

Thesis

My thesis began by exploring what "Pneuma" means.

"Warm, cool, humid, airy, radiant, cozy are an important part of our experience of a space, they influence what we choose to do there but also how we feel about the space."¹ Thermal qualities are important in the architect's initial conception and could influence all phases of design. Airflow is as important to the human body as it is in a building. The purpose of the paper is to establish the relation of the respiratory process and spirit "Pneuma" of the human body to a building through the natural climatic system. The word Pneuma that derives from the Greek word (*pnein*), means "breath", and "wind" as well as the vital spirit, the soul. Similarly, *psyche* from the *psychein* or "to breathe, to blow, to cool" means breath and soul. The Latin work *anima*, signifies "wind" and "spirit" and leads to *animus* the soul." *Pneuma* and *psyche* as well as *anima* and *spiritus* are identified with life and with all living beings and of the universe. In ancient medicine pneuma was associated with the breath diffused through out the body. Many ancient philosophers speculated about pneuma as the soul of the world and the divine breath animating the cosmos. "Diogenes of Appollonia believed that pneuma was the essential element of the universe and as the vital breath that, together with the blood, circulated through human veins".²

Aristotle said that the heart is created first, the heart is the last organ to stop working, the heart is in the center of the body, therefore the conclusion seemed clear to him: the heart is the seat of life. The heart beat speed up or slow down when a man experiences joy or sorrow. From this Aristotle concluded that desires, feelings, and all emotions are derived from the heart. The brain seemed to represent the direct opposite of the warm, mobile, blood filled heart. It was cool, contained blood that was immobile, therefore he concluded that its function was a to cool the blood heated by the violent exertions of the heart. However, he believed the soul, the intellect, and the character were not

bound to any organ, they were independent of the body. The heart, Aristotle said, was not merely the main conductor of movement and emotions, but also the controller of metabolism. The substances absorbed from nutrition, he thought turned into blood in the heart and mixed with air "Pneuma" which came from the lungs. The function of air, since it was cold, its purpose was to cool the hot blood.

"The key to life is the lung" Le Corbusier. In the Radiant City, Le Corbusier explains respiration, as matter of lungs, Air gives the lung its *raison d'être* "exact air". The lungs are the essential organ of respiration, it is within the lungs that dark blood is transformed in to red blood, that occurs from the gaseous exchange between the blood and the air outside. The Lung is the exchange center where blood brings its Impurities to get rid of them but at the same time picks up oxygen to carry it to the body tissues. Lack of air causes death.

In *Thermal Delight* Lisa Heschong said life exists within a small range of temperatures. The surface of the earth is constantly heating up and cooling down with each daily cycle and each yearly cycle. The ground heats the air around it, driving the forces of weather that can change thermal conditions over the course of a few hours. One of the most important ways to regulate the flow of heat is through the circulation of the blood. Mammals and birds can control how much blood is flowing to the surface of the skin. Human naked skin functions well in the hot, humid tropics but needs some help in other climates. Some traditional clothing developed by different cultures often have extremely well thought thermal functions. For example the white robes that the Arab wear reflect away the sun's radiation while helping to fan air past the body and increase evaporative cooling. In the other extreme though the fur parka of the Eskimo keeps in both body heat and water vapor from perspiration so that the Eskimo lives within a semitropical environment.

Nest building is, the best way of choosing the best microclimate. An animal seeking out a

rock crevice or a hole in the earth as a place to rest and be cool is choosing a favorable microclimate. All animals start their nests by finding the best location. The Anasazi Indians of the southwestern United States were smart in choosing locations for their cliff dwellings. They chose locations shaded in the summer by an overhanging ledge of the cliff, but exposed to full sun all winter long. With their backs to the cliff, the dwellings were protected from the winter winds and also took advantage of the thermal mass of the earth to moderate the temperature flux.

Heschong explains that to enjoy being warmed or cooled we need some awareness of the process. It is impossible to enjoy consciously what we don't notice, yet most of the process of heat flow take place below our level of conscious sensation. Heat convects away from our skin surfaces in air currents too gentle to feel. Clues from other senses can help make us more aware of thermal process. For example there are many ways to notice that the air is moving and helping to cool us even when it is too gentle to feel.

Ho Hsun, a Chinese poet wrote:

*You can't see it or hear it,
It is so soft. But it is strong
enough To dust the mirror with pollen,*

*And thrum the strings of the lute.*³

One good example of feeling air is the description given by Lisa Heschong in *Thermal Delight* about Japan and Persian Gardens. In Japan people like to hang lanterns or wind chime under the roof of the veranda during the hot and humid summers. The lightly swaying lantern or the ringing of the bell gives a suggestion of refreshing wind and coolness. In Persian gardens roses and jasmine and other fragrant flowers were planted in different quarters so that when the breeze came, it came with a lot of scents.

Many of the other sensory associations with cooling seem to want to remind us of something, like the breeze, lightly playing over the surface. Cooling sounds are light and high pitched,

Pneuma In Winery

like the Japanese wind chimes or the splashing of water droplets in a fountain. Cool decorations move lightly over the surface like laciness of Victorian gazebo or the mosaics of vines and script that twine over every surface of a Persian mosque. Heschong continues to explain that it is right at the skin's surface that people most consciously notice cooling. Which makes perfect sense when we consider that both the process of evaporation and convection take place at the surface of the skin. Even when losing body heat by radiation to a cold surface, people still assume that they are being chilled by a cold draft somewhere in the room. In contrast, warmth is internal because we associate it with the warmth generated within our own bodies. Warmth is what's alive at the very core of things. A fire and the sun also generate heat inside of themselves. We feel their heat not so much warming our skin as penetrating in to the very center of our being.

"The thermal sense is intricately bounded up with the experience of our bodies. We continually sense the heat flow of our bodies, information that creates a general background for all other experience. Keeping warm and keeping cool have been everyday activities for people since time immemorial."¹ We are also unlikely to relate our thermal well-being to anything in particular unless there is an awareness at some level that an object or place does have a thermal function. Radiant hot water pipes embedded in the ceiling may work for keeping us warm but there is no way to sense directly that the ceiling has a thermal function. The lack of specific clues makes it hard to relate to the ceiling in the same way we relate for example to the hearth. The same can be said of walls. An important function of the exterior wall of a building, especially in a cold climate is to act as an insulator between the interior of the building and the weather conditions outside. In the middle ages they used intricately woven tapestries and carpets in the medieval halls. This was originated with the European peasants who would hang skins or lengths of cloth on the walls of their houses during the cold weather. That created an extra insulating air space and a radiation barrier between the inhabitants and the cold exterior

walls. The royalty used very special pictorial hangings. The Mughuls of India developed a similar system in order to heat their open and airy stone palaces in winter. Persian carpets, in addition to providing insulating layers over the stone floors for people to sit on, they are also hung along the walls for insulation. The carpets were valued for the beauty but also for their warmth and comfort. A mechanically cooled place is linked with symbol of status. The heat was an equalizer, something everyone had to endure, rich or poor. While the problem of cold weather was extremely complex and expensive. In medieval Islamic countries, big effort was expended to cool the throne or pleasure pavilion of the sultan. Elaborate waterworks were used to cool an area by evaporation.

The hearth is well known as the center of gathering and to provide a source of heat for the house. In four books of architecture, Palladio describes how the ancients used to heat their houses, they build chimneys or ducts (*canna, tromba*) in the thickness of the wall through which the heat of the fire below the rooms rose and went out through certain vents or holes made at the top of the chimneys. In the summer the "Trentos" which are the gentlemen of Vicenza, cooled their rooms in the same way. Since in the hills of that estate there are some large caves which the locals called *covali*, using those caves that existed in that region by directing the air through certain vaults ventiducts that they call *ventidotto* and then send the fresh air through all the rooms with tubes opening and closing them to produce more or less coolness according to the season. Palladio also mentions the "prison of the winds", which is an underground room built by Signor Francesco Trento, which he calls *Eolia*, where many of the ventiducts open out. The description of air flowing through out the building through pipes and vents, relates to the circulatory system of the human body of the veins and arteries and lungs.

Like Aristotile, Erasistratus a Greek physician born in 320 B.C. was interested on how the human body works most of all the heart and the blood vessels. Following the paths of the blood vessels, he made his way to various organs, and when dissect-

ing them he always found them filled with blood, just like the veins. Therefore, he thought the blood must have reached them through the veins. In the larger arteries, on the larger arteries, he found mostly air. Fresh air comes from the lungs through the "vein-like arteries" (pulmonary veins) in to the left side of the heart where he concluded that the inhaled air was transformed in to an air like substance maintaining life- the "life pneuma". Sensation and movement, however were conducted by the nerves, and Erasistratus believed that air reached the nervous system through the blood vessels of the brain, and to be transformed in to a different kind of pneuma, which he called "soul pneuma". He assumed that this air was also in constant motion, starting from the brain and coursing through the body by means of the spiral cord and the nerves. Therefore he concluded that the "human body has three kinds of substances which made their way outward from the center: blood by way of veins, "life pneuma" by way of the arteries, and soul "soul pneuma" by way of the nerves. (figure 1)

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The three substances according to Erasistratus. The blood in the veins is drawn black, the "life pneuma in the arteries white, and the "soul pneuma" in the brain and nerves grey.

DobyT.,M.D.Discoveries of Blood circulation.

(figure 1)

Leonardo da Vinci was also interested in finding answers about pneuma. Da Vinci explains "The lung is not capable of sending air in to the heart, however, he continued it does not need to, for air is produced within the heart, which evaporates in the form of perspiration on the surface of the skin through the extreme ends of the capillaries."¹ He rejected the theory that pneuma went directly in to the pulmonary veins through the trachea ending in vessels. His question was " What was pneuma? And what was air? There must exist a common factor

between combustion and breathing. "Where there is not enough air for the fire, neither fire, nor any sort of animal can live. Where fire cannot burn, breathing animals cannot exist either"^{5a} (figure 2)

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Circulatory System and Lungs depicted by Leonardo Da Vinci

Doby T., M.D. Discoveries of Blood circulation

(figure 2)

Kenda Barbara an architect and a professor, wrote an article of Villa Eolia as the Pneuma of Costozza, which describes in more detail the same idea that Palladio was explaining about Trentos. Costozza is a small town near Vicenza, which is full of, caves and springs. Some of the caves are natural, but many are artificial. "An eighteenth- century church historian Francesco Barbano, describes Costozza as one of the most memorable marvels of antiquity, with caves and canals made both by art and by nature and where winds originate, flow like water and generate fresh air."² Later an article was published by a historian called Gaetano Macca, who describes the underground movement of "air as process of purifying many substances and even writes about the cave as a point of cosmic insight".^{6a} In Costozza Kenda explains that there are number of "sixteenth century ville that are connected by gardens and are linked underground through caves and wind channels, or ventiducts, forming a natural and unique air conditioning system."^{6b}

Eolia she explains is the prime example of sixteenth century pneumatic architecture. As the human breaths through its lungs, so the air of the pneumatic building, which circulates through its own lungs the ventiducts. Francesco Trento and his villa Eolia "a superb marvel of construction"^{6c} (Figure 3) Francesco Trento was born in 1528, he received a doctorate in civil law in Padua and was knowledgeable about science, philosophy, agronomy, literature, art, and theater but also a collector of art and musical instruments. In 1560 Francesco Trento constructed Villa Eolia together

with another Villa Eoliail. To date Francesco has been credited with the invention of a system of subterranean ventiducts for the natural "air-conditioning" system of the family buildings. From the article Kenda Barbara includes a map of Costozza dated 1567. The oldest surviving document displaying the original position of Trento's buildings, gardens, and orchards. According to Trentos drawings, a colonnaded passage originally connected Eolia II with Eolia. A similar connection she explains can be found below ground, where one of the principal ducts leading from the Cave of the Winds to Villa Eolia is extended to the site of Eolia II. "Villa Eolia must therefore be considered a pavilion or dependency of Eolia II."^{6d} **(Figure 4)**

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(figure3) Villa Eolia

(Figure 4) Map of Costozza, 1567

Kenda, Barbara, *Pneuma in Voila Eolia*,

"Francesco Trento devised a natural climatic system for his three buildings, Palazzo di Costazza, Villa Eolia, and Eolia II as well as for the nearby Villa Trento. Originally, these four villas were all connected by underground ventiducts to the Cave of the Winds, which has constant temperature of about 14.4 C **(Figure 5a+b and 6)**. It acted as a source of fresh air for the whole climatic mechanism. Hot summer air filled the highest part of this cave, which extends from high in the hill to the level below the villas, on contact with the rock walls the air cooled and become heavier, so that it dropped to reach the ventiducts. The movements pushed air along the ducts so that it would rise when it reached a rising well and eventually pass into the halls of the villas through elaborately carved and pierced stone rosettes in the floor." ⁷ The mechanism of airflow in Villa Eolia still resembles its original where in the sixteenth century, Eolia had at least two vetiducts. The first vent conveyed air through the west door while the second vent generated air through the north door of the cryptoporticus. There was two additional ventiducts

that were constructed, allowing air from the eastern and southern sides to enter. Now from the Cave of the Winds, air continues to travel through a principal ventiduct to the villa's cryptoporticus, or "the Prison of the Winds" and is further conveyed through an octagonal rosetta to the hall of Eolia. **(Figure 7)** The article also mentions about a possible precedent for Trento's system may have been provided by the Odeon, a garden pavilion in Padua, built around 1535 by Alvise Cornaro who lived from 1476 to 1566. In one of his book *Art of Living Long*, Cornaro wrote: "... I have avoided...remaining for any length of time in poorly ventilated places and have been careful not to expose myself too much to the wind and the sun for these things too are great disorders. He reiterated this advice in his brief book on buildings, where he stated that he wanted fine tuned and durable edifices through the proper selection of site, orientation, materials, and arrangement of correctly proportioned rooms: and in my chambers, I am defended from the great heat as well as from the great cold the mortal enemies of the old age, because I fabricated them according to the laws of architecture which may prolong human life."^{7a}

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5a

5b

(Figure 5a) Entrance to the Cave of the Winds
(Figure 5b) Interior of a principal Ventiduct
Kenda, Barbara, *Pneuma in Voila Eolia*,

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(Figure 6) Entrance to a principal Ventiduct, 1560
(Figure 7) Rosetta in the floor of Villa Eolia

Kenda, Barbara, *Pneuma in Voila Eolia*,

While Trento studied in Padua, he may have visited the Odeon and come across

Cornaro's treatises on architecture and medicine. Both Cornaro and Trento relied on ancient literature. Theorem IV of Hero's *Spirituali* (Figure 8) appears to provide a prototype for villa Eolia. This machine demonstrates how a pneumatic device beneath a room generates fresh winds channeled through the mouths of stone heads mounted on the walls of the room: "Building a chamber in to which a wind will blow more or less according to our desire.... When the water rises, much air from the wind outside issues through the mouths to the room, rendering the space fresh since these mouths blow like the mouths of winds themselves....."^{7b} Kenda says while the instruments of Hero's pneumatics were only toylike miniatures, Trento transformed them into a pneumatic machine for human habitation.

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(Figure 8) Theorem IV of Hero of Alexandria

(Figure 9) Entrance to the cryptoporticus of Villa Eolia

Kenda, Barbara, *Pneuma in Villa Eolia*,

According to Kenda Barbara Eolia is a prime example of sixteenth century pneumatic architecture: the villa is both a physical and spiritual realization of pneumatic principles as well as a unique cosmological representation. In the article Kenda mentions about the Renaissance, that a lot of the attention has been about the proportions of architecture in relationship to the human body, music and the cosmos but not about Pneuma which means -breath, wind, spirit, soul - the primary prerequisite for establishing harmony in the triangular relationship of the "human body, a building, and the universe: they may all be said to breathe".^{7c} Kenda claims in the article that the principal goals of the Renaissance architects were to augment the powers of pneuma to "foster the art of well-being". This idea was important also to Trento where in one of his entrance doors in the cryptoporticus of Villa Eolia (figure 9) an inscription reads: AEOLUS HIC CLAUSO VENTORUM CARCERE REGNANT AEOLIA ("Aeolus rules over Aeolia by way of this prison of

winds”), which refers to the mythology of the Aeolus, the god o winds: Juno made the winds to go against Zeus as a retaliation for his running off with Io. As punishment, Zeus imprisoned the winds in a cave on the island of Aeolia, locked them behind a brass door, and appointed Aeolus to be the guardian.^{7d} “Renaissance architects applied pneumatological doctrines in their theories and practice because they held that true architecture could be deciphered only by virtue of a correspondence between the structure of the soul and that the object. They believed that the art of living well could be determined through the discovery of the pneumatic principle of the divinely ordered cosmos and of architecture. Therefore, the model Renaissance building was to be a realization of pneumatic theories in practice and was to enhance the well-being of its inhabitants.”⁸

The most critical for the study of Renaissance pneumatic architecture, are the medical aspects of *pneuma*. According to Erasistratos, pneuma in the form of a warm wind was first formed by the inhaled air or the environment then revitalized in the heart and spread through the entire organism. Hippocrates taught that all disease was caused by pneuma, and believed that to become a successful physician, one had to understand wind. Among the “pneumatists” of medicine, Galen was the first to consider the relationship between pneuma and psyche. He asserted that “physical pneuma, located in the brain and made by air inhalation and blood exhalation, had to be considered the prime instrument of the human soul.”⁹

Vitruvius included the subject of pneuma in his architectural treatise. He arranged streets inside octagonal town halls, so that the noxious winds would be avoided, referring to the octagonal Tower of the Winds built in Athens by Andronicus of Cyrra around the second century B.C. This monument was an horologium, containing a clepsydra, or “water clock” and its exterior was decorated with eight sundials and eight reliefs of the wind gods. The

tower was crowned by a Triton (keeper of Soul) which rotating with the wind informed ancient Athenians about the weather and about the diseases or the therapeutic powers that the wind might bring. **(figure 10)**

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(Figure 10) *The Tower of the Winds in Athens*

Kenda, Barbara, *Pneuma in Villa Eolia*,

Kenda Barbara describes that the ideas for Eolias geometry and for the villas wind dial can be traced back to the octagonal Tower of the Winds. The cryptoporticus of Trentos is build with a mosaic pavement with an octagon in the middle. On the walls there are eight small niches, under which are carved the names of eight local winds: "Borea, Euro, Sirocho, Austro, Garbin, Zefiro, Maestro, and Tramot."^{9a} The mosaic octagon vertically mirrors an octagonal ceiling rosetta in to which the eight ribs of the cryptoporticus's vault converge. Eolia show through its geometry that eight was the correct number of winds and follows Vitruvius's instructions on the arrangement of the streets within the octagonal I walls to defend the city against the winds. Trento's villa is oriented toward the collaterals so that its corners split the cardinal winds and diminish their forces.

The invention of the ventiducts and the architectural geometry, for Eolia demonstrates that Trento's primary concern was to augment the beneficial pneuma of his villa. "As the human being breathes through its lungs, so the air of the a pneumatic building, such as Villa Eolia, circulates through its own lungs- ventiducts."^{9b} "Trentos conceptualized Eolia as a corp mediante, reinforcing a doctrine of Aristotle's De Respiration: So do all things inhale and exhale..."^{9c}. In the article Kenda also mentions that Leonardo studies about pneuma concluded that the architect and physician must be acquainted with the scientific rules of equilibrium, a building and the human

body must be balanced by the harmony of all elements.

Shortly after the construction of villa Eolia, Philibert de L'Orme, in his third Book on Architecture, published the image "The Architect Emerging from the Cave" (figure 11).

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(figure11) "The Architect Emergin from the Cave"
from Phillibert de l'Orme

Kenda, Barbara, *Pneuma in Voilla Eolia*,

The architect standing in front of a cave, holds a compass, integrating with a snake according to Kenda the representation of the image might be Francesco Trento enlightened with the knowledge of architecture and medicine while emerging from the Cave of the Winds. De l'Orme also refers to the writings of Hippocrates explanation of pneuma. "Wind in bodies is called breath, outside it is called air... How air, then is strong in the case of wholes this has been said and for mortals too this is the cause of life and the cause of disease in the sick, all other activities of man are intermittent, for life is full of changes, but breathing is continuous for all mortal creatures, inspirations and expiration being alternate."¹⁰

Villa Eolia is therefore the physical and spiritual realization of pneumatic theories as well as a unique representation of the sixteenth-century understanding of the cosmos. Considering the ideas of the ancient "pneumatists", and those of Leonardo, and Connaro, Trento constructed a Renaissance model of pneumatic architecture and a therapeutic machine to foster the art of well-being. "Eolia, as villa spiritale, demonstrates that the soul of the edifice functions as indispensable human soul and the cosmos, and that this triangular relationship is fundamentally conditioned by pneuma and thus by the respiratory process not only of the human body, but also of a building and the universe."¹¹

Pneuma In Winery

In conclusion "Pneuma" is an essential resource for supporting life. Early architecture existed to create comfortable internal conditions: Roofs, walls, floors, window, and doors all evolved through time to fit the climate. This historical evolution has formed a massive lexicon of envelope typologies that designers can now draw upon.

Architects are now developing advanced techniques for providing natural air ventilation and design with more logical approach when human comfort and health are taken in to consideration.

The winery is designed based on the air that moves in the site. The idea of using pipes was one way of bringing natural air in to the building without having to use machines.

Pneuma in Winery

Washington Alexandria Architecture Consortium
Alexandria, Virginia

¹ Doby T., M.D. *Discoveries of Blood circulation*. (New York, London, Toronto: Designed by the Etheredges, 1963),p.97- See(figure 1)

² Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.101

^{5a} Doby T., M.D. *Discoveries of Blood circulation*. (New York, London, Toronto: Designed by the Etheredges, 1963),p.97

^{6a} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.101

^{6b} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.101

^{6c} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.102

^{6d} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.103

⁷ Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.104

^{7a} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.105

^{7b} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.107

^{7c} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.108

^{7d} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.108

⁸ Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.111

⁹ Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.111

^{9a} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.111

^{9b} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.113

^{9c} Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.113

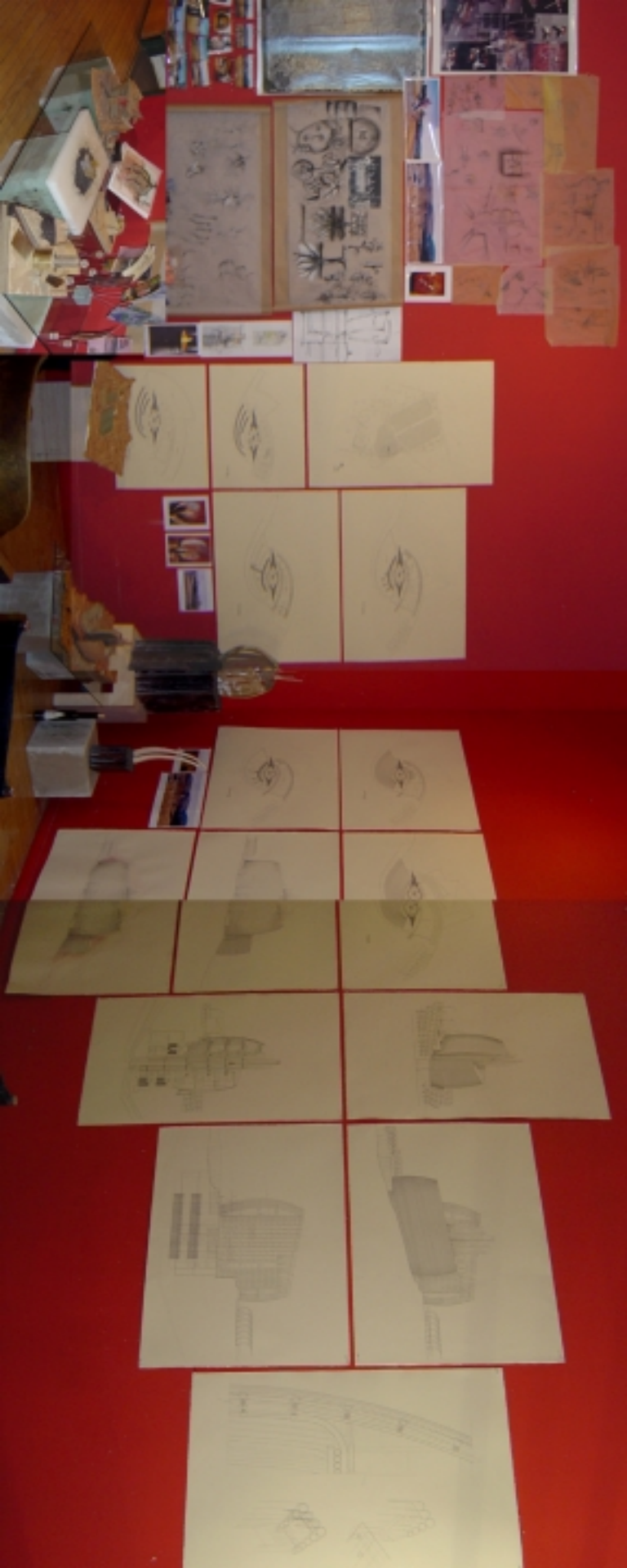
¹⁰ Alberto Gomez and Stephen Parcell, *Chora-Intervals in the Philosophy of Architecture*, (McGill University , Montreal, Canada 1996) p.50

¹¹ Kenda, Barbara, *Pneuma in Voila Eolia*, (Res 34 autumn 1998) p.117

Pneuma In Winery

Thesis Defense Day

Washington Alexandria Architecture Consortium
Alexandria, Virginia



Pneuma In Winery

Collage of Ideas

*The first thoughts began by collage of ideas of history of “**wine**”, the idea of the “**human body**” and its relation to wine.*

Washington Alexandria Architecture Consortium
Alexandria, Virginia



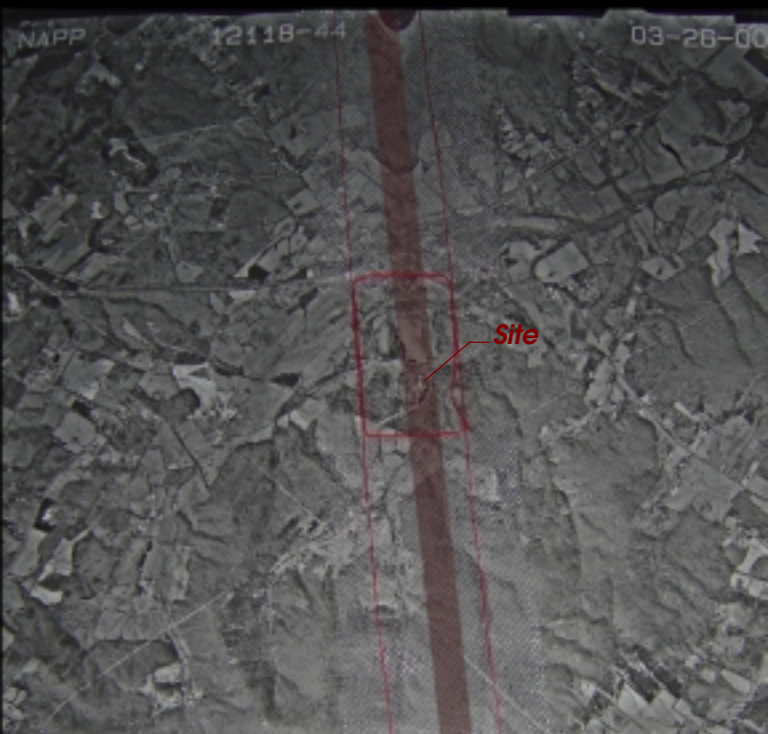




Pneuma In Winery

Site

The site is located in Barboursville, Virginia. A winery already exists and a mansion which was built by Thomas Jefferson. The mansion was destroyed by fire in 1884 but its ruins have been carefully preserved. There are 135 acres of vines that exist in the site today. The new building will be located in the same spot where the old one is, facing the main road so the visitor is welcomed as they enter the site.



USGS Aerial Photo of Site



View from the main road way

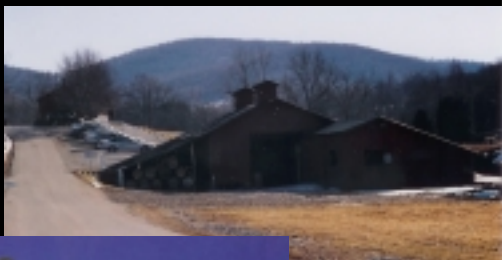
*historical mansion view
from the winery*



View from main road



Existing Site Pictures



historical mansion





Photo A from brochure of existing winery



Photo B from brochure of existing winery



Photo C from brochure of existing winery





Site Map and Aerial Site Photos

Pneuma In Winery

Washington Alexandria Architecture Consortium
Alexandria, Virginia



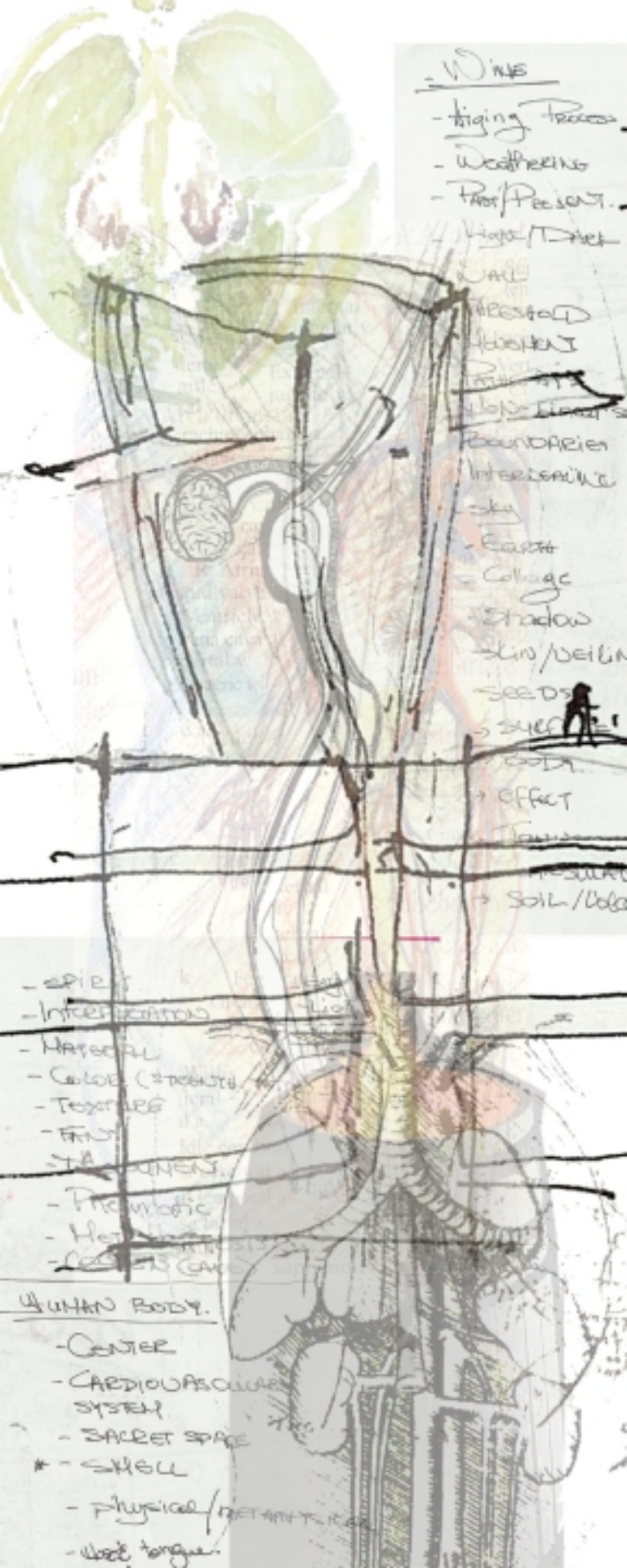
USGS Aerial of Site



Main Sketch Idea

The sketch is the idea of the vine growing from the earth beneath with its roots underground. The two walls represent the lungs of the building where they protect the heavy wind from entering inside.

While the center (aorta, root) is the "**pneuma**" of the space where it will bring life inside the building from the earth below to the open sky. The main elements the **grape**, the **lung** the making of the **barrel** with fire inside. The human function with the cardiovascular system that brings blood to the heart therefore bringing air to the lungs. The same experience of the building where the roots underneath of the winery represent the aorta that will bring air inside the building from the ground below.



- WINE
- Aging Process
 - Weathering
 - Puff/Present
 - Light/Dark
 - Wall
 - Threshold
 - Horizon
 - Boundary
 - Boundaries
 - Interlocking
 - Sky
 - Earth
 - Collage
 - Shadow
 - Skin/vein
 - SEEDS
 - SHEET
 - GODS
 - effect
 - material
 - Soil/Volca

- SPIES
- INTERSECTIONS
- MATERIAL
- COLOR (STONED)
- TEXTURES
- FINISH
- TAPE
- PROTECTIVE
- HETEROGENEOUS
- COLORED CAR

HUMAN BODY.

- CENTER
- CARDIOVASCULAR SYSTEM
- SACRET SPACE
- * - SKULL
- physical/MENTAL
- wood tongue

Earlier Sketches and Study Models

Work in progress

The Sketches and study models explore the idea of dividing the winery in two halves.

One being the process of the wine and the other the visitor walk through.

After dissecting a grape in two halves and seeing the human lung cut in section both seemed very similar in the system of breathing. The middle root of the grape that makes the grape grow, so does the main aorta of the human body brings the blood to the longs to pump "air".



Grape

Pullman
- 1/2" x 1/2" x 1/2"
- 1/2" x 1/2" x 1/2"

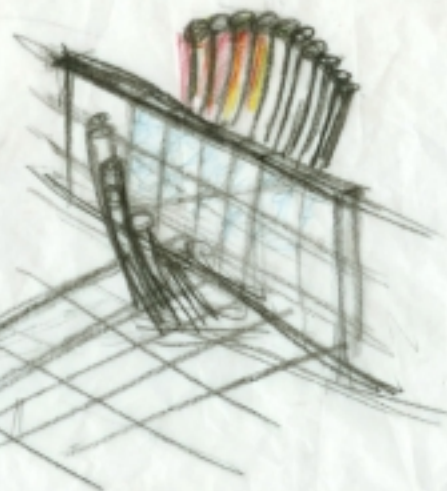


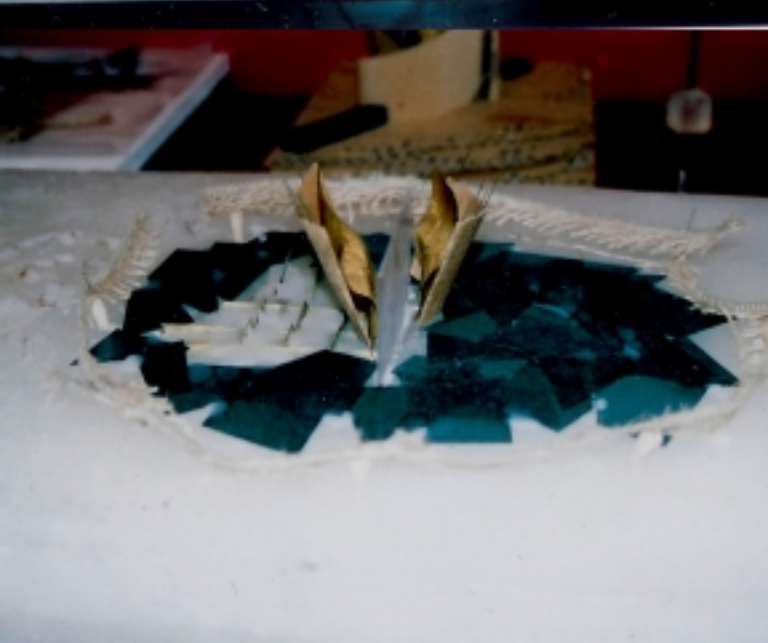
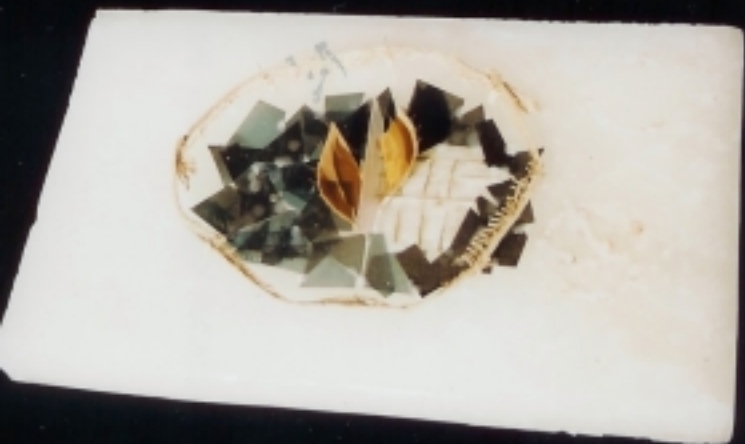
Leaf
Flower



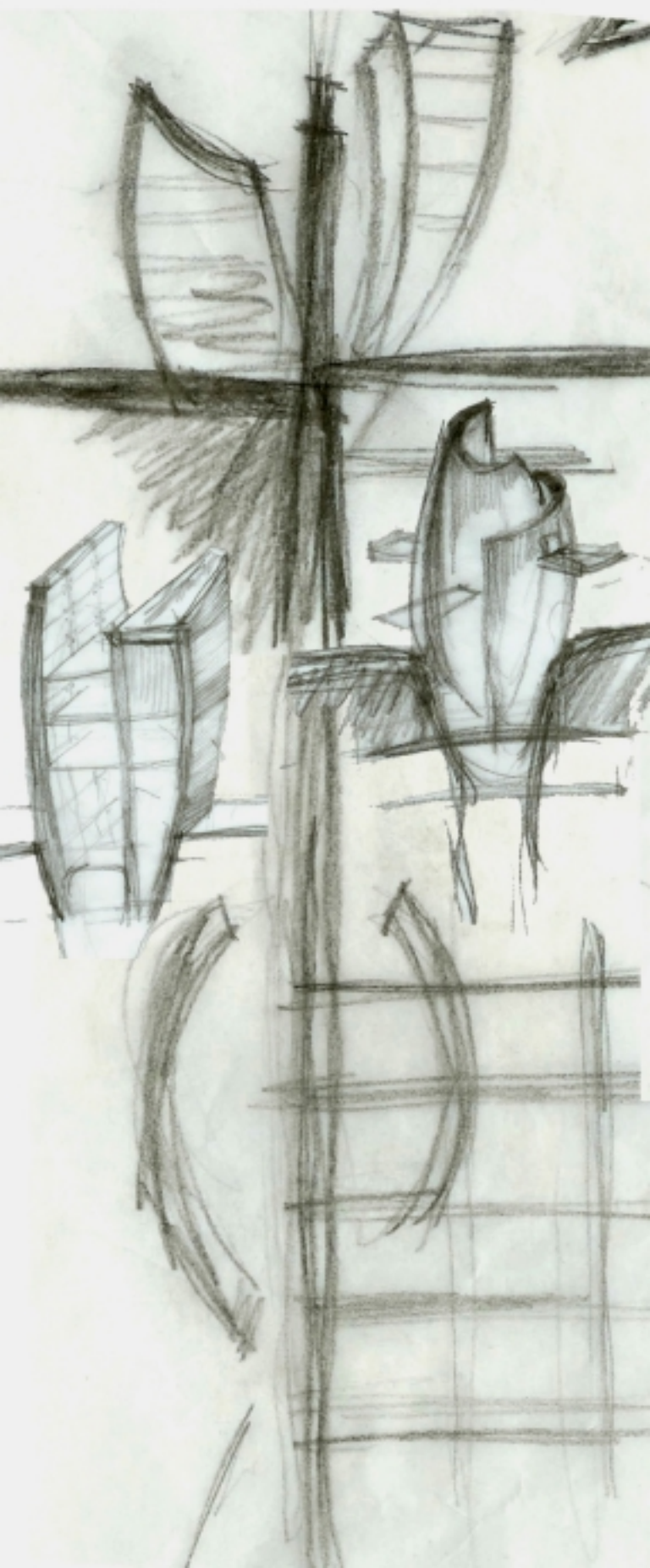
Leaf
Flower
Leaf

Premiere
Leaf





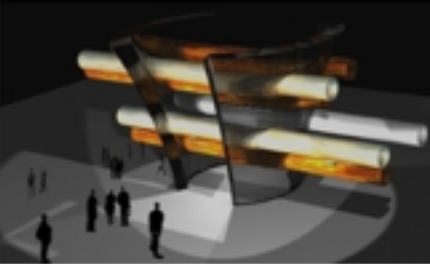
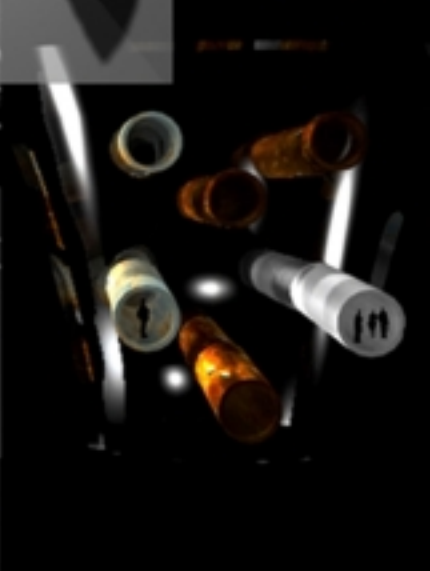
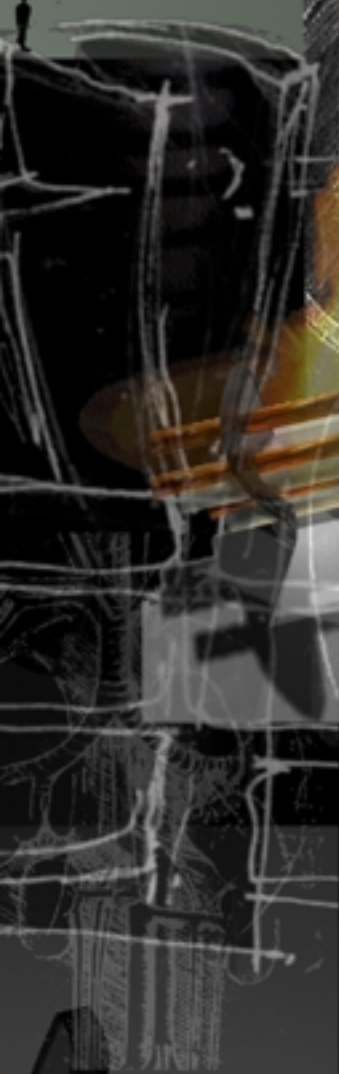


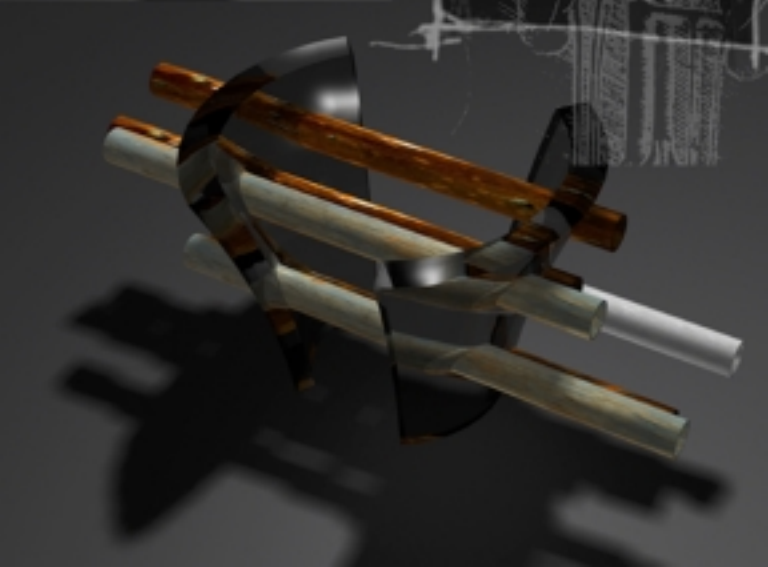
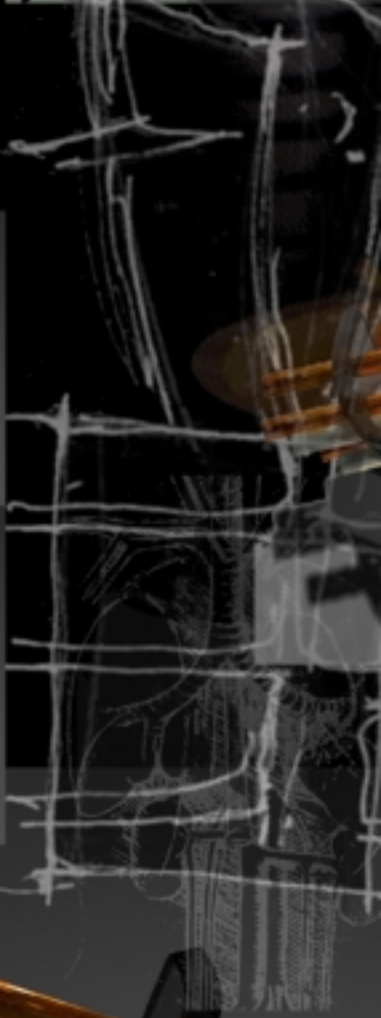


3D Model Studies

Work in progress

*Studying materiality by using 3d elements and models by hand. The idea of bringing life in to the winery through air, was best displayed by using **pipes** (glass and metal). Some of the first ideas to study how the pipe could be used to make the best function.*





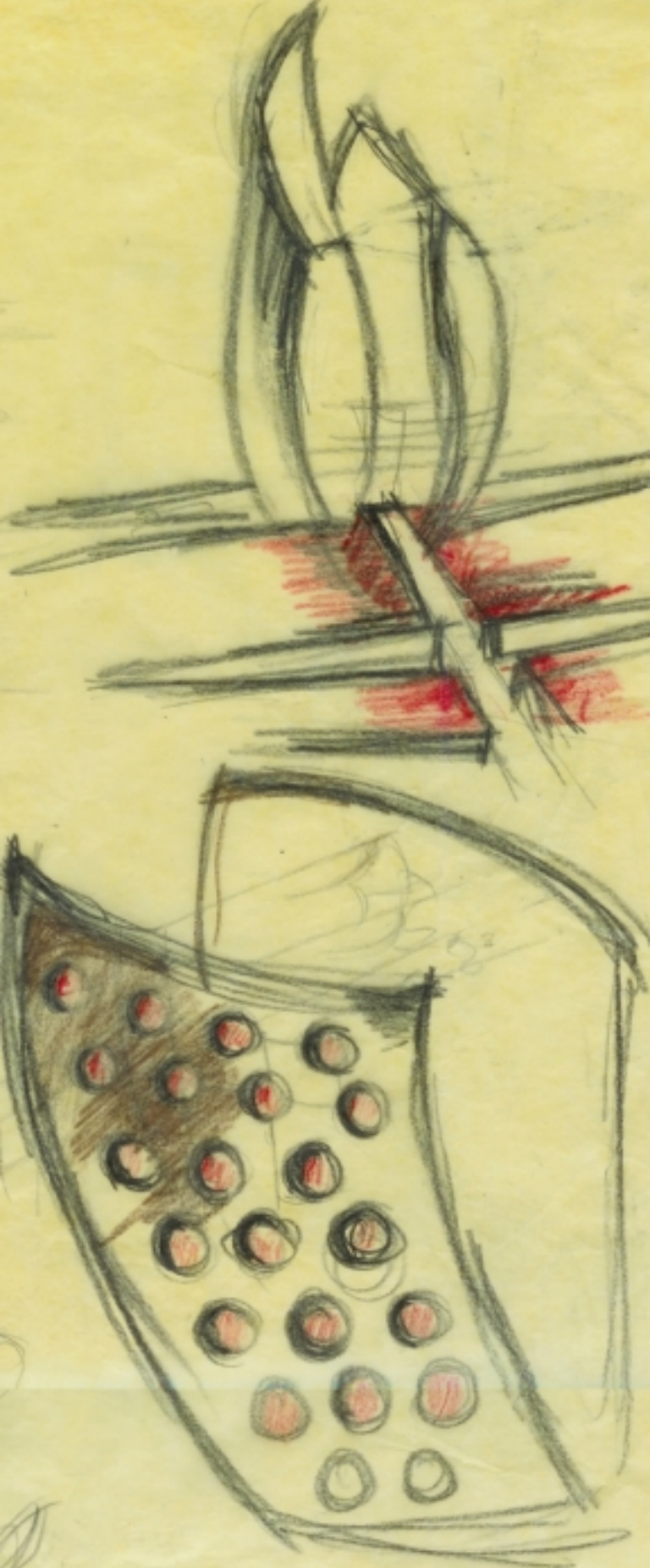




Lung study model







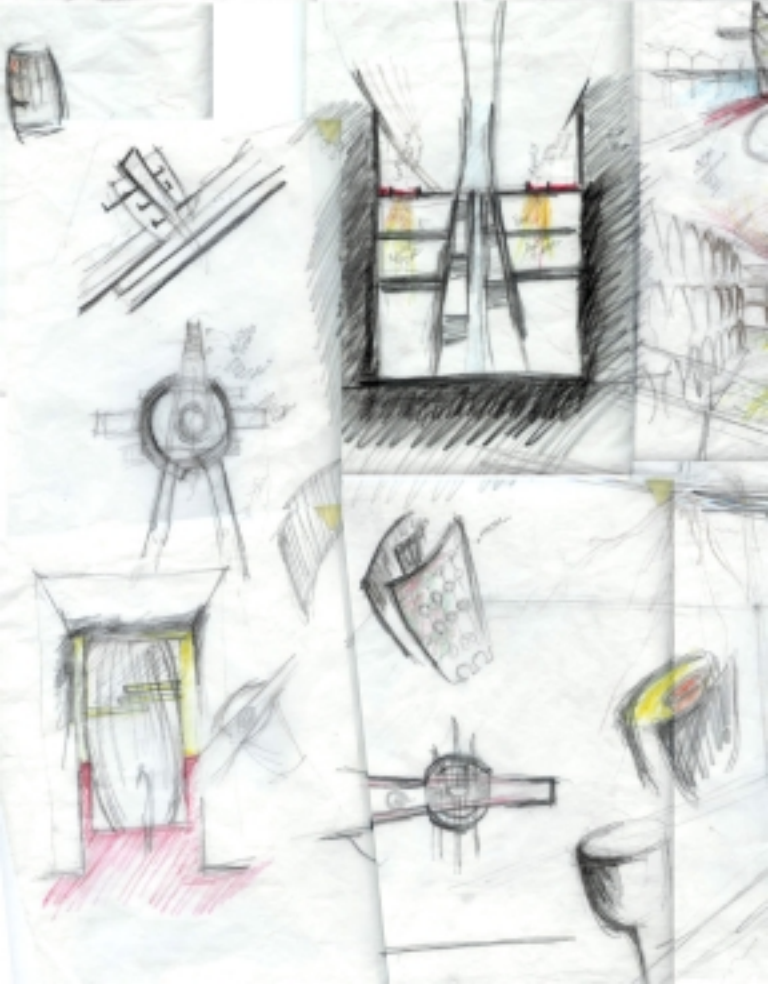












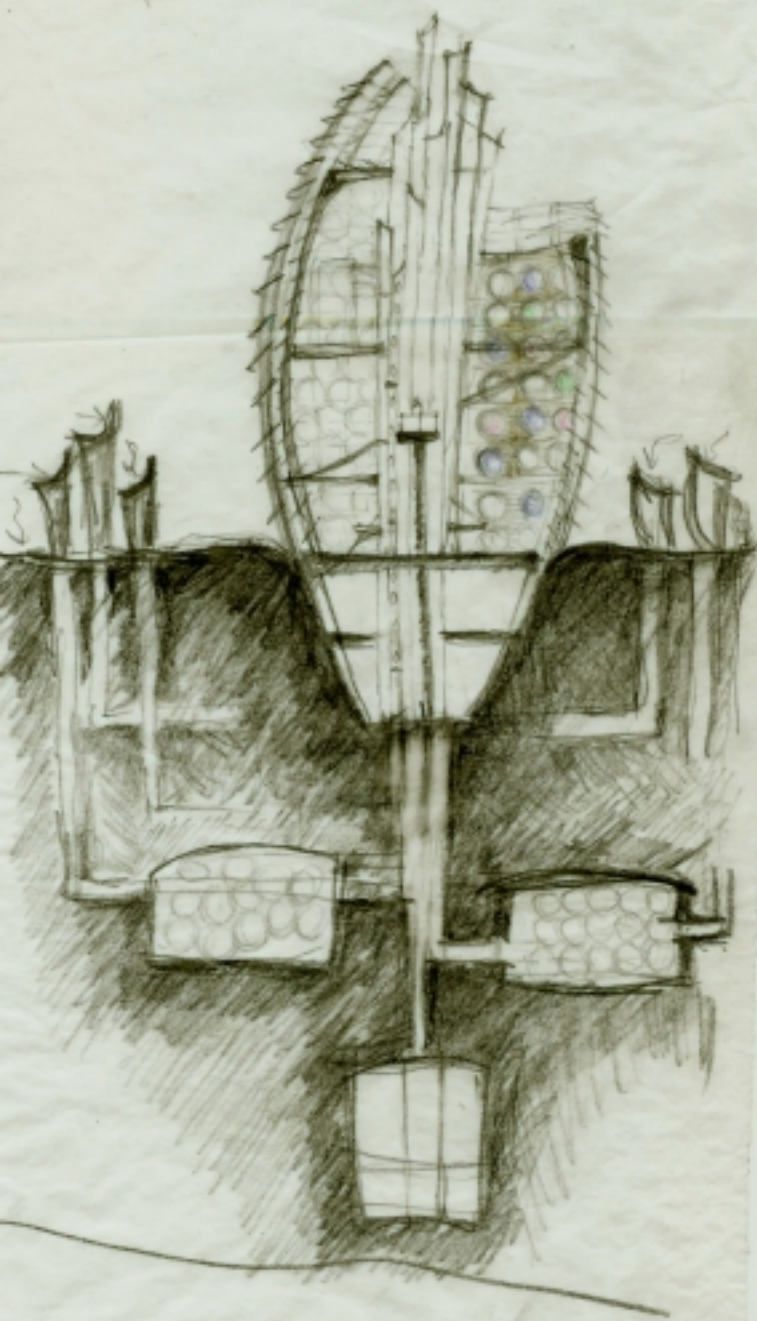


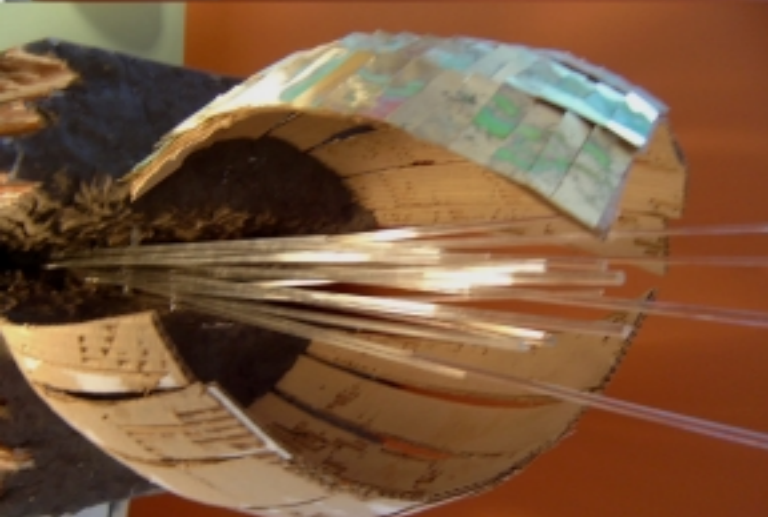
Sculptural Model of Main Idea/ Structure Study

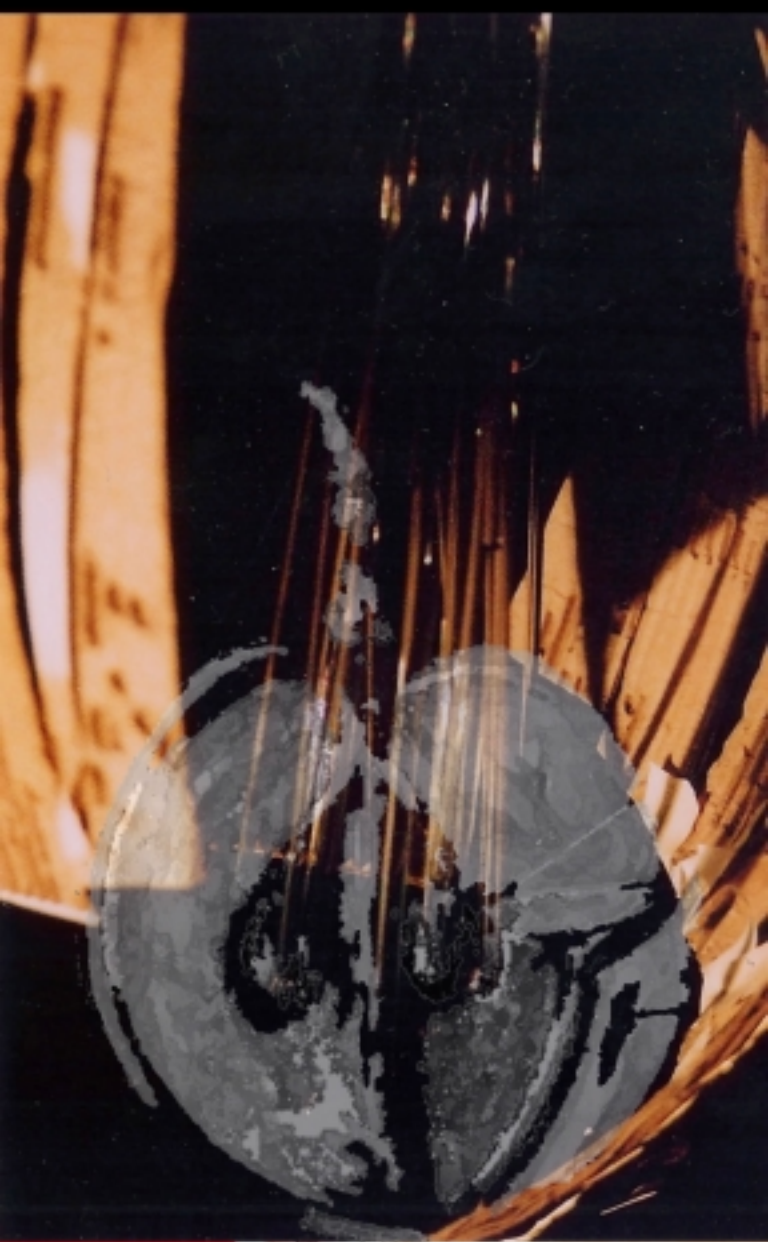
Pneuma In Winery

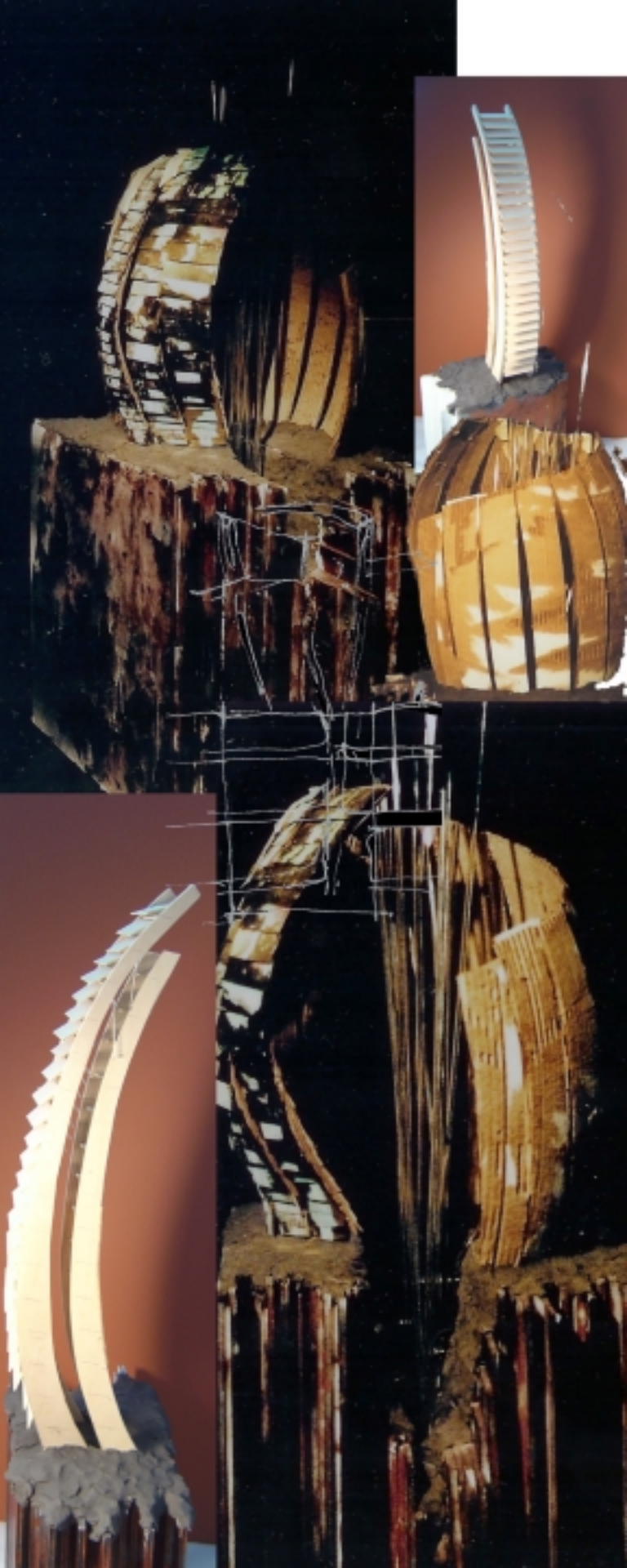
Washington Alexandria Architecture Consortium
Alexandria, Virginia

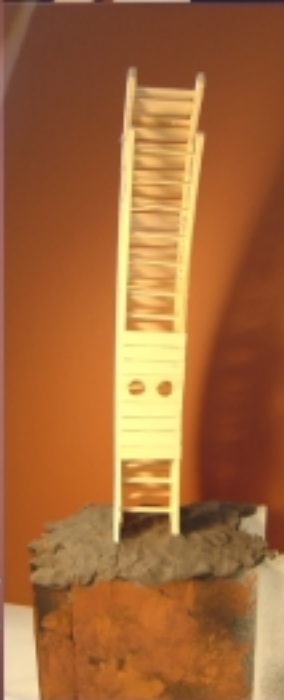












Final Presentation/ Site Model

The visitor is welcomed by a long procession of a glass retaining wall that acts as museum of housing the vines of the site by being able to look at the roots as you walk by.

The Winery is divided in to two halves, by a plaza in the center that stores a series of pipes that protrude from underground.

The tallest side of the two halves is the visitors center that is made up of 3 floor. The material is made of metal pipes and a lot of light entering through a wall of glass.

The other half side will house the process of wine making in 5 floors. The material of the process building will be made of concrete with very few windows to control temperature the best.

*The winery functions through a series of **pipes** that are in the center. Those pipes bring air, water, electricity, wine and they also store the elevator which is one of the biggest pipes in the center. The pipes that bring air in to the building go under ground were they are connected with a series of folies around the site that function as thermosifon.*

Pneuma In Winery

Underground the grapes are brought in to the receiving area where they are pulled up by one **pipe** in to the pressing machine on the 3rd floor. Then the process continues in to another **pipe** to be brought in to the fermentation room on the 2nd floor while another **pipe** brings the wine in to the barrels for aging. The final room is the tasting room where it takes place in the visitor center either on the underground dark floor surrounded by all the bottles, or the 3rd floor and roof floor where it is open to the sky above where you can look at the vines outside. On the visitor center there is also seating outside by a series of cascading terraces that a visitor can enjoy the view of the vista of vines and mountains.



A faint, light-colored architectural sketch of a building. The sketch shows a curved roof structure supported by a grid of vertical columns. A small figure of a person is visible on the right side of the building, providing a sense of scale. The drawing is done in a loose, hand-drawn style.

Pneuma In Winery

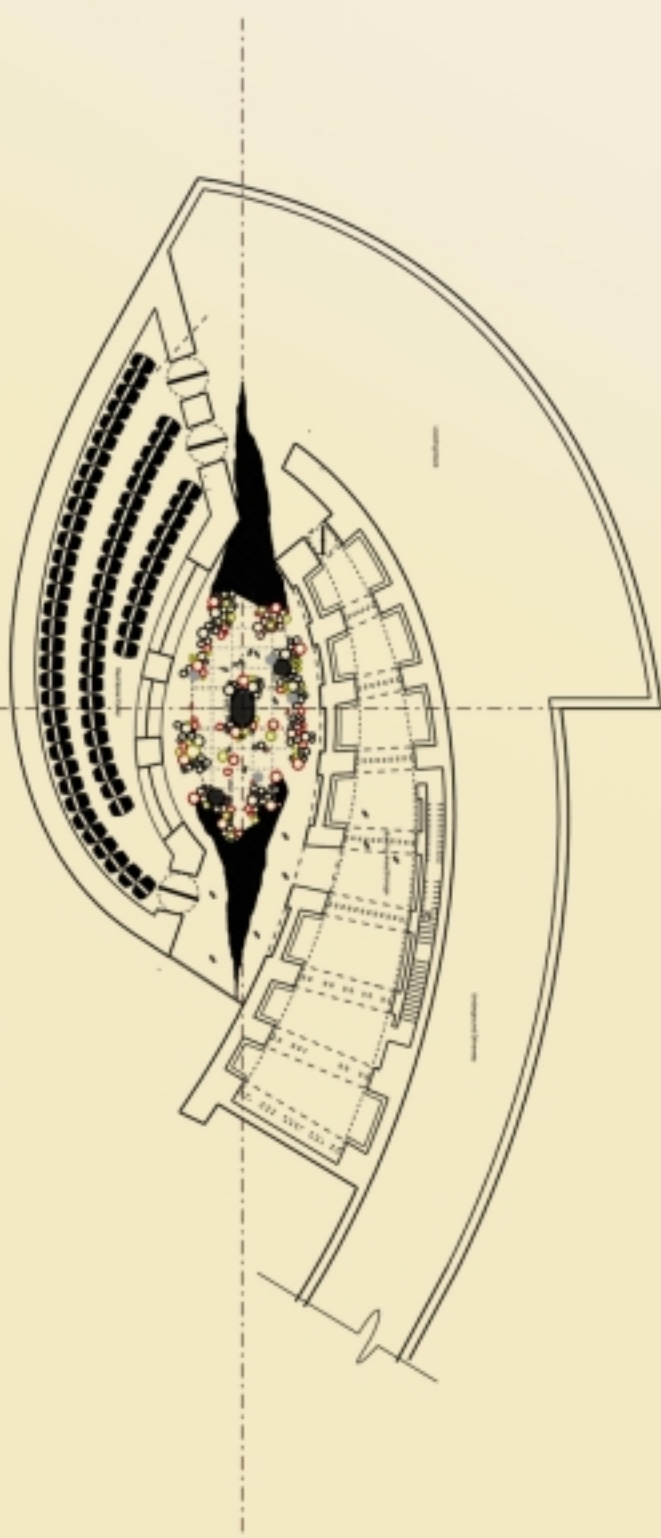
**Site Plan, Plans,
Sections Elevations
and Final Model**

Washington Alexandria Architecture Consortium
Alexandria, Virginia

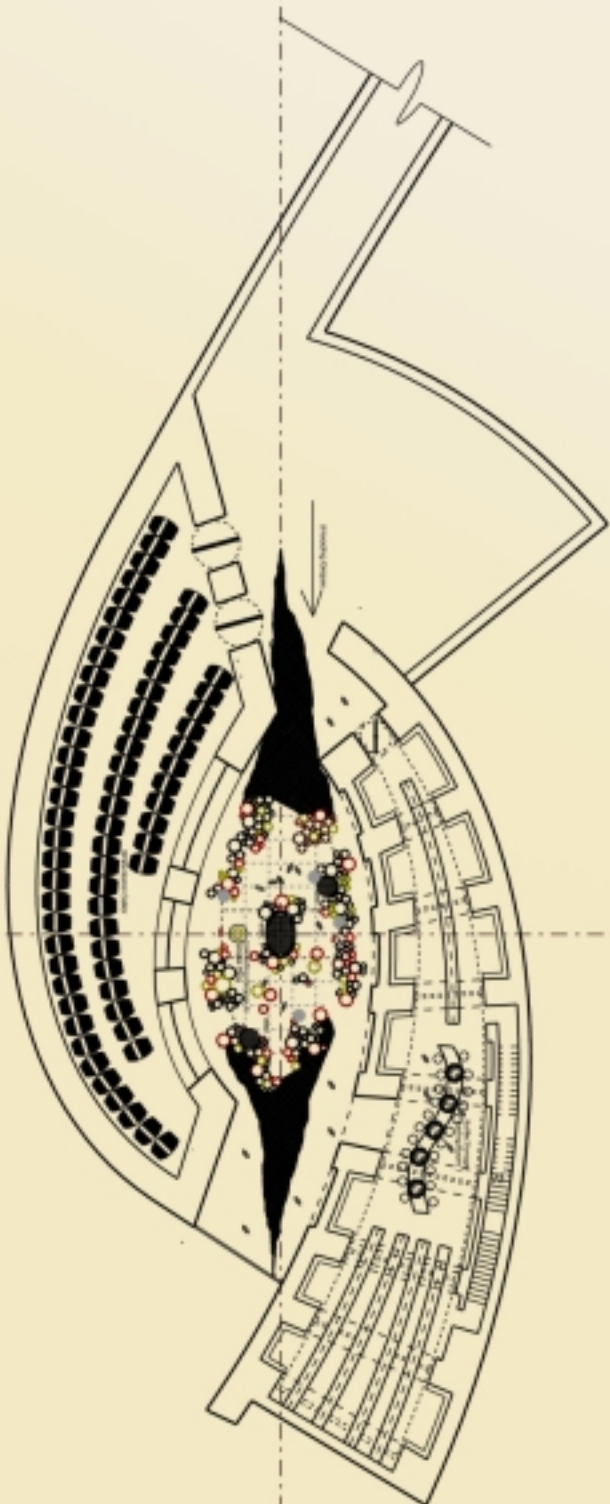


↑
N
Site Plan
Scale 1:100



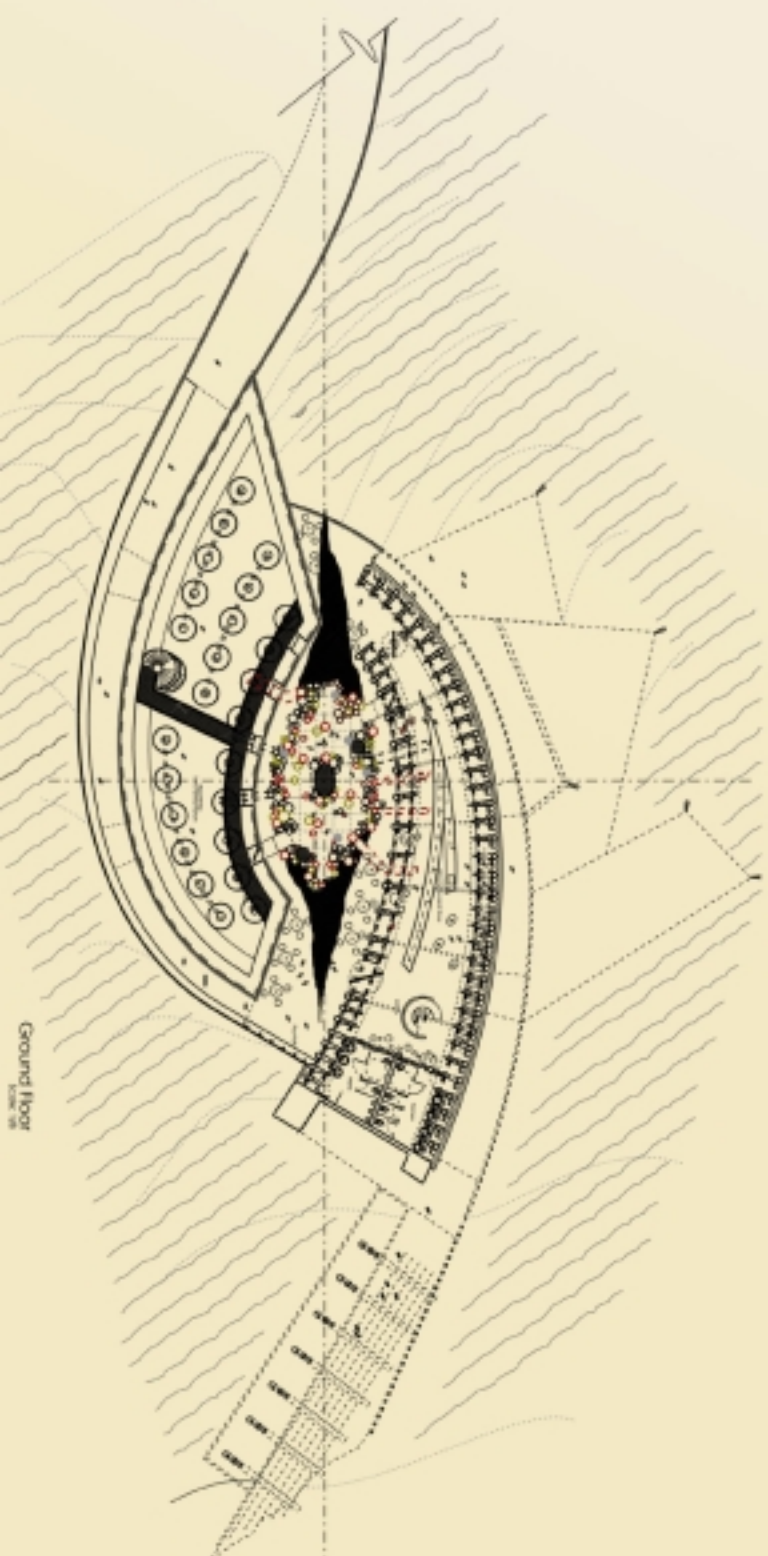


Cellar Floor 2
Scale: 1/8"

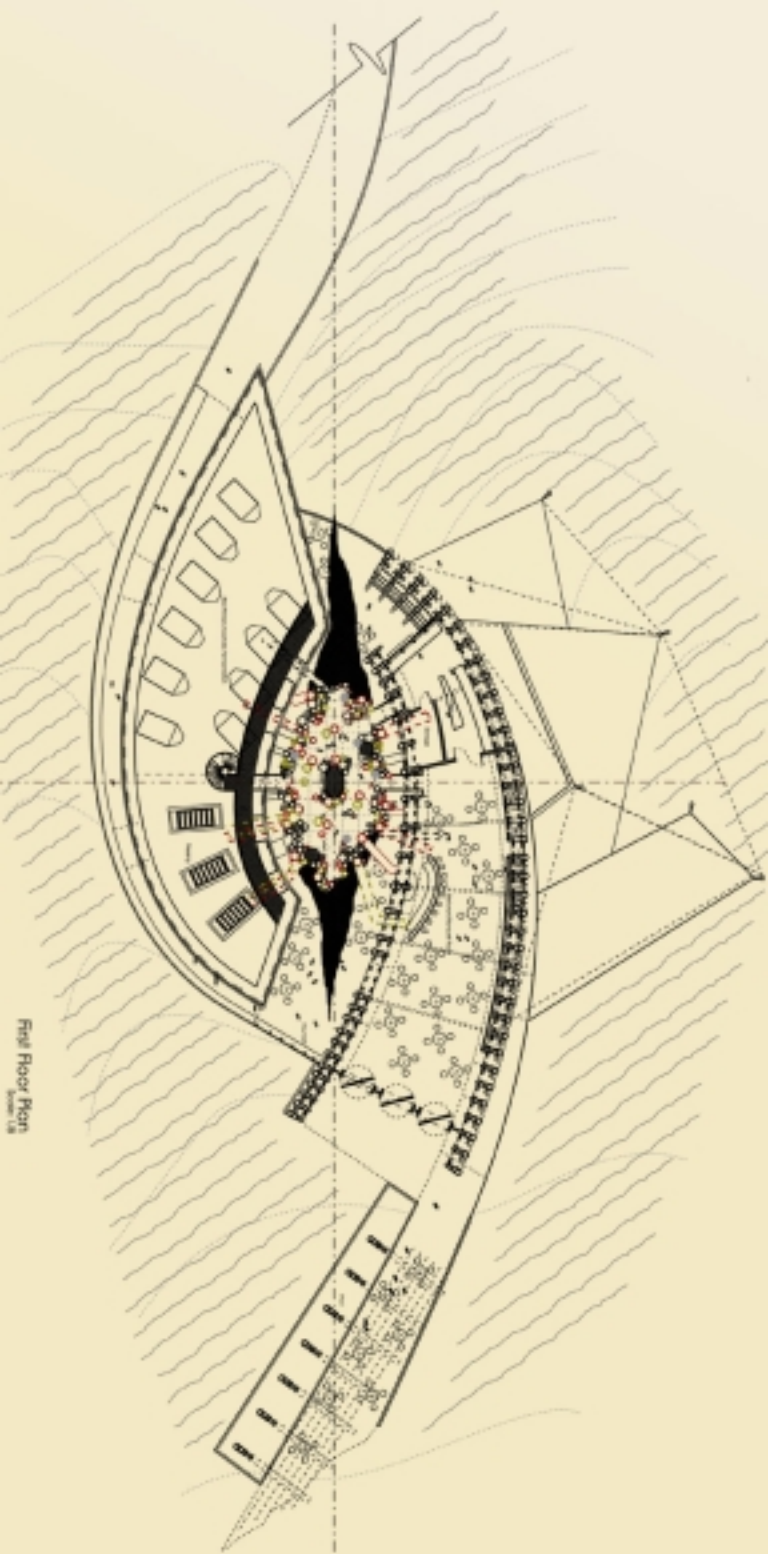


Cellar Floor 1

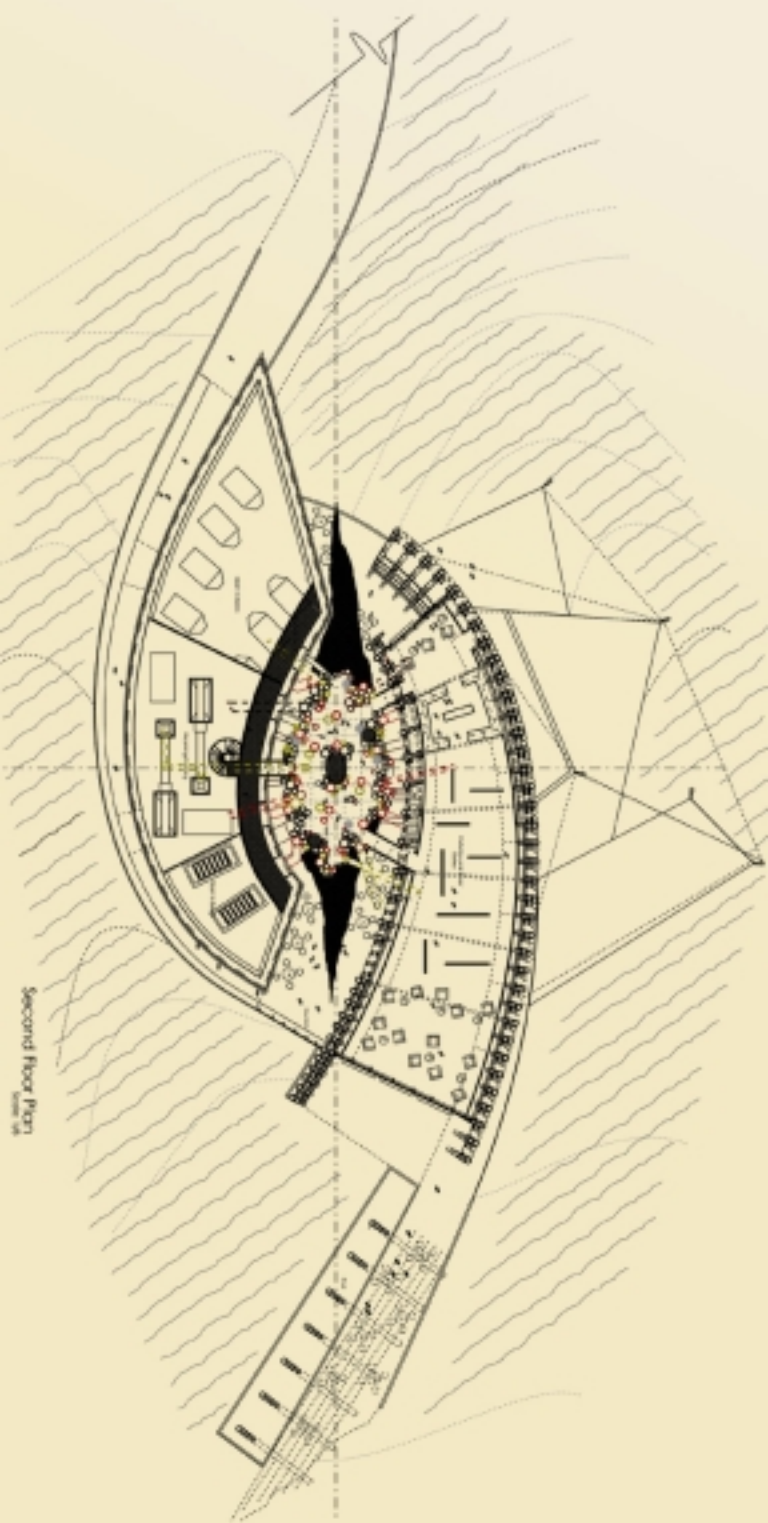
Scale: 1/8



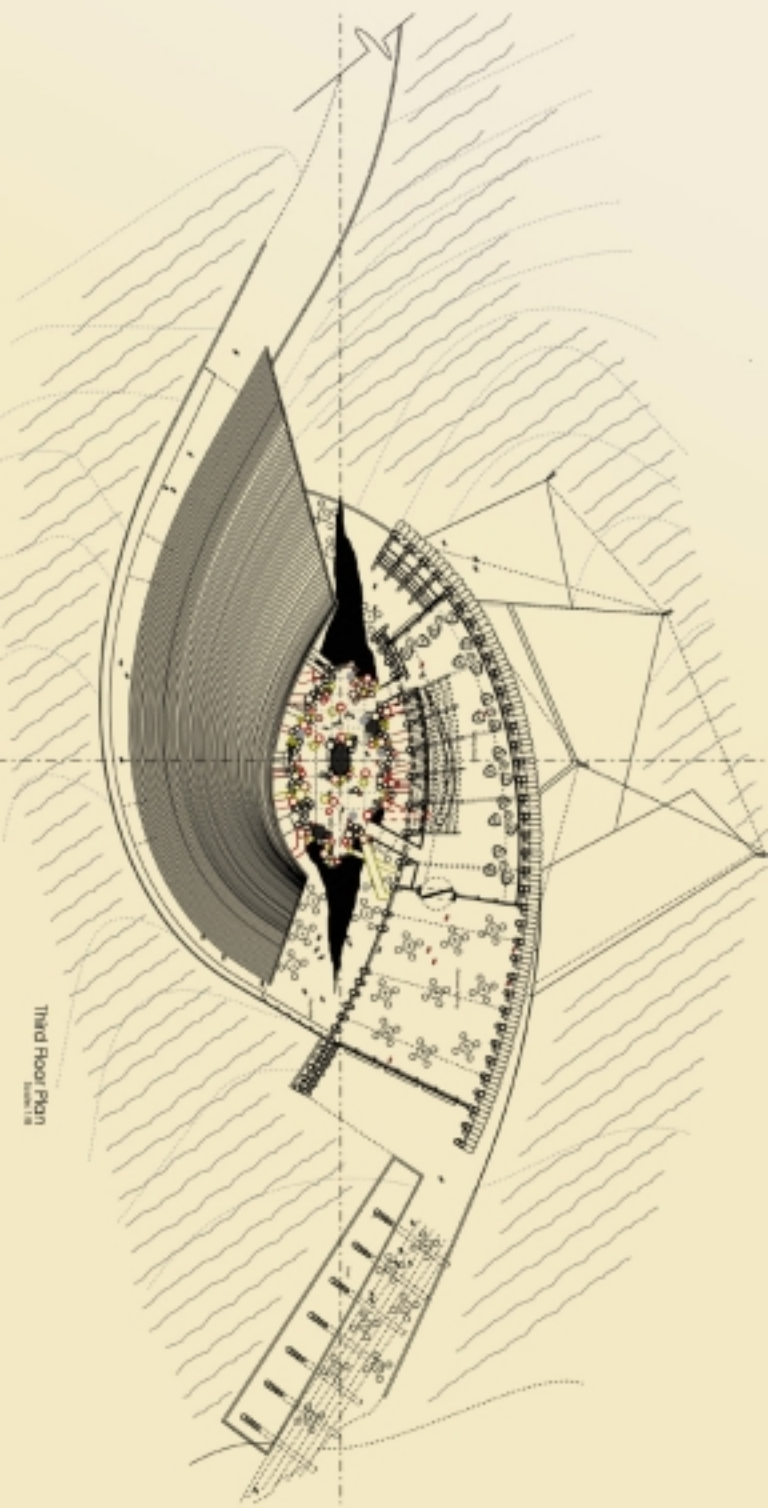
Ground floor
Scale 1:500



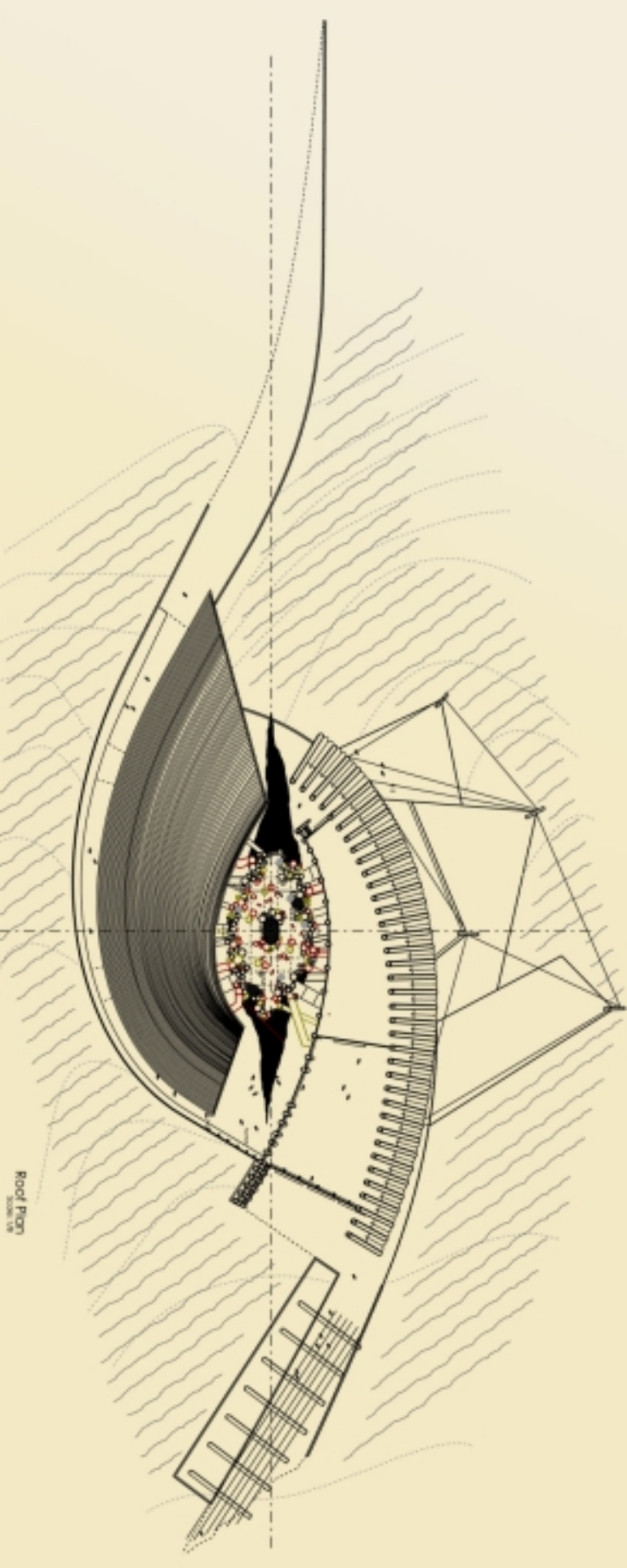
First Floor Plan
Scale: 1/8"



Second floor (Fig. 1)

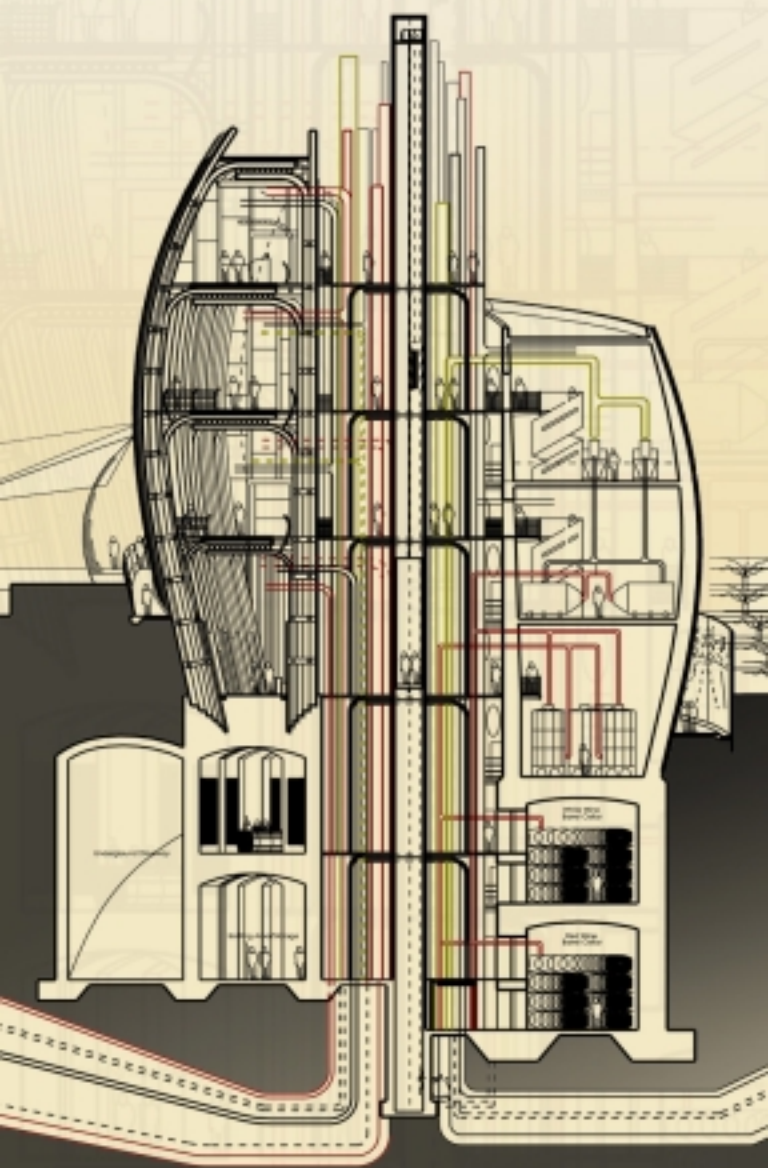


Third Floor Plan
Scale 1/8"

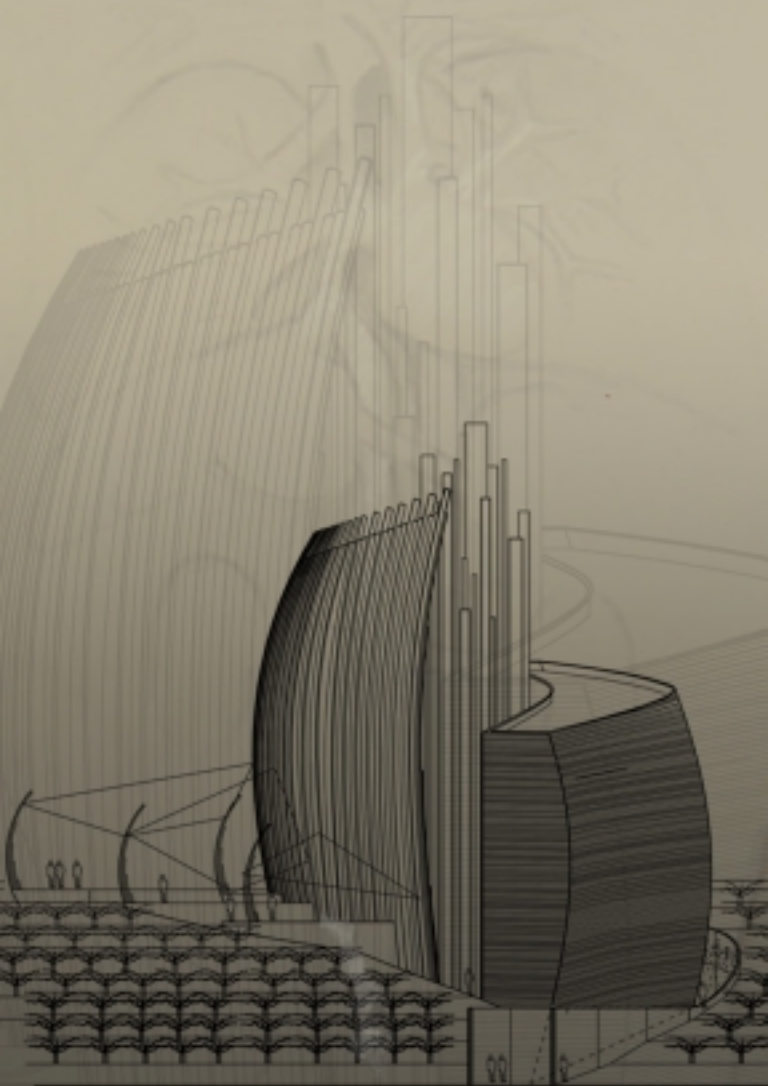


Roof Plan
2006.05.19

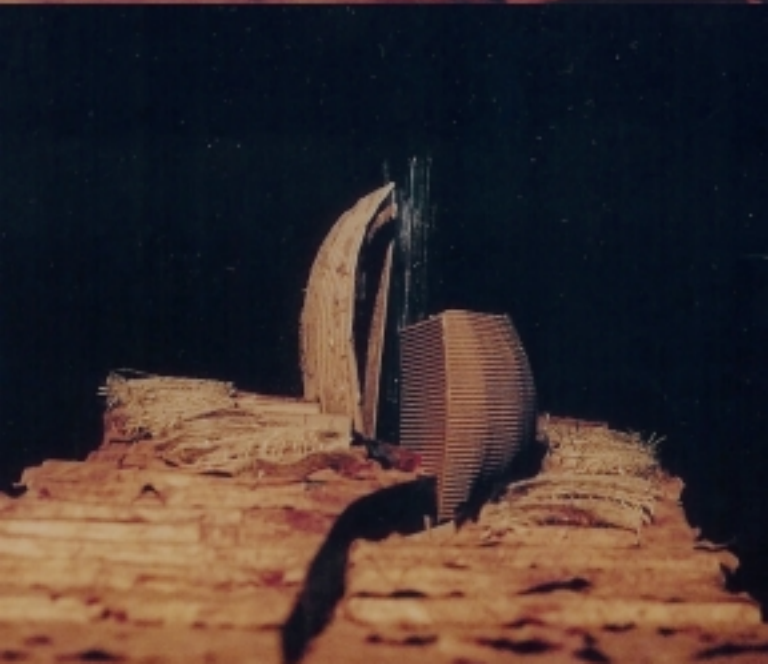


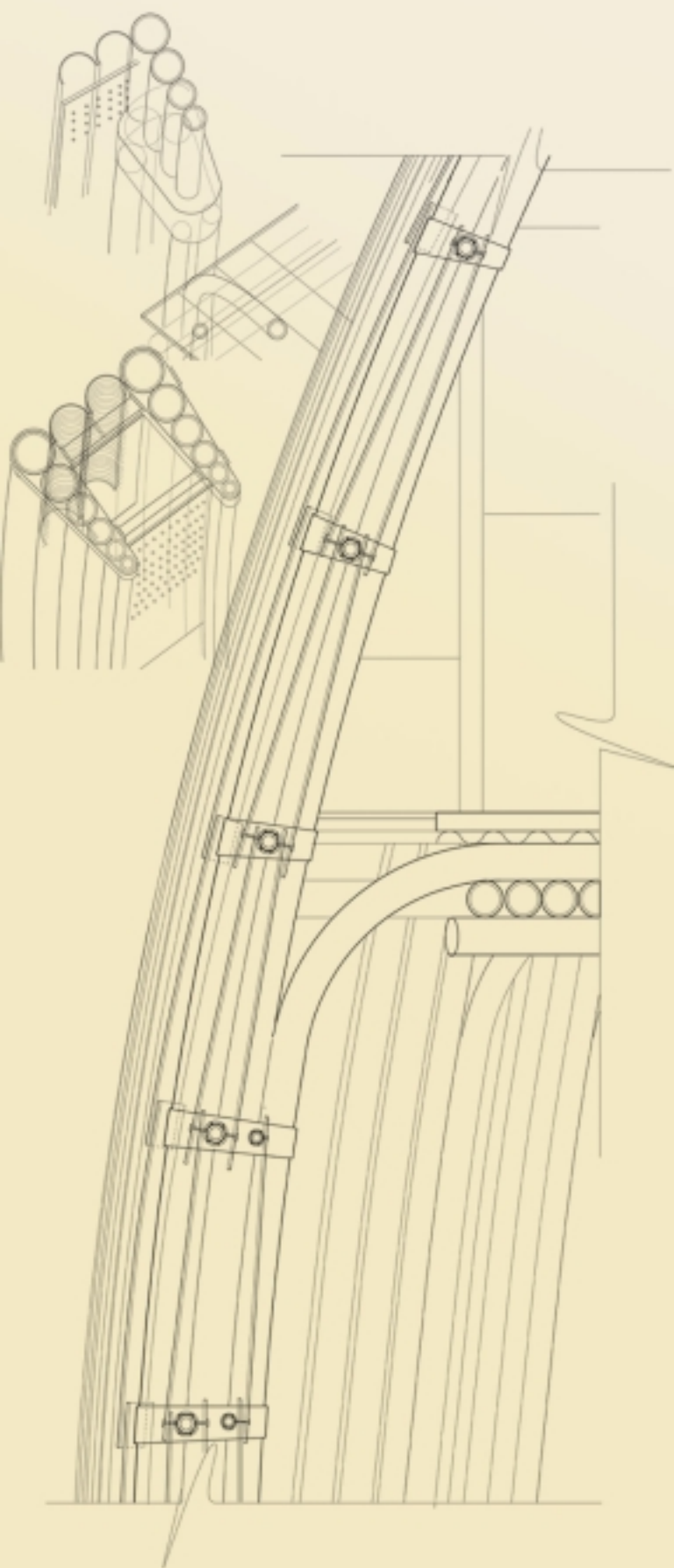


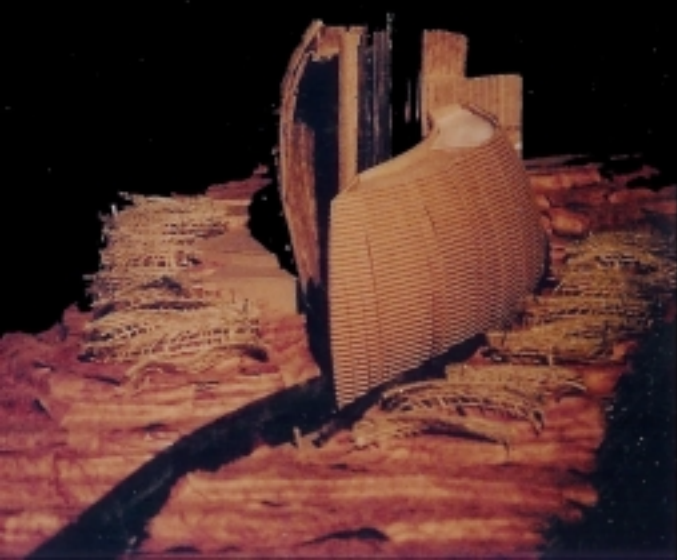
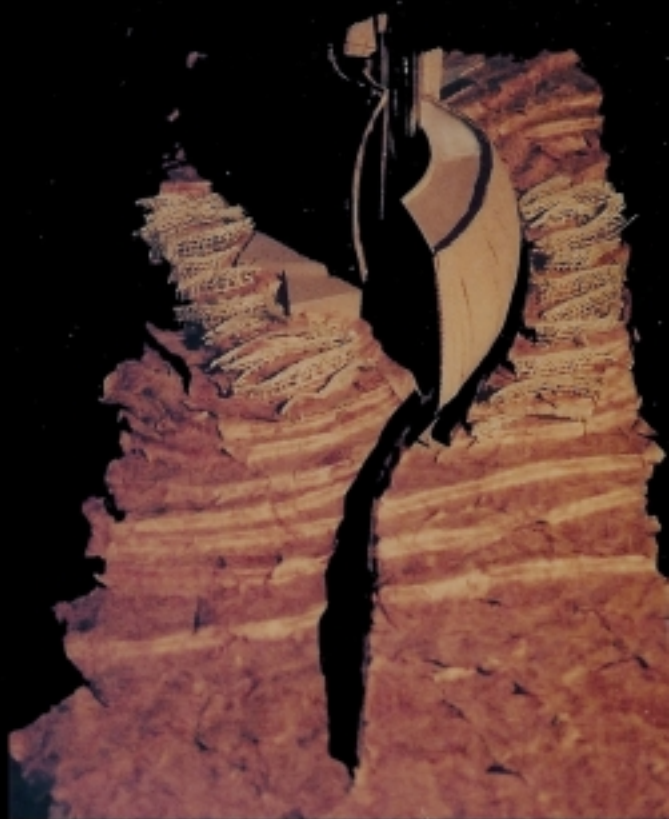




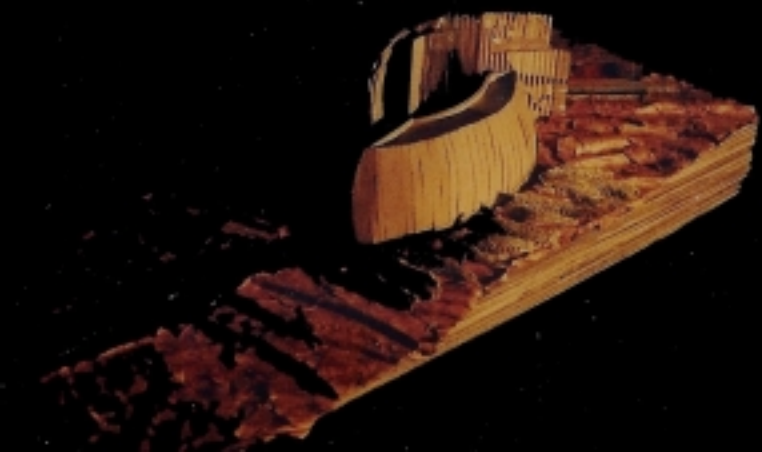
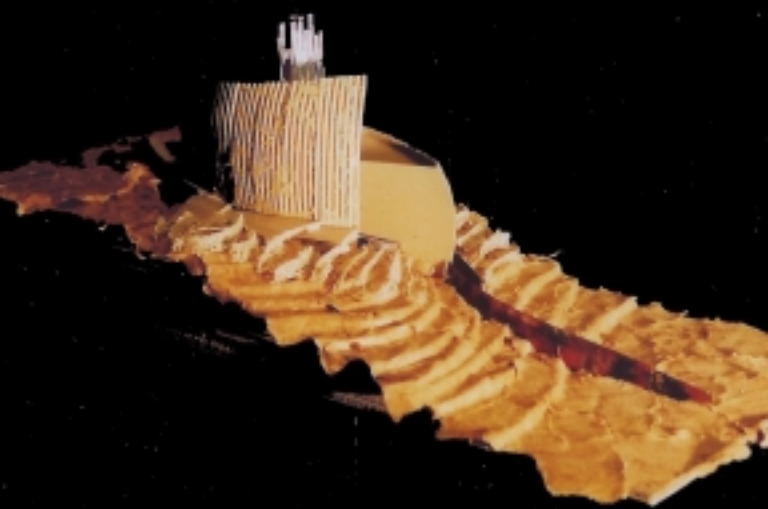


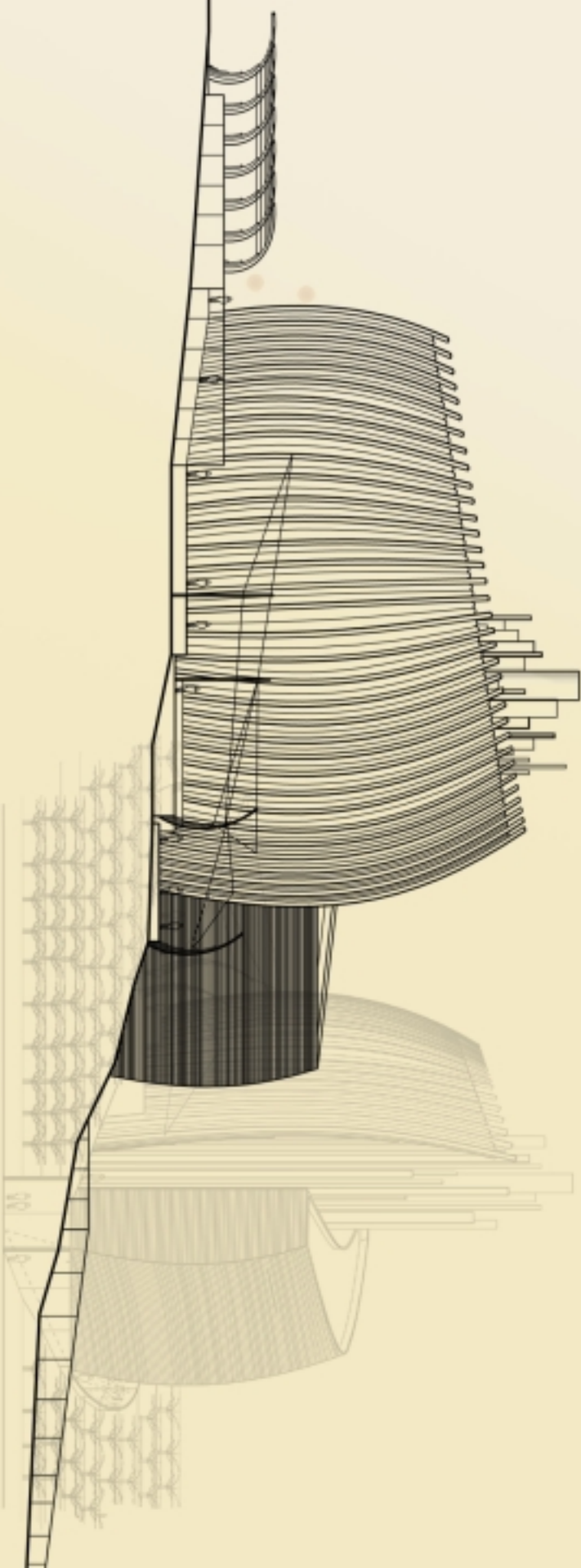


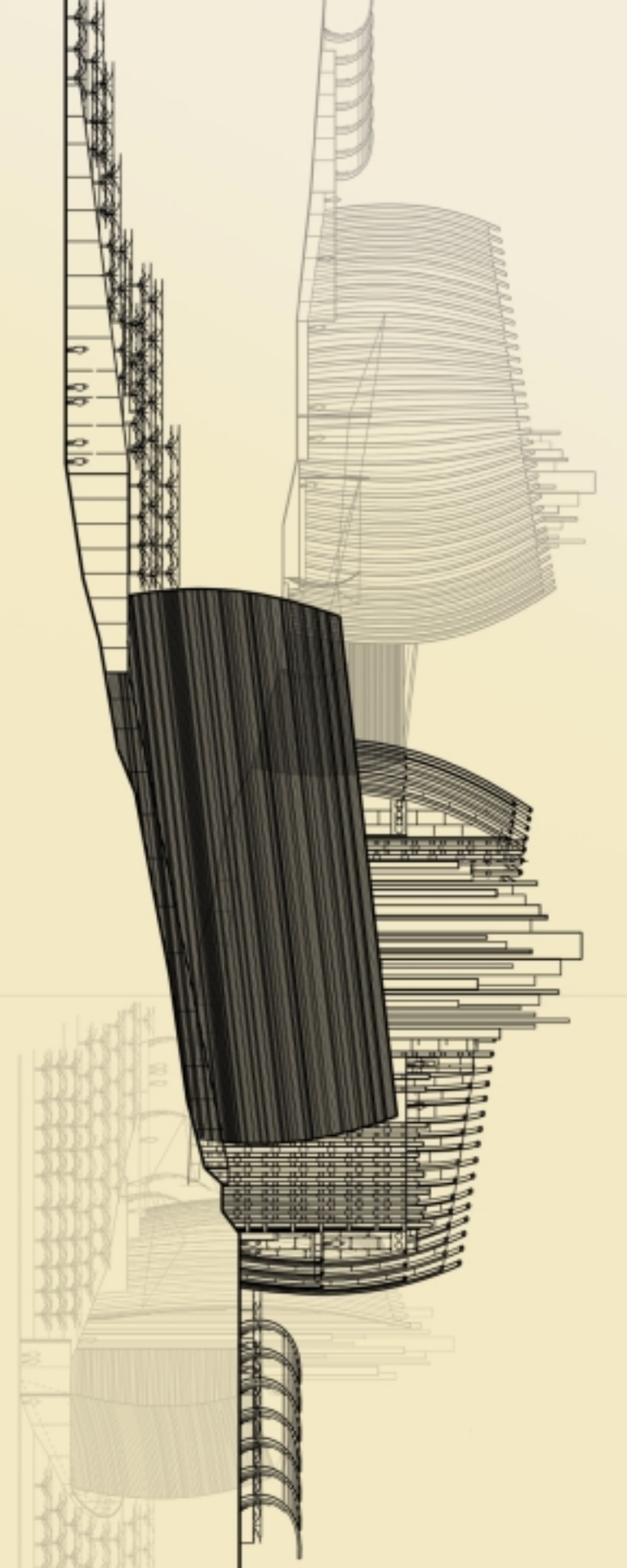




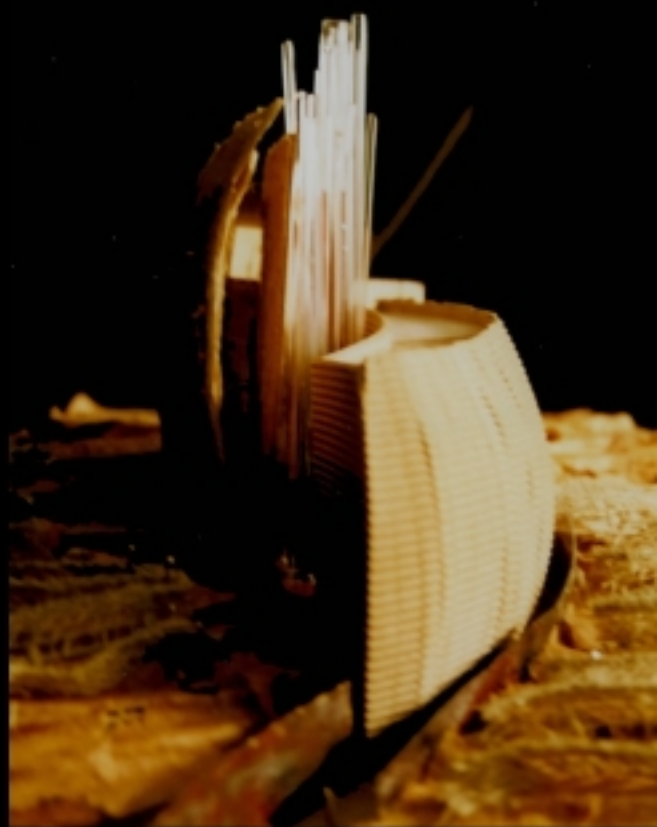














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Vita

objective

A challenging position with a progressive architectural firm that will enable me to learn and expand my design and technical skills with opportunity to contribute to all aspects of the project design development through construction documents.

education

december 2004

Master of Architecture

Virginia Polytechnic Institute and State University
Washington Alexandria Architecture Consortium,
Alexandria Virginia

may 1997

Bachelor of Architecture

The Catholic University of America, Washington
D.C.

may 1996

Bachelor of Science in Architecture

The Catholic University of America, Washington
D.C.

may 1994

Associated in Applied Science in Architecture

NOVA- Annandale VA Cum Laude

master thesis

"Pneuma" In Winery, Winery in Barboursville Virginia

fifth year thesis

"Study Center/Museum" for the restoration and
preservation of the Acropolis

honors/awards
competitions/
accomplishments

Certificate of achievement award in architecture
Dean's list
Exhibited project at the National Building Museum
in Washington D.C.
Design build workshop - published in the magazine
of ARCHITECTURE, May 2000
Involved in preservation project for St. Mary's
church
Finalist at the international competition for the
development
of 'David's Island' in New York at the castle gallery
of New Rochelle
Foreign studies competition at Catholic University
National metro canopy competition in Washington
D.C.

work experience

february 2005-present

STUDIOS Architecture, Washington D.C.

Designer for apartment building in Bethesda,
Maryland

may 1999-june 2003

Bowie Gridley Architects, Washington D.C.

Worked on different aspects of project from SD, DD
to CD. Responsible for choosing
finishes for most projects and putting finish boards
together. Designer for graphics
and master plan booklets. Field measuring. Jobs

Pneuma In Winery

Washington Alexandria Architecture Consortium
Alexandria, Virginia

worked on included: Art Center (SD,DD,CD) and final finishes in Germantown Maryland. Williamsburg Lower/Middle School (SD,DD,CD and final finishes) in arlington virginia. Preservation and renovation of a Middle school for disabled children in Washington D.C., Lower/Middle School Gym and education facilities in Texas. Renovation of interior lobby and entrance lobby of John Hopkins university in Washinngton D.C., master plan for an elementary school plus a St. John church in Baltimore Maryland.

dec.1997-may1996

Heery International Inc., Washington D.C.
Worked w/ project leader to complete DD and CD drawings, field measuring and space planning. Initiated graphics for presentation drawings.
Project included: Convention Center (CD's) in Washington D.C.
Preservation and renovation (DD, CD)of a hotel in New York.

June1996-aug.1996

Lascaris Interior Design, Mclean Va.
Designer for variety of projects (international and domestic). Responsible for picking finishes and putting presentation finished boards.

Janu.1996-may1996

Holland Lessard Group, Washington D.C.
Intern architect, assisting in field measuring, file managing, and interior design work.

computer skills

Microstation, Auto Cad14, Archicad, Adobe (photoshop, pagemaker, and illustrator), Microsoft (word, excell, power point)

languages

Fluent in greek, english, arabic. Reading and writing french

reference
upon request

available

