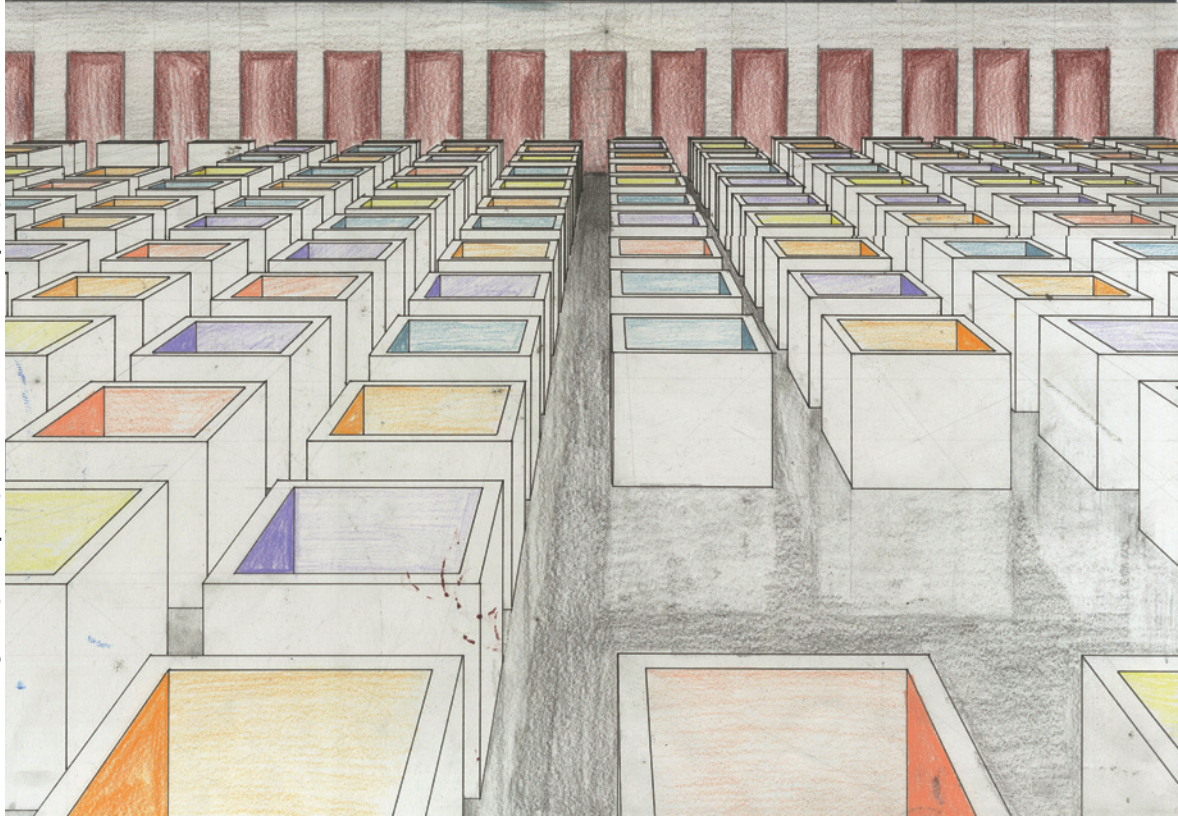
How do you decide location? Draw Primary axes from which things come from?

150  
100  
11.20

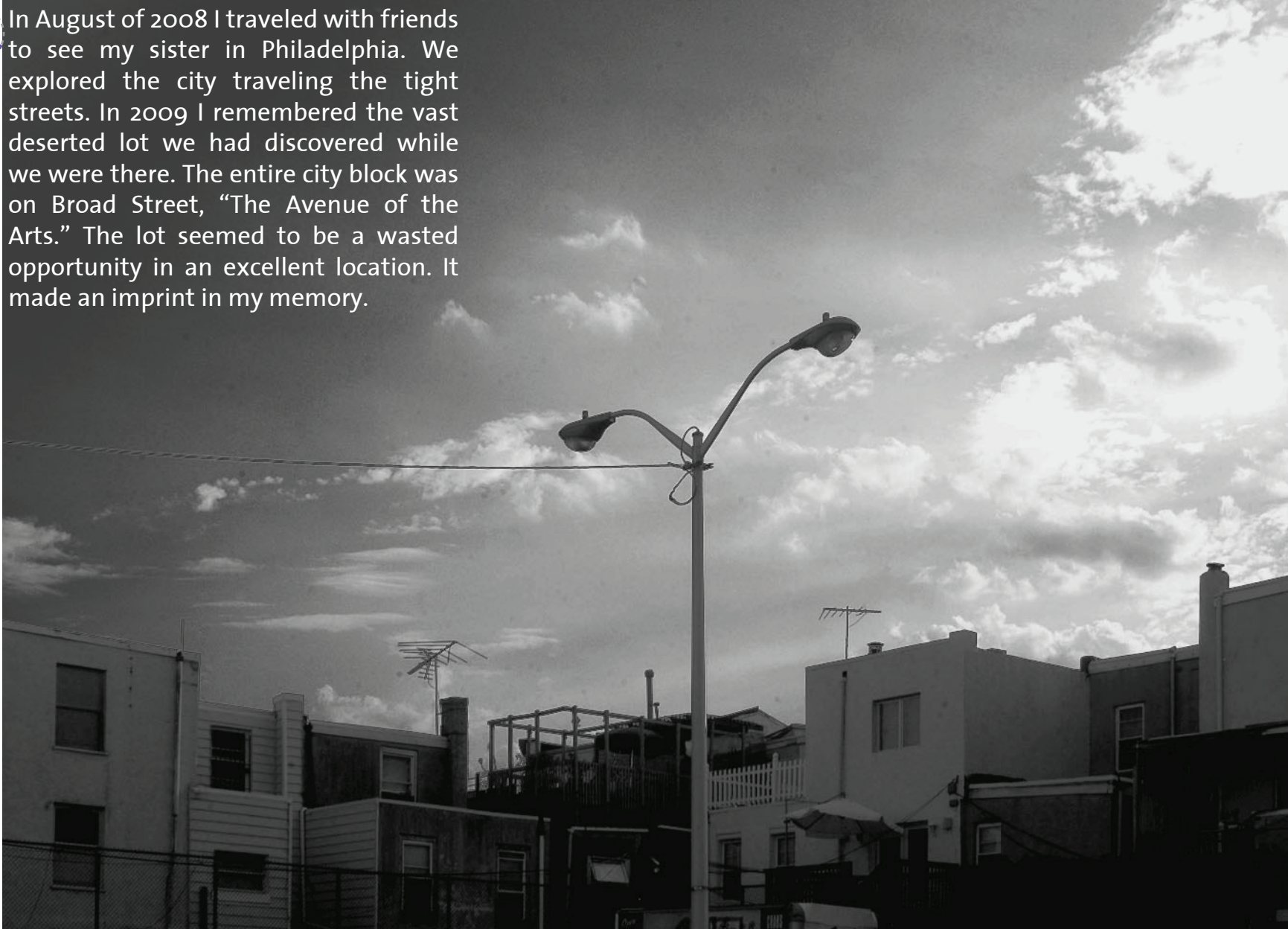


**THE SITE**

**FIRST SITE DREAM** The first image I had of the site was a series of mausoleums with interior courtyards creating streets. The idea of a city within a city really interested me. The streets open up at certain points to create a more urban space, rather than just the intimate prayer space of the interior courtyards. The different colors are to indicate the different quality that each courtyard should have.



In August of 2008 I traveled with friends to see my sister in Philadelphia. We explored the city traveling the tight streets. In 2009 I remembered the vast deserted lot we had discovered while we were there. The entire city block was on Broad Street, "The Avenue of the Arts." The lot seemed to be a wasted opportunity in an excellent location. It made an imprint in my memory.





philadelphia  
art museum

RIVER



logan  
square

BROAD STREET

MARKET STREET

rittenhouse  
square



kimmel  
center



city hall

independence  
national  
historical  
park

independence  
hall

washington  
square

the high school  
for creative arts

THE SITE

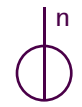


WASHINGTON STREET

SCHUYKILL

RIVER

DELAWARE





The site I chose was straddling Broad Street. The eastern larger block was empty. A factory on that block had burned down in the 20th century. The smaller western block held the remains of a train shed. The rail lines used to stop in this location. Currently the shed was being used by a food distribution company. The block was mostly asphalt, concrete, litter, and weeds.



BOARDING STREETS



CARPENTER STREET

WASHINGTON STREET

15TH STREET

BROAD STREET

13TH STREET

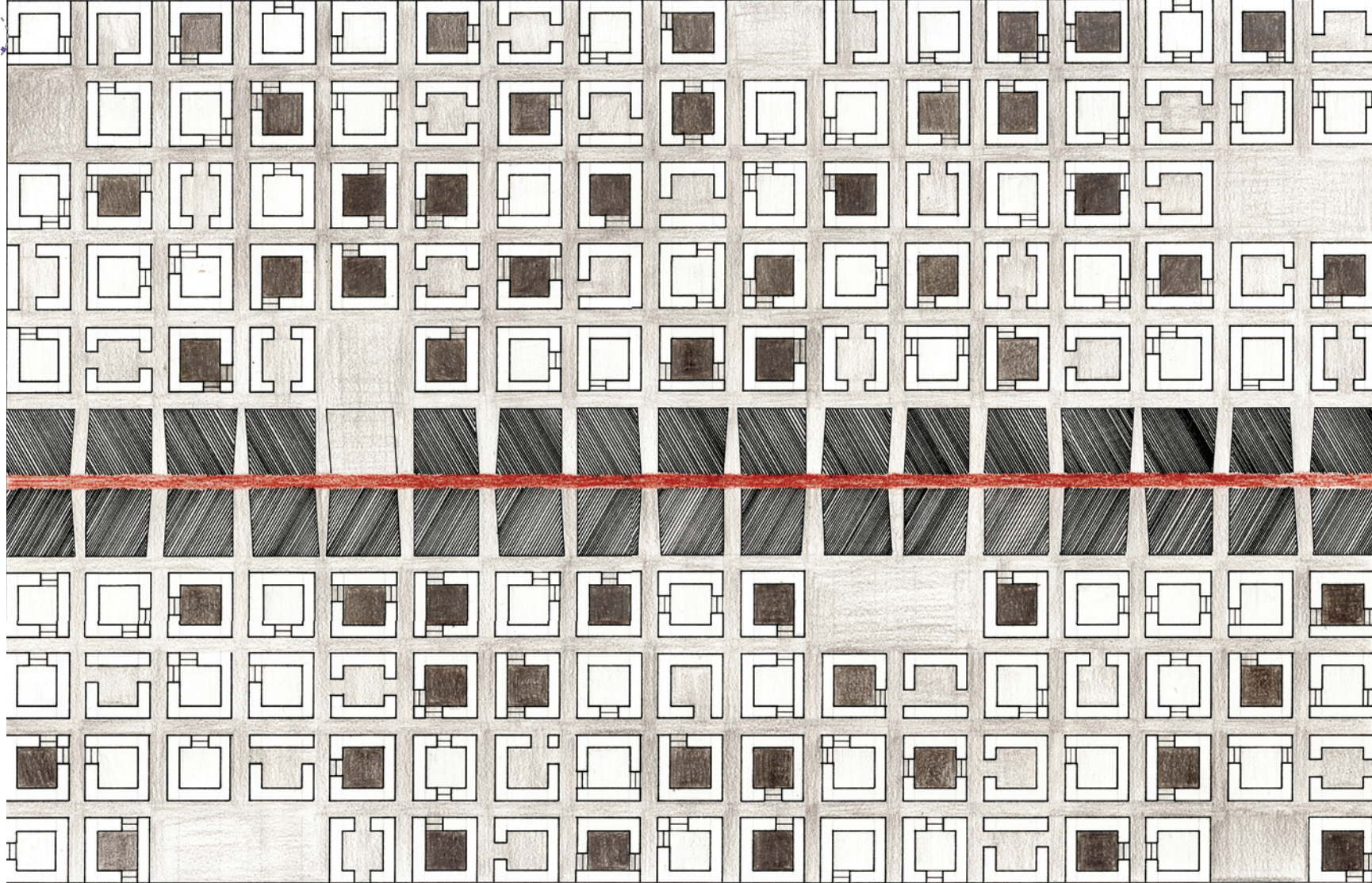






This drawing demonstrates the scale of my proposed cemetery. San Cataldo cemetery by Aldo Rossi is on the right. The sites are roughly the same size, with San Cataldo possessing a little more square footage.



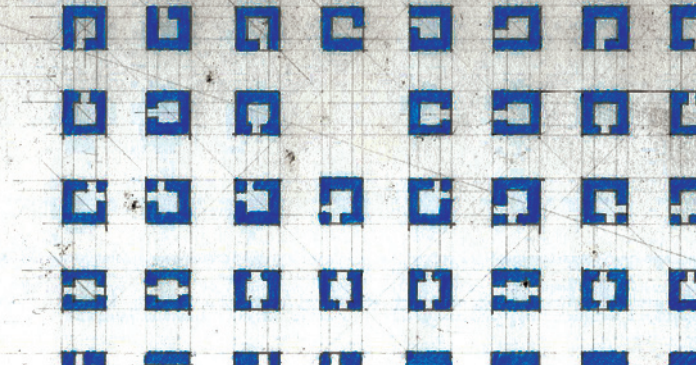
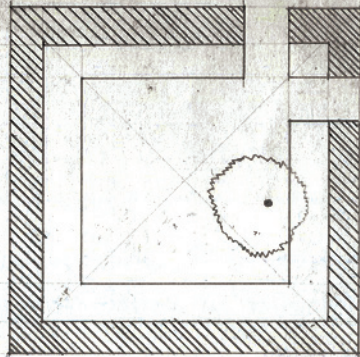
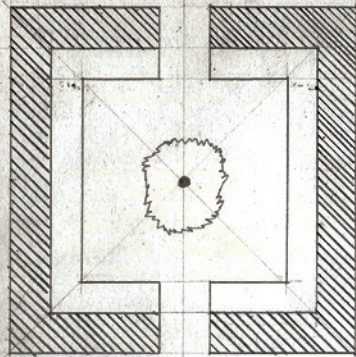


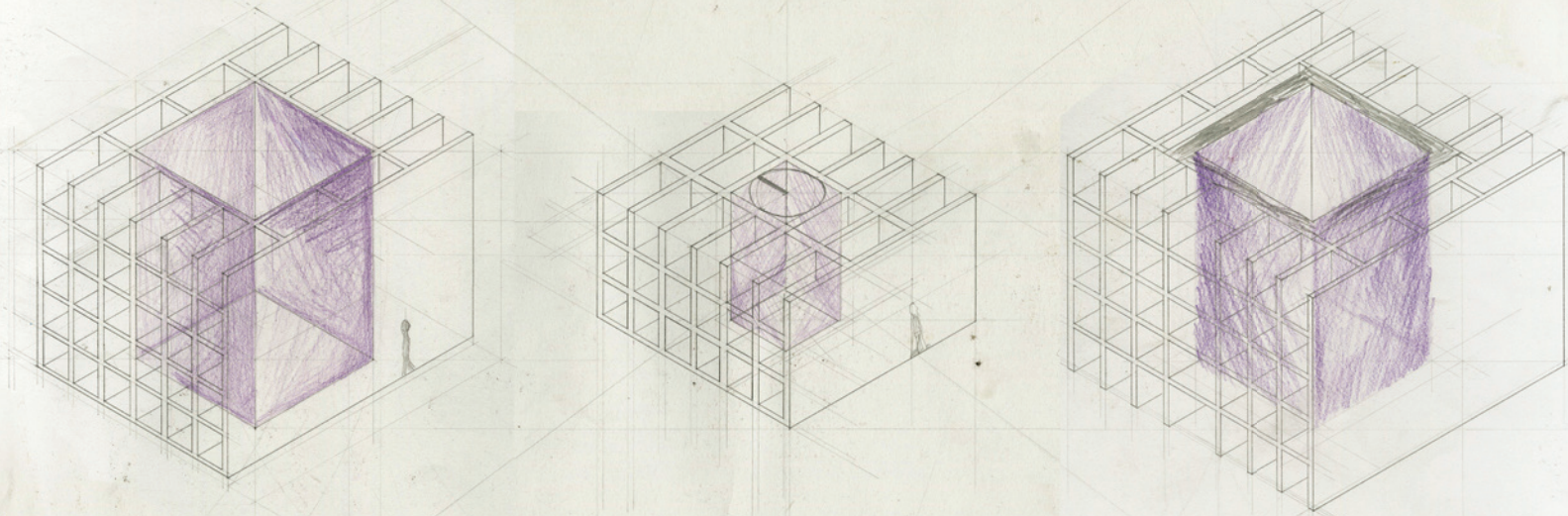
This drawing investigated the interior courtyards and the arrangement of the mausoleums on the site. The density of color corresponds to the height of the courtyard. The dark is sunken; the white is raised, and the grey is level with the streets. The red line represents an axis that will come from the chapel. It will help order the site.



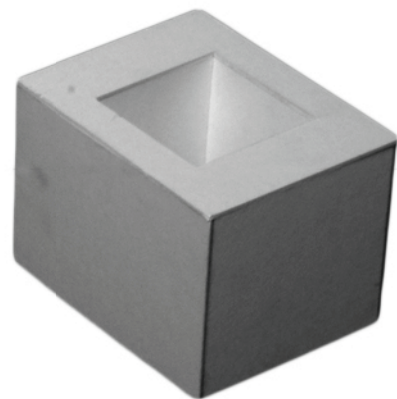
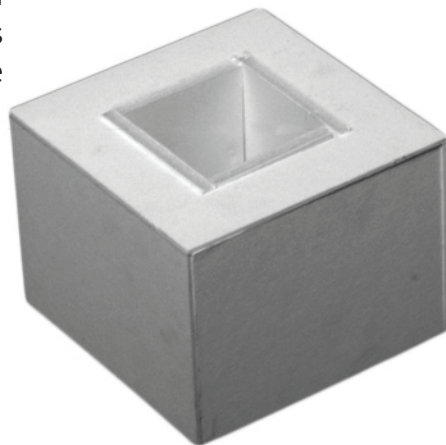
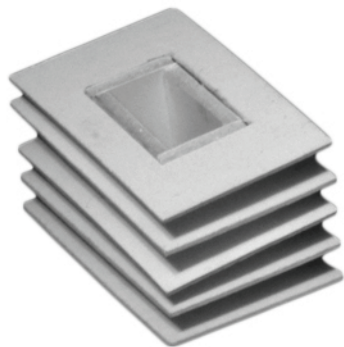
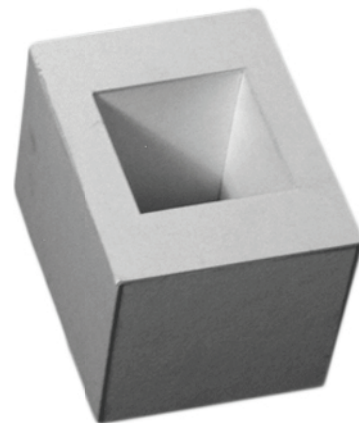
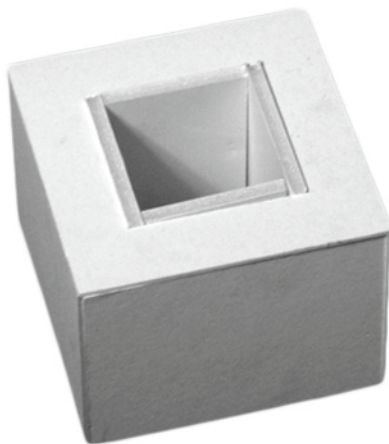
**THE MAUSOLEUM**

This drawing was investigating the experience of the mausoleums in the site. I thought it would be interesting for the bodies to be in tombed upright. However, my studies in Catholic burial convinced me it was not appropriate.

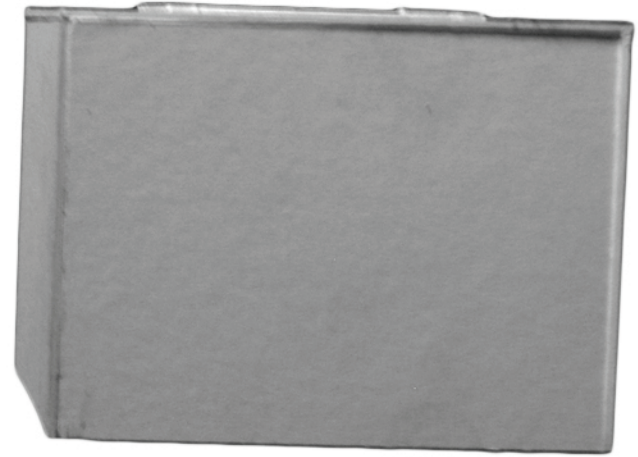
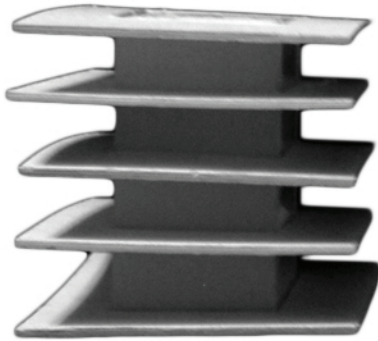




This drawing was trying to find the balance of tombs height and width. There are marriage vaults and single vaults. While creating this drawing, I still had not considered other proportions besides the 1:1. Thus I had the cube.



**MAUSOLEUM MODEL STUDY** After coming across sacred proportions. I designed the mausoleum to have an interior proportion of  $1:\sqrt{3}$  and an perimeter proportion of  $1:\sqrt{2}$ . The height of the mausoleum is 4 tombs high. A datum will be expressed at the top where the tabernacle is in elevation.



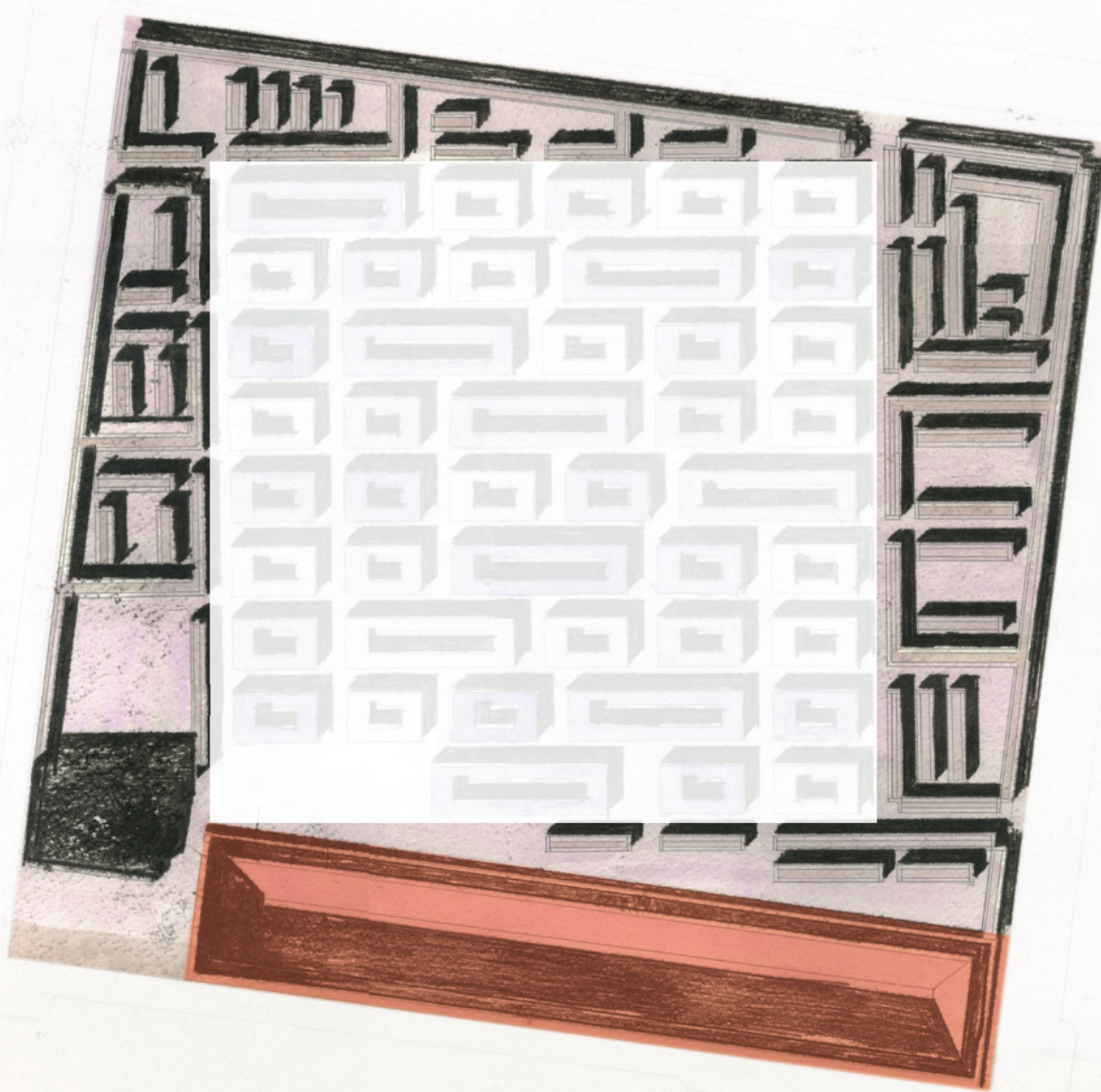
The model on the left started to address the assembly of the mausoleum. You can see the interior walls of the interior prayer court. Also the model shows that the 4 slabs for the 4 tombs that decide the height of the mausoleum. There was no glue used on the model to the left, where as the model on the right used glue, using more while communicating less.

# THE COLUMBARIUM

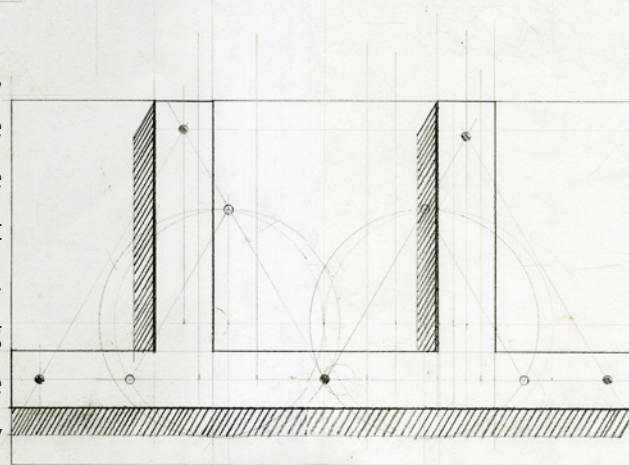
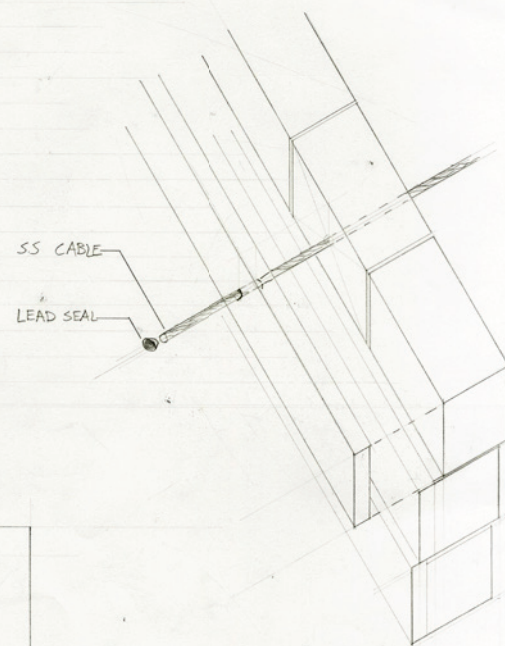
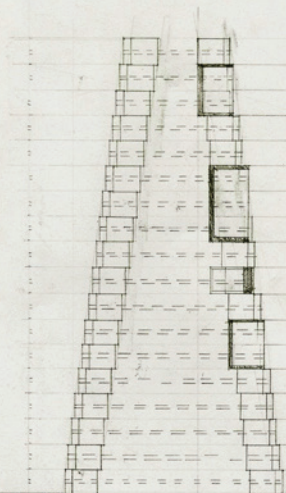


JOSEPH I. MANNES 1917 - 1988 WIFE BRIDGET 1919 - 1989	FRANK JEREB MMC USN 1906 - 1986 WIFE ISABELLE F. 1908 - 1996	ROBERT J. OFFENBAHER CSP USCG 1905 - 1986 WIFE JOHNWARD A. 1912 - 2007	RAYMOND BENNETT 1907 - 1986	EDWARD PRIMEAU 1907 - 1986	JOHN DAN ROWLAND MC USA 1903 - 1989 MRS WIFE DORIS 1918 - 2007	SCHROEDER 1903 - 1986	FRANK B. STURM MC USA 1903 - 1986 MRS WIFE DORIS 1918 - 2007	ALBERT J. ABEL JR 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	JAMES O'BARR 1918 - 1988	JOHN F. SALZANO 1918 - 1988	JOSEPH H. ECKHARDT TIC 3 USA 1907 - 1988 WIFE ANN 1911 - 2004																																													
JOHN W. DEAKYNE 1903 - 1986	WILLIAM W. BRADY MAJ USA 1906 - 1986 MRS WIFE FLORENCE W. 1906 - 2005	LEONARD TRYCK 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	MAURICE LIEN 1903 - 1986	MARIE T. STOUT 1903 - 1986	JAMES O'BARR 1918 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN F. SALZANO 1918 - 1988	JOHN W. DEAKYNE 1903 - 1986	WILLIAM W. BRADY MAJ USA 1906 - 1986 MRS WIFE FLORENCE W. 1906 - 2005	LEONARD TRYCK 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	MAURICE LIEN 1903 - 1986	MARIE T. STOUT 1903 - 1986	JAMES O'BARR 1918 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN F. SALZANO 1918 - 1988	JOHN W. DEAKYNE 1903 - 1986	WILLIAM W. BRADY MAJ USA 1906 - 1986 MRS WIFE FLORENCE W. 1906 - 2005	LEONARD TRYCK 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	MAURICE LIEN 1903 - 1986	MARIE T. STOUT 1903 - 1986	JAMES O'BARR 1918 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN F. SALZANO 1918 - 1988	JOHN W. DEAKYNE 1903 - 1986	WILLIAM W. BRADY MAJ USA 1906 - 1986 MRS WIFE FLORENCE W. 1906 - 2005	LEONARD TRYCK 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	MAURICE LIEN 1903 - 1986	MARIE T. STOUT 1903 - 1986	JAMES O'BARR 1918 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN F. SALZANO 1918 - 1988	JOHN W. DEAKYNE 1903 - 1986	WILLIAM W. BRADY MAJ USA 1906 - 1986 MRS WIFE FLORENCE W. 1906 - 2005	LEONARD TRYCK 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	MAURICE LIEN 1903 - 1986	MARIE T. STOUT 1903 - 1986	JAMES O'BARR 1918 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN F. SALZANO 1918 - 1988	JOHN W. DEAKYNE 1903 - 1986	WILLIAM W. BRADY MAJ USA 1906 - 1986 MRS WIFE FLORENCE W. 1906 - 2005	LEONARD TRYCK 1903 - 1986	WILLIAM B. WILDER 1903 - 1986	MAURICE LIEN 1903 - 1986	MARIE T. STOUT 1903 - 1986	JAMES O'BARR 1918 - 1988	JOHN P. LATHAM MILT USMC 1918 - 1988	CHARLES D. THIBAUT MC USA 1914 - 2003 WIFE ADDIE M. 1913 - 1988	JOHN F. SALZANO 1918 - 1988



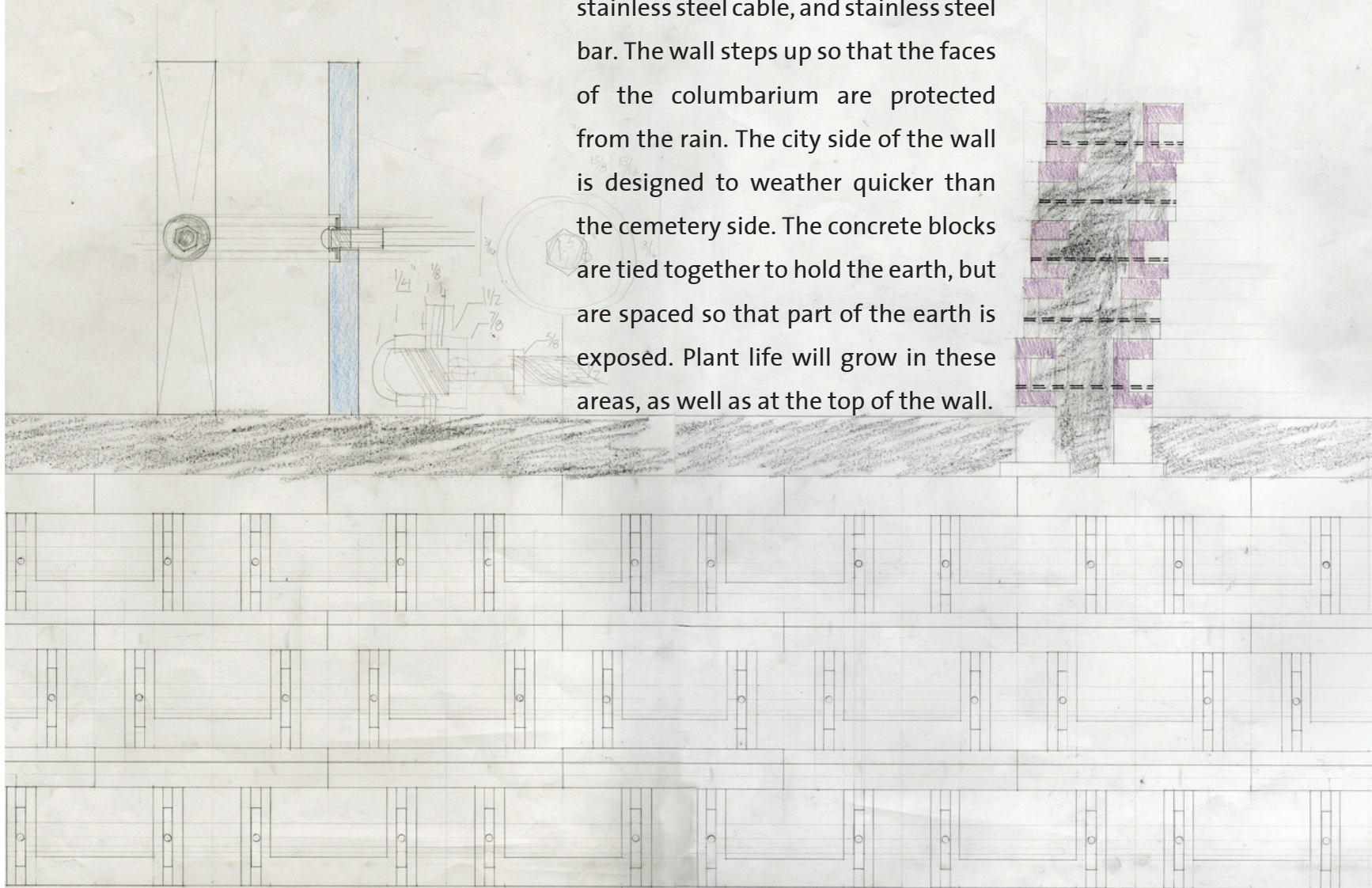


The location of the columbarium came from a difference between the cardinal directions and the grid of Philadelphia. On the left you see the western site. The core area is a square which holds the mausoleum. The columbarium take up the triangles that remain. The red area is a processional ramp that descends into the earth. The earth from that cut will be used to form the walls of the columbarium. Keeping the earth on site, as well as thickening the walls between the city and the cemetery. I thought this would increase the phenomenon of the threshold. The walls of the columbarium are arranged in a way to make each room unique. The entry of the rooms correspond to the east-west streets of the mausoleums.

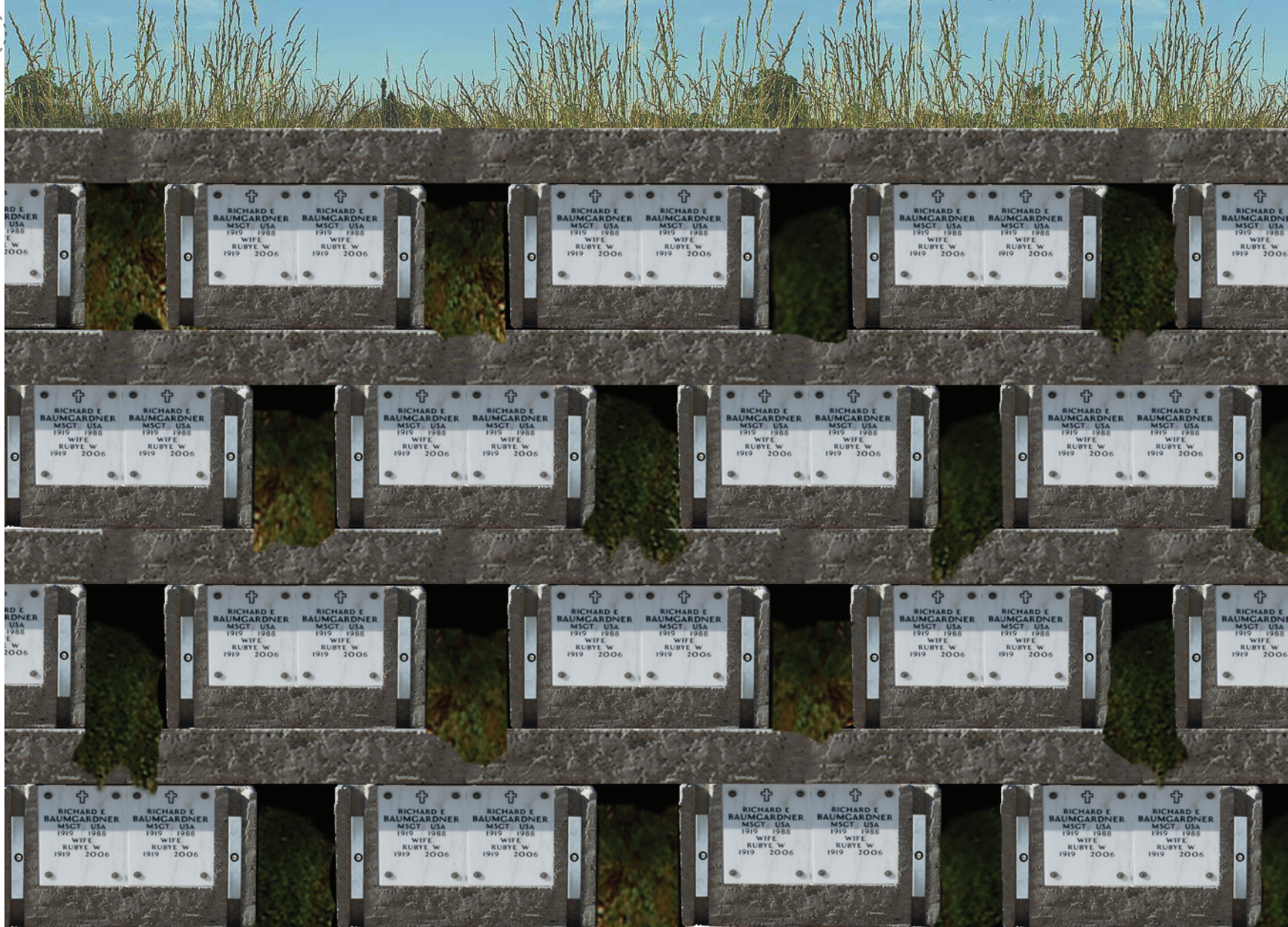


**FIRST COLUMBARIUM DESIGN** My first design tried to use standard cmu, precast stone, precast concrete, and stainless steel cables to stabilize the forces of the earth. The top of the wall exposed the earth to allow plant life to become the cornice of the wall. The stone was 1:6, but the cable pulling it in the middle created undesirable stress. The stone would eventually crack from the force put on it. Also the proportions of the cmu did not relate to the project.

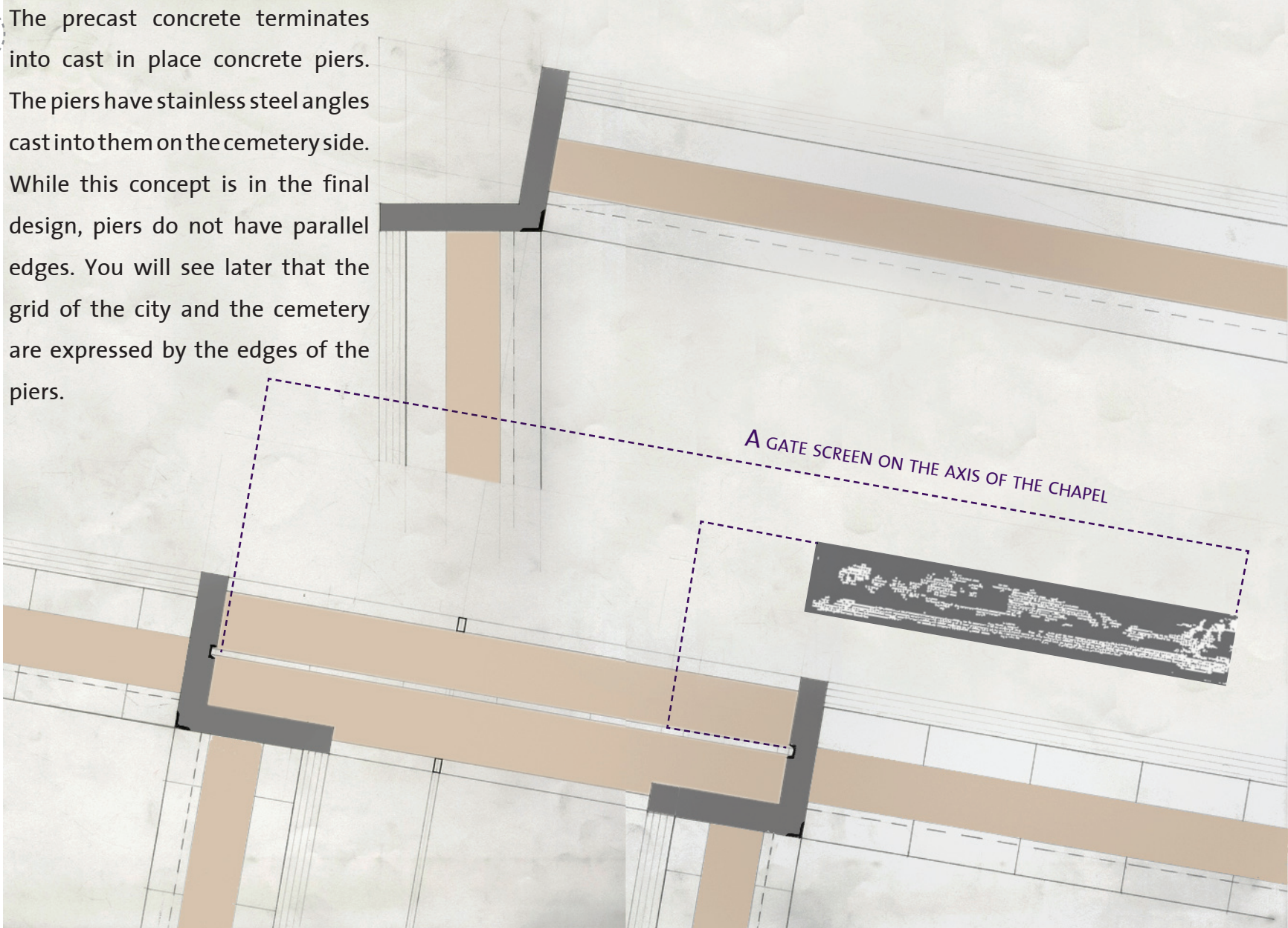
The final design used precast concrete, stainless steel cable, and stainless steel bar. The wall steps up so that the faces of the columbarium are protected from the rain. The city side of the wall is designed to weather quicker than the cemetery side. The concrete blocks are tied together to hold the earth, but are spaced so that part of the earth is exposed. Plant life will grow in these areas, as well as at the top of the wall.





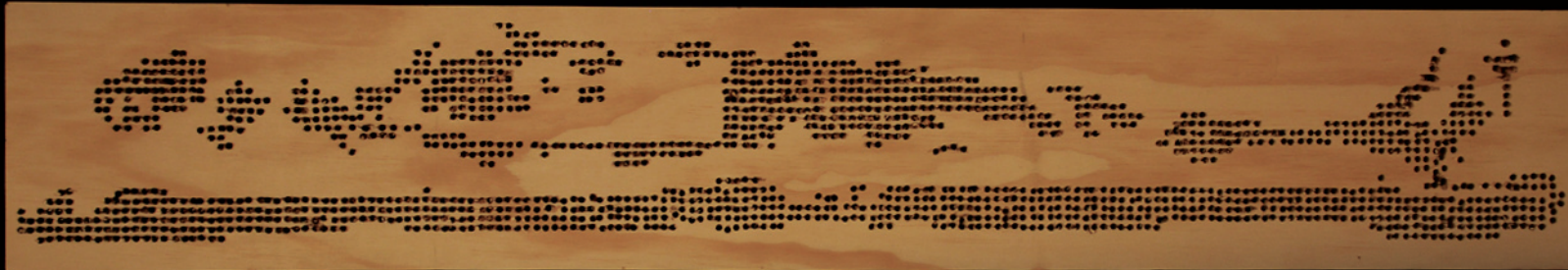


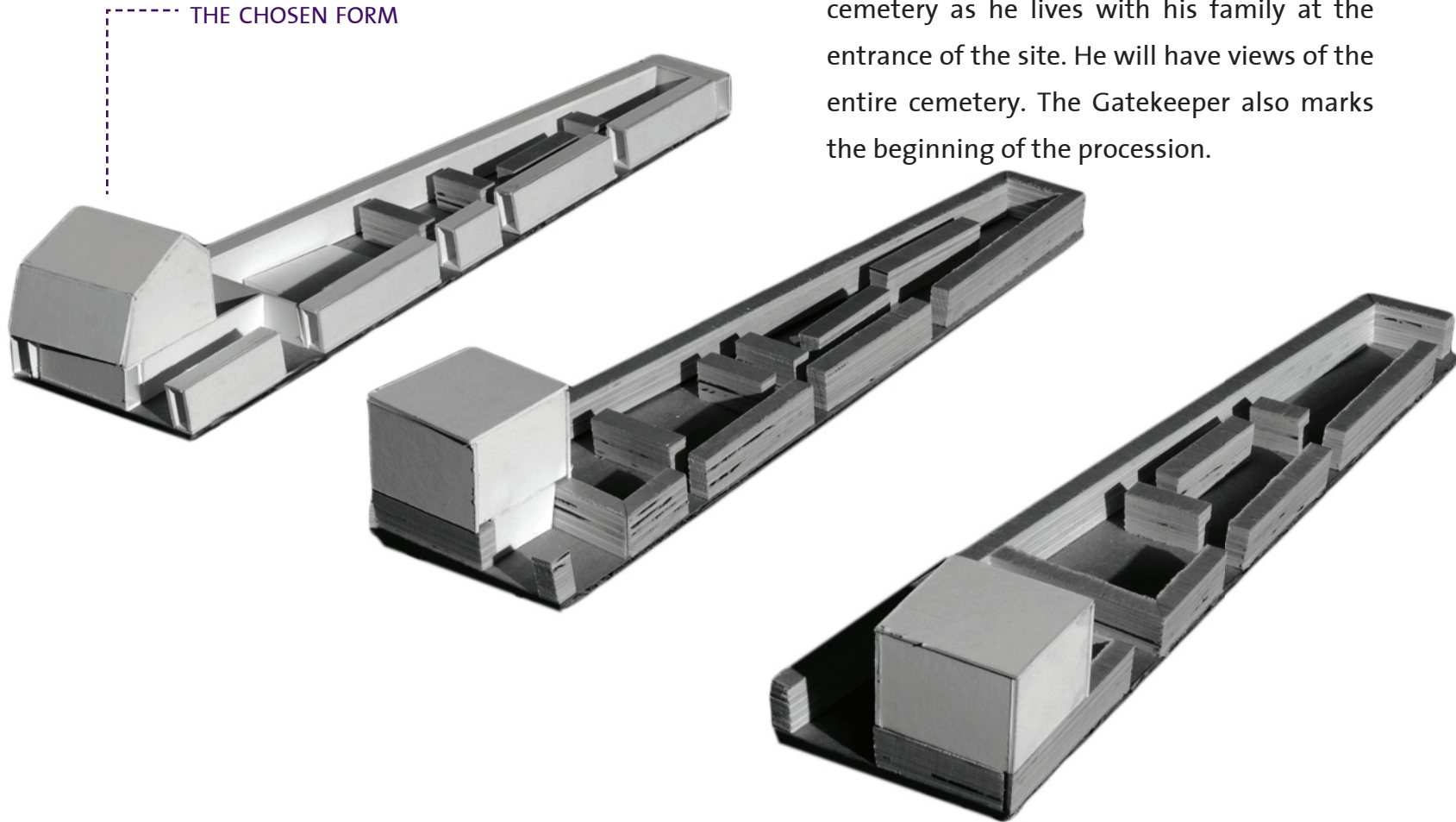
The precast concrete terminates into cast in place concrete piers. The piers have stainless steel angles cast into them on the cemetery side. While this concept is in the final design, piers do not have parallel edges. You will see later that the grid of the city and the cemetery are expressed by the edges of the piers.



A GATE SCREEN ON THE AXIS OF THE CHAPEL

This was a material study for a screen on the axis of the chapel. It fits into the columbarium walls. The image is Hans Holbein's painting, titled "The Body of the Dead Christ in the Tomb". The painting was proportioned 1:6. The image was turned into vector information and then scaled and applied to material. I marked each hole with hammer and nail then drilled. However the information could be applied to a CNC. and cut into a heavy sheet of metal.





This is a model study of the triangle that contained the columbarium gardens as well as the entrance to the cemetery. The larger form is the proposed house of the cemetery gate keeper. He will oversee the care of the cemetery as he lives with his family at the entrance of the site. He will have views of the entire cemetery. The Gatekeeper also marks the beginning of the procession.





# THE PROCESSION

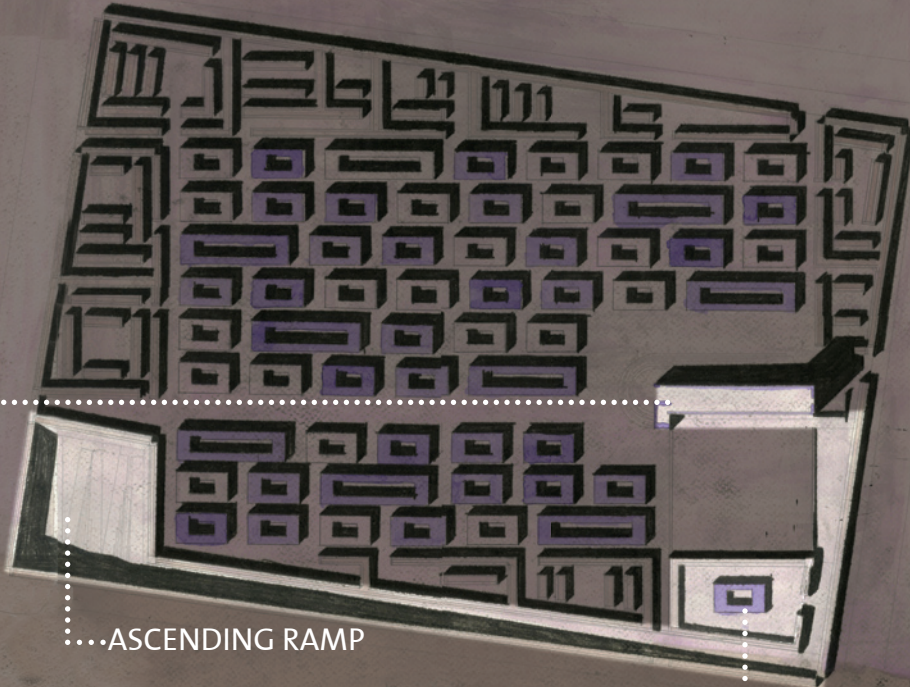
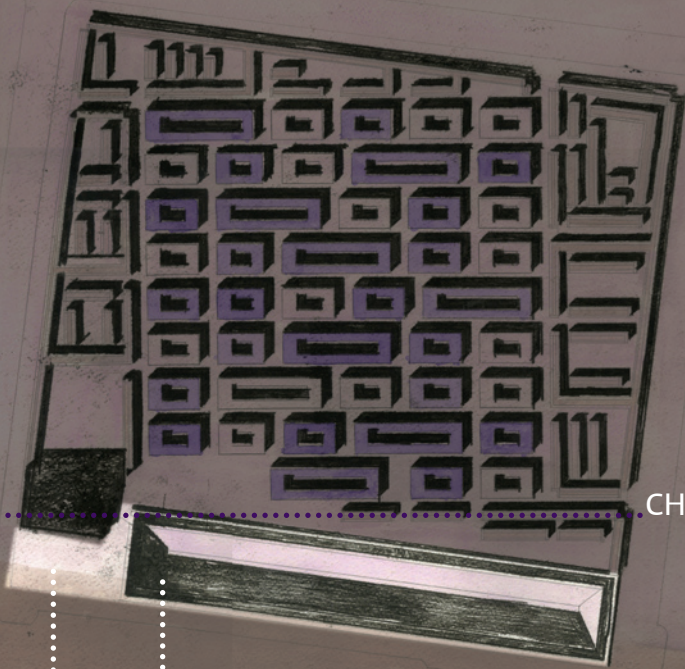
In order to connect the two sides of the site, I decided to create a processional path. Inspired by my research in funeral processions, I wanted to create a path that was sympathetic to this. Historically funeral processions would follow behind a horse drawn hearse, but today the procession mostly takes place in cars. I felt that giving a path that took advantage of light, perspective, and material, could offer a place and time for the family of the departed to pray and fully participate in the steps of the procession. It is my hope that the procession will help the loved ones separate themselves from the profane world of the city, and ready themselves to enter the chapel, where they will leave the departed.

The procession begins in the south west corner, by the gate keeper's house, and travels east toward the chapel. The path descends, passes under Broad Street and rises on the other side.





PROCESSION PLAN



CHAPEL

DESCENDING RAMP

ENTRANCE GATE

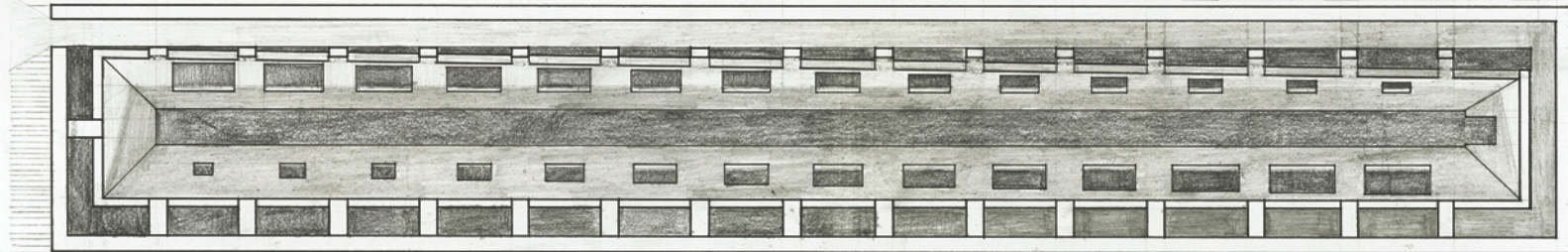
ASCENDING RAMP

MAUSOLEUM FOR BAPTIZED INFANTS

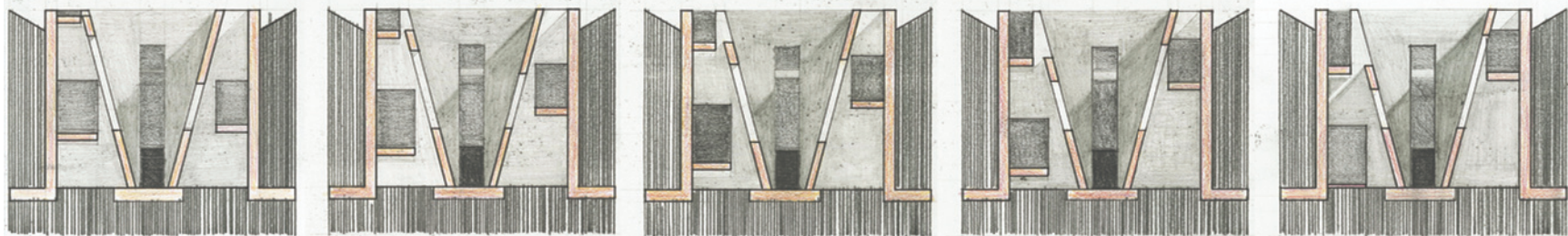




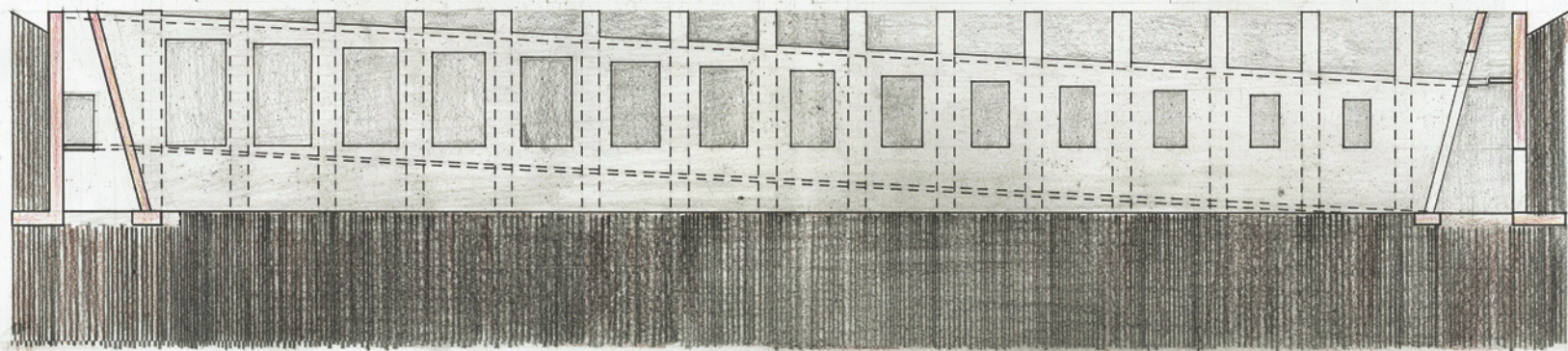
The funeral procession begins at the meeting area at the corner of Washington Avenue and 15th Street. They will park their cars along the block and walk to this area awaiting the opening of the gate and the beginning of the procession.



The descending ramp was designed to the proportions of the ark. The floor slopes 1:20. It descends 45' in order to pass under the Broad Street metro line. There is a central void that will hold water at the bottom and reflect the sky. The buttresses break up the long stretch into a series of rooms. Each room has a unique lighting condition. As the procession descends the openings on the path become smaller to emphasize the diminishing light, preparing the travellers to enter into the earth.

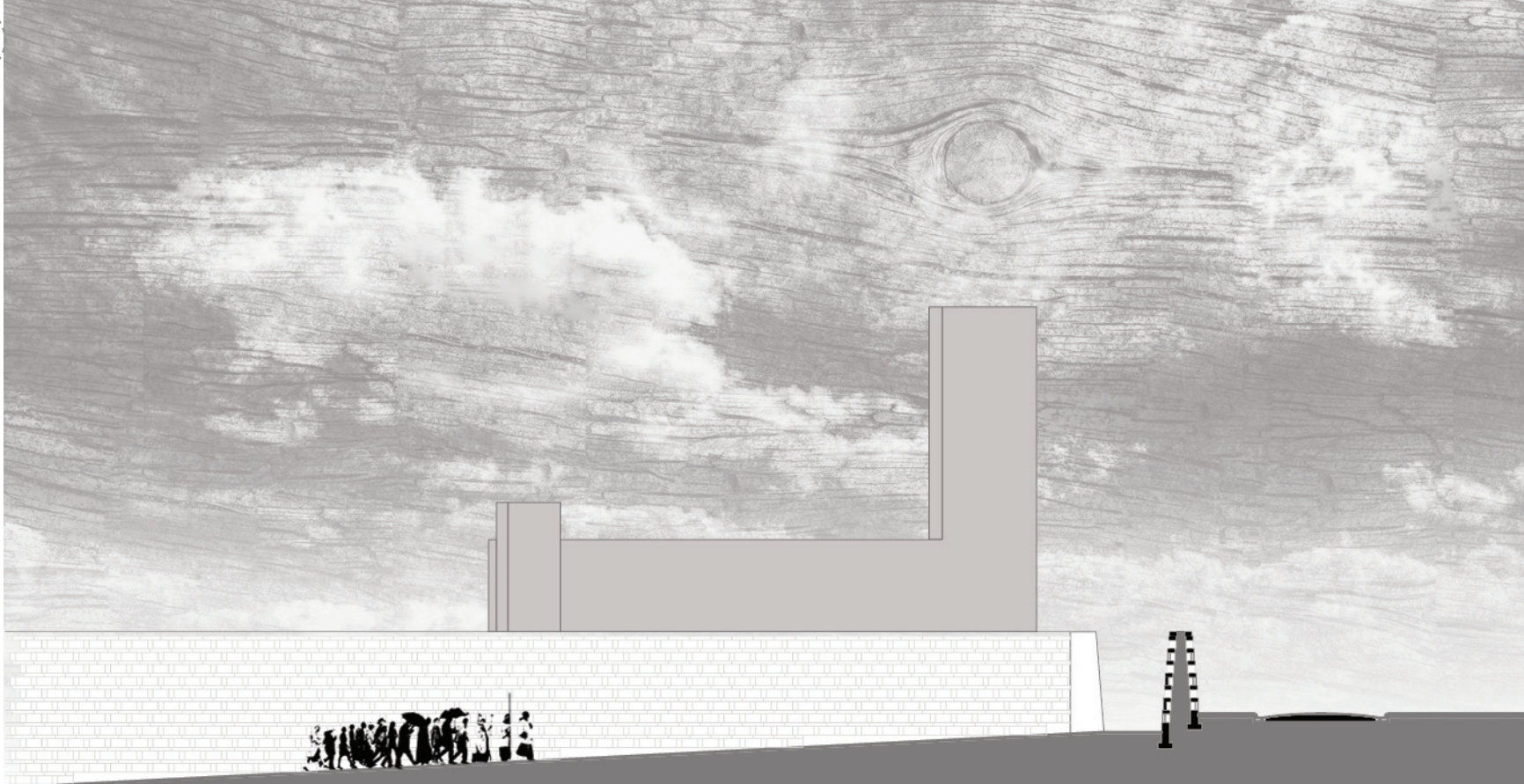


15' 45'



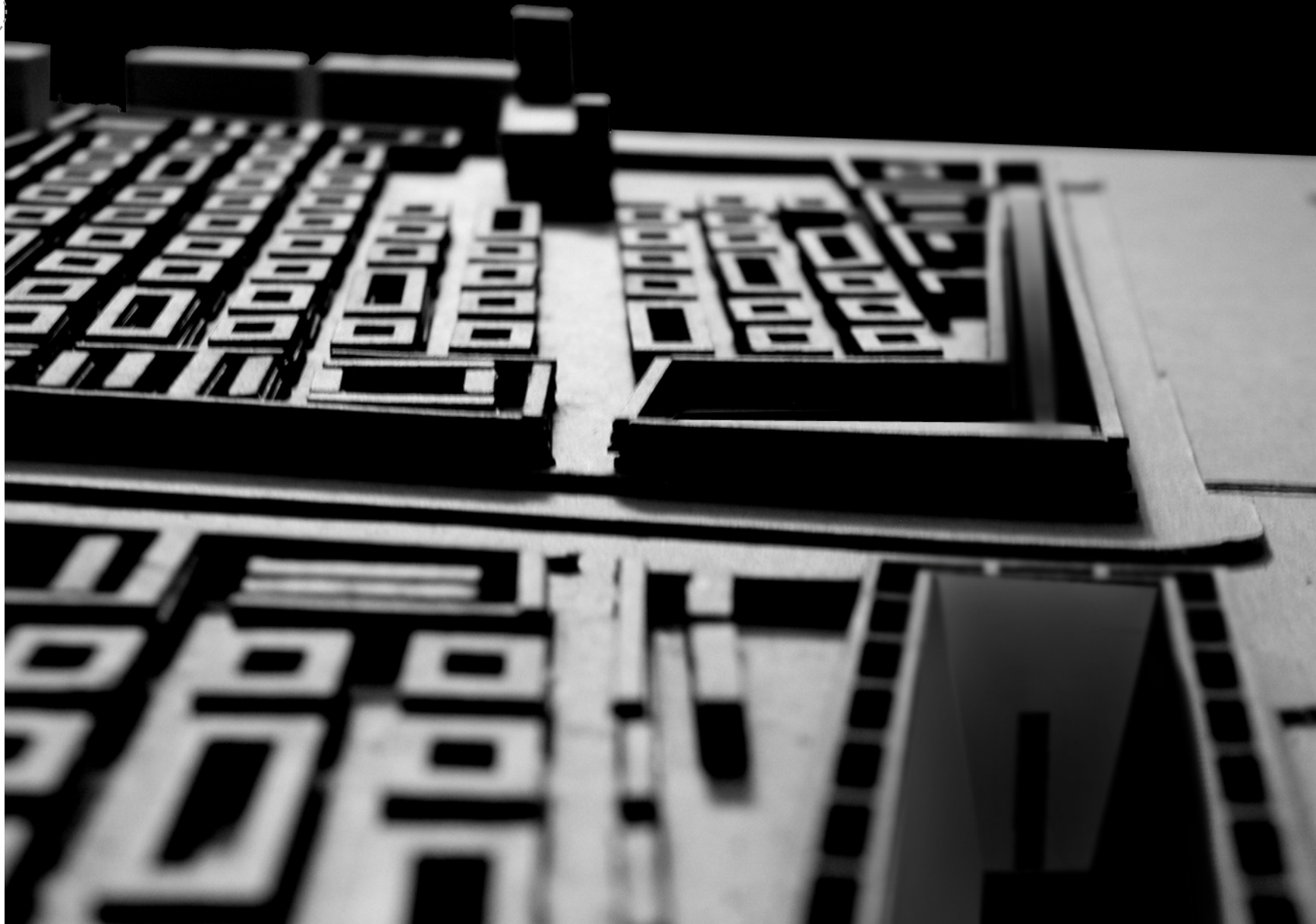


The procession descends deep into the earth passing under the Broad Street metro train. The mourners pass through the earth and arrive to the ascension ramp. The light quality on the ascension side of the procession is much brighter and the space is more open. The path weaves upward with a 1:20 slope, and stairs are fit into the slopes creating a stramp. The walls of the ascension ramp turn into the columbarium walls of the cemetery. This material change starts to reveal the interior nature of the cemetery.



15' 45'

The ascension ramp continues to move upward on a long narrow slope. The columbarium walls create a valley that diminishes as they approach the end, where a turn awaits them. When they turn the corner they are once again able to see the chapel. The final resting place for their loved one. While continuing after their turn there is a brief glimpse to their left of the baptized infants mausoleum. A reminder to the mourners of the promise and hope of eternal paradise with God.





**THE CHAPEL**



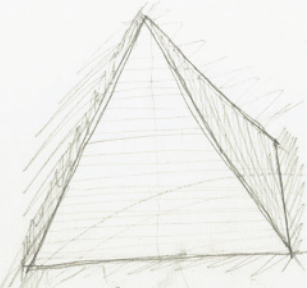
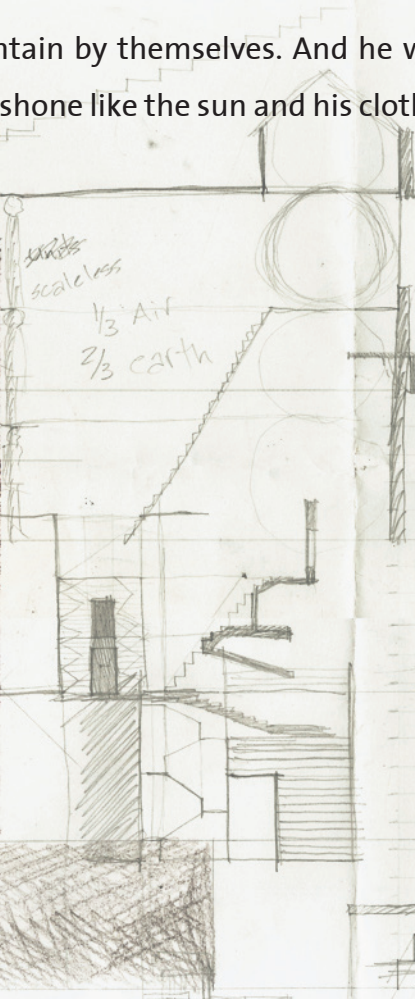
The chapel is dedicated to the Transfiguration. This served to help generate design concepts involving light and hierarchy at the altar.

“and he led them up a high mountain by themselves. And he was transfigured before them; his face shone like the sun and his clothes became white as light.”

TURN TO THE CHAPEL



Descend Ascend



church at calvary

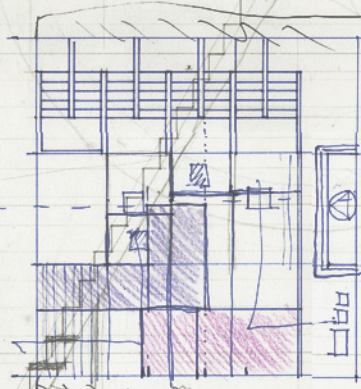


Borromini

scale keep it high

Pantheon  
stair and  
saw man

This is painfully too direct



7  
23' 4"

12-7 = 8

7-7 = 0

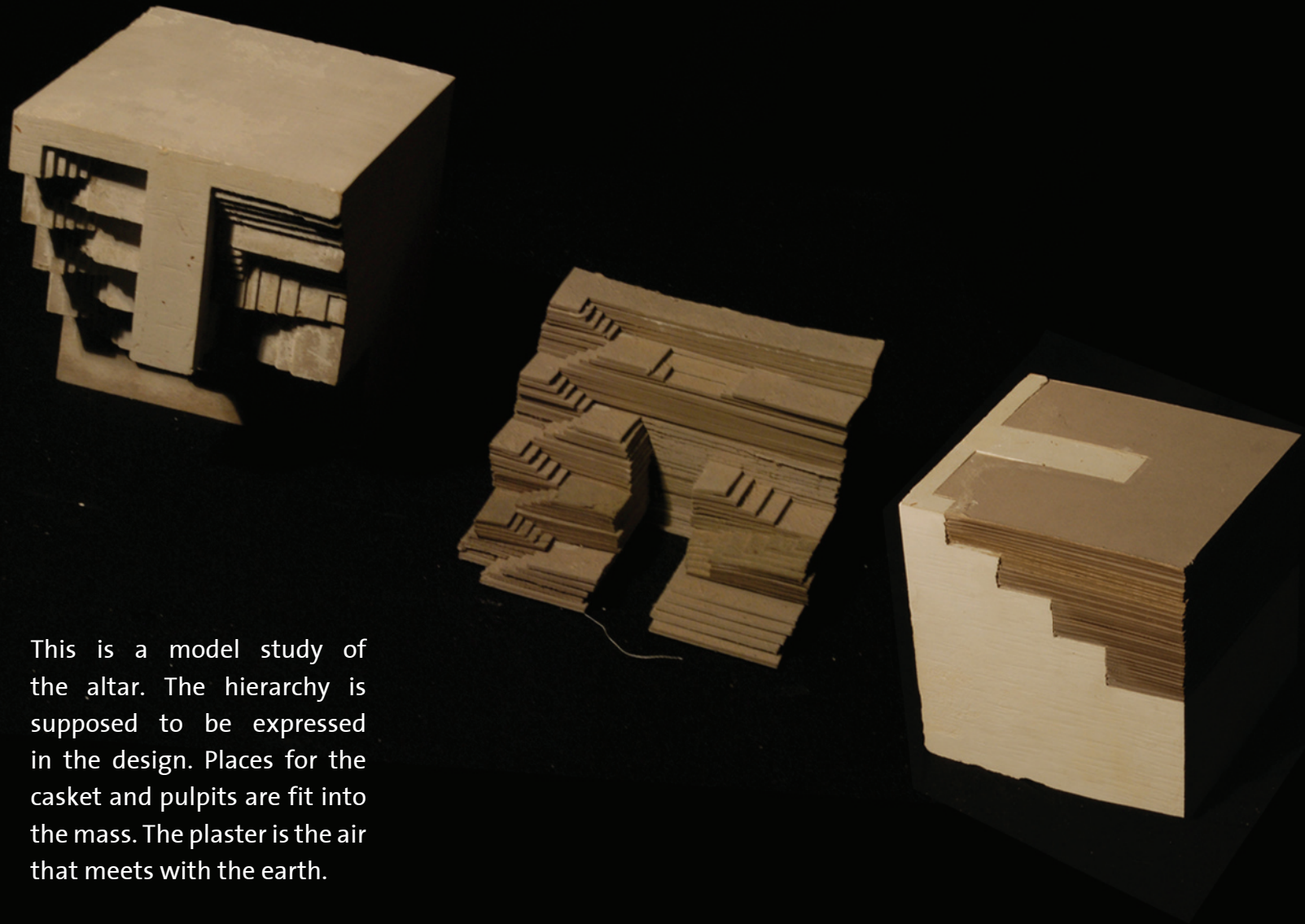
40 = 18 23

12  
84  
6/12/10  
72

23' 4"

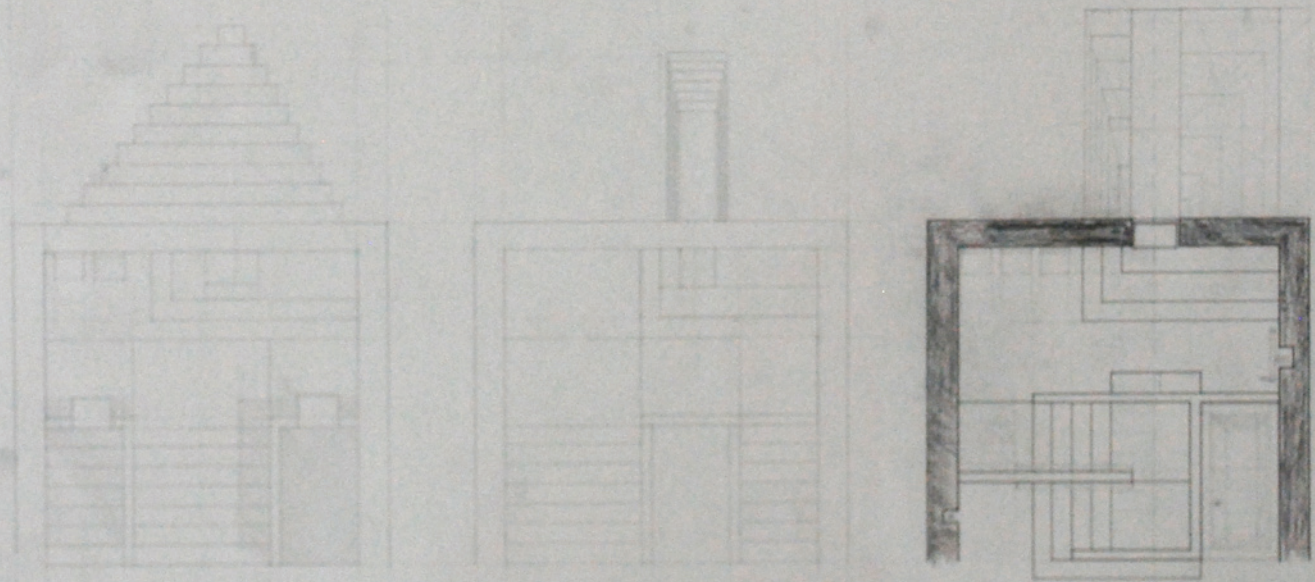
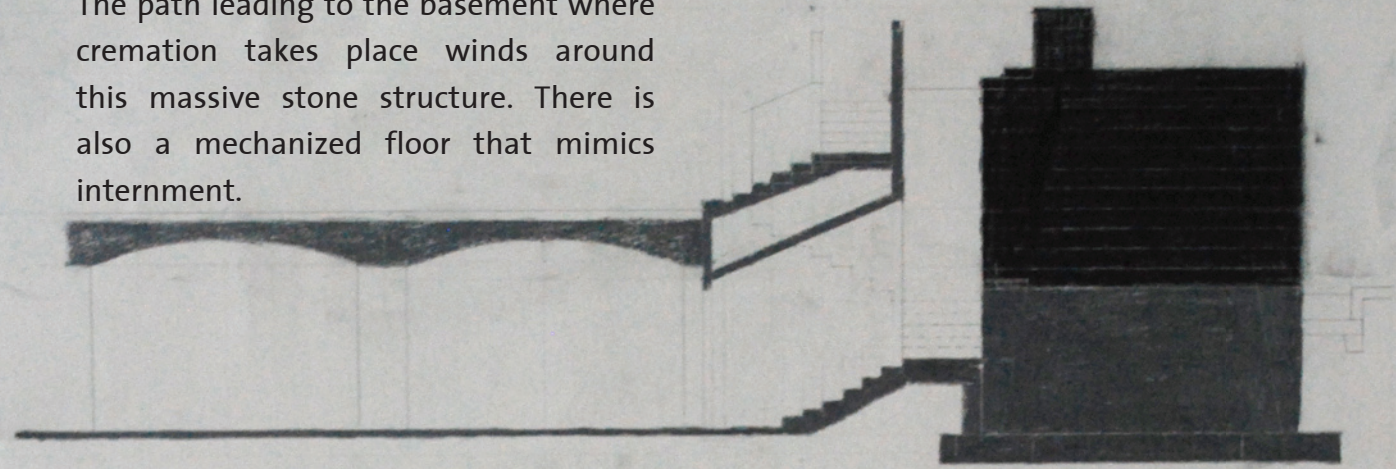
11-5 = 55

4' 5' 36"

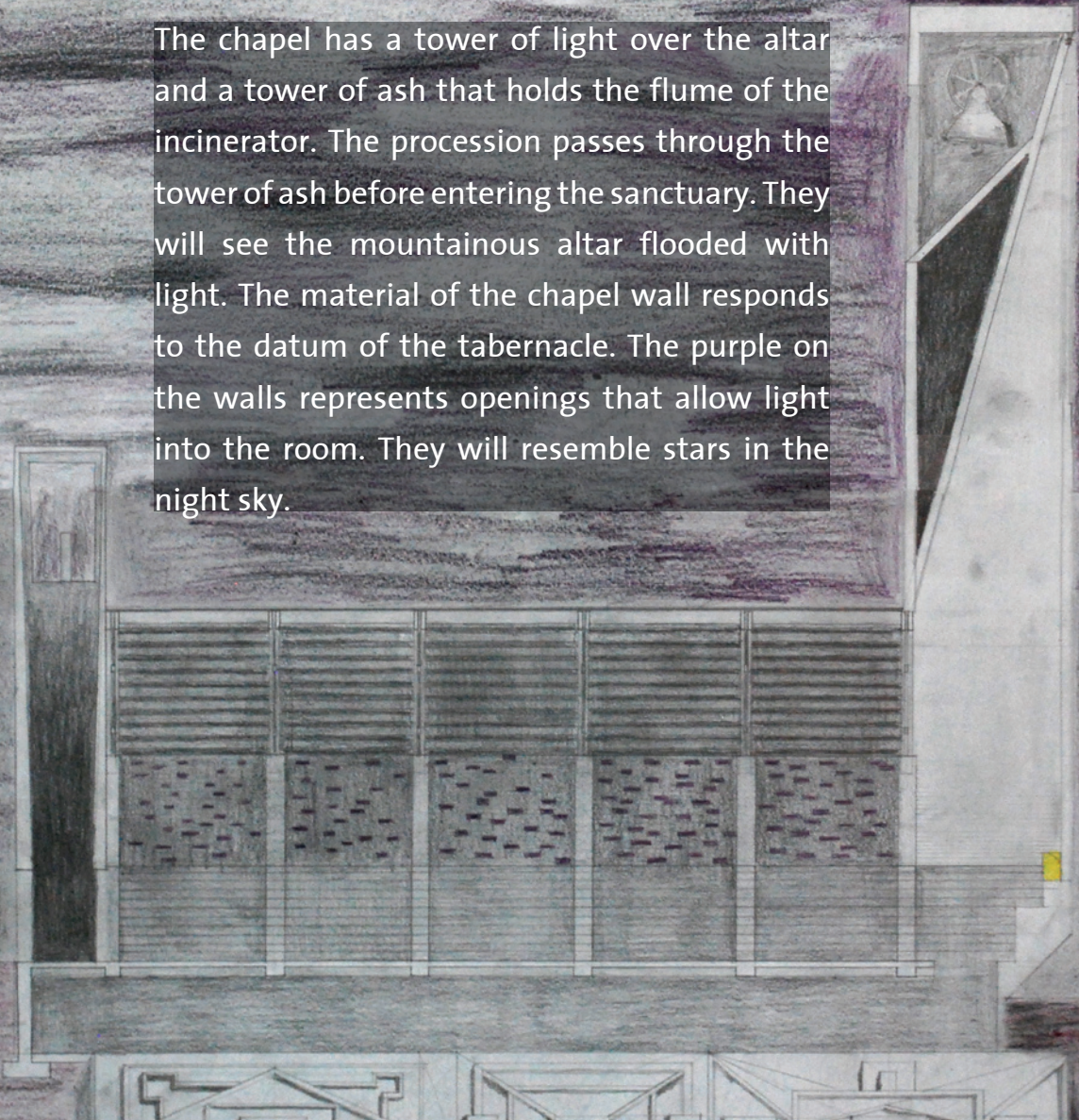


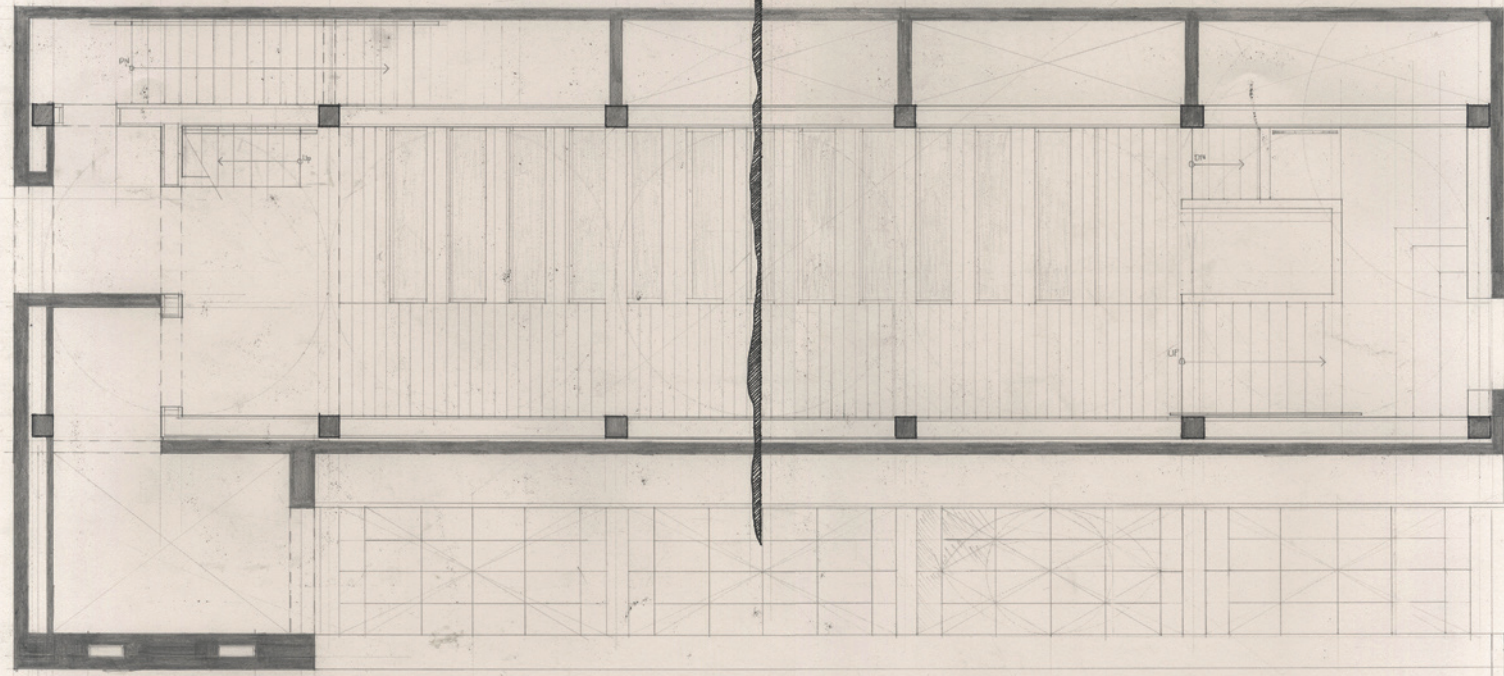
This is a model study of the altar. The hierarchy is supposed to be expressed in the design. Places for the casket and pulpits are fit into the mass. The plaster is the air that meets with the earth.

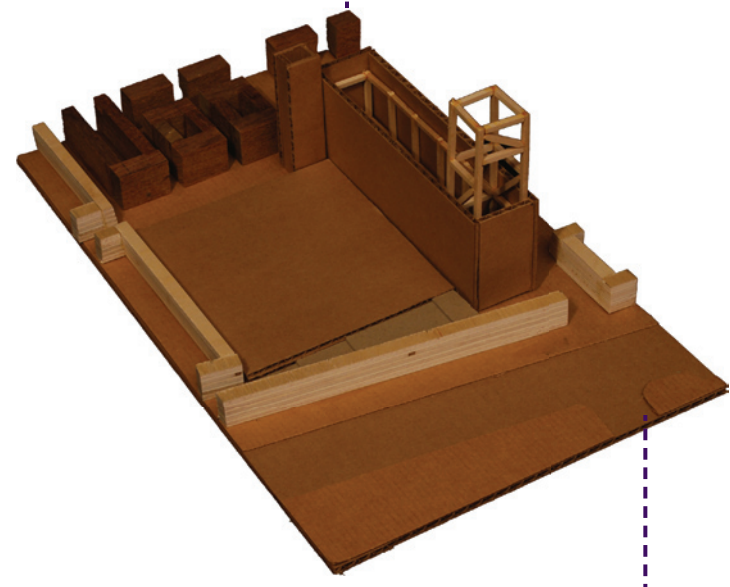
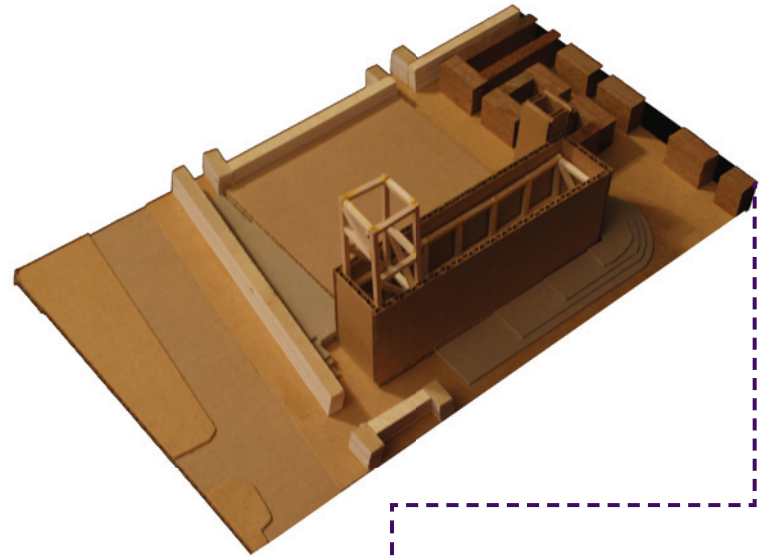
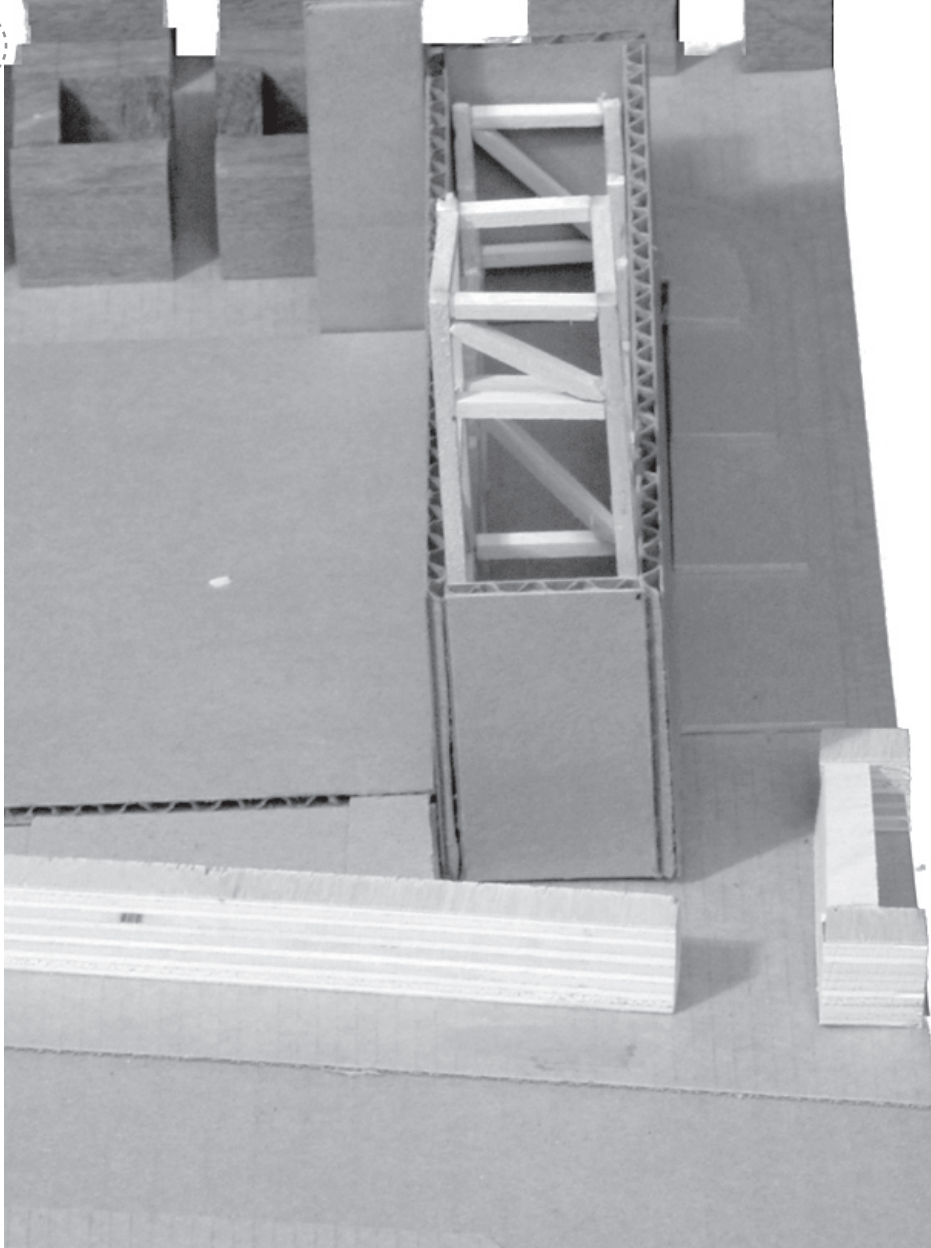
The altar has its own separate foundation. The path leading to the basement where cremation takes place winds around this massive stone structure. There is also a mechanized floor that mimics interment.

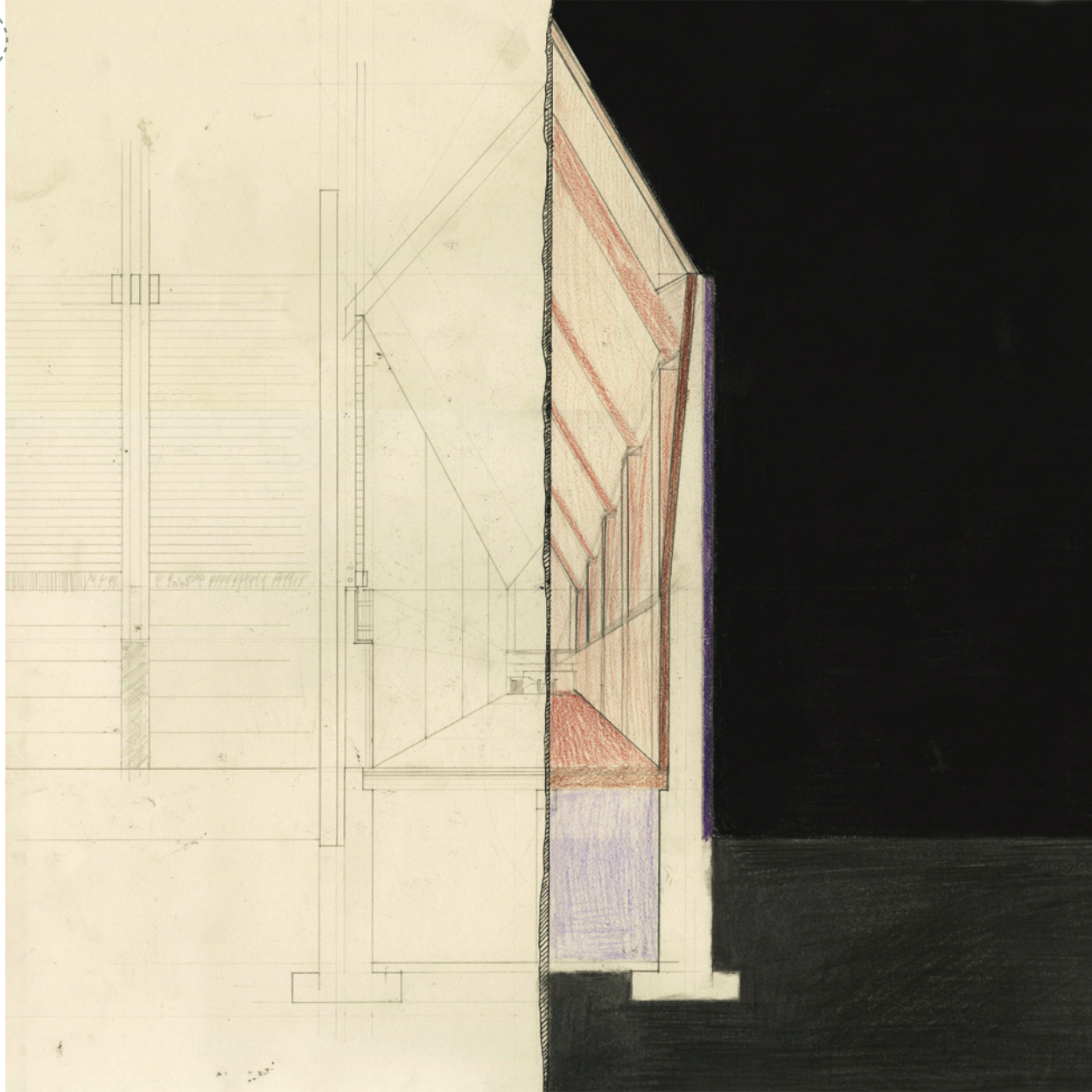


The chapel has a tower of light over the altar and a tower of ash that holds the flume of the incinerator. The procession passes through the tower of ash before entering the sanctuary. They will see the mountainous altar flooded with light. The material of the chapel wall responds to the datum of the tabernacle. The purple on the walls represents openings that allow light into the room. They will resemble stars in the night sky.









This section perspective investigates how the interior walls of the chapel correspond to the datum line of the tabernacle. Also the flooring and basement structure express the axis line in plan. The structure is timber framed with a precast concrete exterior.

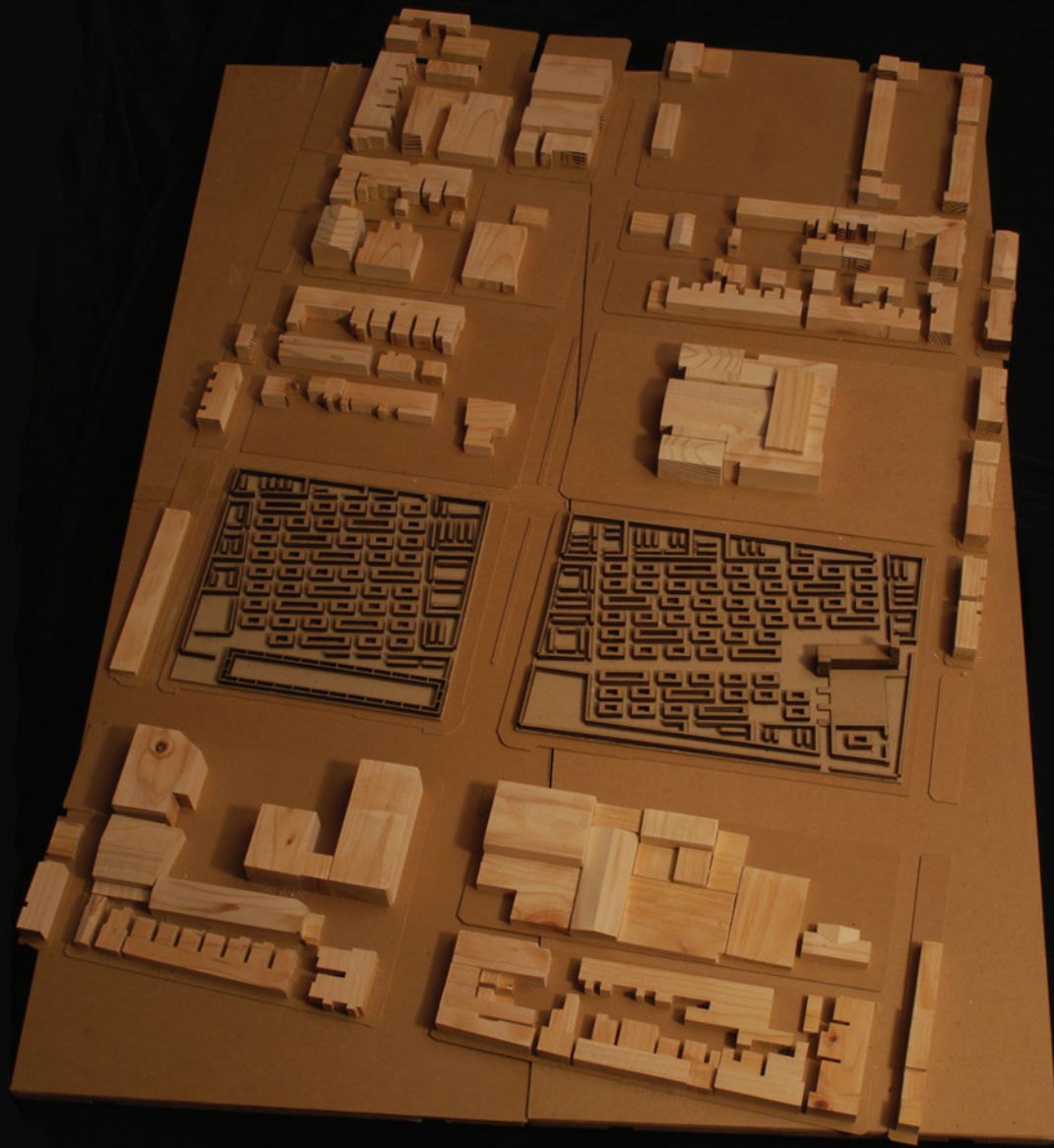




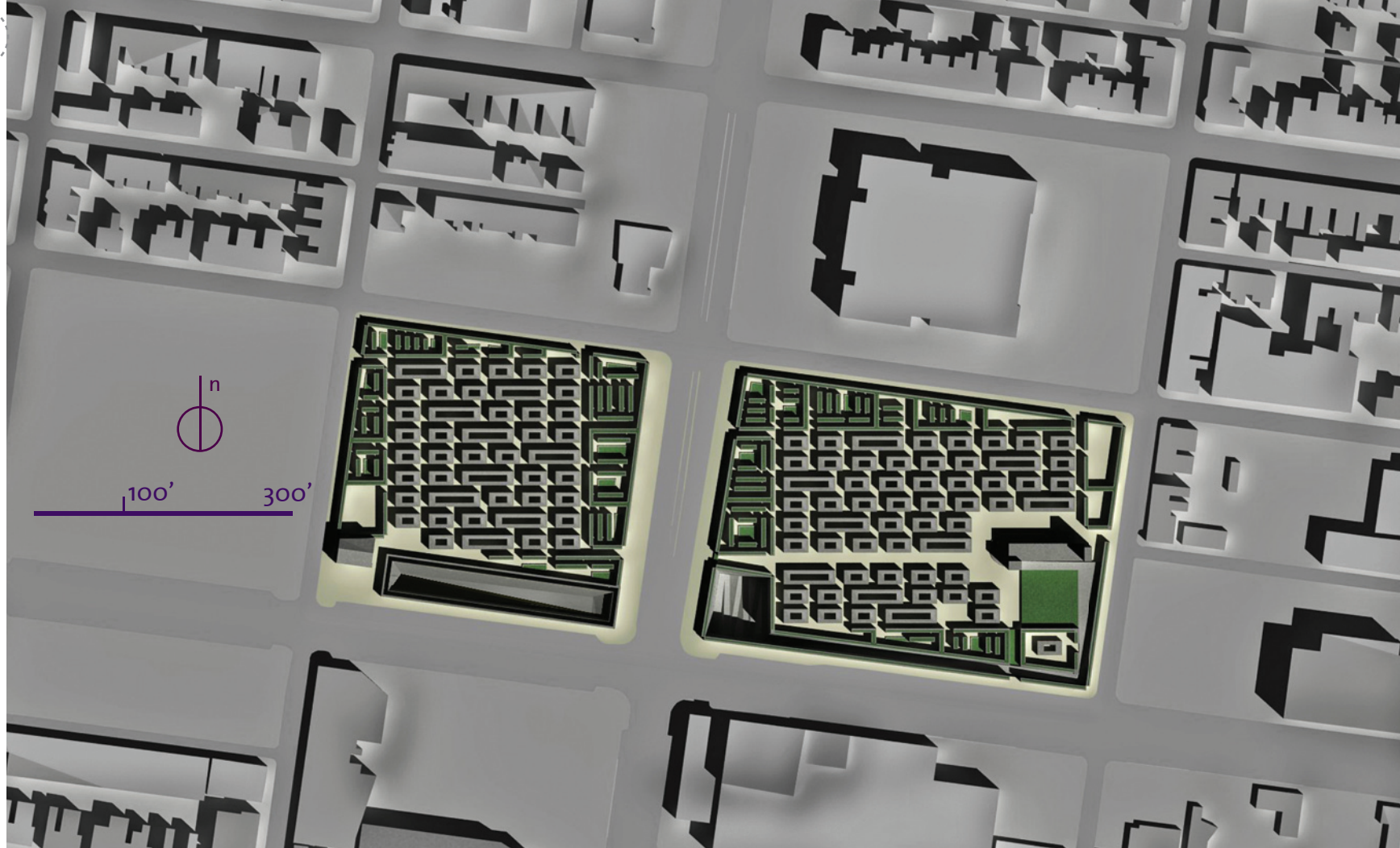
The story of the ark inspired the design for rainwater. Water sheds off the roof through huge scuppers and falls to a gutter system that runs at the base of the chapel. The building will appear to float. Small windows placed on the southern face of the chapel will allow light to reflect off the water and enter the sanctuary.



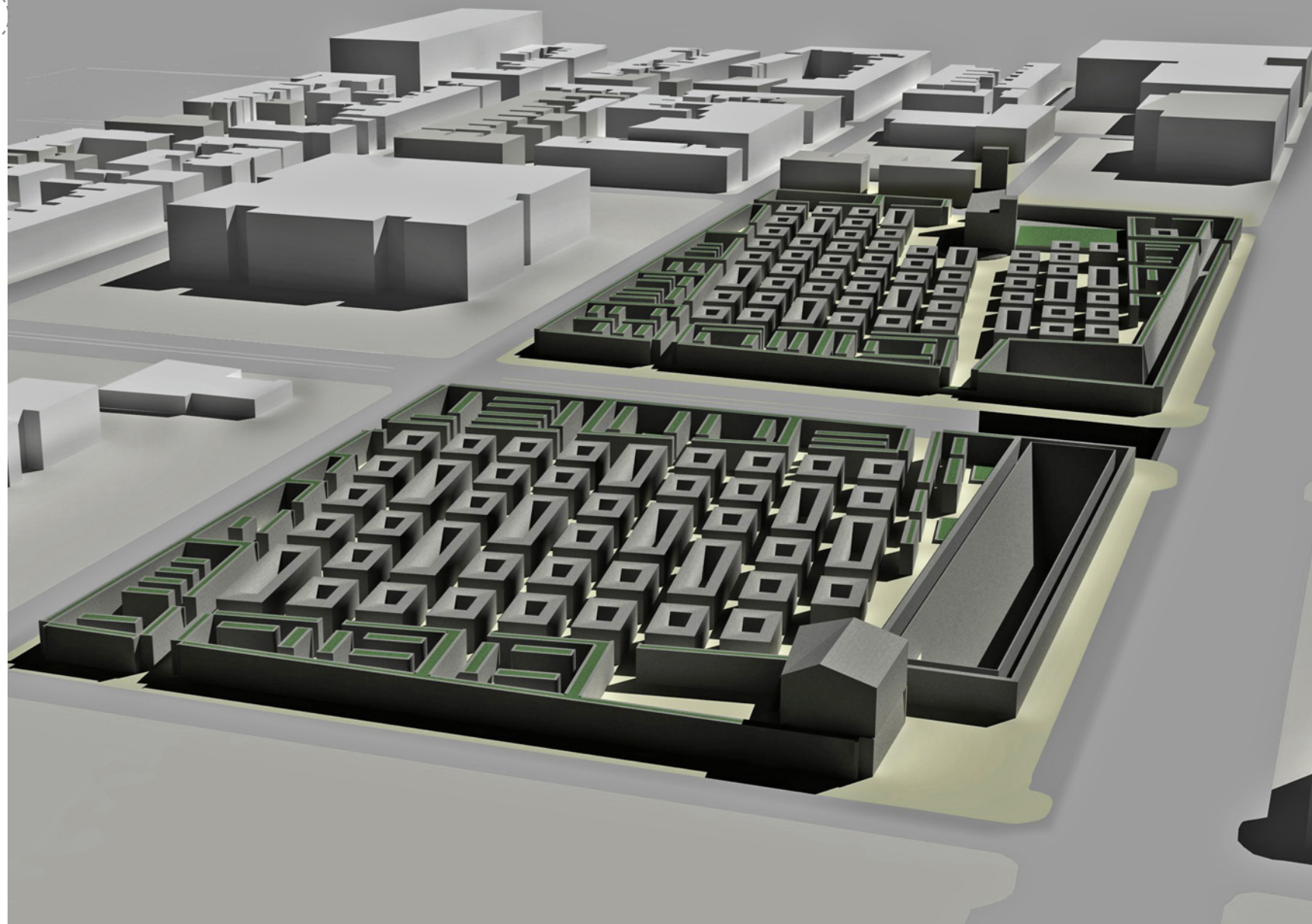
# THE FINAL



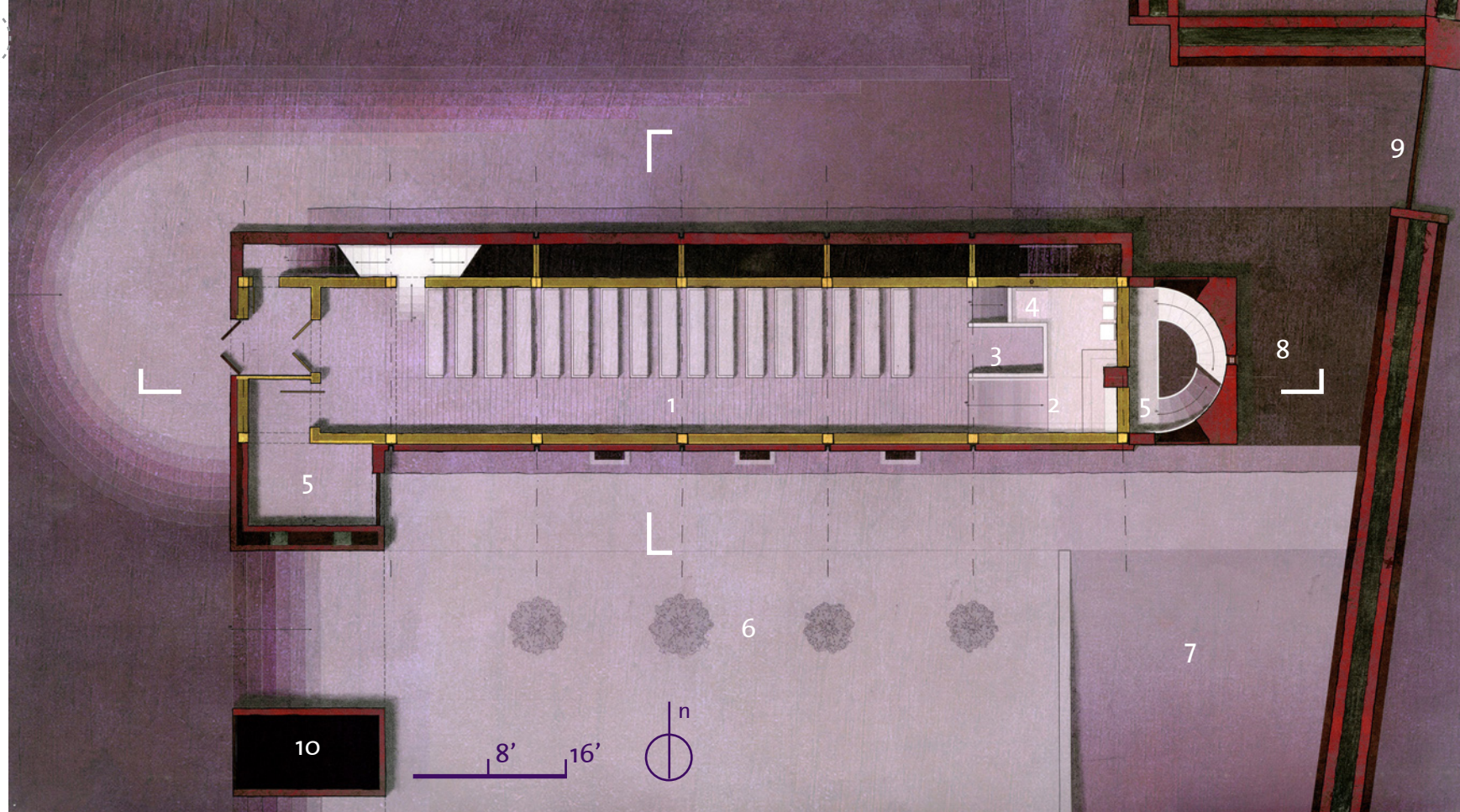
This is a 1:500 model of the site and the surrounding blocks. You can see the difference between the city grid and the cardinal directions.



The two plans are ordered by geometry. The smaller block uses 1:1. The larger block has a the proportion of  $1:\phi$  and the chapel is placed on the division line of  $\phi$ . The axis continues through the site and marks the entrance to the cemetery and the beginning of the procession. There are exits at the geometrical corners. There is another entrance on the east side for parishioners coming to the chapel.

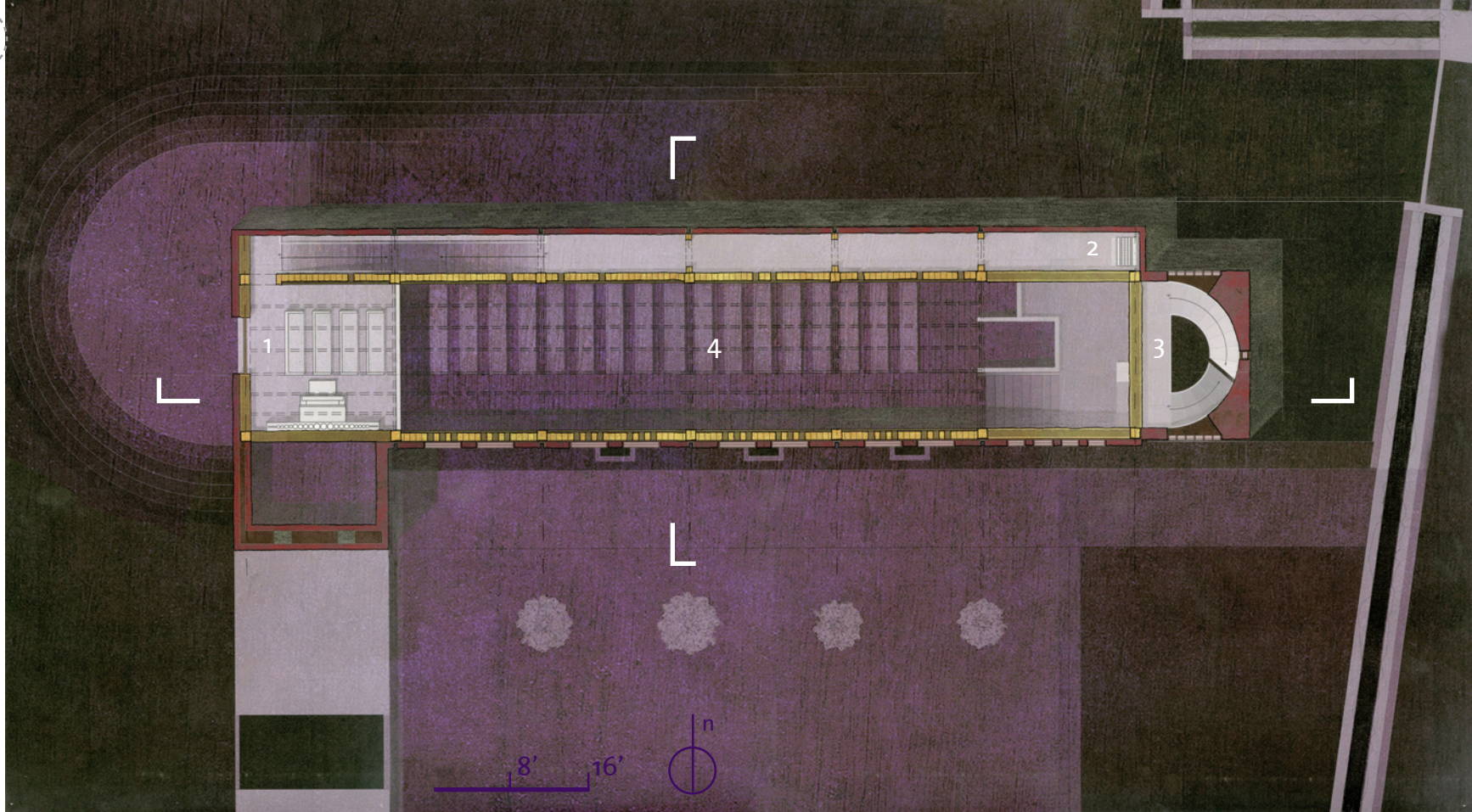


FIRST FLOOR PLAN



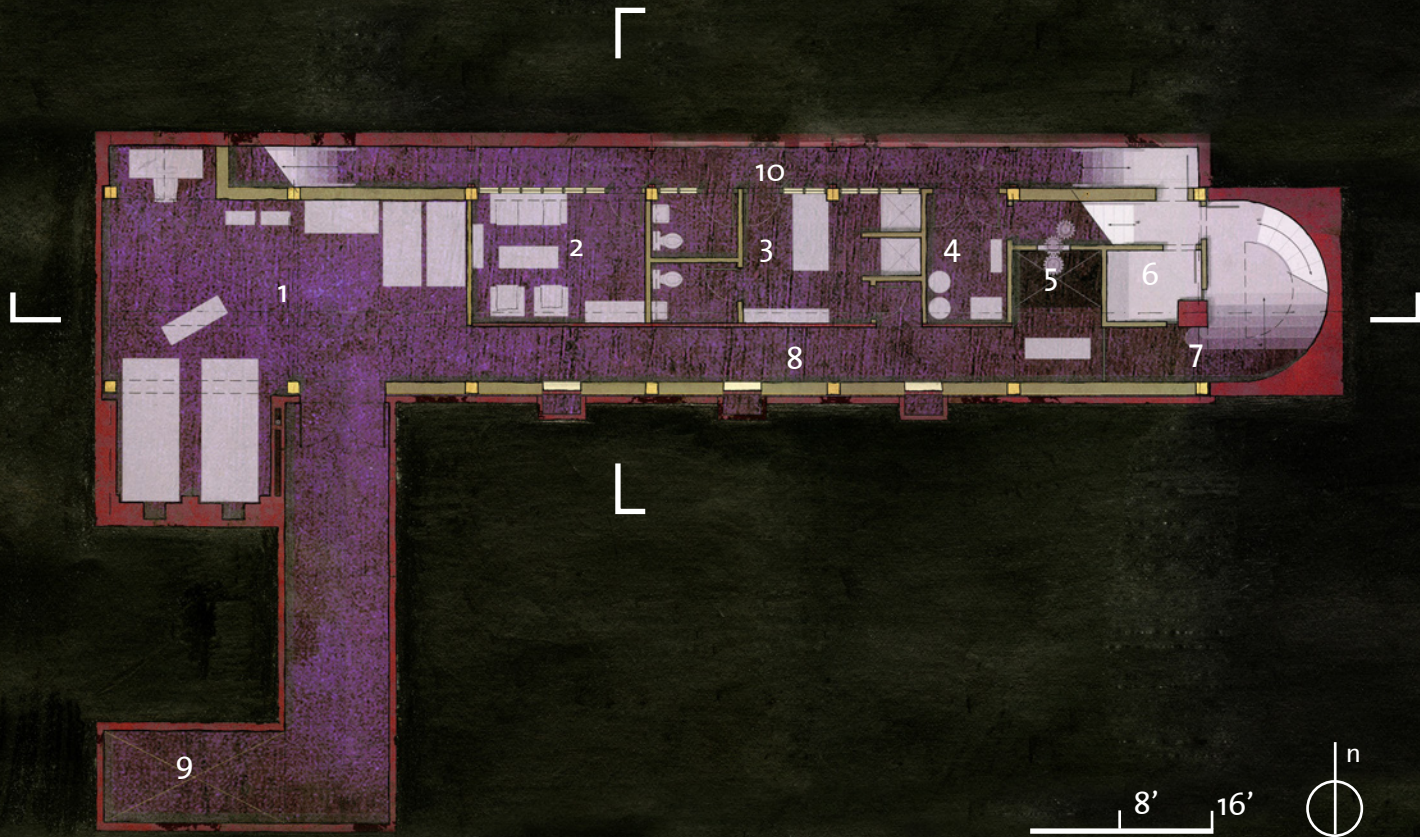
- 1. Sanctuary
- 2. Altar
- 3. Casket Lift
- 4. Pulpit
- 5. Procession Entry
- 6. Chapel Garden
- 7. Procession Path
- 8. Fountain
- 9. Cemetery Gate
- 10. Mechanical Area Well

There are two entrances to the chapel. One is for the procession. One will come up from the path, walk between the garden and the ornate wall, and then walk through the Tower of Ash to enter the chapel. The other entrance is through the cemetery gate passing the fountain reflecting the bell tower. One will walk up the slope, and at the top one will see the cemetery grounds.



1. Choir Loft
2. Transfiguration Shrine
3. Bell Tower Stairs
4. Sanctuary

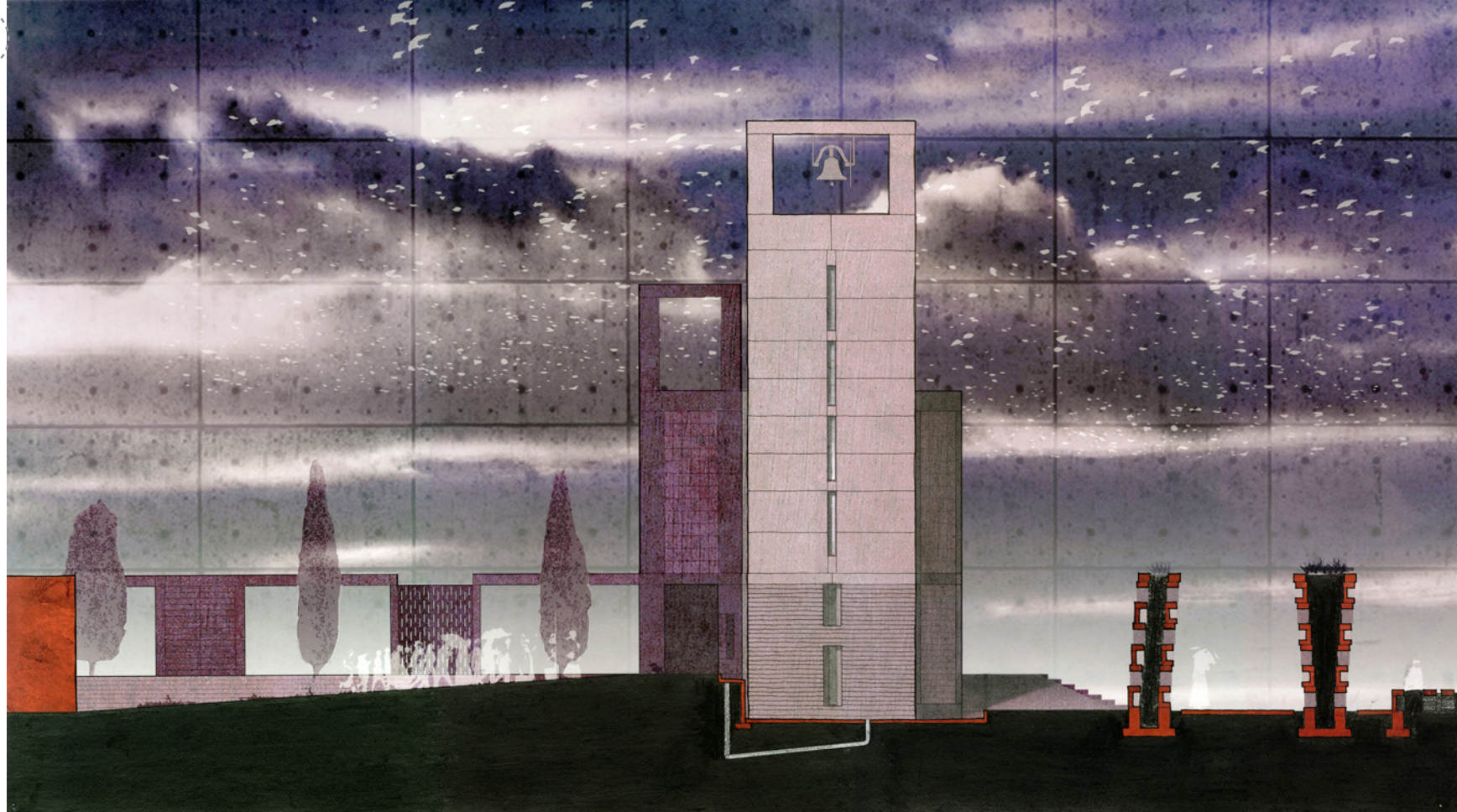
Stairs to the second floor are in a side area to the sanctuary. This space has zenith lighting. The openings in the wall will allow light to filter into the sanctuary. The stairs can take you to the choir loft, or to the shrine of the Transfiguration. The choir loft is equipped with an organ.



- |                     |                           |
|---------------------|---------------------------|
| 1. Incinerator Room | 6. Sacristy               |
| 2. Meeting Room     | 7. Bell Tower Stairs      |
| 3. Locker Room      | 8. Hallway to Crematorium |
| 4. Mechanical Room  | 9. Mechanical Area Well   |
| 5. Casket Lift      | 10. Hallway               |

The basement is designed around the programmatic. It holds area for workers to clean and perform their duties. The hallway to the crematorium has natural light via window wells on the south face. Stairs from the altar lead to the sacristy, bell tower, and the hallway to the locker room.





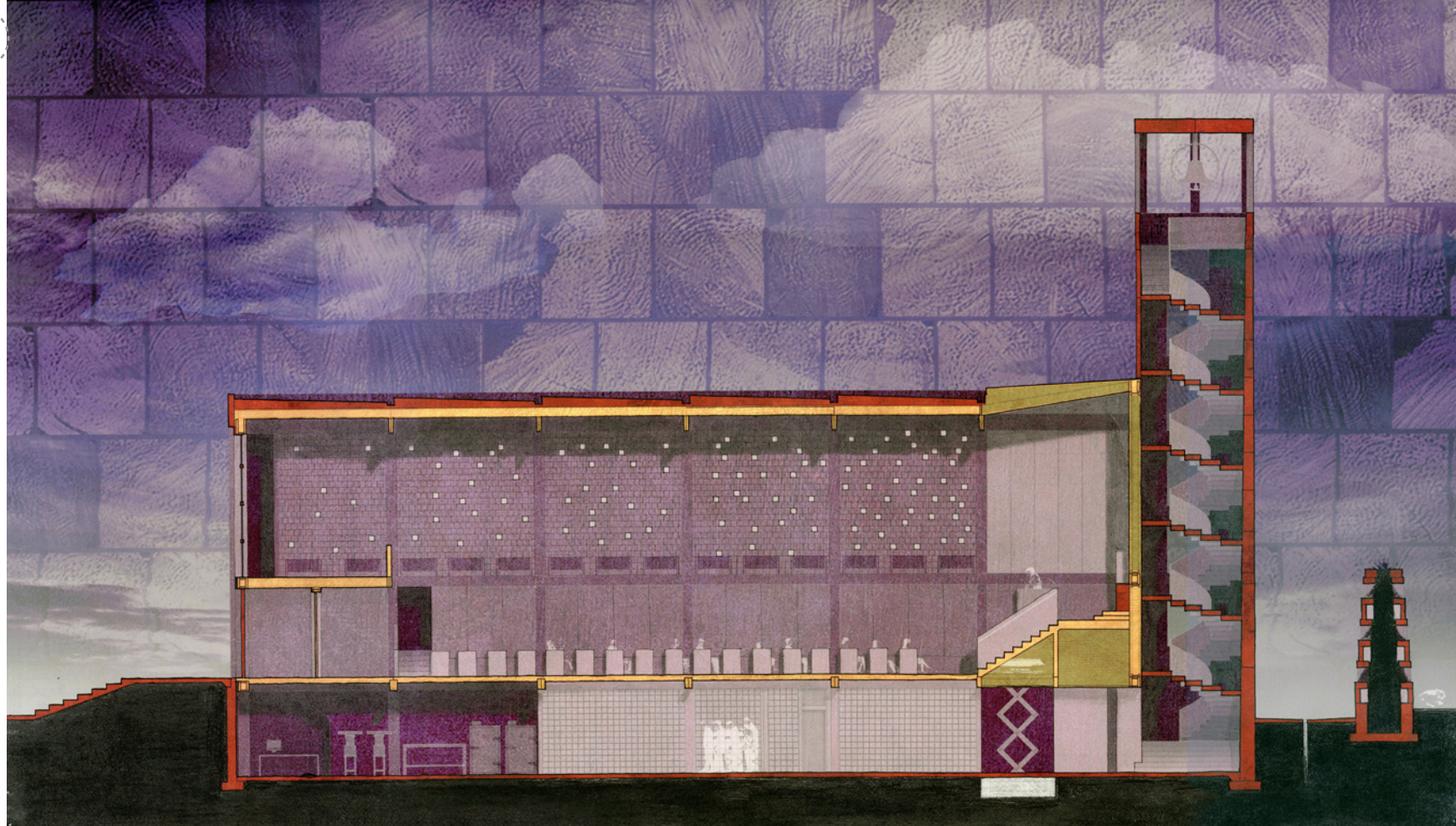
The Tower of Light sits in a fountain pool. The water is continuously circulated from the pool to the fountain located in the Tower of Ash. The Tower of Light is constructed from cast concrete. The bottom part that is below the datum is formed with wood board, the part above the datum is formed with plywood panels. You can see the section through the columbarium walls and the raised earth in which urns can be buried in the ground.

8' 16'



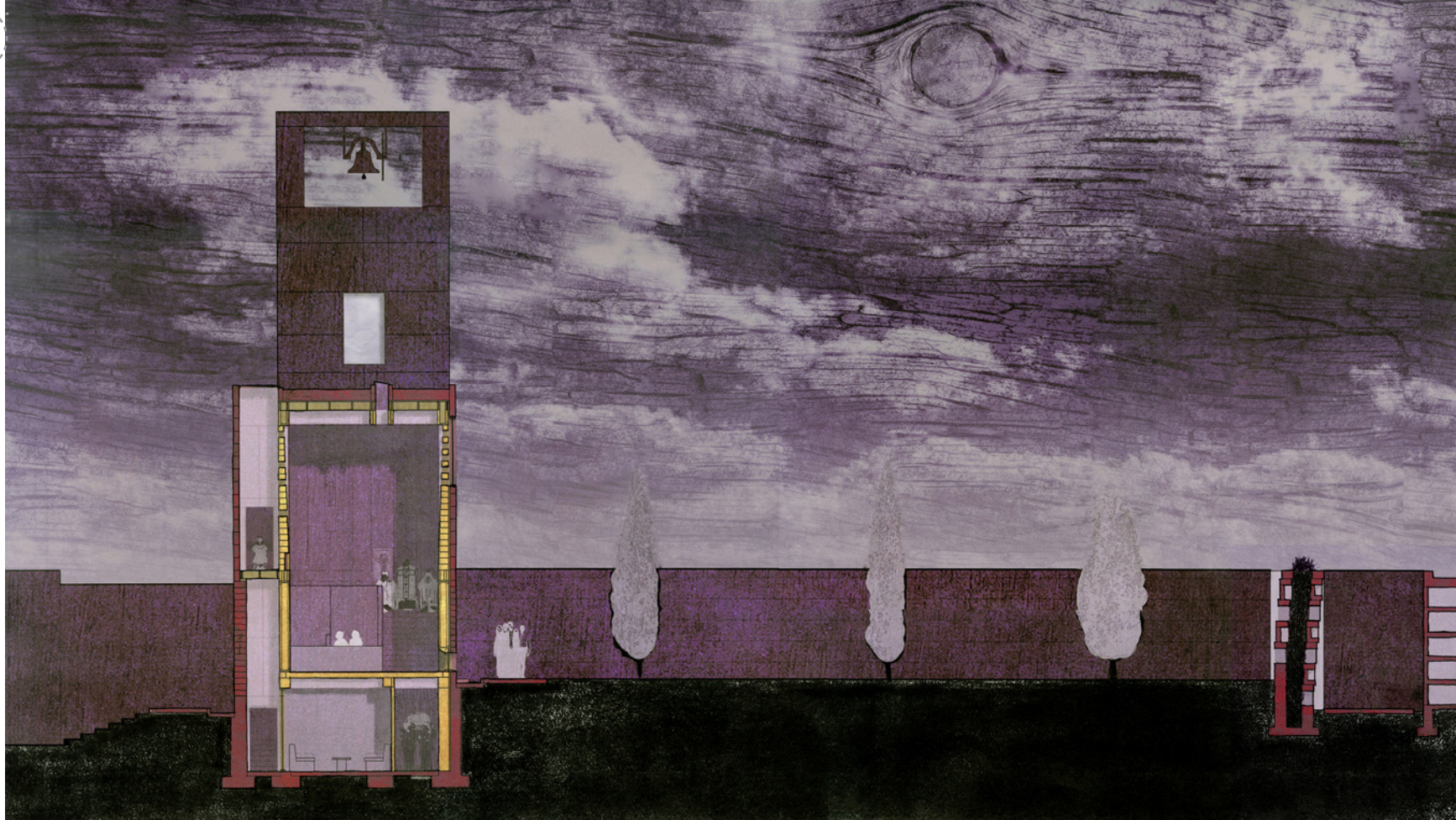
The south face of the chapel has the most glazing. The fenestration for the sanctuary is proportioned  $1:\sqrt{3}$ . This is the same proportion for the tower openings. The opening rhythm changes at the bay containing the altar. There is more glazing so that there is a dramatic lighting difference at the altar. You can see the openings at the floor of the chapel. These windows will allow light to be reflected from the water into the space. The facade is composed of precast concrete blocks, cast in place concrete cornice, and stainless steel downspouts.

8' 16'



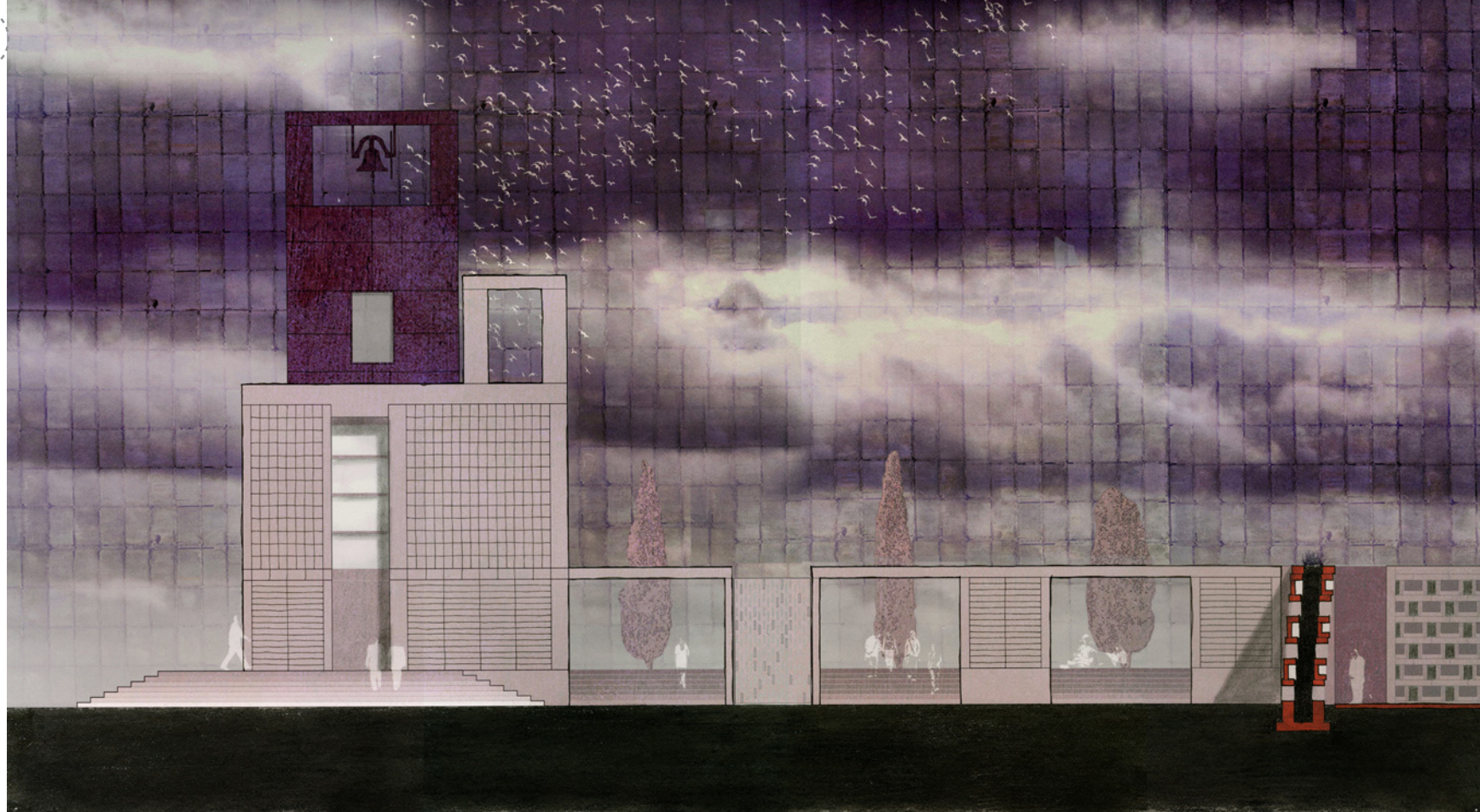
The service will happen with the casket in its place before the altar. The altar will be flooded with light compared with the rest of the space. Light will come through the tower of light, and stair shadows will be cast on the translucent structural glass walls at the altar. When the final prayers have been said, the preacher will turn the wheel and the casket will lower into the basement. The workers will take the casket down the hall to the incinerator to be cremated. You can see the star like openings in the upper wall. That portion of the wall is wood block with exposed end grain. The openings are the negation of one unit.

8' 16'



The roof is supported by glulam beams. They span to a skylight opening. Instead of spanning the whole distance, a metal piece connects the two sides at the skylight. This will diminish the shadow of the structure from the light. The floor structure is solid wood beams that are fit together to make the floor and structure the same. The aisle and the seating area will be made from two separate woods. This will accentuate the point at which they meet. This will express the axis. The north exterior wall is the only wall made from the precast concrete block that carries a load.

8' 16'



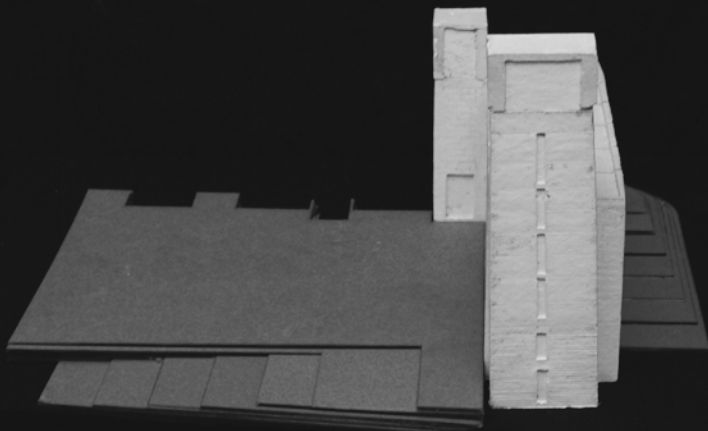
The west elevation has the common entrance to the chapel. Workers, clergy, and parishioners will use this entrance on most days. There are steps with a canopy that lead to the chapel garden. This will be a place for people to visit and treat like a public garden. People can sit, sketch, and talk in this area. To the right in this drawing is the burial area for baptized infants. During the procession this place becomes visible. It is perhaps the only time that lay people, non clergy, will see it.



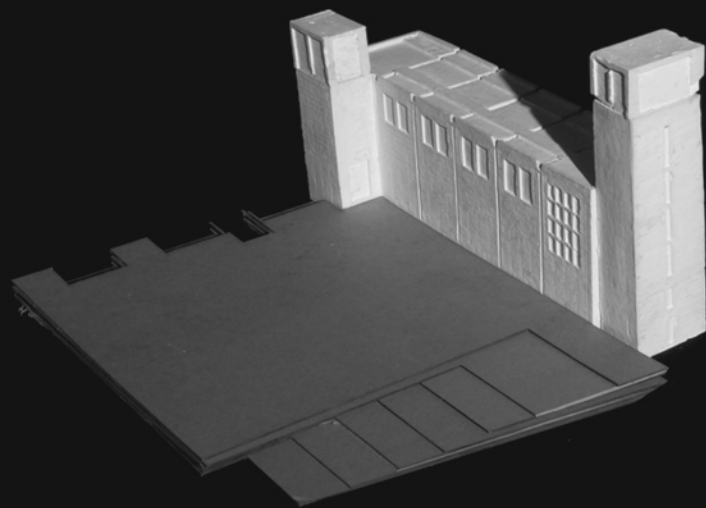
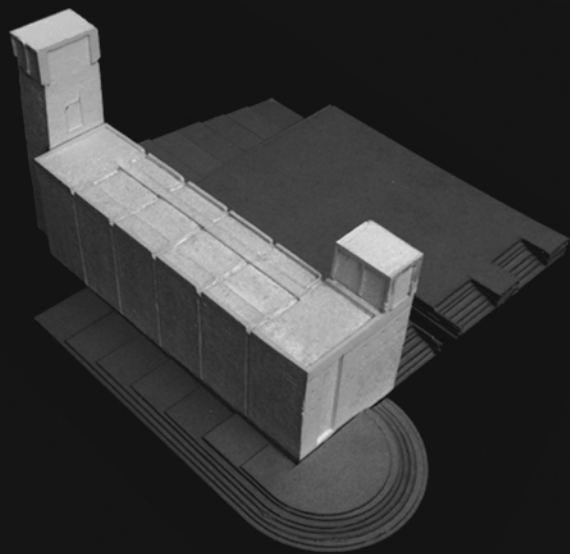


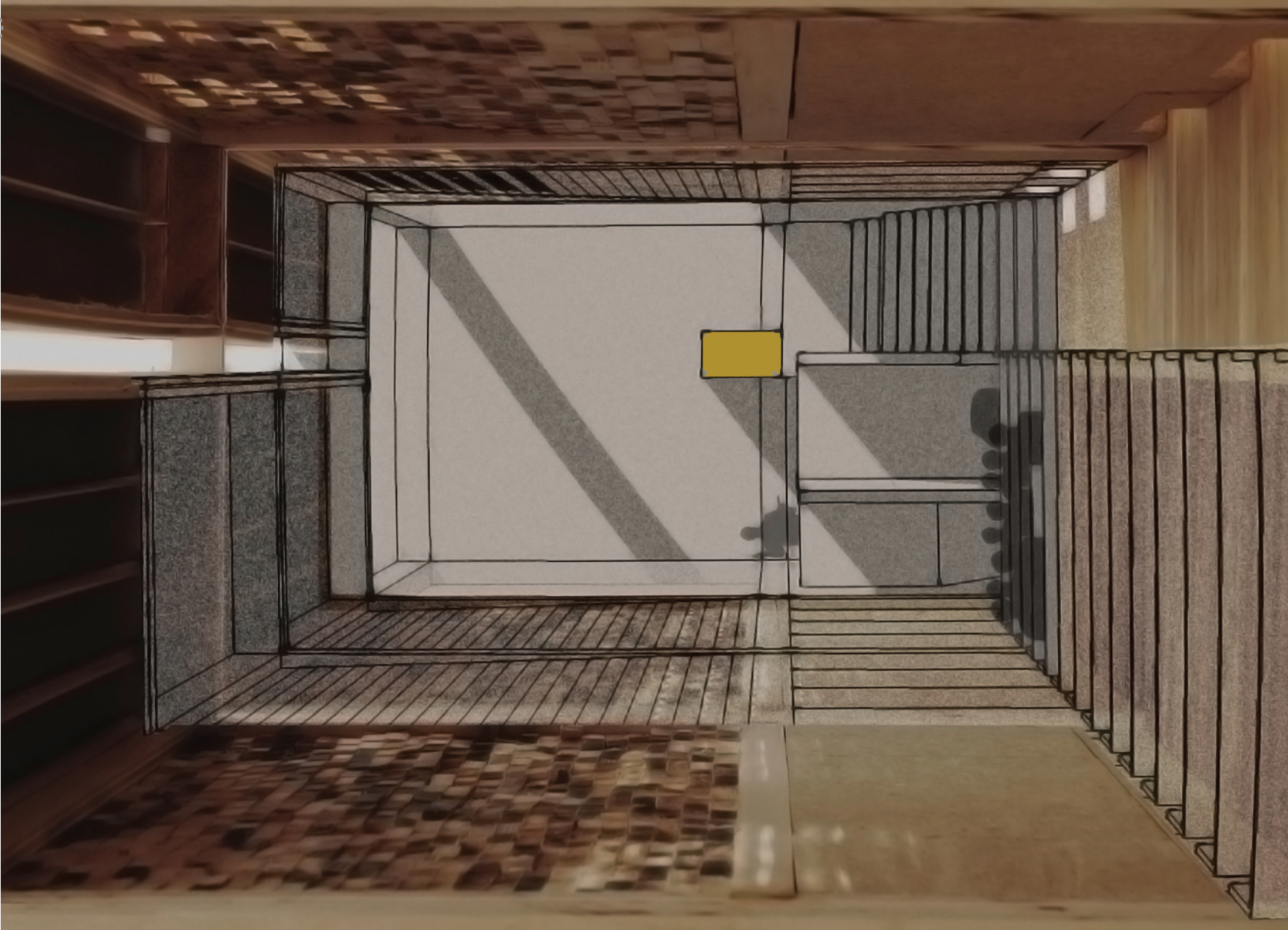
When the casket has been lowered the loved ones can toss a rose before they leave. They will go out the common doors to the chapel. Upon exiting the doors they will have a view back toward the gatekeepers house. They will see where they entered the cemetery. Perhaps this will be a fond memory for the mourner. The person will then either turn and walk down the ramp, or walk down the steps to explore the cemetery, or visit the tomb of someone they know. Smoke from the cremation will fill the sky.

8' 16'

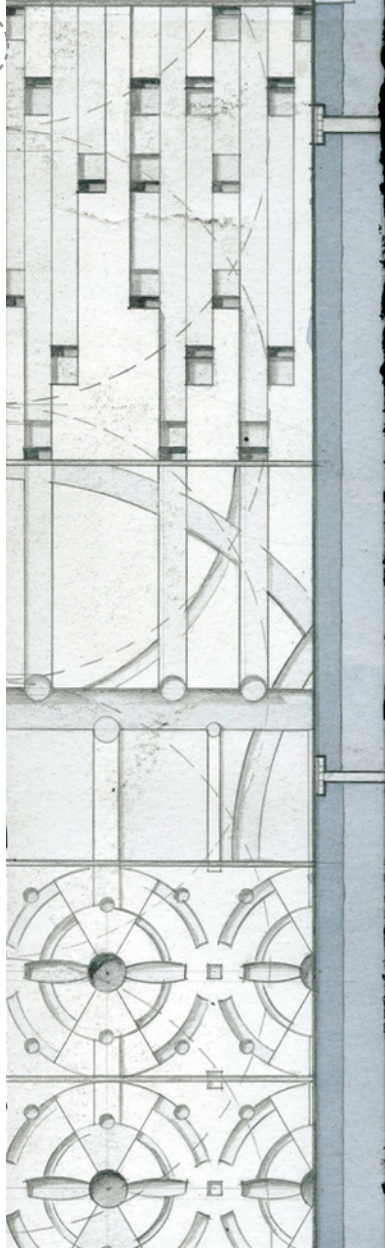


This is a 1'-0" - 1/8" plaster model that was cast with scored chipboard form work. You can see the way the roof works with water drainage and the skylight.



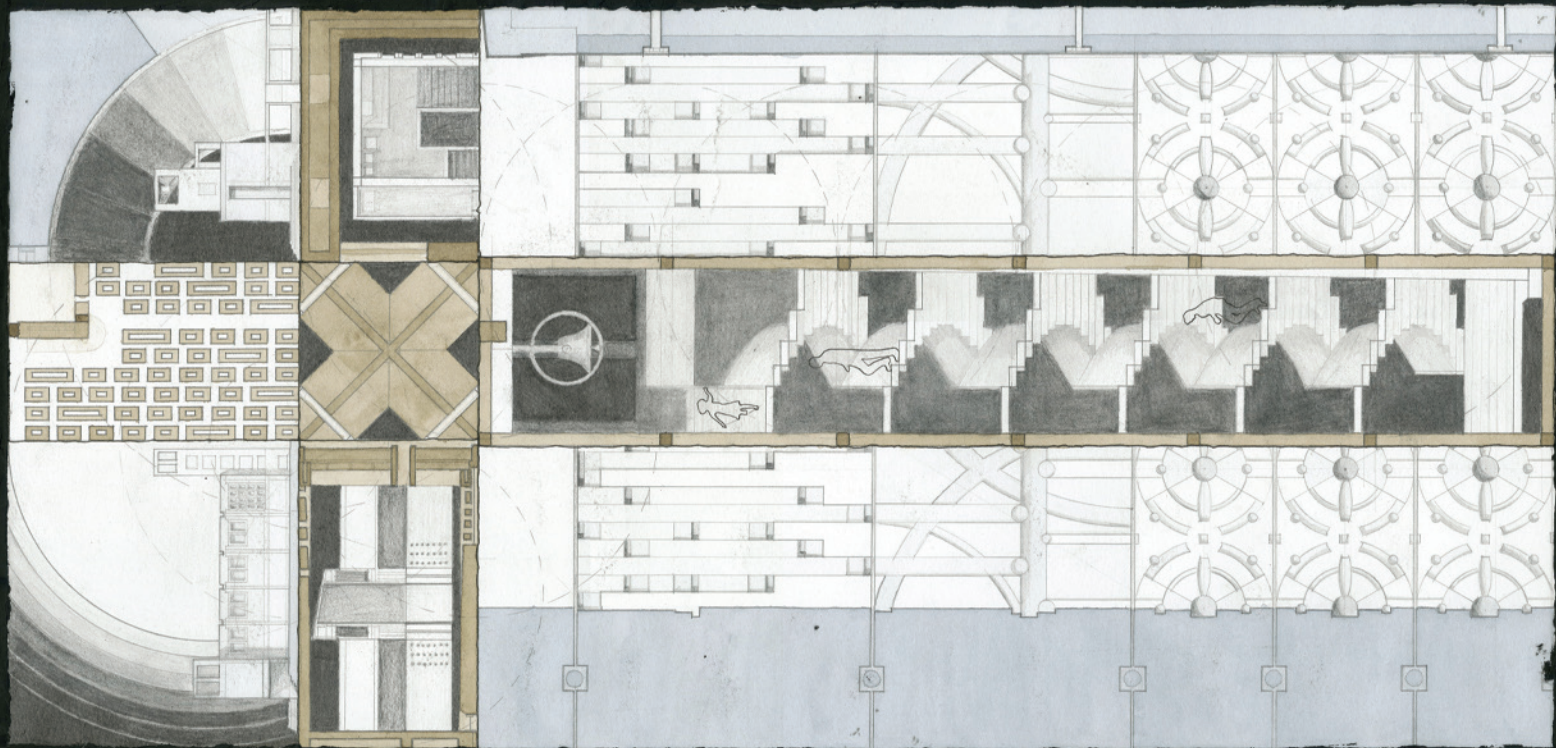





 $1 : \sqrt{2}$ 
 $1 : \phi$ 
 $1 : 6$ 

These relief cast concrete block are stacked to create the exterior skin of the chapel. The proportions are listed above. Each relates to the other. The relief for the 1:6 proportions was inspired by the 6th element on the periodic table, carbon. It is the dominant element for life. The 1:√2 was inspired by a DNA diagram. Both DNA and √2 are building blocks. The 1:φ relief ornament served to unite the other two designs. There is a relief running along the φ division line.

## ANALYTIQUE



This drawing is ordered with the proportions that ordered the project. It is an arrangement of details, plans, sections and elevations.



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## THANK YOU

To my committee:

Marcia, Paul, Jaan and Susan there is so much of each of you in this design. Thank you for your passion and imagination throughout this process.

To my girlfriend:

Monica you've been my support and distraction throughout this thesis. I owe my sanity to you. Thank you for the love you have given me.

To my family:

Dad, Joe, Amanda, Hillary, Vishnu, Mike

To my friends:

Mark Troutman, Bryan Montanio, Matt Sander, Jon Foote and Carolina Dayer and many more. You've all given me advice, conversation or beer along the way.

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