

Positions

Christopher Paul Schellhammer

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William U. Galloway
Howard S. Gartner
Frank H. Weiner

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Abstract

This companion of short essays, images and drawings are parts to a whole: a series of independent studies in search of architectural understandings. While this “project” has been underway for several years, until recently the thread of relevance between studies has been untethered. Now at the end, I come to the beginning of this book to suggest the emerging relevance to these studies: architectural harmony.

And because the process of understanding is one of sorting things out, this compilation should be appreciated as such. Thus, it is by no means comprehensive or conclusive, despite its presence as a completed work. Indeed, the writing of this book is itself a sorting activity. It is not a report of absolute findings, supported by irrefutable references or statistical data points. Readers should therefore enter the book as a student, engaged in question making, discoursing with another also searching in these pages.

Herein lies emerging positions, built up from root questions. Because of this, these positions will likely change with time and may never find absolute resolution. If forced to side with one position at this time, it must be the acknowledgement that there are many. Indeed, many valid positions exist and perhaps, more importantly, coexist.

This is the nature of harmony as well. Harmony in architecture is less about notions of something specific, final or pleasing and is more about the poise of phenomenal states: where relationships of part to part and part to whole form entireties that are appreciated for something more than qualitative or quantitative distinctions.

Because harmony is an *ex post facto* backdrop for these studies, it is not a persistent theme throughout the book. Part 1 is dedicated to positions best described as taking stock; for example, taking stock of subjects, such as knots or the square; taking stock of situations and roles, such as modes of inquiry and the responsibility of design; taking stock of one’s own dispositions, so to set out a consistent relationship between the players and the field of play.

Part 2 describes the thesis project with demonstrations and words. Words are inevitable in discussing the work. They help articulate observations and defend design decisions and sensibilities.

Some of these observations are described as if the project exists. But because an architectural thesis often uses demonstrations to provide examples in lieu of final constructions, it is hard to gauge the extent to which these speculations are imagined or drawn out by demonstration.

The book concludes with Part 3. The thesis defense lecture is one distillation of harmony that closely examines a fragment of the project as an example of part and whole.

Alas, it is in the very nature of using words to understand architecture, especially if the author of text and line are one in the same, that an author’s *a priori* intentions and their *a posteriori* evaluations of the work are susceptible to mix. Further, such an author is faced with a paradox; on the one hand, he is the expert, on the other, he is in no position to claim ultimate authority. Compatibility between work and word exists partially in the mind and partially in the eyes. It is indeed difficult (perhaps impossible) to step outside the self enough to accurately compare and contrast word and work. With this point established, the work is not only subject to critique, but so is this evaluation of it.

To conclude these preparatory remarks, as the direct benefactor of these studies, my appreciation of harmony in architecture is reaching that elusive position where, with each layer of understanding made clear, additional layers of opacity are encountered. In other words, questions are answered with yet more questions. For example, should harmony be understood as cause or effect? Does harmony exist out of time or completely in it?

Thus, standard definitions are quite inadequate for architectural understandings of harmony. And while it might be helpful to break harmony down into digestible parts, this reductive inventory does not render a harmonic assembly. Furthermore, even the most lucid of explanations do not translate well into examples such to instruct. It seems the type of thing, perhaps like color, is best known through repetitive and thoughtful experience. This is just the start where even assumptions brought to the table must be checked.

Despite these quandaries, my challenge for this book is to reveal something fundamental, albeit modest, to readers, and in the end, for architecture.

Acknowledgments

Many people helped make this work possible. I extend an immeasurable amount of appreciation to family and a litany of friends – fellow students and faculty and to the college and university. I am forever indebted for this gift.

To my wife Stacey and daughters Ellenor and Annabelle – for sharing your husband and father with this work.

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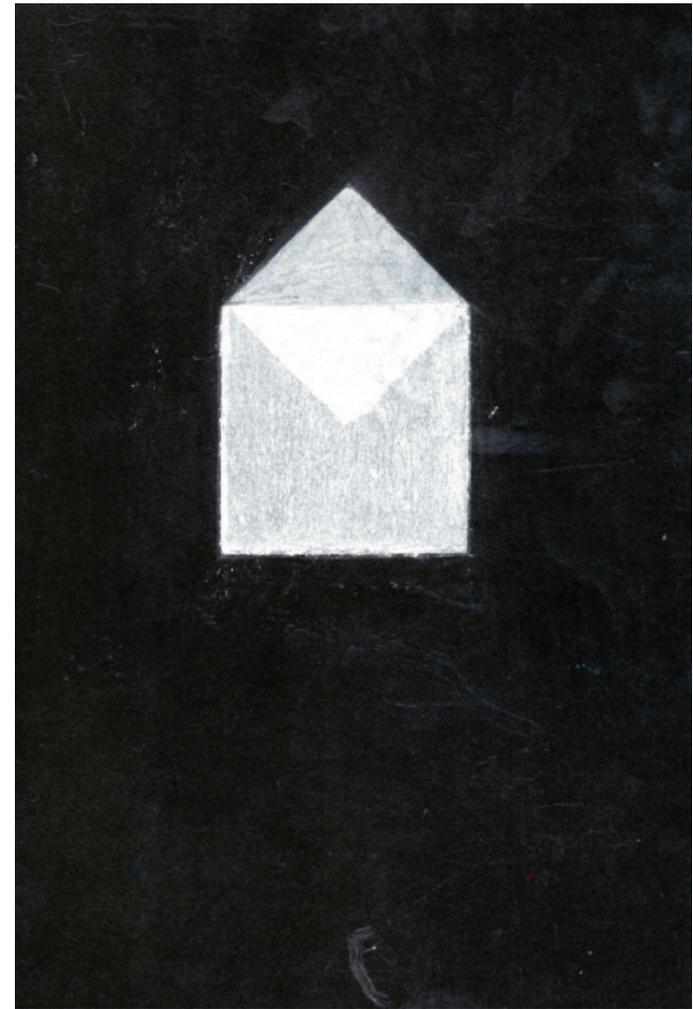
To the support staff for the college – Everyone in the front office: Peggy, Trudy, Nora; Shop & Computing: Mark, Noah and Jeff; Housekeeping: Eugene and the always helpful Library staff; without all of you, the world of the student would cease to turn.

It has been a true education. I will miss it and hope to give back to architecture as much as it, and you, have given me.

Thank you,



Chris Schellhammer



Chalk on pastel stock
8 x 12 in

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Studies

How many ways can a question be asked?

We are inquisitive beings with an innate capacity and desire to explore and learn. This position suggests that this tendency be completely leveraged. Rather than exhaust a single line of inquiry in search of truths, perhaps the path to truth is not as linear or straightforward as truth itself.

But common practice is to exercise this capacity within narrow bands of inquiry. Science for example, adheres to its accepted scientific methods and precepts. It must. Because without them, the very premise of science as an investigative method is refuted.

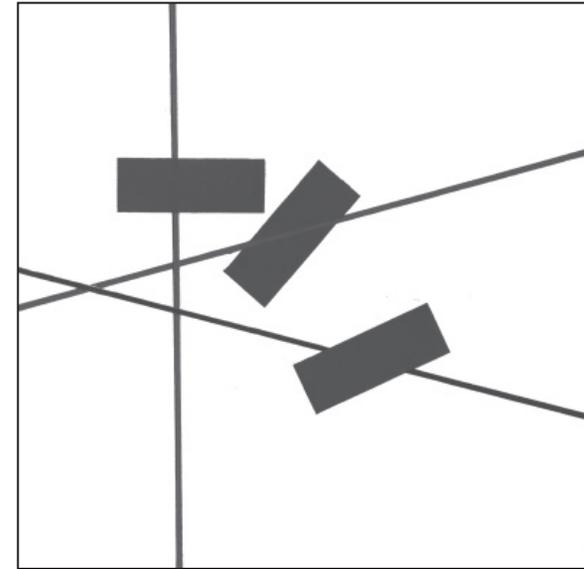
This example is not meant to discredit any mode of inquiry, but to unequivocally state that a wholesale commitment, dedication and adherence to one mode of investigation is fundamentally flawed. Certainly many disciplines have proven themselves. Yet it is also obvious that no one discipline can answer all questions. And so it is with architectural study.

These remarks are presented to make a case for multiple modes of inquiry. For architecture, or more specifically, the practice of architecture, this means that practice should include other ways of seeing the world and the work. While computer-generated presentation pieces can certainly be one way to communicate to another, it is equally, if not more important, to use various modes and media to work. These various study mediums, as well as shifts in perception (*to See* page 21) are tools for the student.

Documentary footage of Max Bill troweling paint onto canvas and removing tape to reveal his demonstrations of concrete art seemed more like the building up of an image sculpturally through addition and subtraction than one of painting[1].

During this study, painting ran parallel to architectural drawings and modeling. As work progressed, paintings turned from unique one-off compositions to a series of like-kind representations of architectural moments in the project.

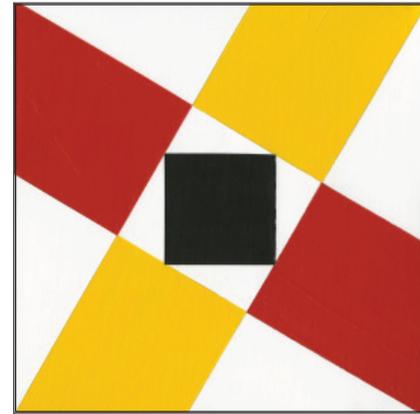
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1. Schmid, E., *max bill - the master's vision*. 2009, Ariadnefilm GmbH: Switzerland. p. 93 minutes.



Acrylic on illustration board
8 x 8 in



Acrylic on illustration board
12 x 15 in



Acrylic on canvas
12 x 12 in

Symmetries

The same rationale that superimposes a grid onto a natural landscape, is likely to find logic in symmetry.

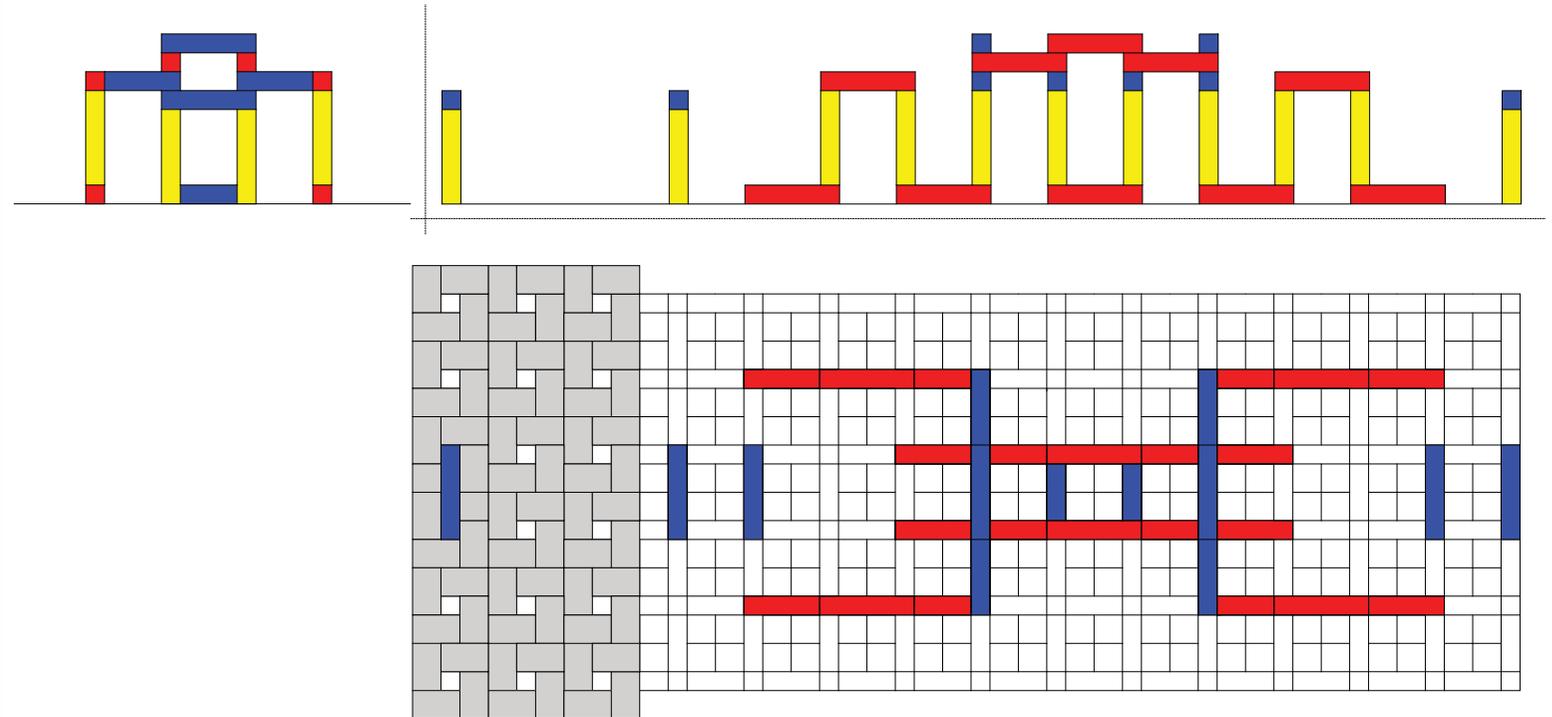
Does this mean asymmetry is irrational? No. Asymmetry is as logical as symmetry, but where symmetry is defined by set rules (two-dimensional reflection along an axis), asymmetry takes more liberties and can require several and perhaps sequential geometric operations to describe.

Compositions that cannot be described in either manner are non-symmetrical and require different faculties for design and/or analysis. Are these irrational? Perhaps. At the very least, they are not universal. Thus, as the universal nature of geometric operations grants a universal rationale, an idiosyncratic operation is as distinctive as an individual.

So what of this distinction? The rules of these modes of operating (or observing) are either universal or individual. Universal rules are open to challenge, and exceptions to these rules can be demonstrated within symmetrical or asymmetrical moves and patterns. If rules, or lack thereof, are individually derived, how is this revealed? How is it questioned? If a rule is broken here, it is unique to the individual, only known by the self, and as such, both the rules and the exception to the rules cannot be demonstrated outside of the self.

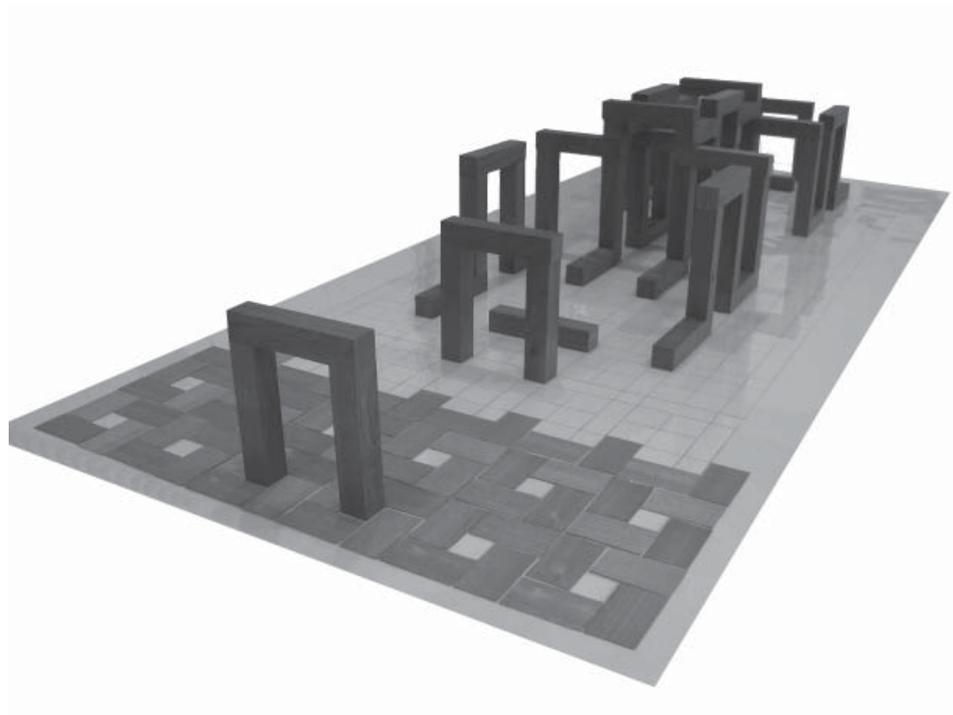
While the rules of reflective symmetry are relatively straightforward, the rules of asymmetry are similar to knots. To further this analogy, if asymmetry is similar to knots, non-symmetrical compositions might be closer to the myth of the Gordian Knot[1]. Indeed, some of life's most difficult knots are personal in nature and can only be solved by the self.

The image of a Gordian Knot is graphically portrayed by M.C. Escher, particularly in his architectural portrayals of never-ending descents and accents of stairs and ladders[2]. These representations of the impossible are non-symmetrical dreamlike apparitions. Through expert craft, Escher brings these ideal images within reach yet not without a certain amount of disbelief.



Part and Whole Study:
Max Bill's Pavilion Sculpture
Bahnhofstrasse, Zurich, Switzerland

Floor Pattern Study:
Floor as installed
Partial overlay of rotational symmetry pattern



Part and Whole Study Model
 Black Walnut & Red Oak Veneer
 Model Scale: 1in-1ft

Escher explains:

“..a mental image is something completely different than a visual image, and however much one exerts oneself, one can never manage to capture the fullness of that perfection which hovers in the mind and which one thinks of, quite falsely, as something that is “seen”. After a long series of attempts, at last – when I am just about at the end of my resources – I manage to cast my lovely dream in the defective visual mould of a detailed conceptual sketch.” [Escher, pg. 5]

1. Evslin, B., *Gods, Demigods & Demons: A Handbook of Greek Mythology*. 2006, London: Tauris.

Note ¹The myth of the Gordian Knot is often used as a metaphor for an unsolvable problem, the solution of which is extreme or violent; ‘cutting of the Gordian Knot’ as portrayed in the myth when Alexander the Great, frustrated in trying to untie the Gordian Knot, cuts the knot with his sword.

2. Escher, M.C., *M.C. Escher - The Graphic Work*. 2001: Taschen. 76.

Note ²See “Ascending and Descending”

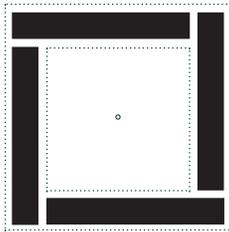
Escher’s images are open to interpretation and often oscillate appearances. These are “surreal-izations” of Escher’s mental images made visible by expert craft. While this particular work can be read to convey ideas about universals, such as duality, or the nature of the human condition, one is initially left beside themselves in a state of suspension. The images are impossibly convincing. As if frozen in a dream, these graphical illusions captivate the eyes as the mind struggles to sort them out. And as difficult it is for an artist to sort out his own mental images, it would seem implausible that any representation could convey the artist’s mental image to a 3rd party as a visual image. Yet Escher succeeds. Observers come to appreciate the image as is and by way this impossible image, something quite universal can be concluded.

Squaring the Square

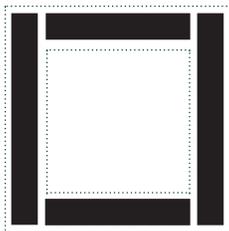
If you set off to construct a square, what knowledge of the square do you take with you? Four sides of equal length meeting at right angles.

For demonstration purposes, let us assume the building material available is of equal length, of uniform thickness and with 90 degree angles throughout. Let us also assume the sides will be connected using simple butt joints. How would you cut this material?

Given what we know, you would not have to cut the material at all. Given sides of equal length, the sides can be positioned as such:

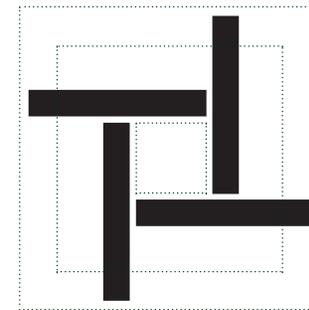


The other choice is not consistent with what we know about squares. This puts two lengths in play, offset by the thickness of the material. A square results but of unequal material lengths.



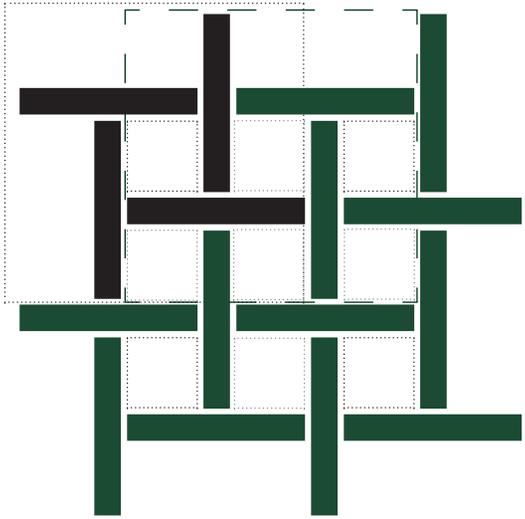
Why contemplate something so basic? Bringing ideal geometry into physical reality is challenged from the start. Thus, the way squares are brought into the world should match their ideal qualities (such as sides of equal length). The idea of the square, when it takes material form, exerts its will. In the physical world, this arrangement just might be what a square would like to be. After all, is not a square everything except what physical reality or graphic representation is used to demonstrate it? So what of this consequence?

There are several considerations. In this case, the square is put into rotation. Visual rotation is perceived first via the pinwheel arrangement. Moreover, while the ideal image of a square is symmetrical, this constructed reality is not. It is symmetrical by rotation about an axis running through the center of the square. This axis of rotation, which could be also understood as a spatial condition, implies a third dimension.



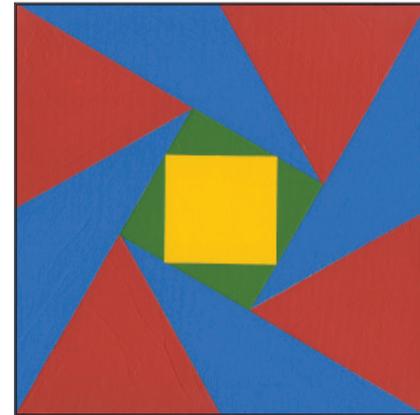
Also, a new appreciation of square is obtained. The construction suggests expanding fields as the same lengths are repositioned such that the image of the square is imbedded within and expanding outward.

Here, part and whole become as relevant as the image of the square. The parts take on an identity of their own and form a unique whole, itself a part within the expanding field. The relationship of part to whole, and space between (above) as part to a larger whole (next page), provide a flat image to the eye that starts to read over and under in the mind.



This new whole reveals new parts, inverted originals as opposite rotating counter parts. It is the relationship between these two parts, with counter rotations, where rotation is canceled and the whole is brought to rest.

As a rational construct of geometry, the ideal square also seems present in the physical world, making appearances within material constructions. In this case, a knot that is repeated, inverted, rotated and extended into a woven fabric equally conveys a field of physical and rational order. While coming to grips with the realities of the world, in our first acts of making: for clothing, shelter, net or basket, the ideal square and its extension as grid, is demonstrated.



Acrylic on canvas
12 x 12 in

¿ Sustainability ?

No position would be complete in this day without a well thought out position on the topic of sustainability popularized by the “green” and “clean” energy movements. For the purpose of a position statement, it would be routine to define sustainability but this is a difficult proposition wrought with inconsistencies. And because this is a personal position that proposes a different notion of the word, any definition is moot.

I recall my application essays for graduate school, wrought with objectivity and purpose, particularly within the area of this generalization. Not because of popular trends, but because I believe that architecture can, on its own merits, sustain. In other words, sustainability is not about low VOCs or lowering construction waste, etc; these are just good practices in and of themselves. The sustainability that interests me is more about architecture’s a-material.

Thus, a poetic conduit to whatever miraculous world one chooses to braid into their everyday existence. This is what sustains intellectually, emotionally and spiritually. It is in the perfection of life, made ever more possible by architecture, that is ultimately what deserves to be called sustainable.

Personally speaking, if I may borrow a sentiment from Frank Lloyd Wright, I find peace and order in “the cathedral of nature[1].” Therefore, an architecture that sustains me is one that is situated within, and acknowledges, natural assets. This does not mean that what sustains one person is right for another, or for every project. This is something to be navigated and negotiated. Any number of tectonic expressions can be exercised towards this notion, regardless of how many “green” products are used along the way.

Sustainable products do little to sustain us beyond physical concerns. The emphasis on sustainability is rather fashionable as these concerns have been with architecture since Vitruvius. Buying green can be justified, as mentioned, because this is a logical thing, just as building a certain way (adobe) for a certain climate (dry and hot) renders buildings more hospitable. For sure, this is one of architecture’s great gifts. But to a modern, I am not sustained intellectually or perhaps more importantly, emotionally or spiritually, by such utility.

Obtaining and maintaining a higher ground in an emotive mode of existence can be augmented by comfort and good physical health, which can be attributed to sustainability.

While this is a worthy objective, it is not the only one and certainly not one to forsake all others.

May I ask, *what sustains you?*

1. Stipe, M., *Frank Lloyd Wright: The Interactive Portfolio*. 2004, Philadelphia, London: Running Press. 92.



Bristol Paper
4 x 4 in

Objects of the Mind

In this position, ideas and objects are treated similarly as such: idea as object; object as idea. Therefore, within this discussion, an object of the mind is an idea of the mind.

This definition of object is a challenge, since object can stand for things physical as well. Indeed, an object can be almost anything. So, why narrow one's view of object in this discussion? Why not simply use *idea*?

It is important in this context to understand that an object of the mind is one that has latent form; a special type of idea that is inclined towards a physical and formal presence. An idea of the mind, focused on an object, produces a similar result, but the distinction becomes important because there are ideas of the mind that have nothing to do with latent physicality.

This position is based on the belief that there are no *new ideas*. This is not to say that ideas have been exhausted over time, leaving only old ideas in history's wake. It is to say ideas just are, regardless of their presence or relative newness in the thoughts of a mind. Given that ideas and objects of the mind are synonymous, this would also mean that there are no new objects.

What then of claims of something new? That it is not an object. It is a subject - to the object or idea. A subject can act or be acted upon. Object is ideal as in *object of thought*. Objects are either completely imagined or "seen" by the mind through visual sensations of subjects. Again, let us not confuse object novelty with knowledge. The problem of knowledge is a different matter. Yet to the point, how can we come to know something new if it did not already exist?

For example, the *object of one's desire* is not a physical thing. The true object, or objective, is desire itself [a feeling such as euphoria, safety, ecstasy]. Something physical is subjected to desire [a physical drug, firearm, lover]. So if there are no new ideas, there are no new objects, only subjective means upon which to realize ideas and objects of thought.

Of what use is this? Circular modes of inquiry where subjects can be studied to come to know objects and/or objects can be brought to subjects. Yet the benefits of this distinction precede a direction of study. They establish the pre-conditions necessary for there even to be rules of play: a declaration of the players.

(...continued on facing page)



[Enter Will]

It is in the field of play that the will of the object is considered either a formidable opponent or a faithful ally. The subject is caught in the middle, subjected to material will, instrumental will, the will of the object and the will of the designer.

war of wills

the world has a will of its own.
parts of this world, borne of and unto it.
'a will of its own' is passed on.

to exist is to have a will.
birthright or privilege?

which will should prevail?
survival of the fittest? finest? firmest?

a victory of will is not what it seems to be.
victory does not legitimize a will because the will is
wired for victory by definition.

How might one mediate this war?

If the will of the object is allowed to fully project itself, without imposing or competing wills, the idea as object is ever more intelligible through its subject. And judgements can be made.

This position is not an absolute for suggesting that one kind of will be prioritized over others. Rather, it is absolute in the negotiation of wills day to day, for the will of the world is such that there are times when negotiation is impossible.

One Way of Working

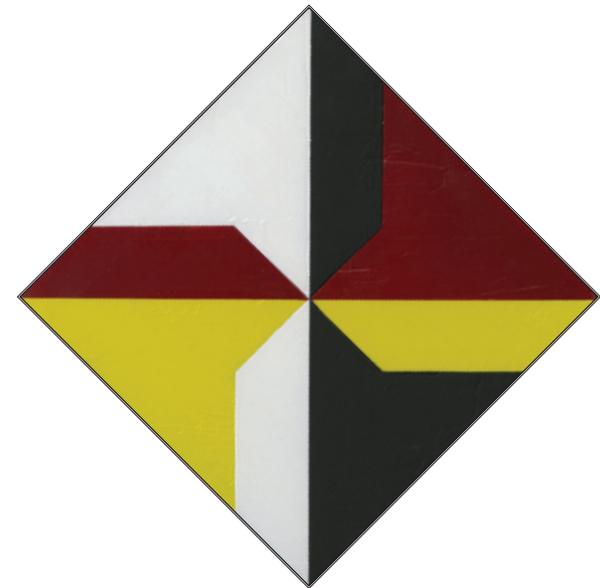
If one subscribes to the doctrine that there are no new ideas, what then is the role of design and designer? A popular understanding suggests that design is practiced by the creative professional. These terms, “design” and “create” will be clarified for the purpose of describing a position on working.

In lieu of there being no new ideas, one has a choice: to study an idea that already is, or set out to discover an idea that already is. What is the difference? A reasonable critique of the later is that it lacks a rational decision on how one should proceed. For if a goal is set in the mind, then the mind's next task is to determine the means to obtain the goal. Certainly for any rational being, this seems a prudent course of action. And Aristotle's thoughts on final causation are consistent with this approach - that before one can even begin, the end must already be in mind. Put another way, the final cause is what came first in the mind[1].

Now let us consider the means. This would be consistent with Aristotle's efficient cause and where instruments and technical means can enter as causes. Yet consider that the means may be fundamentally flawed. Means can be flawed similarly as methods selected to prove a claim. Often, the methods used to prove a claim are perfectly suited to prove, not disprove the claim. Thus, while the means selected by the mind to reach a goal are perfectly suited to reach that goal, the means are imperfectly suited to reveal anything else.

Thus, the difference between a wall that is found versus the idea of a wall a priori, is that the found wall can exert its own will due to the disposition of the explorer. The wall a priori is thrown into the war of wills which can be hard fought given that the idea of the mind is ideal. Furthermore, something thought versus something found can put a damper on the flow of discovery. And yet the most important distinction here might be less about specific activities, as means to an end, and more about the disposition of the person performing the activity. Here a certain open-mindedness can leave enough of a crack within the hard shell of an idea to shed light on found opportunities as work progresses.

With the disposition of the explorer established, what to discover? Anything and every thing of interest and that sustains inquiry: everyday situations (tragic|comedic), well-established constructs, physical forms from natural and/or built environments, culture, geometric concepts, rational ordering devices, etc...



Acrylic on canvas
12 x 12 in

While these subjects of study are sources upon which to discover, they can also inspire. In inspiration, it is important to understand that nothing new is created. Inspiration, while perhaps externally triggered, is a call to action that comes from within. This is where inspiration also fails as a proper description for design. Rather, things found from the activities of discovery demonstrate themselves as they are. And here, judgements can be made. Nothing new is created and nothing new springs from the designer.

Understanding design as a creative act is not only a position of hubris, but also leads to confusing the results of such activity as divine novelty. The conclusion a priori sets itself up for impossible testing. It is disadvantaged first and foremost because bringing an idea into the world rarely lives up to the ideal of the thought. If it does, then something of a charade is at work, from which even the designer may be duped. Second, one must forget the thought in the first place to see with disinterest and exercise their sensibilities.

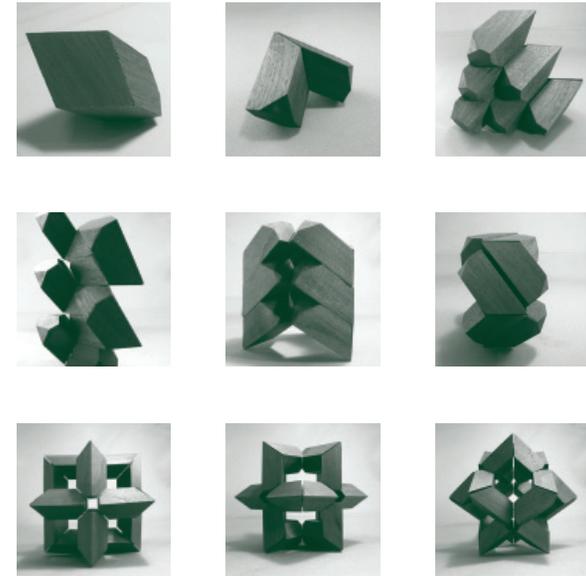
Again, if we can accept that ideas and objects of the mind already exist, then their latent forms are poised on the edge of discovery in physical subjects. It is the role of design then, to bring these into the world on their own terms. Design is not an activity that creates things out of nothing, but a scheming of things that are. This scheming is a way of working, that embraces a spirit of playful discovery rather than a systematic means of solving problems and reaching goals. It is a type play where the conclusion to discovery is judgement.

So, if design can begin as play, how might it end? Before we conclude, it is worth taking stock of resident benefactors. This way of working insulates one's ego from the work by aptly emphasizing actions before ends. This separation fosters healthy critique and neutral judgements. Yet this position requires self-discipline because criticality and disinterest can be easily confused with un-interest.

And while critique aims at the subject more so than the object-idea, it is more responsible to understand that the relative success or failure of a work is linked to the design activity, not the subject or object. Therefore in critique, despite appearances, one is not personally critiqued, but the evidence of actions, or lack thereof, are.

Evidence of action is demonstrated with examples. Whatever relative achievement play brings to bear during discovery and judgement, the work as example always benefits from additional rigor facilitated by the learned sensibilities, innate talent, and resolve of the designer towards a perfected end.

The final demonstrations of subject examples is the complete data set upon which critique is fully realized and can comment on archi-



tectural qualities of form, structure, material, etc... These examples (drawings, models) are the record of the design activity. This activity reveals character which brings the work closer to a mindful reality - As telling as the marks made from craft.

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1. Metaphysics Research Lab, C., Stanford University, Stanford Encyclopedia of Philosophy (SEP), in *Aristotle on Causality*. First published Wed Jan 11, 2006; substantive revision Tue Apr 22, 2008, Metaphysics Research Lab, Stanford University: Stanford.

Afterthought - This way of working was not a conscious decision regarding an ideal way to work, but the result of an accommodating environment and a personal choice to stay uncommitted, at least for a time, to a given thesis "topic". With academic freedom, study can start just so. Thus, the course initially was to set out to design something. If this practice is encouraged, it would seem that program details be best held at bay. Because at their worse, they could be considered as the sole basis for architecture. But a firm grasp of program can be argued as necessary for successful projects. This fact, coupled with the realities of professional practice, it seems that the liberties offered within academic settings are not the best fit for professional settings. Perhaps a modified or partial approach to this mode of working is necessary to carry the spirit of discovery and free play forward in some capacity to professional practice.

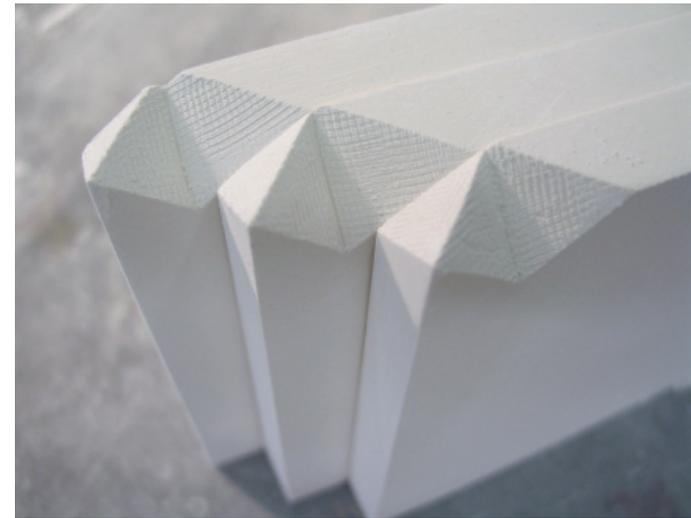
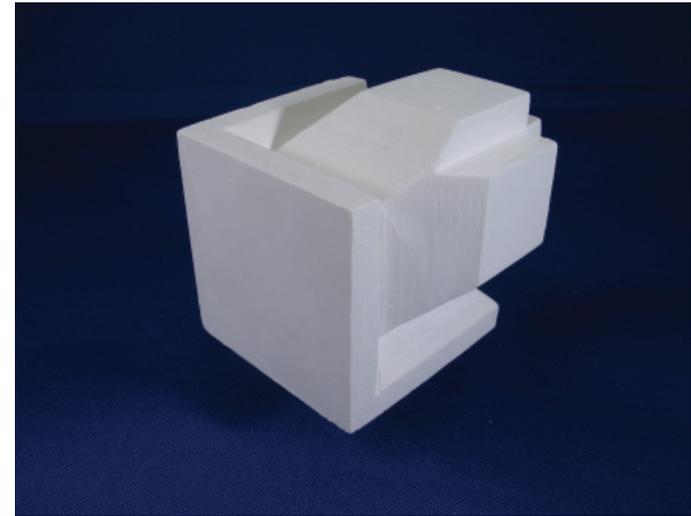
Character

Within a scheming of things that exist, a responsibility to architecture and environment is revealed - A responsibility to character.

While character might be understood as something intrinsic to existence, as in a birthright, the quality of character is actually demonstrated over time and by example. Character is in question each and every day and is the result of action, again and again, even if this action, as is the case with a landscape or a static building, is simply its presence. This is one reason to scheme: to demonstrate a certain character.

Character therefore, by way of repetition, becomes something not only readable, but also reliable. Once established, a character becomes something you can count on, something predictable - as telling as any identifying mark.

A character, appropriate and relevant, helps establish a harmonious and rational connection between the thing we see and what we understand to be its reason for being.



Top: One of Eight Units from Cube - Plaster

Bottom: Internal character of Chapel Roof joints; nested units - Plaster

to “See”

There is a phrase in a catholic hymn that explains a moment of absolute clarity, a type of rebirth, in answer to the question - What is there? “I was blind and now I see.”

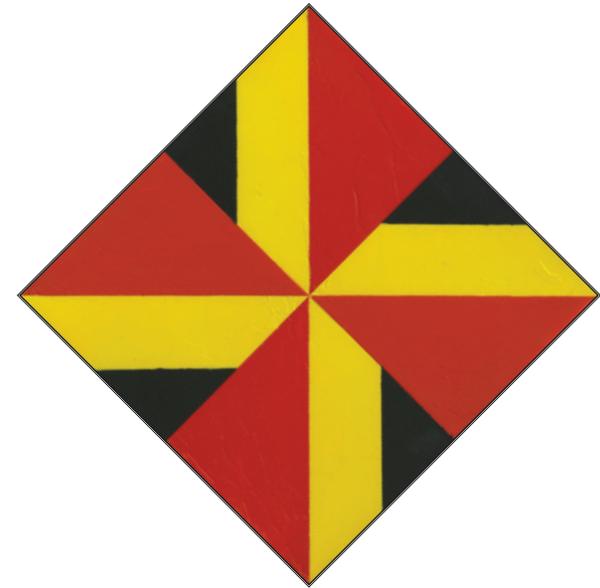
The theological context of this metaphor is one way to answer this persistent metaphysical question. Many have been pondered: is it what we know?, what we sense?, what we feel?, what we think? Yet despite the context of its use, “seeing” something anew, previously being “blind” to it, is a fundamental lesson that makes this statement applicable for every mode of inquiry.

Granted, a total commitment to such thinking can get in the way of life. To always consider *what is there*, contemplative rigor mortis can ensue. So, the questions should not be asked for the sole intent of finding answers but in the act of discovery, the questions are brought along to assist in the act of “seeing”.

While this essay uses a narrow band of sensory perception and experience to make a case, the premise is to be broadly applied. On a sensory level, one can embrace questions as a latent precept upon which to study the sensible world and “to see” questions as answers. Shifts in sensory perception are synonymous with shifts in mental perspective. Thus, on another level, a shift in mental perspective can allow one to better appreciate parallels, perpendiculars or tangents to their own thoughts.

If there is imagination at work, it is a capacity for seeing versus a capacity for creation. This is a tandem act of sense and mind: a simultaneous act of visually perceiving and imaginarily “seeing.” For example, am I to assume that because I can rationalize the phenomenon of collapsing space as an optical illusion based on certain physical conditions that it does not actually happen? For the same reason I cannot always trust my senses to show me what is really there, I should not dismiss the validity of phenomena that results from the fallibility of senses either.

How we receive information is a dominant force. Yet we know our senses cannot always be trusted. This begs the question, can they ever be trusted? Experience tells us they can, particularly in helping us get along in the world. Our senses are tuned as such.

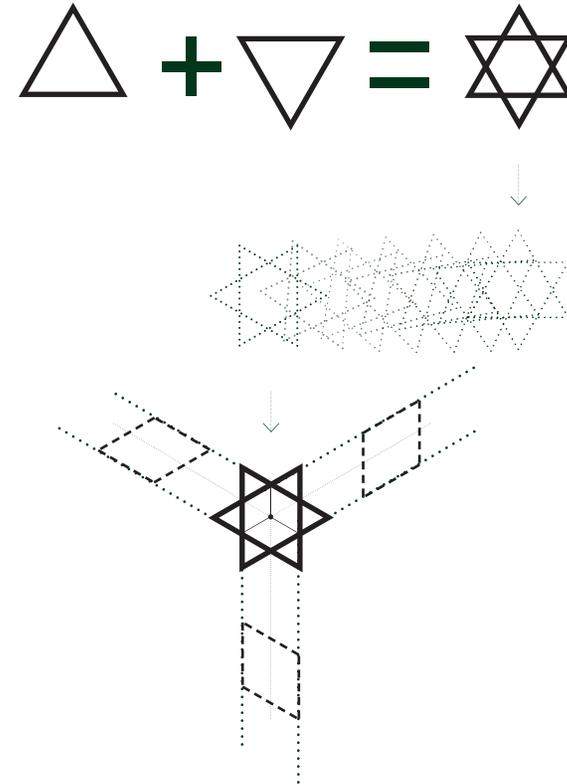


Acrylic on canvas
12 x 12 in

Conversely, there is little point for us to visually tune to ultraviolet spectrums so to locate pollen laden blooms. This comparison suggests that our senses are perfectly suited to help nurture the human body, and are just the right kind of senses for nurturing the rationality of the human mind. Thus, if experience can help our rationality sort out the world, can't the same experience and rationality be used to *see it with new eyes*?

A simple example: orientation. Which way is up? If in the simple act of rotating images, one appreciates or sees something to which he was previously blind, one notion of what is there gives way to another. New appreciations are not meant to trump, discredit or belittle prior understandings. Rather, all observed realities foster an appreciation for multiplicity.

When the sense of 'which way is up' is questioned, a turning over occurs; the absolute - "what is there?" becomes "there's another what" inviting participation in childlike discovery and a never-ending quest.



Shifts in perception yield multiplicities

In the Star of David, "what is there?" can be described more than one way as orientation is rotated. In this example, the representation moves from two overlapping equilateral triangles in two-dimensions to a three-dimensional representation of three bisecting square planes. The image is of eight cubes of space that each share a common corner as a point origin. The cubes infinitely expand in three dimensions from this point as the eight containers of Euclidean space. Speculation of the origin of this ancient symbol is moot given the point of the exercise.

Knots

as Architecture and the Human Condition

This thesis study was initially open to as many ideas of knot as there are knots in tied form. Yet as study continued, a narrow band of considerations emerged.

Why knots? Aside from a personal interest, they demonstrate something rather fundamental. Knots have been with humanity for ages and are represented in the arts and in culture as much, if not more so, than in their utilitarian context [1][2]. From Oriental buttons to Celtic knot work, the list is long and rich.

A book entitled *Orderly Tangles* by Holden [3] found its way into my studies. This work, included photographs of small wooden models of various knot types. While I was quite used to the collapsing nature of knots in tension, to see these *loose* knots, sculptural in nature, pitting space against material, I began to appreciate architectural qualities of form, structure, proportion, order, and spatial complexity.

Yet I am unsettled by imposing the image of knots onto architecture. While the idea of knot continues to captivate my attention as an analogy for life, architecture made in the likeness of a knot seems an oddity despite honest attempts to appreciate building projects that make such moves.

In rationalizing this intuition, the scale of knots, their form and structure, and resulting function, seem almost purposefully contradictory to the scale and spatial essence of buildings. Knots are hand-tied things, and are happiest when fully collapsed under tension. While knots serve as elements for shelter under the umbrella of architecture, their roots in nautical rope work and textiles send them on a different trajectory than architecture: not only as a basis for architectural form, but also as a fundamental element of architecture. Indeed, it is odd to consider the knot similar to column, beam, wall, or roof within the language of architecture.

Thus, a building in the image of a knot seems awkwardly formed, inappropriately scaled, and distorted in its mimesis as architecture. However, it is in the evaluation of parts where the relevance between knots and architecture is strongest.



From The Caribbean Hut, observed by architect and author Gottfried Semper at the Great Exhibition in London in 1851, to the standard paver and masonry patters of today, the connection between knot and architecture seems rather elemental *and* indirect.

Semper states, "In architecture and ceramics - in fact, in all the arts - netting is used for surface decoration and is often applied structurally and symbolically as an ornament for projecting or bulging parts, such as belly of vases." [Semper, pg 221]

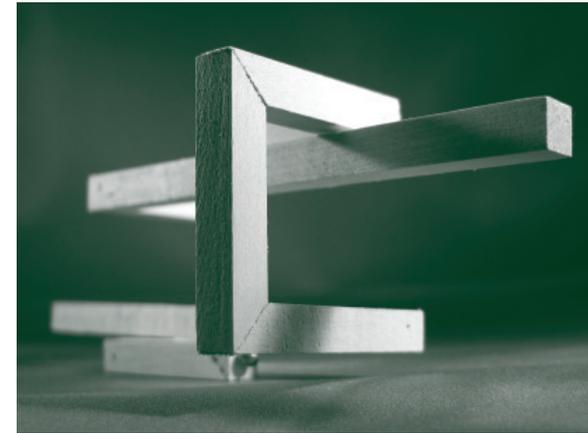
This is a difficult reconciliation that is made palatable by suggesting that knots and their woven relatives are productive as architectural metaphors yet are simultaneously ill-suited as architectural elements.

Therefore, in its true form - A knot as such cannot be anything other than a knot, much less a building. The abstracted knot as a concept is much closer to the idea of joint in architecture. And perhaps all architecture, from building assemblies to entire buildings, from the arrangement of buildings to entire cities, is closer to fabric; woven entities with knot-like joints.

Yet for knots to teach and provide a basis for any of these statements, they had to be practiced: as tied cords, as wooden and woven paper models, and in drawing. It is within these studies that the idea of knot was disassociated with its typical tied example and used as a subject of study in a search for underlying principles that might make a stand as architecture. The pivotal question became: What can knots teach as they struggle against my will to make them into something else? (*The following essay presents these findings*)

So it is in this architecture of knots as follies that a fundamental duality is revealed. On the one hand, knots can be understood as problems to solve, to untie or unravel. On the other hand, they are solutions to problems, with a substantial inventory and history supporting this claim.

While a tied knot is physically three dimensional, it is also a linear sequence of time and a record of actions in space. This is one way the knot itself instructs. A knot is untied, turn by turn in the opposite direction of its construction as a series of steps.



One traces steps backwards and reverses these same moves forward in construction. In their completed state, knots can stand as formal and structural solutions to utilitarian problems and they can stand as art, ornament, symbol, or graphic in a range of cultural or communicative capacities. In an architectural mode of inquiry, it seems that the knot is both situation and resolution, beginning and end.

Is architecture like knots in this regard? Simultaneously both problem and solution? Or does architecture negotiate a middle ground between these polar conditions?

The figurative use of knot in language puts a heavy burden on the word that is not entirely unjust. Descriptions of human institutions such as cutting the cord, tying the knot, family ties, are more than just tired clichés. These are sayings forged by language and time and indicate culture refining itself through ritual and habit.

These rituals and habits of the polis find their way into the architecture of the city often described as an 'urban fabric.' A fabric, mindfully understood as knots in a series, implies much metaphorically. Yet, the image of this analogy is misleading. In this description, similar to a quilt or patchwork (also a common description for cities), the image the mind renders is akin to a colorful zoning map. Yet these patches of color, while designating districts well, do a disservice to the connections and edges between districts (arguably more important). Thus, the image appears as an assembly of islands rather than integrated parts to a whole.

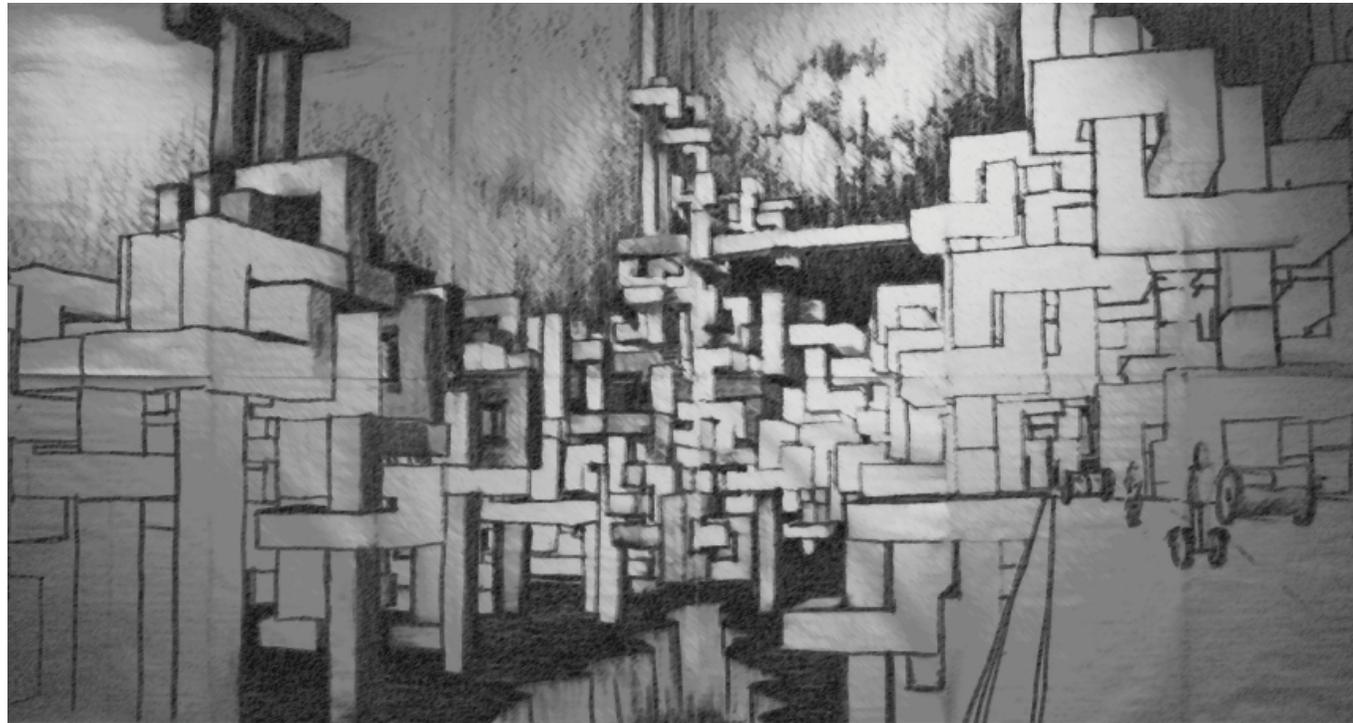
A more accurate position, the fabric of the city is understood as a multiplicity of relevant connections, operating independently as parts (knots), and as parts to a larger whole (fabric). These connections can be consequences of the built environment, and they can also represent the conduct and governance of rational beings such as ourselves within the polis.

So it is in this context, the image of the polis, that architecture as knot was tested quite literally as a fabric, as both form and structure, of the city. Yet the "knotted city" (see folio) quickly became figurative and through drawing came to represent the image of a three dimensional labyrinth, not easily navigated and situated in a mysterious world.

This recalls of the myth of Theseus, the infamous Athenian, whose story reveals the knot-like duality of the human condition: the labyrinth as daunting problem and as solution in Ariadne's cord.



Neighborhoods
Pastel on trace
24 x 36 in



Knotted City Labyrinth
Charcoal on newsprint
6 x 12 ft

It is here we find our most perplexing navigation, analogous to the knot as life, and similar to tracing the turns of any knot, through history, myth, dance, drama and art, it is also the very thing, laid out in front of us that seems to assist as well.

Upon killing the Minotaur and his success of navigating the labyrinth, Theseus decodes the maze in the cranes dance. The dance, a different representation of the same knot as problem (labyrinth) and as solution (Ariadne's cord), is laid out for others in this dance.

Thus, it is in preliterate society that the knots of life in and of the polis were recorded in the form of dance. It is in the action of the dance that the action of life and the world, representing time and space, becomes the record of what is important to the members of the polis. And dance persists as such today, on the stage and in the streets to celebrate, for example, the enduring institutions of marriage and death.

And as preliterate communication through dance gave way to language as a primary means to communicate, theater enters the scene with the chorus, drama, and dialogue to spin words into knot-like tales turning the story over and under, sometimes ending as it started, answering one question to turn and ask another [4].

Thus, based on the knot's long standing as a human utility and metaphorical connection to the human condition, it is easy to appreciate the knot as relevant to architecture, but as stated earlier, formal and structural relevance is not as convincing. When the formal qualities and physical structure of knots, or anything else for that matter, are used figuratively to construct a likeness in a building, the result is often suspect. A building's image might look like something else, yet in its attempt to look like something else, it is not only not entirely that, but also not entirely architecture.

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1. Semper, G., *Style in the technical and tectonic arts, or, Practical aesthetics*, ed. M.E. Steven Lindberg. 2004, Los Angeles, CA: Getty Research Institute. 981.
 2. Ashley, C.W., *The Ashley Book of Knots*. 1944, New York: Doubleday (a division of Bantam Doubleday Dell Publishing Group, Inc.). 620.
 3. Holden, A., *Orderly tangles : cloverleaves, gordian knots, and regular polylinks*. 1983, New York: Columbia University Press. x, 97 p.
 4. Robinson, D.N., *Great Ideas of Philosophy-Lecture 5: The Greek Tragedians on Man's Fate*. 2009, The Teaching Company, LLC.

Findings

Architectural Relevance Found in Knots

Following the studies of physical knots as architectural follies and as figurative urban fabrics, observation of a few simple knots (primarily the figure 8) uncovered several qualities that were either recognized as valid courses for future study or used to scheme for the subsequent project architecture.

Rotational Symmetry

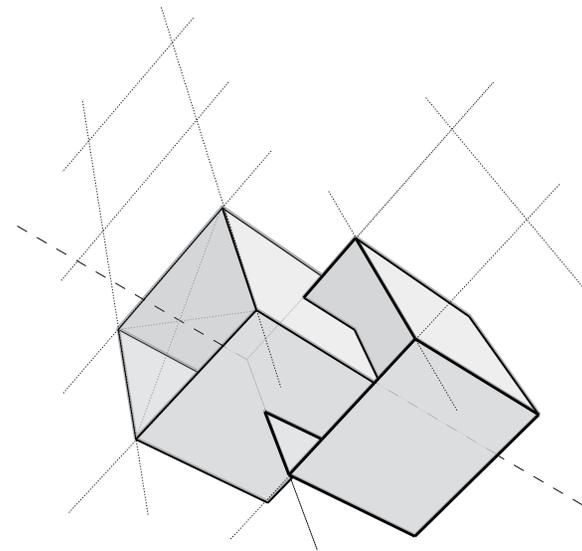
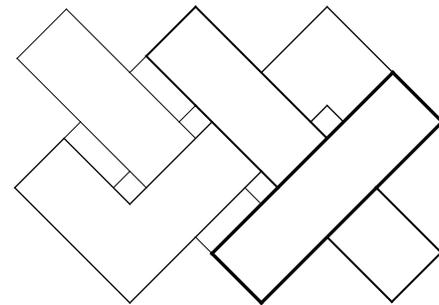
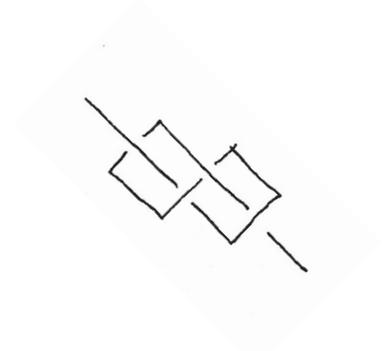
Rotational symmetry was used throughout the project and should be understood as an intrinsic characteristic of genetic quality that fills a paradigmatic role in making a whole of independent parts. Rotational symmetry is practiced at different scales within part to part and part to whole relationships throughout the project. Rotation, along with translation and inversion are primary geometric operations used to scheme.

In rotational symmetry, one is not obtaining something dynamic in the sense of movement. Although tied knot studies and architectural models demonstrated a tendency to rotate under load, this is not an overt move towards a “moving” architecture. Rather, implied movement, certainly rotation, becomes evident to the mind as one positions their view in relation to a subject and as light plays off surfaces.

Offset Spatial Grids

“To me the simple act of tying a knot is an adventure in unlimited space. A bit of string affords a dimensional latitude that is unique among the entities. For an uncomplicated strand is a palpable object that, for all practical purposes, possesses one dimension only. If we move a single strand in a plane, interlacing it at will, actual objects of beauty and of unity can result in what is practically two dimensions; and if we choose to direct our strand out of this one plane, another dimension is added which provides opportunity for an excursion that is limited only by the scope of our own imagery and the length of the ropemaker’s coil.” [Ashley, pg. 8]

The recognition of offset spatial grids in knots is not to suggest that knots are the exclusive physical manifestation of such an order, but



rather verifies that the rational grid and its many variations, in this case, an offset three-dimensional grid is not just a product of our mind but is also readily observable via such physical demonstrations. This would suggest a type of omnipresent order that lies somewhere between and within our physical and rational worlds.

Among many ordering devices, the rational grid has served architecture at all scales, from homes to cities, with a persistent and productive history. Knots demonstrate a variation of this basic two dimensional order upon which to consider questions of form and structure in architecture. This consideration emphasizes the analogy of architecture as something woven; a product of spatial grids more akin to three dimensional fabrics than as a consequence of an extruded two dimensional orthogonal grid overlay.

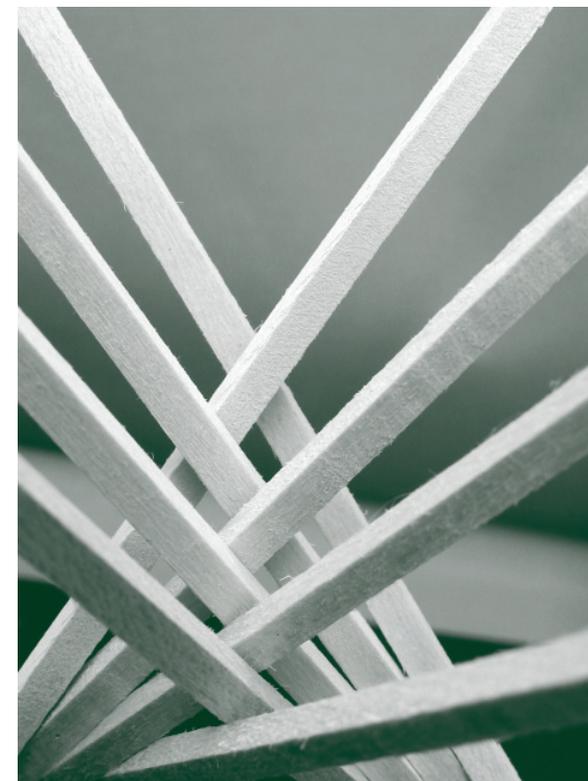
This analogy is echoed by one of Godfried Semper's four elements of architecture: the woven rug wall [1]. Indeed, even the wall systems of today are layered assemblies. And even though masonry facades are the most visually "woven" of elements, they rarely serve as the primary structural utility. And neither did its predecessors. Yet it is in that very part of the wall that echoes something woven, structured and physically ordered, under the skin of architecture.

Nested Connections

Nested connections in joints recognize that architectural elements and materials cannot occupy the same space, nor can they so seemingly transform from muscle to ligament to bone as some of nature's finest connections show.

So the question is: how should architectural elements and their material properties meet? Posed differently, how are corresponding elements positioned relative to each other such to make a joint?

Within the vast language of joints, from ancient Japanese wood joinery to modern-day moment connections or how wall meets floor, the language of knots demonstrates how architectural materials do not meet, but rather nest. In a nested connection, there is a spatial dialogue between parts such that each part, as a standalone entity, can articulate a line or lines of this dialogue. The spatial dialogue between the positive space of parts and the negative space of the joint includes all of the lines of all of the parts and is the relationship described as detail.



This is in contrast to joints where the parts are crafted and positioned such that elements come together in a detail-less detail [2]. The relative positioning of elements and organization of space is the poetics of joinery defined here as architectural knot work. And similar to how knots transcend their utility into the world of art, as with tied Japanese buttons, so can architectural knot-work offer more than structural utility. Here, the juxtaposition of elements not only serves utility, but also one of character.

So, if elements don't meet, as observed in knots, how many ways can they be related to another? How will the joint express itself as a whole? In part? Will one element or its material properties be more predominantly articulated? Or will structural responsibility be celebrated instead?

Of course, these questions are rhetorical to make a point: That the poetics of architectural joints is revealed by the tension of non-connectedness more so than the joint simply seeking connection.

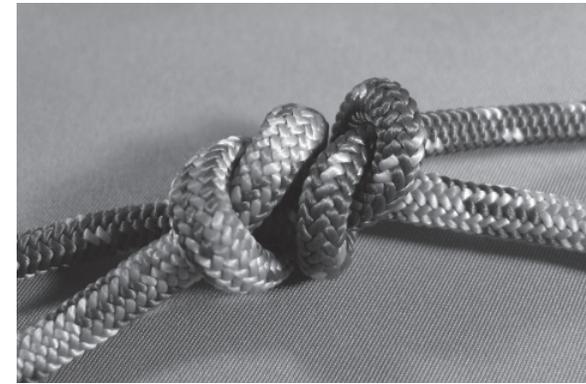
Proportionality

Several observations deserve future study relative to proportionality. It should be noted that because no comparative studies were performed in this area, these observations do not quite reach the level of demonstrated findings.

Forces and material play a part in the relative massing of a knot as it is drawn tight. The knot obtains a structural and formal proportionality in this tightened state relative to the size of the material. A tangle on the other hand, lacks this proportional quality.

If tied correctly under demanding conditions, the strength of the knot will exceed the tensile strength of the material. Or described differently, the compressive force of the material applied unto itself within the knot is greater than the tensile strength of the material outside the knot. If adequate tension is applied, the material will fail before the knot. It seems that a structural proportionality is also demonstrated within the knot form.

Paradoxically, there are moments in the symmetrical and asymmetrical tightening of knots where the proportion of space to material finds a relative harmony between the extremes of loose and tight. Not only in the knot's wholeness is this observed but also in the complimentary complexities and relative and rotational positioning of parts. The image of yin and yang describes this dance between space and the material that attempts to contain it.



The visual complexity of a knot is proportional to the number of material crossings that turn to form and structure the knot. Yet, it is uncertain if the recognition of this complexity is a rational appreciation of form and structure, or something proportionally opposite to rationality - Eros.

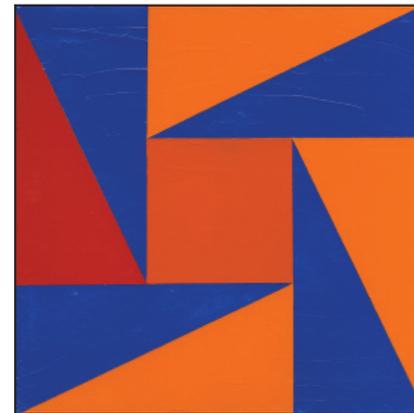
Knots intertwine and express a rapturous embrace and flowing passion that is not only comforting and sensual but also violent. Like a constrictor's coil, knots love space madly, to the point of squeezing the life out of it. Knots have qualities similar to the sensuality found in the painting studies of Le Corbusier in *A Marriage of Contours* [3]. From a handshake between friends to the embrace of lovers, the image of human relationships is equally knot-like.

Through these observations, the knot seems to be a lesson in proportionality of wholes in balance, that appear to reach a state of equilibrium derived from both a compatibility between parts, and a balance that sets one thing in opposition to another, even if the *thing* is in opposition to *itself*. For example, the opposition between tension and compression in knots is like human generosity being oddly reliant on an equally seductive and powerful capacity for power and greed.

Can one exist without the other? Balance by way of opposition draws parallels to Venturi's explanation of contradiction:

"It can include elements that are both good and awkward, big and little, closed and open, continuous and articulated, round and square, structural and spatial. An architecture which includes varying levels of meaning breeds ambiguity and tension. ...Examples which are both good and bad at the same time will perhaps in one way explain Kahn's enigmatic remark: "architecture must have bad spaces as well as good spaces." [Venturi p. 23]

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1. Semper, G., *Style in the technical and tectonic arts, or, Practical aesthetics*, ed. M.E. Steven Lindberg. 2004, Los Angeles, CA: Getty Research Institute. 981.
 2. Weiner, F., "a detail-less detail". 2010: Studio Pin-up in Cowgill Hall, Virginia Tech University, Blacksburg, Virginia. Used to describe a joint where different materials meeting in the same plane demonstrated no differentiation.
 3. Ingersoll, Richard, *Le Corbusier - A Marriage of Contours*. 1990, New York: Princeton Architectural Press.
 4. Venturi, R. and Museum of Modern Art (New York N.Y.), *Complexity and contradiction in architecture*. With an introd. by Vincent Scully. 1966, New York: Museum of Modern Art; distributed by Doubleday, Garden City. 135 p.



Acrylic on canvas
12 x 12 in

Project

A study of part and whole can be exercised in a wide range of architectures: the detail of an opening, a building fragment, a wall assembly, an entire building, and a collection of buildings. The notion of a city as a study is compelling because of the relative scale of parts and wholes and the opportunity to study within the aforementioned range of architectural considerations.

A necropolis can address fundamentals of city without appearing to fall short of complexity and scale. Thus, a cemetery is the building program under which prior thesis studies would be applied.

Following this programmatic decision, the question of what a cemetery complex architecture should be is posed repetitively. A prudent answer to this question is one which considers memory and time:

-Historical - What architecture came before in places of this sort? What were the traditions and beliefs that produced those architectures?

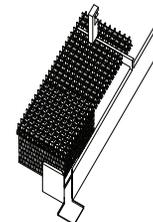
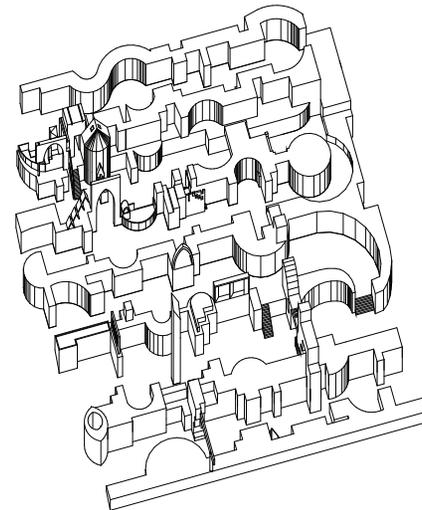
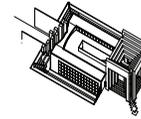
-Present - What are the traditions and beliefs of people in this time. Are these beliefs in stasis or actively evolving?

-Future - Does the future look like the present? Said differently, is the present ready for the future today? Perhaps tomorrow?

Providing itemized answers to these questions is not the purpose of presenting them. Besides, this is a short list. Instead, these questions are a primer to the architectural propositions that follow. Perhaps answers and additional questions can be read from the work.

Yet to connect the notion of part and whole to memory, time and program, a brief explanation is warranted. A relationship between part and whole, where some parts and wholes are not architecture, but are people and their traditions, a harmony between architecture and program would need to recognize this active relationship. Otherwise, the architecture might only exist as an art.

A return to a historical time is proposed in this place making. This recalls a time where the position of the living and the dead shared a proximity in place. This is not done by repositioning cemeteries in urban centers. Rather, it is an effort to offer aspects of civic life in the garden cemetery of this time and place. This proposition is place-making for the entire polis: the eternally restful, the mournful, and the playful. The project seeks to balance a city for the dead with one for life as well.



Site of Layered Horizons

The horizon relevant to the project is not infinite or straight like the ideal horizon of the mind at sea.

The undulating horizon of southwest Virginia is not an unreachable horizontal. Where an ideal horizon represents space infinite, this layered horizon collapses space ever finite. The contours are not all perpendicular to the field of view, but instead of this contributing to depth, because of distance and the veil of atmospheric opacity, interstitial space between horizon layers cannot be sorted out. As such, a series of ridges, large and small flatten out into a backdrop of earth and sky.

I first came to appreciate this phenomenon when I visited the Grand Canyon as a young boy. Standing on an overlook, the thing in front of me appeared as if it were a gigantic postcard. Now living in Southwest Virginia, the phenomenon of collapsing space is framed by opportune view sheds. Only the clearest days of the year offer enough detail to provide the eyes depth for the mind.

The project horizon is characteristic of the region. The primary view to the horizon (west-southwest) is situated such that the horizon is both near and far, making it seem both infinite and accessible at the same time. This duality is characteristic of the phenomenon of layered horizons.

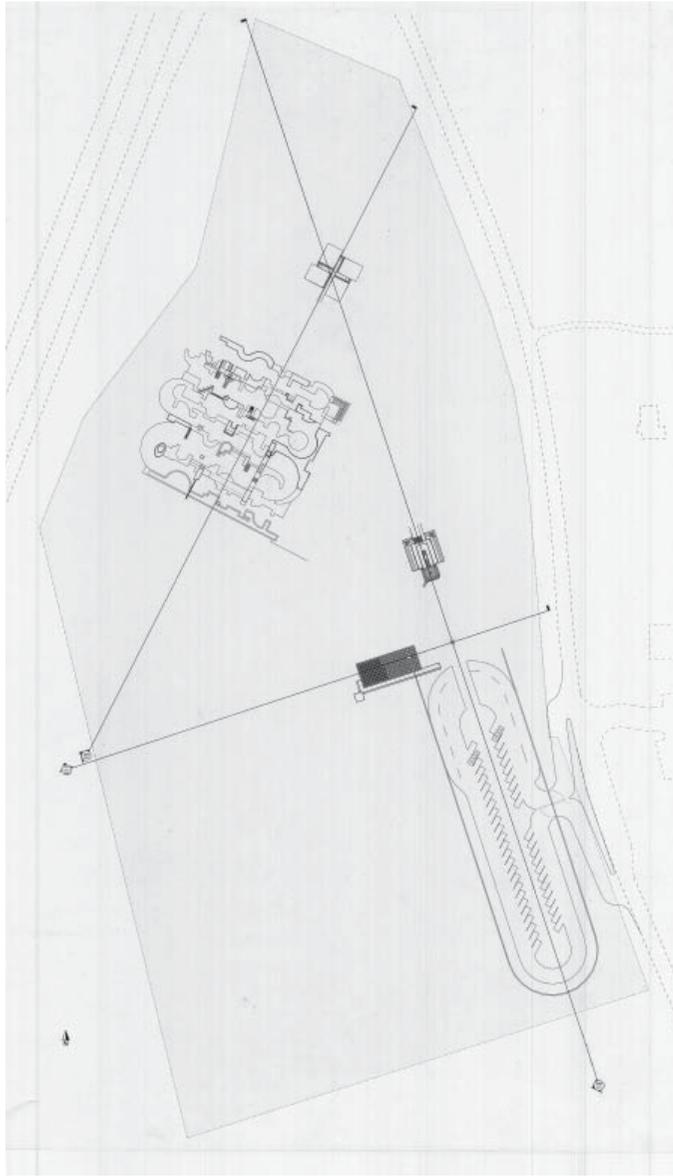
There is a cautionary phrase used to describe a moment when the long view is lost to daily obstacles - *When one can't see the forest through the trees*. This statement aptly describes a physical condition where space (the forest) collapses into a single layer comprised of foreground and background (the trees).

Similarly, the layered landscape collapses space and presents overlapping planes and crossing horizon lines. How might an architecture counterpoint the rhythm of such a landscape?

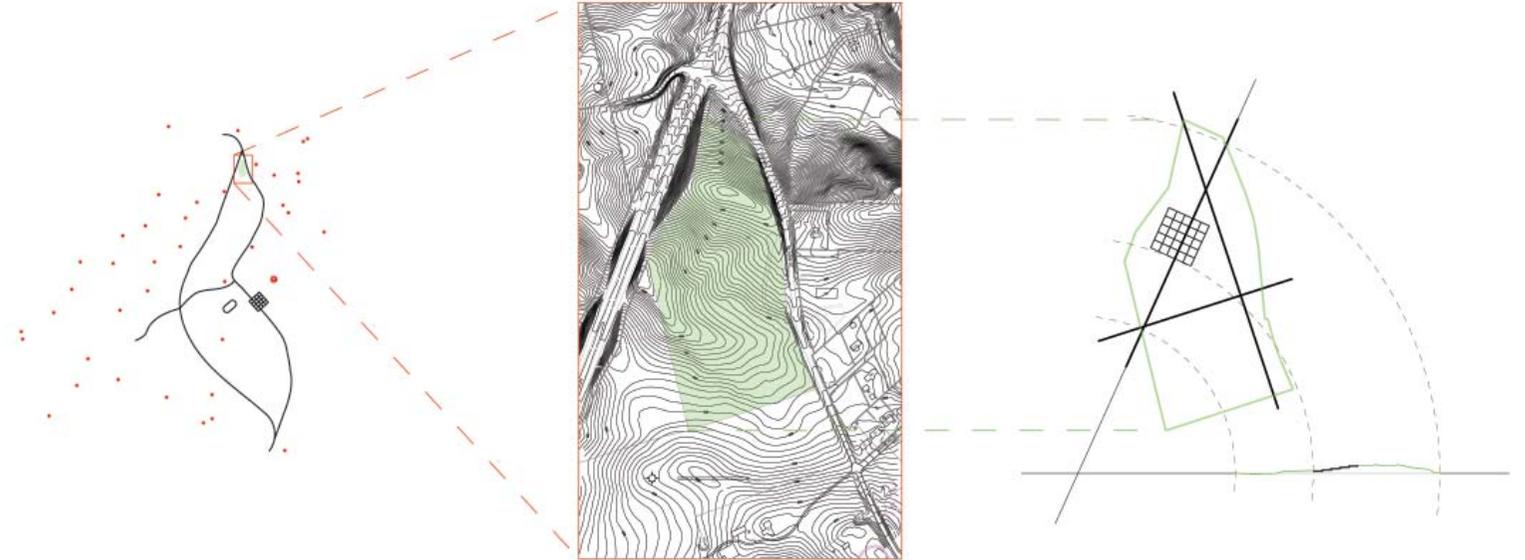


Top - Acrylic and Watercolor on Illustration Board
6 x 6 in.

Bottom - Basswood Model
9 x 6 in.



Site Plan
Lead over Ink Jet on Vellum



Site Context:

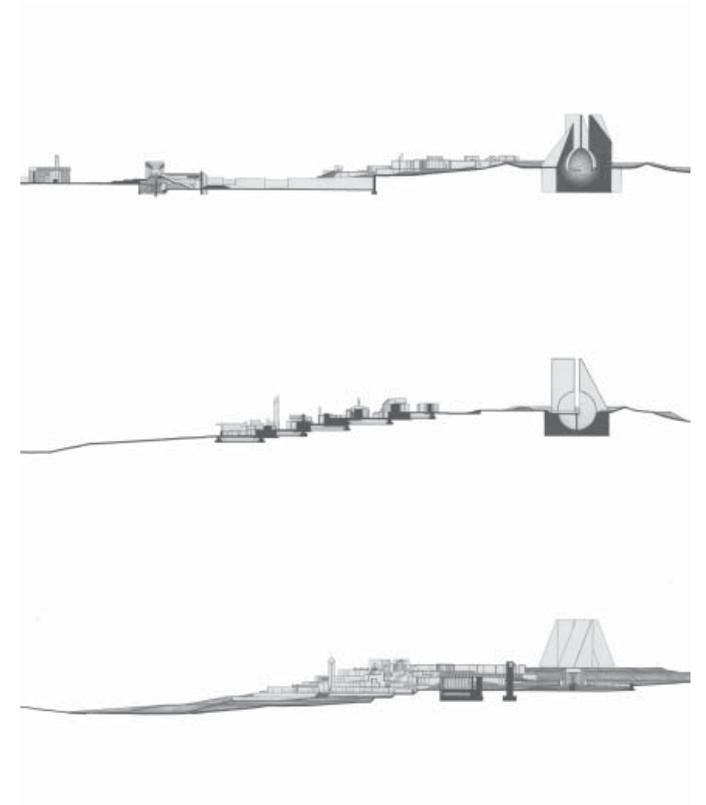
- Site: North side of Blacksburg, VA; N. Main St. & Rt. 460
- Westview municipal and surrounding family cemeteries

Necropolis Scheme:

- Organizing primary and secondary axis
- Ordering armature for streets of necropolis



Future Necropolis
Charcoal on Drywall
4 x 6 ft



Site Sections
Lead over Ink Jet on Vellum

The contours of the Brush Mountain ridge line run to the south and west, as do all of the Appalachians, such that the western view from the site has a horizon line that starts slightly higher to the north and steadily falls to the south-west. The site's proximity to Brush mountain and an unobstructed western view from the site magnifies this condition.

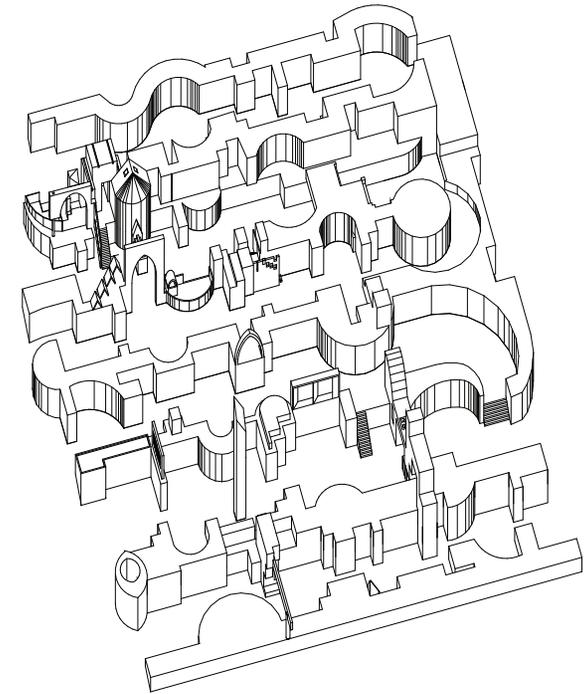
Further, the site is situated near the eastern continental divide. Thus, this is quite literally the region's high ground. The water from the site drains into the headwaters of Tom's Creek, which flows to the New River, and ultimately south to the Gulf of Mexico. Not far away, water finds a different course east via Craig Creek to the James River and the Chesapeake Bay.

The view west from the site is one of the key assets and characteristics of place. This influenced the site scheme such that the western horizon be made a consistent companion.

With a persistent connection to the western horizon, the cycle of life is witnessed in the setting of the sun. A life is laid to rest as the sun sets on the day. And our belief that the sun will rise again instills a comfort in the circular process of forgetting and remembering. Forgetting is not forever. Memory will again wake, as certain as there is a new day.

line that separates earth and sky,
you follow ridge lines and fall into valleys,
getting lost in the farmers field.

here you don't seem so strange.
I can walk to you.
my horizon, where will we go today?



Top: Layered horizon line trace of western field of view from site
with digitally applied gradients

Bottom: Axonometric
Future Necropolis

Tower and Roundness of Being

What is the essence of being? What might being look like?

Vitruvian man, made even more famous via Leonardo da Vinci's sketch of a human figure, is contained within square and circle geometries to consider the proportionality of human form. Now consider these geometrical boundaries as images representing man's rationality as square and man's being as circle.

A suitable image of being is round [1]. We look around. We take in what is around us. We walk around. We repeat daily routines in circular fashion such that we physically "orbit" around our own essence. Our being is akin to a breathing sphere, contracting and expanding, inhaling experience and exhaling rationality in response to sensation and contemplation.

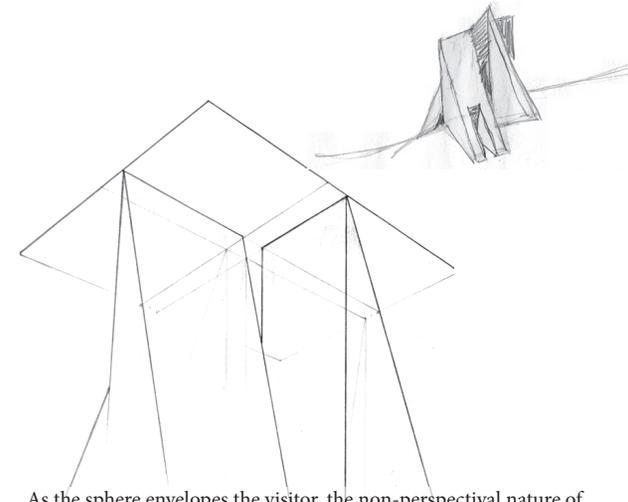
Tower in the Landscape

A tower is situated at the high point of the site, and terminates the primary axis of the complex scheme.

The tower as a whole recalls the image of an ancient memorial pyramid. This whole is the relationship between four identical parts. Each part is a wedge, each situated on its back, with the thin edge of the wedge pointed to the sky. A quarter sphere is carved out of each wedge along one vertical edge. Each part is rotated about this common edge and for every 90 degree rotation parts are juxtaposed parallel and perpendicular with six feet of separation. This creates spherical room, divided down its vertical axis by a space open to the sky. Cruciform in plan, this is the spatial relationship between the assembled masses and the nature of the 5th elevation.

The juxtaposition creates a 6' wide corridor between each wedge. This separation encloses four tall narrow entries open to the sky on each side where visitors can take in interior views.

The entry is rotated 45-degrees from the primary axis putting visitors in orbit around and rotating the installation in view. The entry is suggested by a declining walkway into the tower. As the visitor aligns with this entry, the entry continues as an elevated walkway, extending to the middle of the space within. As the visitor enters this space, a spherical room looms large in front as fast as it closes in behind. The nature of the entry and walkway position the visitors' torso in the middle of the sphere.



As the sphere envelops the visitor, the non-perspectival nature of the room suggests a contemplative space. It does not service the many. Ultimately, one person safely experiences being in the center of the sphere.

Water is welcomed into the bottom of the sphere where the cruciform trace of the sky as seen above is also reflected below, inverting the relationship of the heavens such that even the firmness of the Earth is temporarily suspended from mind.

A relevant question, similar to Protagoras' famous maxim "man is the measure of all things," asks the individual, "am I the center of my world?" The polished surface of the sphere and mirrored effect of the water suggests self-reflection. "Gnothi Seauton", "Know Thyself" is one relevant conclusion to this question.

The tower can certainly be interpreted as a monument to the dead or a marker for the necropolis, but as it is seen by the living, what it gives back to the living is more than this. As visitors consider their world, perhaps what is most salient is distilled into their remaining days.

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1. Bachelard, G., *The Poetics of Space*. 1964, Boston, MA: Beacon Press. 232.

Note 1 Bachelard dedicates the last chapter of *Poetics of Space* to the "phenomenology of roundness" where he proposes a metaphysical argument for the image of being as round.

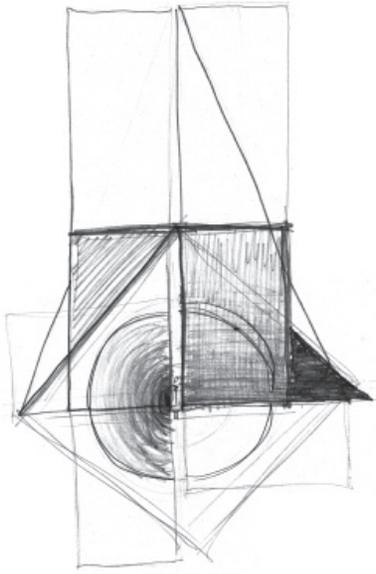
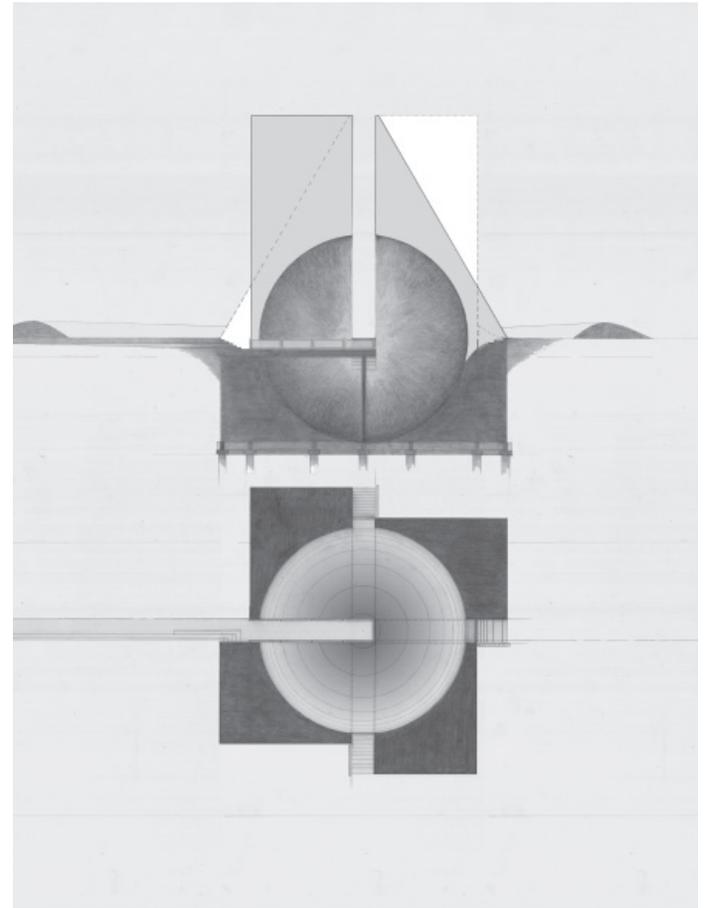
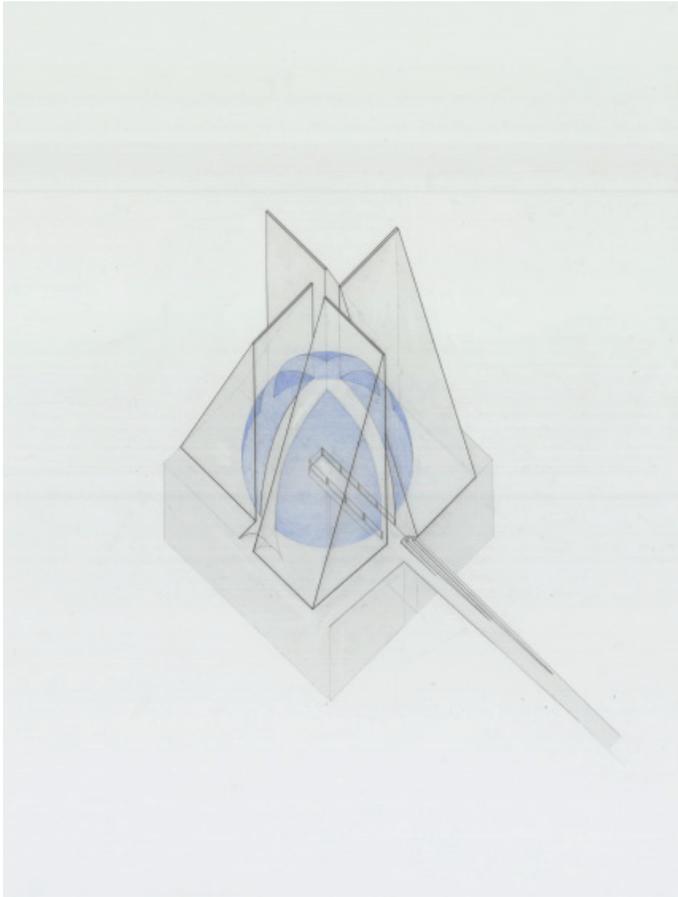


Diagram Sketch
Charcoal on Newsprint



Tower Plan and Section
Lead on Vellum



Tower Axonometric
Lead & Colored Pencil on Vellum



Tower Model
Plaster & Paper

Tomb and the Manes

A Monument to Community Leaders

Lewis Mumford in “The City in History” describes the formation of permanent settlements and cities. He suggests that the city of the dead not only predates the city of the living, but also is a catalyst for its being[1]. The physical position of the dead in relation to the living is variable throughout history. As such, the proximity between the living and the dead will forever fluctuate.

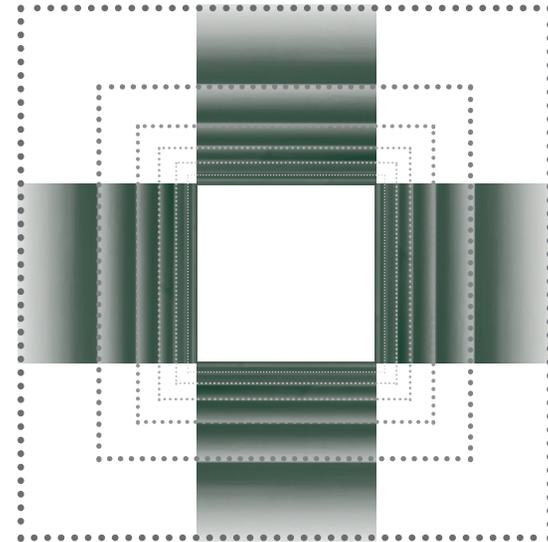
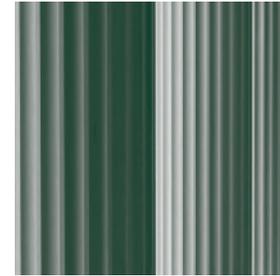
In ancient settlements, death and burial was a private family affair. The architectural response to this included a house for the living family and nearby, a house for the deceased family[2]. The advent of the community cemetery predestined its position to the living as one of variable proximity. Yet regardless of location, what remains constant is the human institution of death, and the spiritual and sustainable dimensions that the dead have upon the living.

The original study considered a tomb for the founding family of a town. This founding family holds significance in current time as the principles and ethics of those that came before are the same for those living today. Thus, the tomb serves as a reminder of these principles such to carry the community forward. The tomb is a visual story or myth, a static dance which the living play out and pass on.

The notion of a founding family tomb gave way to its extension: one to include community leaders through time. Yes, against many odds communities are founded, but it is the action of today that maintains the polis and is equally notable. As such, the founding family tomb evolved into a mausoleum where family members of today and tomorrow are celebrated.

The Tomb

An oblique view of layered colonnades is a visual reference and image of the ancient temple, and this reading is the result of such an architecture. The tomb reads similarly. Yet, this reading could also be from the implied plinth, synonymous with temple ruins where the entry to buildings seems ubiquitous and one which elevates, projecting a plinth-like image into memory.



Inevitably borrowing from architecture, this oblique and narrow field of view of a colonnade inspired a study of layering and rotating large-scale window frames which could also be read as a series of stacked architectural columns, steps and lintels. The parts and whole of each frame are modified in size and proportion, relative to a nine-inch square module.

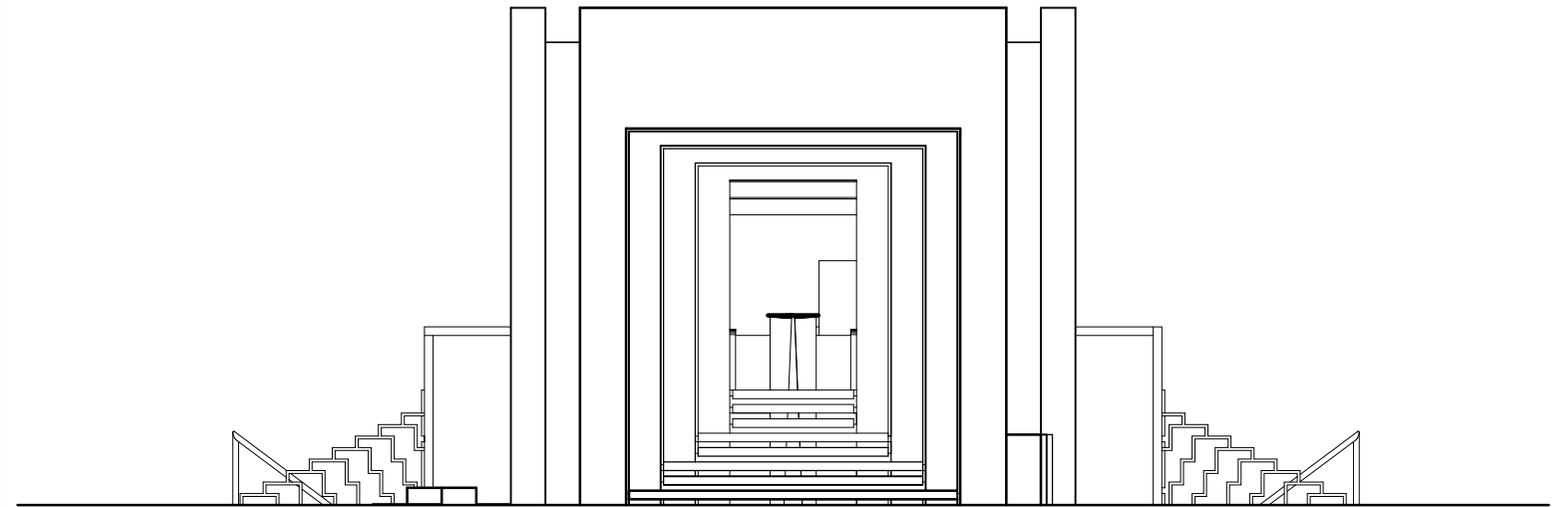
Each series contains four individual frames of proportional sizes stacked such to form a symmetric accordion-like window-pane of vertically oriented wafers of space. This condition is expressed horizontally below grade by way of stairs and to the sky by way of a "jury box". This spatial condition suggests a dualism. On one hand, the compressing of space towards the center suggests a focusing. On the other hand, the condition also broadcasts its central essence outward.

Each framed series is arranged at the head of the building as a single part, and together suggest a cubic spatial container. The vertical edges of the container are subtracted by pulling each series away from this implied edge. This is a large reveal that controls light into the "interior" spaces and is large enough to be occupied.

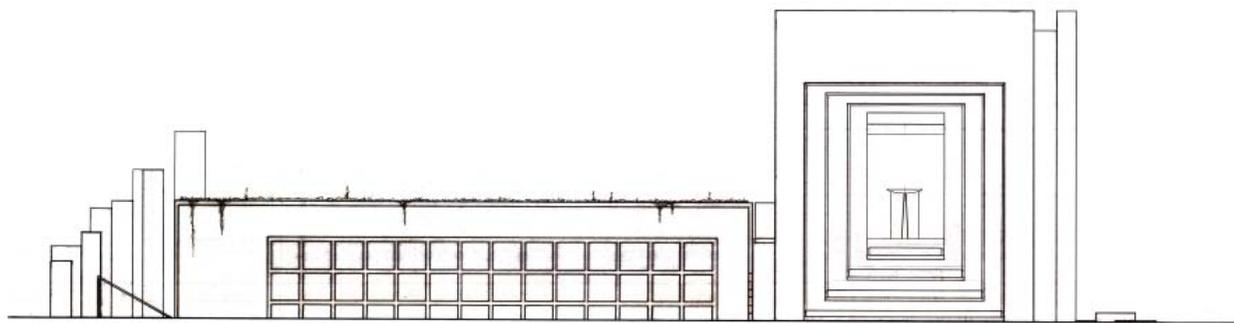
The installation is open to the elements such that there is no main entrance. Entrance is everywhere. While this openness might contribute to a ruinous quality, the building is situated on site to provide a convincing front. Yet this front which elevates a visitor's eyes and able bodies up eight 9X9-inch steps to a plinth and alter, it also reveals a concealed entrance to access below-grade rooms. This corner entrance within the reveal, has a secret character that is in odd opposition to its entrance-signalling step and its proximity to the "front."

With a convincing front, so there is a convincing back. Drawing from perhaps an implied direction along the primary axis, where the front calls one to the building, the back sends people away towards the tower and the rest of the facility. From both upper and lower levels, free-standing columns take on ancient personification. But where in ancient temples columns are bound by their capitals and neighboring elements (and in this tomb, bound within the series of frames), these similar columns are free to the sky and walk asymmetrically from the tomb into the necropolis.

Between front and back, readers should recirculate the drawings for impressions of the middle. The sentiment expressed earlier in this section calls for a coaxing out of "character of place" for the eternally restful, the mournful, and the playful. This coaxing is played out between material facets and child-sized spatial niches.



Tomb - Mausoleum
North | Front Elevation



Tomb - Mausoleum
East | Side Elevation

Poetic Topos

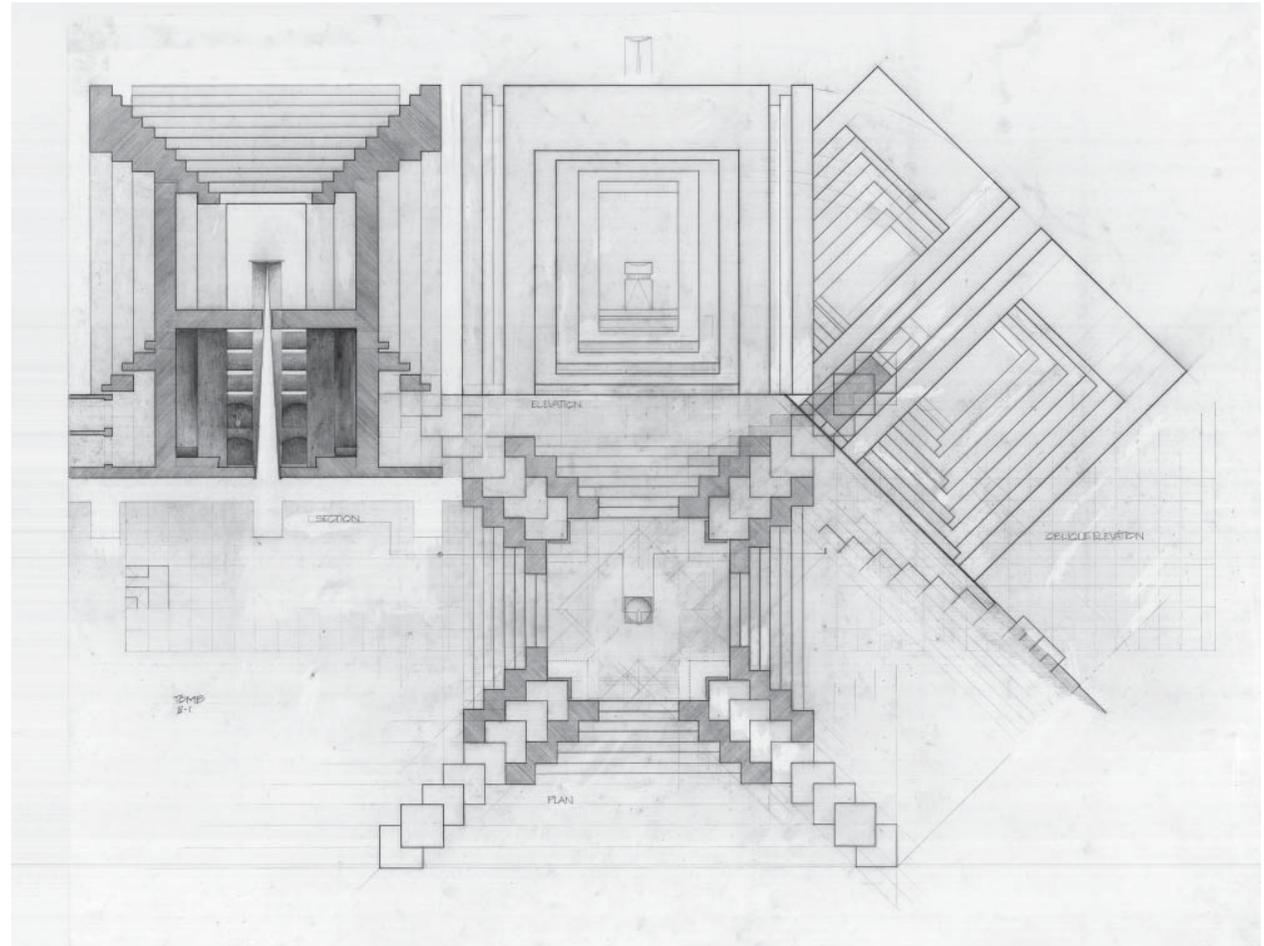
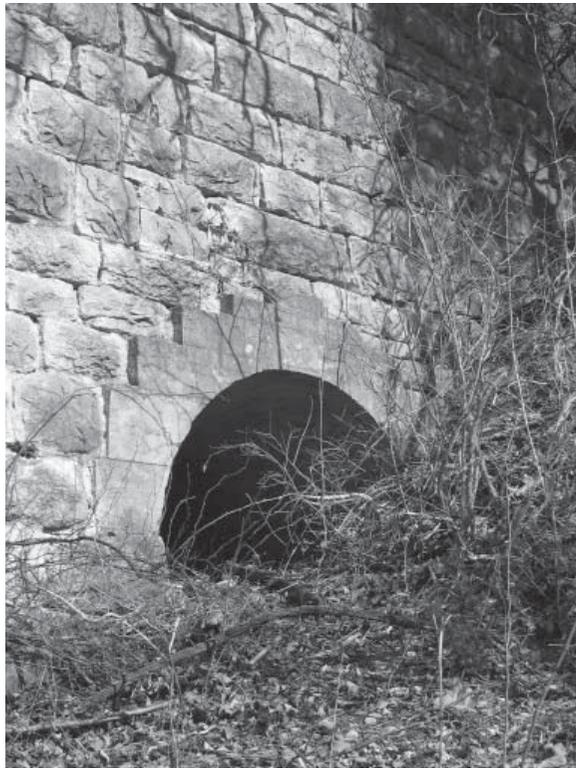
The idea of a mausoleum, a density of internments, might be traced back to a time of communal burial in either earth, church or catacomb. This raises a question with respect to the poetics of place. Is the scale of a building sufficient to hold as many characters of place as there are internments? Or could this lead to distracting discontinuity or an eclectic sum of parts? Should the character of such a place be singular and non-differential? Is this the appeal of the open cemetery - Its ability to spatially respect the individual with place in the midst of a non differentiated whole such as city or landscape?

As the culture of human kind refines itself, the celebrated rights of the individual solidifies the idea of individual in and out of life. Of course this is an old idea practiced in a variety of ways today. As such the modern mausoleum attempts to reconcile a balance between the universal and the individual.

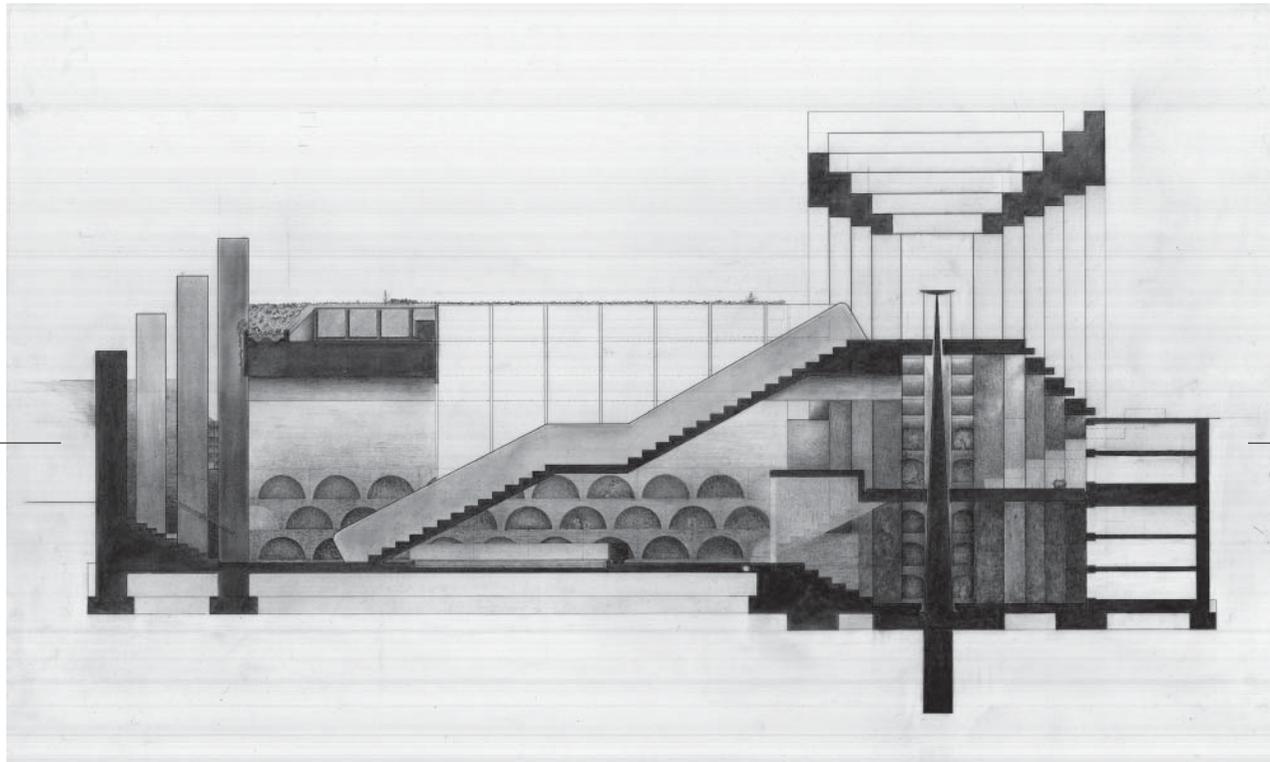
Indeed, the opportunity for loved ones to participate in such place making is appreciated by families. Inscriptions set out information, but do little to augment place. The practice of cremation, while a reductive means to ward off corruption, actually expands opportunities for place and memory. The deceased can return home and coexist with the living, or return to the earth in transcendental ritual. In all cases, the poetics of place making, even if place is to exist in memory as experience, confirms the tendency to counterpoise place against the eternal void; to bind the here with the not here; explicitness with vagueness.

And yes, the individual carries importance, but in the push for individual and difference the oppositional necessity of likeness is compromised. The individual as part, and human similarity as whole is balanced and demonstrated in the project. The tomb has an identity of its own and a character of wholeness balanced by the poetic parts of place that acknowledge the individual. The tomb offers several characters in this regard, each offering specifics of place. Internments celebrate the individual by providing architecture and space for memory. And for the whole, it is an open architecture as is the earth, acknowledging traditions and the circle of life of which each are bound and nobly returned.

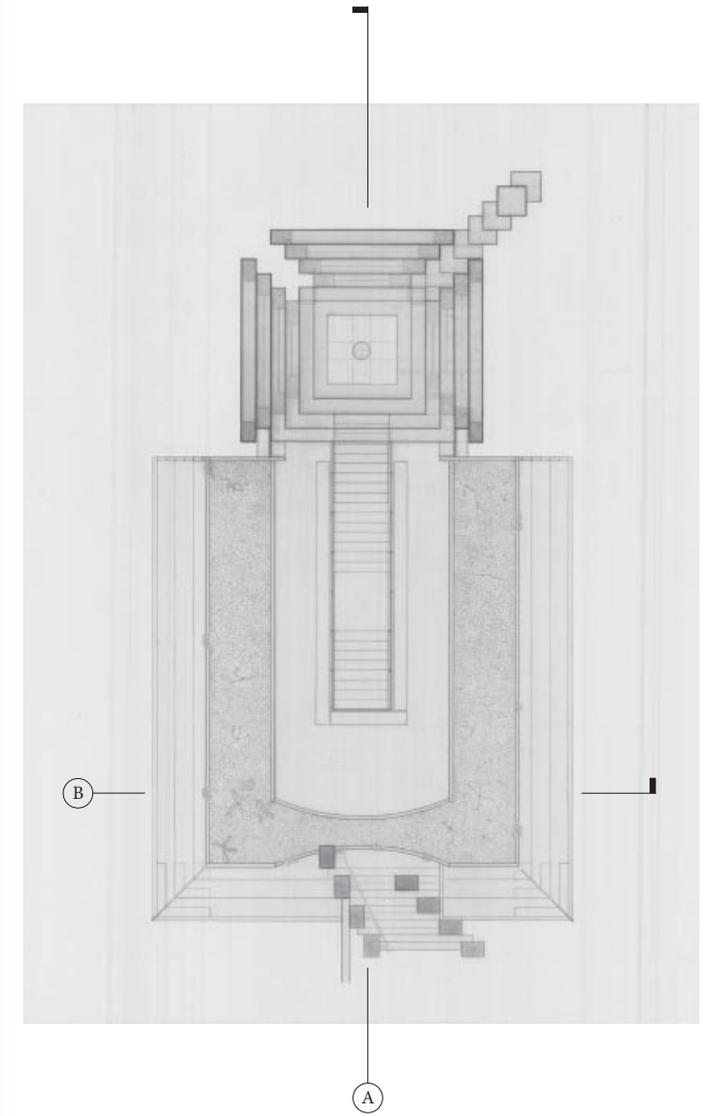
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1. Mumford, L., *The City in History*. 1961, San Diego, CA: Harcourt, Inc. 657.
 2. Coulanges, F.D., *The Ancient City: A Study of the Religion, Laws and Institutions of Greece and Rome*. Tenth Edition ed. 1901, Boston, MA: Lee and Shepard.



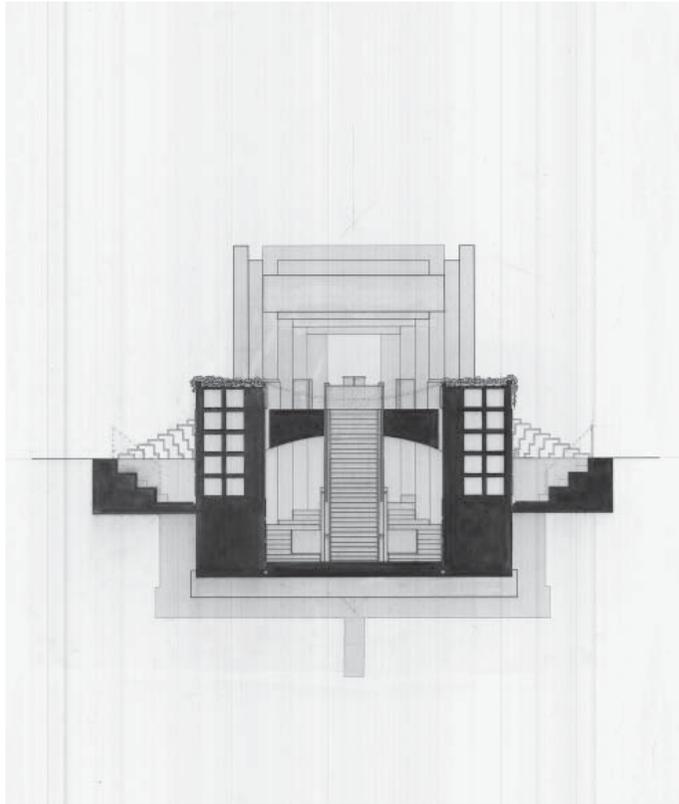
Family Tomb
Lead on Vellum



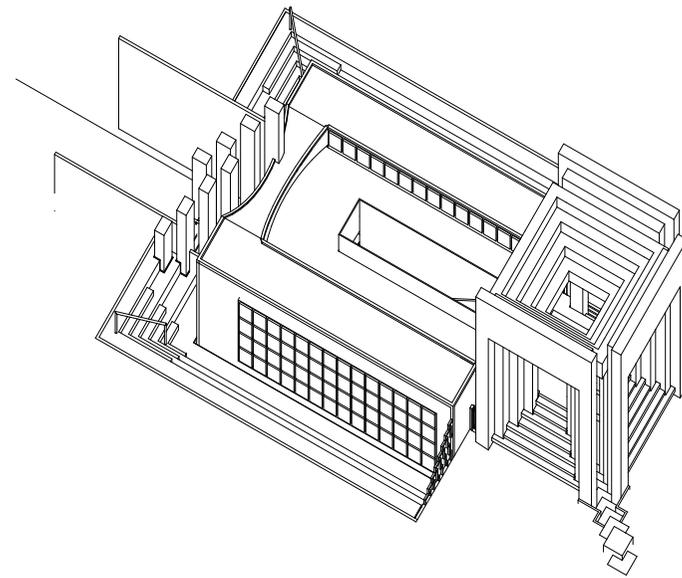
Tomb - Mausoleum
Longitudinal Section | A



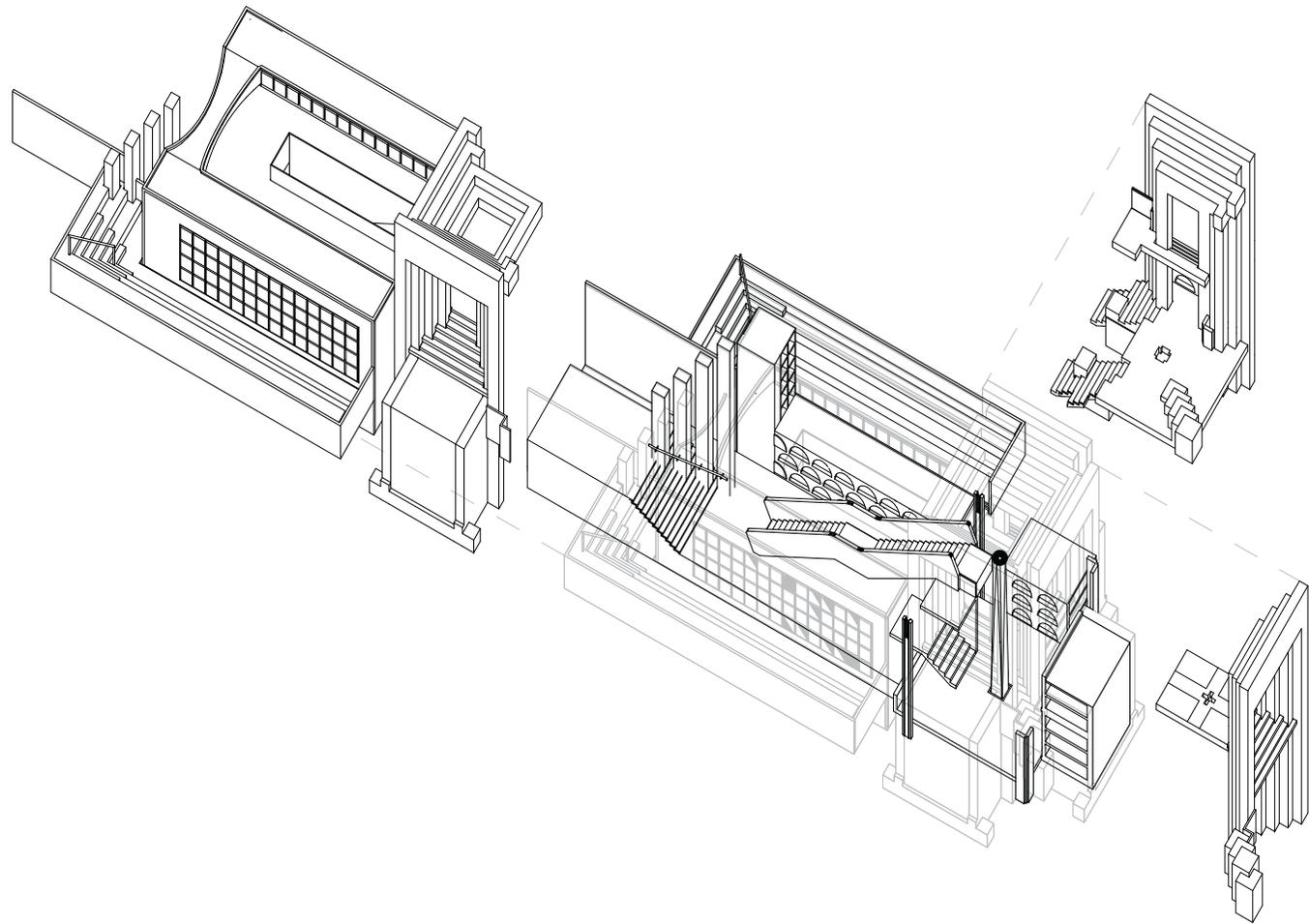
Tomb-Mausoleum
Roof Plan



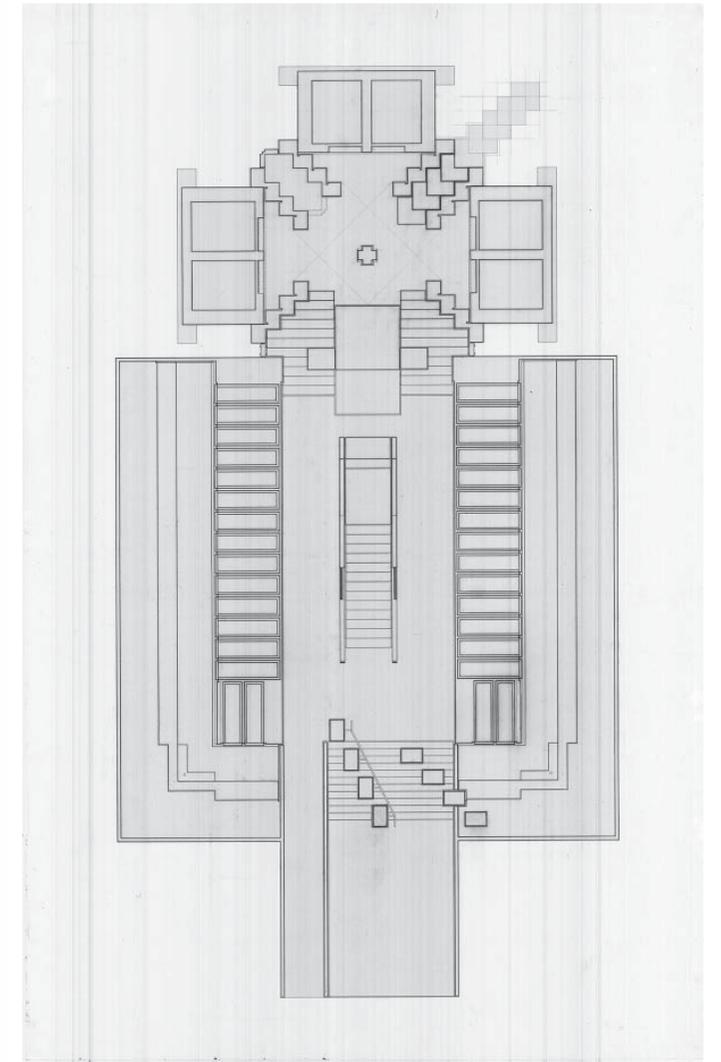
Tomb-Mausoleum
Transverse Section | B



Tomb-Mausoleum
Axonometric



Tomb-Mausoleum
Exploded Axonometric



Tomb-Mausoleum
Second Level Plan | C

On Centers

In contemplating centers, a metaphysical inquiry unfolds. One consideration is the center of space: a mental image of a point appears, and perhaps emanating from this point, infinite lines of reference. This Cartesian image of a central point origin persists despite a parallel understanding that the center of space is an abstraction. The center of space is everywhere and nowhere, without absolute position.

This idea of a point origin is different than the center of "a space". A space, as the container or the space contained, a center or centers can be determined by various analytical modes. Yet without analytical explanations, what can we say about the feeling of center? This leads to an appreciation of center as having various degrees of eccentricity. For example, what of man? What is his center? What of mankind? What is our center?

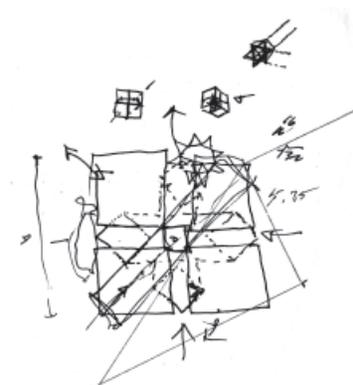
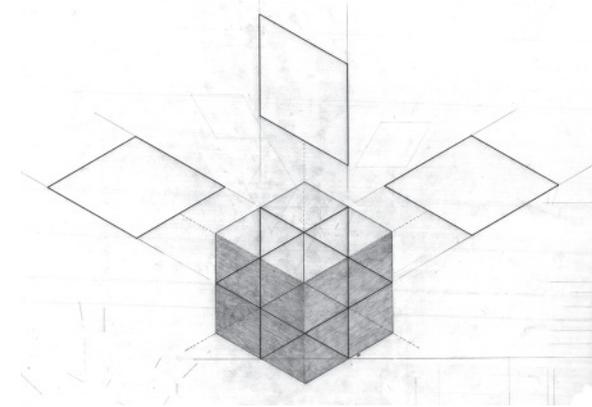
Typically defined as an absolute, outside ideal geometric constructs or mathematical formulas describing mass or volume, actual centers seem out of reach. This center might be described as one of non-physical centrality, or perhaps - Truth. Yet, this is asking too much of a word seemingly dedicated to the sensible world. Thus, beyond a physical position, one could consider the essence of a thing as its ultimate center.

The Center of Things

At the "center" of this necropolis is its essence. Like the fire-center essential to ancient tribes and cities, there is a cube reflective of the essential nature of man to rationalize death and memorialize the fallen. One of several physical centers in the project, this center suggests an origin of Euclidean space through the subtraction of material. Yet beyond its physical description, it tells more.

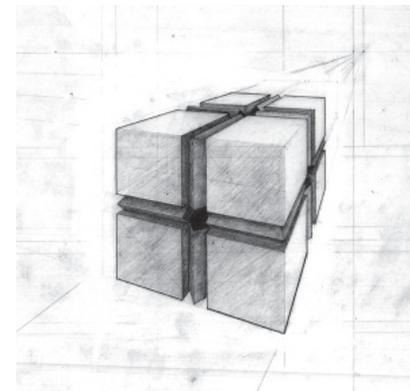
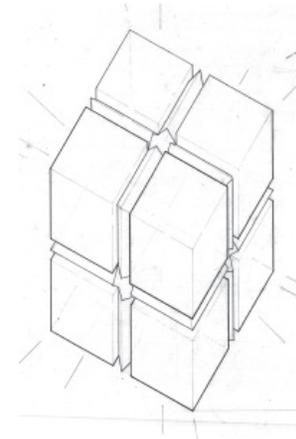
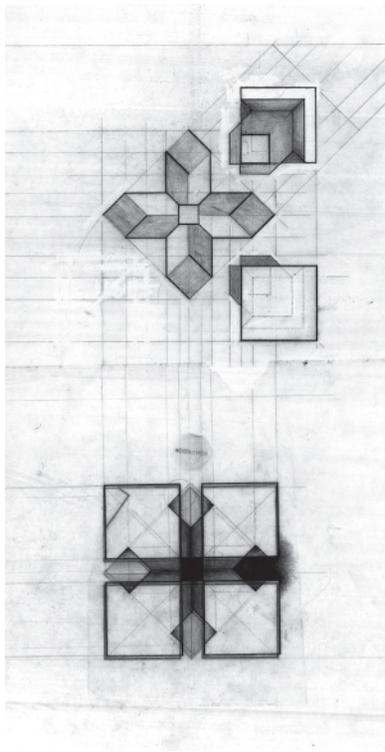
The cube, just beyond the pedestrian entry gate, welcomes visitors and actively holds memory and humanity to its form and structure.

The wooden parts form a skeleton frame for eight stones. This frame is a resident centering device, and is structurally necessary to counter the unstable centers of mass of the stones. With gravity acting as glue, the geometry of the parts and the relationship between the parts form a structured whole.



If the eight stones represent what is unyielding in this world, the wood represents humanity. While fallible due to the human condition, it is our humanity and rationality that is called upon to organize and hold our "world" together. As an image of rational order, this wooden frame is a type of knot binding what we can control to what we can't.

This order, as a human construct, is a reality based on a rational need. As rationality wanes, so goes order. As the cube requires maintenance through time, in the absence of man's rational order, the wood will rot and yield. The cube will fall into ruin, and the memories of those buried here will also eternally rest.



Parts to a Whole or a Whole of Parts?

What comes first?

Architecture could be described as a constructed spatial realm somewhere between earth and sky. When we consider what comes first in architecture, this betweenness is one potential starting point. Other starting points are available and this poses a question: what comes first to the mind and how should this manifest itself in architectural expressions and constructed realities? Put another way, in what order should architecture meet the sky and the ground?

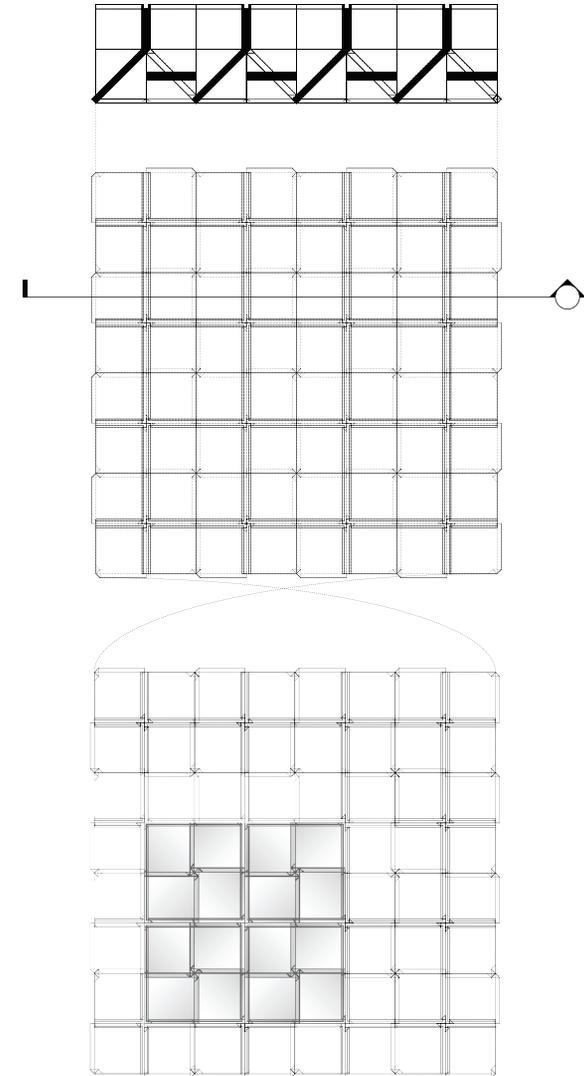
If one considers the roof as the most fundamental of architectural elements, to provide a first order of shelter in the environment, then a top-down approach from roof to walls to foundation seems a logical approach to building design. But what of walls and foundations and the earth upon which it all rests? Are they only to serve the roof?

Furthermore, it seems that just like buildings are raised in construction, a bottom - up approach is equally appropriate. In this instance, the physical and non-physical connections to place, site and landscape, are fundamentally situated by the foundation. The essence of a responsive architecture in this example would seem to spring effortlessly from the ground and be perfectly at home, difficult to imagine anywhere else.

W.G. Clark's observations suggest a similar notion:

“In ruins, where the intended use of the building has departed, it is often unclear whether the structure is landscape or architecture.” ... “These places, in their reductive, earthbound condition, are very satisfying, as if they offer us a primitiveness that we need, one not found in our transplanted formal models.” [Clark, pg. 115]

Indeed, in contrast to architecture of the landscape, the architecture of the former top-down example might seem very portable, able to exist almost anywhere.



Chapel Roof Fragment

- Section
- Plan
- Reflected Ceiling

Both of these courses and outcomes are not only plausible, but are also evident in architecture we see. Thus, these very different approaches do not pre-destine architecture but demonstrate that a sensible decision is required. And for a harmonious pursuit toward a perfected end, these very different outcomes, while contradictory in direct comparison, come from exactly the type of either-or-decision required to establish an appropriate relationship between topos and tectonics.

Yet even sensible decisions do not guarantee that parts are developed in concert to form a coherent whole. Parallel activities regarding each part is called for - An orchestral-like movement, overseen by a sensible conductor, the architect.

The Chapel Roof

The roof of the chapel was found first, but at the time, the project was without program and a chapel had yet to be considered. Once determined, the walls, and resulting foundation of the chapel were developed to serve this origin. As the roof element was refined, it seemed to be of two families: a two way waffle slab and a space frame truss.

Space frames suggest an infinite field of structural possibility that is physically impossible and inappropriate to manifest. They are also unyielding, due to form and structure, in their relationship with neighboring elements. It is an innate quality that is expressed in its very name: the frame's adjective and counterpart is one of space. This linguistic contradistinction does an adequate job of predicting the challenge of space frame relationships in architecture.

Space frames in buildings demonstrate a one-sided relationship where the space frame's willful existence dictates how parts are subjected to it. However, the relationship between the space frame and neighboring parts, particularly when the space frame must intersect a plane, might better be described as a joint-less condition: a non-relational reality.

Thus, this non-relationship is one where parts disregard their neighbors. Unique mediating couplings are necessary to negotiate a part to part proximity and exist as a separate part in and of themselves, not assisting in a joining, but as an intermediation in an unavoidable condition of separateness.

These observations question how something be ended, and in the case of the chapel roof, how are neighboring parts formed, structured and positioned such to support it?

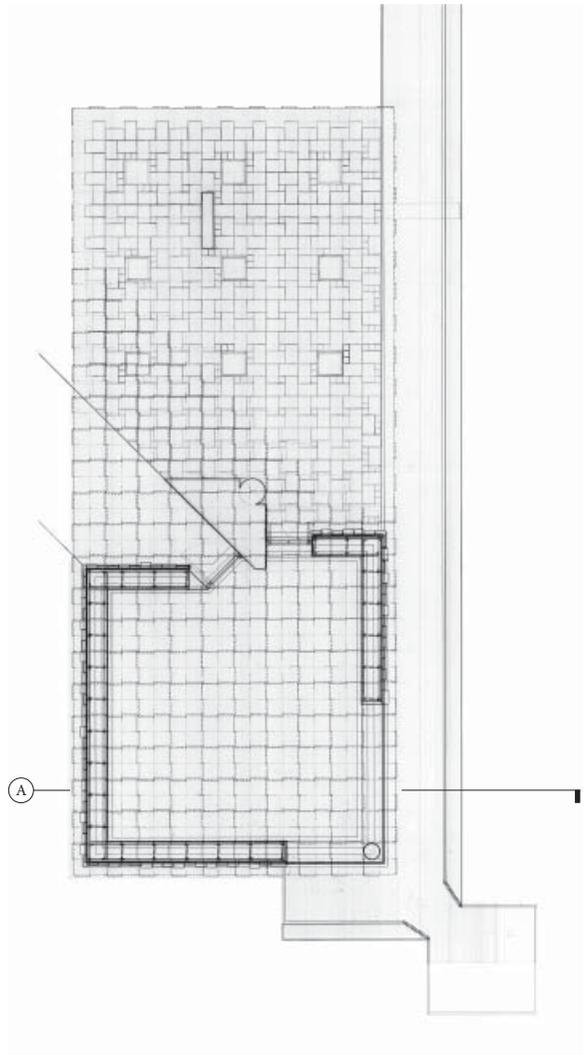
Unlike a space frame made up of linear members, which must pierce through neighboring parts of the building envelope at various angles, the base unit of the chapel roof offers an accommodating plane for a wall to support it. And while the geometry of the assembled roof parts dictate the geometry and position of structural wall panels, their geometrical marriage is apropos. The layered wall system offers a saw tooth cradle upon which the roof nests. Triangular glazing completes the building envelope and is a part of parts in a roof-wall joint of an assembled whole.

Other schemes were studied, but this family of schemes externalized the compressive element required to counter the roof's physical nature to expand. These compressive bands seemed to ingest the roof and sought to not only physically contain the roof but also to conceal its secrets. To a part who's ideal objective is anti-containment, such moves were questioned. This judgement on part seemed sensible given the programmatic and supporting design moves that set the tone of the whole chapel as one of counter containment.

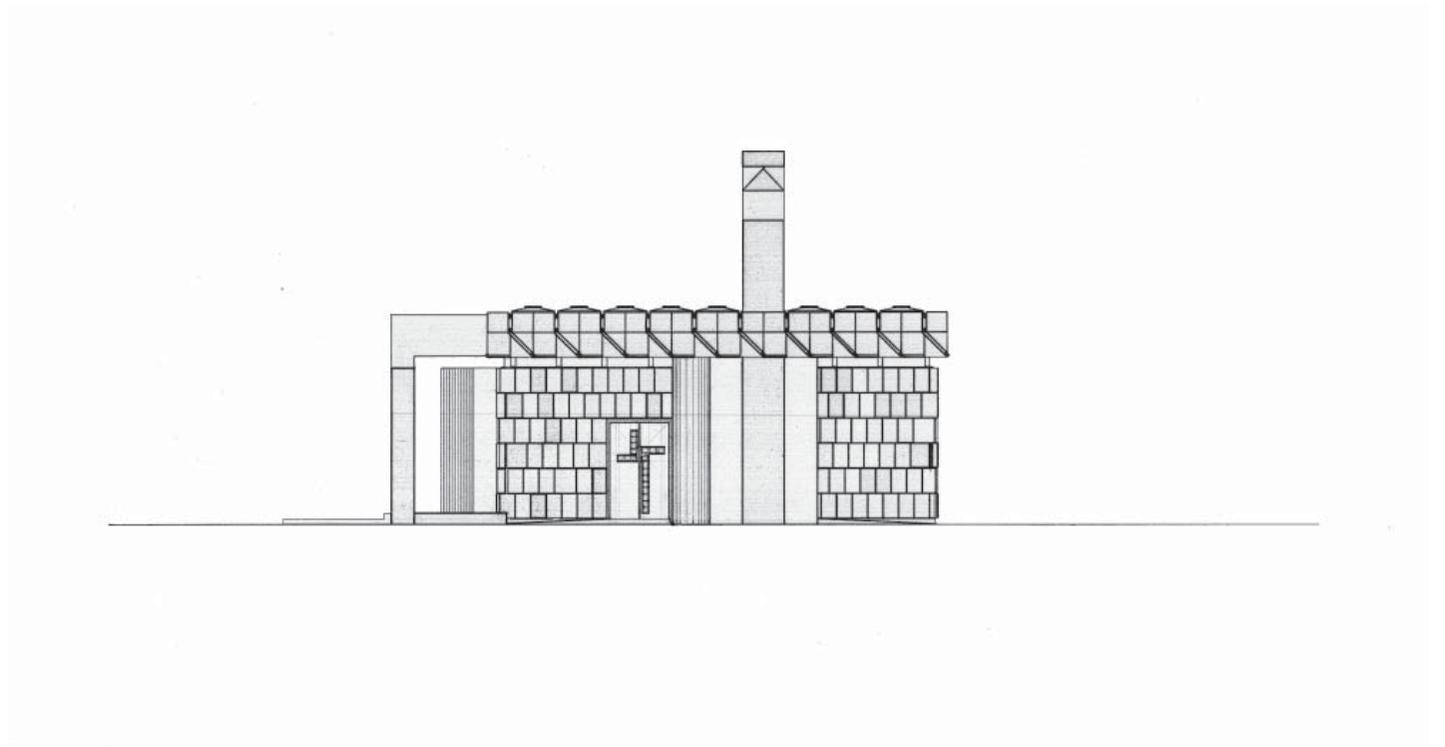
By internalizing the necessary compressive force with tensile members, the roof could architecturally exist as a woven construction, obtaining a static reality where tension and compression play out and where moments are canceled by counter rotations.

The framework of these rationalizations may or may not be enough to justify it. Is any rationalization required? Despite its presence as a part to a whole and as an ordered whole of parts, what does it look like? If in the frame of light it is convincing, then perhaps this is enough.

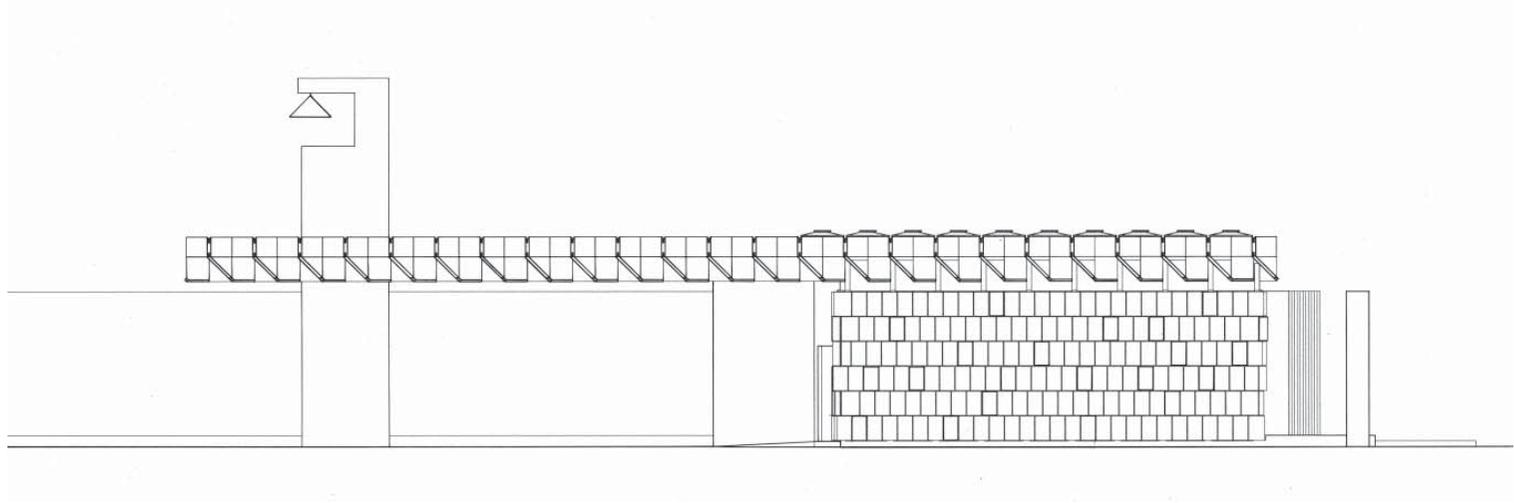
1. Clark, W.G., *Lost Colony*. Perspecta 1997, Vol. 28: p. 114-125.



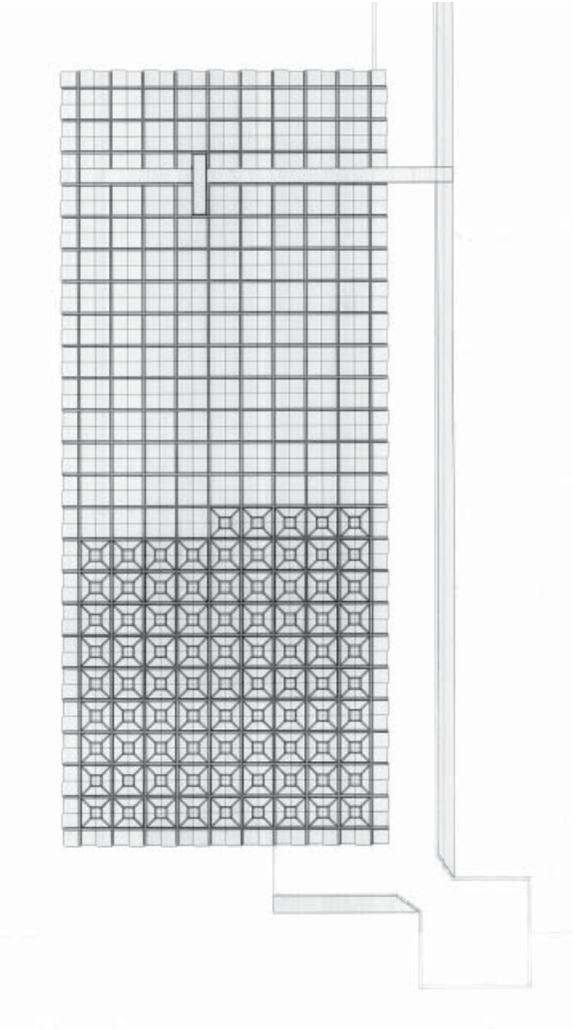
Chapel
Ground Plan with
Reflected Ceiling Overlay



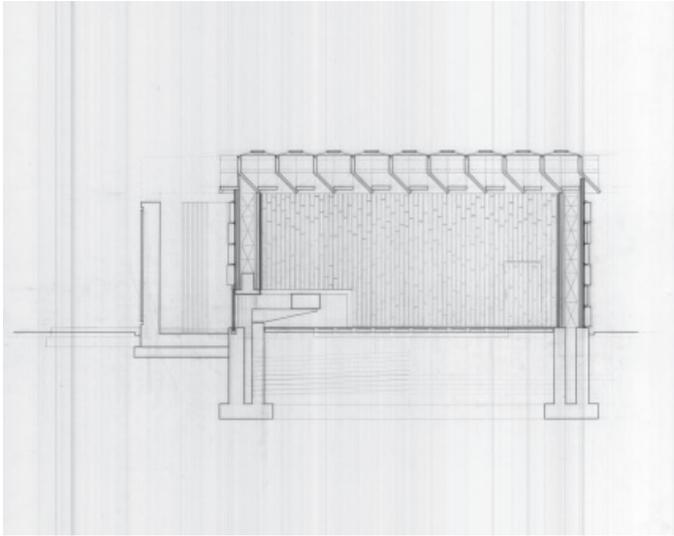
Chapel
West | Entrance Elevation



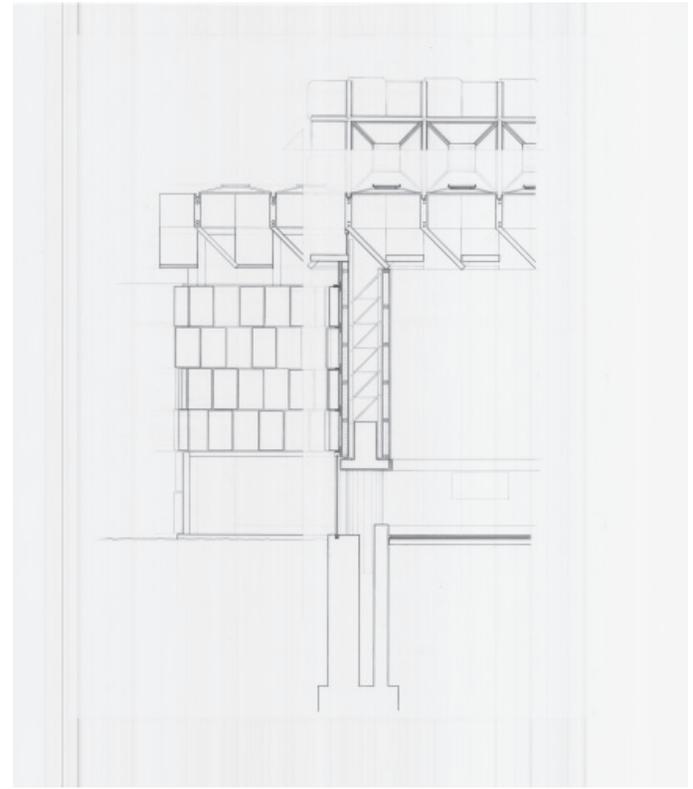
Chapel
South | Side Elevation



Chapel
Roof Plan



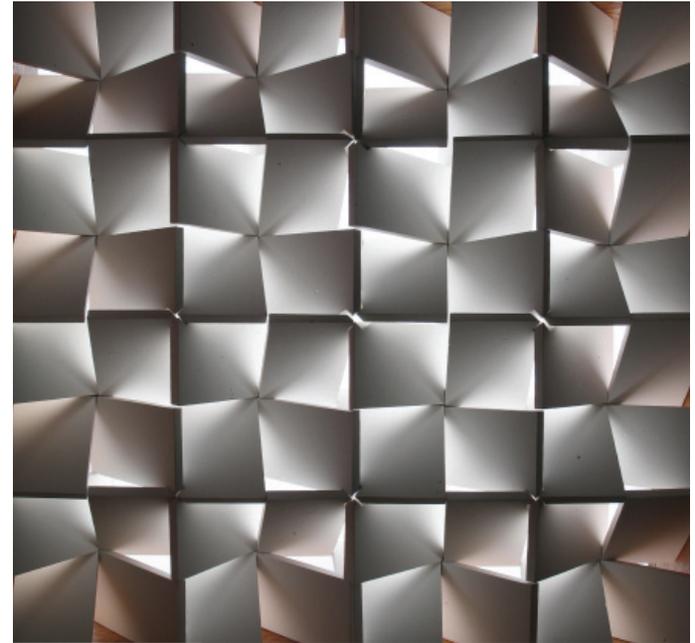
Chapel
Transverse Section | A



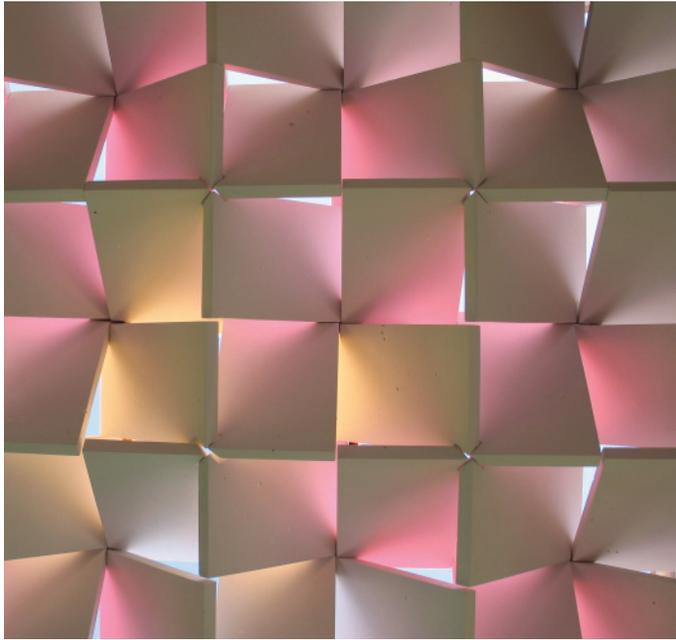
Chapel
Wall Section



Part to Part Nested Connections &
Threaded Post Tension Rods
Roof Fragment - Plaster



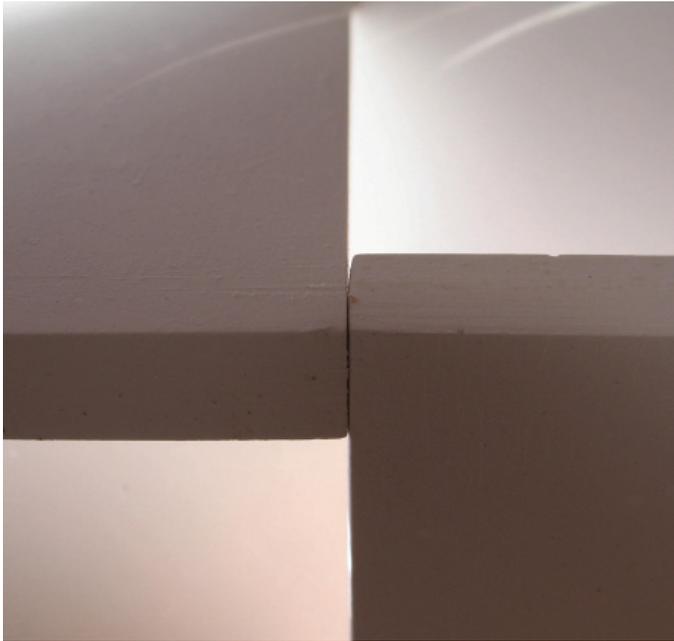
Roof Fragment - Plaster
Light Study



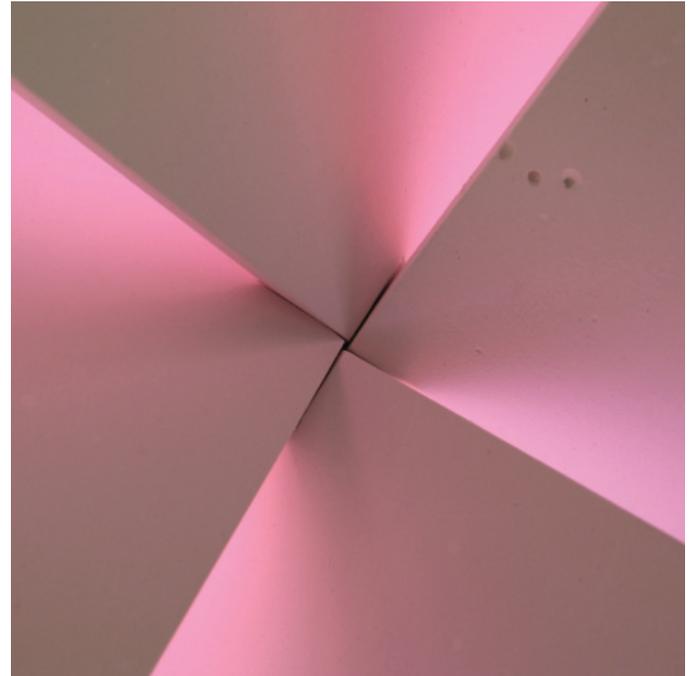
Roof Fragment - Plaster
Reflected Color Study



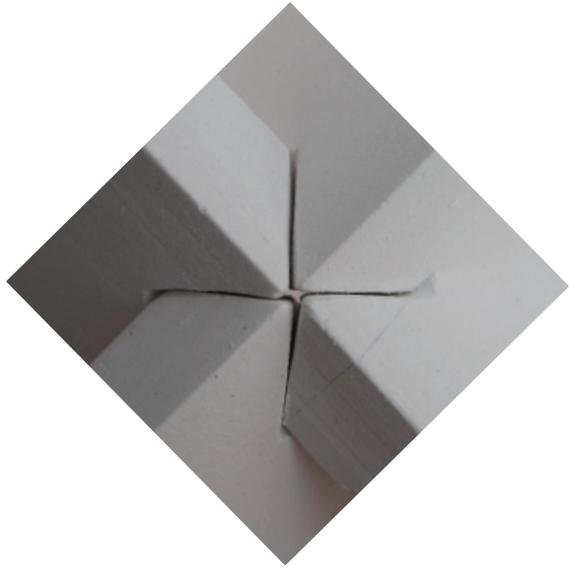
Roof Fragment - Plaster



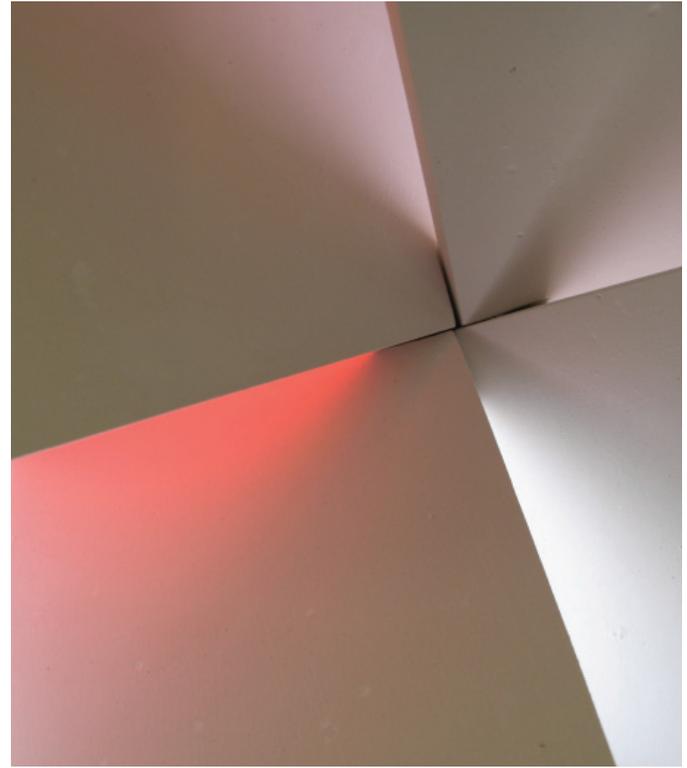
Roof Fragment - Plaster
Joint Detail



Roof Fragment - Plaster
Reflected Color Study



Roof Fragment - Plaster
Joint Detail



Roof Fragment - Plaster
Filtered Color Study

Defense Lecture

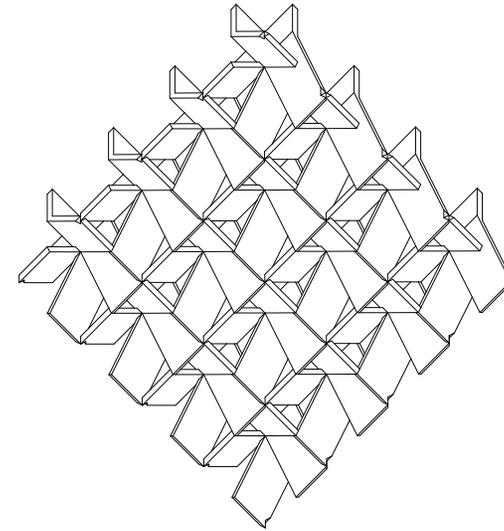
The following lecture notes were used for a defence presentation of the work.

Good morning – my name is Chris Schellhammer and welcome to this thesis defense: a presentation of a year's work. Before I get started with the main message for today, I'd like to orient you to the work in the room. These drawings and models relate to a project – a cemetery complex. There are five proposed installations that make up the built form in this necropolis. This includes a chapel, a tomb-mausoleum, a tower, a 4ft. cube as the center, and an armature for guiding the future development of the necropolis. There is a handful of relevant thesis studies that were produced in parallel to project works. These are sprinkled throughout the room and include the large charcoal drawing, the pastel, the paintings and the model of Max Bill's Sculpture Pavilion in Zurich.

Upon entering my thesis year, two statements from faculty caught my attention: one is that the thesis year is like going back to first year; the other is that what your thesis is about may not be clearly evident until the end. Indeed, until a week ago, I was unsure what about my work I would share with you today.

I embraced these suggestions to set the tone for my voyage. Yes, I am defending today, but the voyage is not over and remains without a final destination. In fact, today should be considered just a stop along the way. Thus, it is in the spirit of discovery, complete with an open mind, that I approach work. I practice the position of an explorer, trying to discover things on their own terms. This is a circular exploration made productive initially by free play, followed by judgment and developed further with the fullest extent of my talent and as much rigor that I can apply.

I started without a defined building program or site, or a specific architectural question in mind. With this information, you might conclude that I was without direction. Yet, I did know what I wanted to achieve – something that I could stand up for, sure that I had left nothing on the table and at the end of it all, confidently present my findings to you.



M.Arch.3 Thesis Defense

Presentation + Work by Chris Schellhammer

Tuesday, August 31, 11:00 a.m. - Cowgill Hall, Room 400

Well, what could I feel good about besides the evidence that some work has been done? That after bringing everything together I had learned during my time here, that there would be something that I judged to be delightful and develop it into something believable and convincing for others to see.

Given that there are differences in taste, and what delights one person might be ignored by another, what is it about what our senses take in that has this tendency to delight? What is it about music to the ear, fine cuisine to taste, a landscape or art to the eye that delights? While there might be several causes, I believe harmony is involved. This partial answer to what delights is yet another question. What is harmony?

Most sources suggest an orderly arrangement of parts to one another and/or to their whole. Another sense of the word declares harmony as a means of joining. This definition of joining could not only be gleaned from the first, but also be a precept to “an orderly arrangement”.

When you enter a discourse on part and whole you quickly realize that you are no closer to an answer because even things of modest complexity have parts and certainly just the presence of parts does not assure a harmonic whole. The question here is: what is an orderly arrangement? Well, it can't just be any order. A gong repeating without variance is an order that can quickly amount to noise.

Now we need to consider the relationship between parts and whole: the proportionality of part to part and part to whole, how they are joined, their repetition, symmetry, simplicity, proximity and position to each other, their rhythm, and counterpoints to name a few. Well, in our attempts at getting at something specific and clear here, it seems we have cluttered the playing field even more. Luckily, this list of considerations in order and arrangement is governed by rules, and it is the finding out and appreciation of rules, and perhaps knowing the right time to break them, that can evoke harmony such to delight.

Yet this remains a daunting task. Really now...what we are suggesting here is a level of perfection synonymous with nature or a master work.

Well, this was too much for me to take on, but I was compelled to try in some capacity. So to use an analogy, if I could find and put together a few notes of a moving musical composition, or draw out a few lines of a masterful drawing, then this would be my

educational accomplishment and contribution to architecture. As architecture, these few notes are to be understood as a fragment of a building from the project displayed today – the chapel roof.

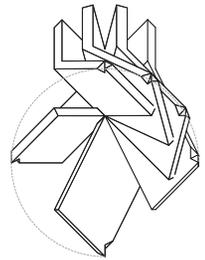
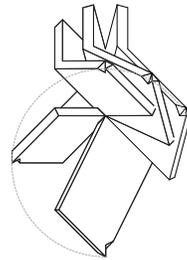
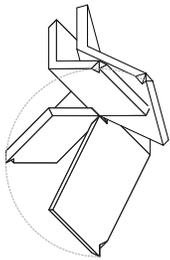
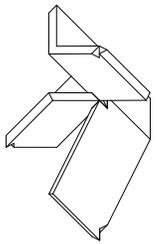
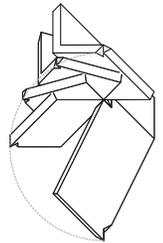
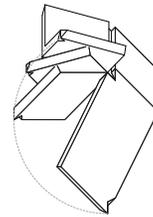
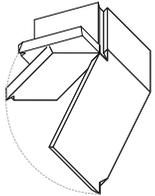
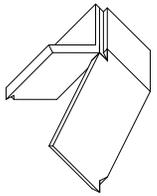
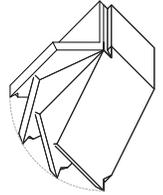
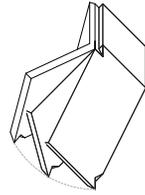
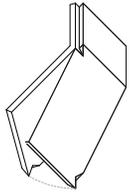
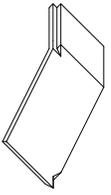
At this time, I should reference a parallel study of knots. What I continue to learn from knots relates to not just the chapel roof, but also the project. In fact, I don't think I am done with knots with respect to my architectural studies. Why?

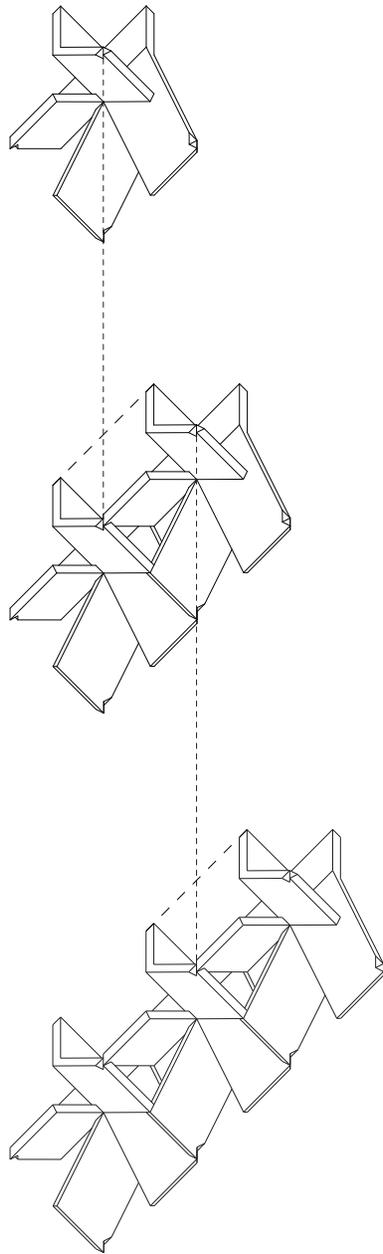
Aside from a personal interest, there is something rather fundamental about knots. Knots are an excellent study in structure and form...indeed knots, not tangles, demonstrate harmony. Knots are ordered wholes whose arrangement of parts is most easily observed in their crossings. These crossings are the joints between parts within the whole knot, which as a whole, is also a joint. Knots as whole joints can be orderly arranged as parts into new wholes: woven structures are knots in a series. This woven, orderly arrangement of parts has an identity of its own and is appreciated for more than just summation of parts – It is appreciated as a whole.

Alberti offers another perspective in this regard – that the harmony of the whole is lost in the attraction of parts. While Alberti was likely referring to the city, these different perspectives are likely due to scale, time or compositional differences. If I may offer my own perspective, I consider perfect harmony one which parts and whole are not only mutually appreciated, but also where appreciation actively oscillates to and fro between parts and whole.

I have arrived at an analogy that claims knots are closer to joints in architecture, and woven fabrics closer to the complexity of buildings. Yet the translation of an orderly arrangement in knots to buildings is a loose translation. This is a loose literal translation only – not to be understood as figurative. In other words, the lessons and rules of knots applied to architecture is not the same as superimposing the image of a knot onto architecture.

Recall one of the definitions of harmony – a means of joining. Generally speaking, “knot” work whether it is for clothing, baskets or fishing, and yes - architecture..., is a joining - connecting us to life and one which demonstrates a duality: one – a joining that amounts to more than a recognizable physical connection but a ‘joining’ such that the thing in front of us is an image of a complete whole...not a collection of connected parts or a tangle of string. And two – this connection to life gets at wholeness not even physical, perhaps phenomenal, where wholeness enters the realm of feeling and of being.





Well, without examples, these words are just words. For knots to teach, they needed to be practiced. This gave way to an exhaustive series of studies. These studies led to follies of knotted architecture that my sensibilities resisted to further develop. So I dug a little deeper, behind the image of knot and found characteristics such as rotational symmetry, offset spatial grids and nested connections. I also freed my studies from linear members that mimicked the linear nature of rope. A parallel study of layers offered planes as an alternative. So, by applying the rules of knots in a scheming with planes, these single instances were developed into studies where these instances (as knots) were put into a series as a woven whole.

The paper models were light and screen-like, yet in treating it like a screen, something that might be hung from a ceiling seemed additive. So I pushed the roof in the direction of being structural and this positioned the roof between two extreme concerns: one of weightiness brought on by mass and one of lightness by way of thinness. In fact, it was the quality of thinness in these paper models that I wrongly assumed was necessary to produce the light conditions I judged to warrant further study.

Ultimately intuition, sensibility and testing led to judgments that produced the plaster model. Here you can observe the concern of weightiness in comparison to paper brought on by the mass I anticipated to accommodate the forces at work. I can also tell you that much was learned in the act of making the models for this project. This particular model has 64 single parts – each cut by hand from cast blocks. As a fragment, it represents less than 10% of the proposed roof, much of which is an open canopy over the chapel courtyard marking the chapel entrance and providing a semi-covered space for groups to meet.

Even though there is only one part in this arrangement, it moves into the background as a silent partner once assembled: its rotation and translation relative to itself orders a new pattern of parts as joints. These joints demonstrate the geometric operations in play and form new mini-wholes as parts in the roof whole. I studied the lines of these joints in a diagrammatic painting exercise, which led to a small set of parallel works.

Yet despite its added mass, the model became as weightless as paper in the light. I did not anticipate the result of this dematerialization. So, in bringing the model into the light, it demonstrates something I believe to be delightful, which might not be the roof at all.

Thus, I am compelled to ask a question. Given that the light conditions in the original paper models is what inspired me to follow this line of inquiry and study, how does something without physical properties be so central in a discussion about things essentially physical, such as parts and wholes? In this example, should light be considered another part in a study of parts and whole? Or is light something entirely separate – a catalyst for demonstration – a podium – the muse upon which the poetry of architecture can meet the eye and delight. Perhaps it is both.

Thank You
Acknowledgements
Open Discussion



Essay References - Works Cited

Studies

1. Schmid, E., max bill - the master's vision. 2009, Ariadnefilm GmbH: Switzerland. p. 93 minutes.

Symmetries

1. Evslin, B., *Gods, Demigods & Demons: A Handbook of Greek Mythology*. 2006, London: Tauris.
2. Escher, M.C., M.C. Escher - *The Graphic Work*. 2001: Taschen. 76. p. 5

¿ Sustainability ?

1. Stipe, M., *Frank Lloyd Wright: The Interactive Portfolio*. 2004, Philadelphia, London: Running Press. 92.

One Way of Working

1. Metaphysics Research Lab, C., Stanford University, Stanford Encyclopedia of Philosophy (SEP), in *Aristotle on Causality*. First published Wed Jan 11, 2006; substantive revision Tue Apr 22, 2008, Metaphysics Research Lab, Stanford University: Stanford.

Knots

1. Semper, G., *Style in the technical and tectonic arts, or, Practical aesthetics*, ed. M.E. Steven Lindberg. 2004, Los Angeles, CA: Getty Research Institute. 981.
2. Ashley, C.W., *The Ashley Book of Knots*. 1944, New York: Doubleday (a division of Bantam Doubleday Dell Publishing Group, Inc.). 620.
3. Holden, A., *Orderly tangles : cloverleaves, gordian knots, and regular polylinks*. 1983, New York: Columbia University Press. x, 97 p.
4. Robinson, D.N., *Great Ideas of Philosophy-Lecture 5: The Greek Tragedians on Man's Fate*. 2009, The Teaching Company, LLC.

Appendices

Findings

1. Semper, G., *Style in the technical and tectonic arts, or, Practical aesthetics*, ed. M.E. Steven Lindberg. 2004, Los Angeles, CA: Getty Research Institute. 981.
2. Weiner, F., "a detail-less detail". 2010: Studio Pin-up in Cowgill Hall, Virginia Tech University, Blacksburg, Virginia.
3. Ingersoll, Richard, *Le Corbusier - A Marriage of Contours*. 1990, New York: Princeton Architectural Press.
4. Venturi, R. and Museum of Modern Art (New York N.Y.), *Complexity and contradiction in architecture*. With a introd. by Vincent Scully. 1966, New York,: Museum of Modern Art; distributed by Doubleday, Garden City. 135 p. 23-25.

Tower and Roundness of Being

1. Bachelard, G., *The Poetics of Space*. 1964, Boston, MA: Beacon Press. 232.

Tomb and the Manes

1. Mumford, L., *The City in History*. 1961, San Diego, CA: Harcourt, Inc. 657.
2. Coulanges, F.D., *The Ancient City: A Study of the Religion, Laws and Institutions of Greece and Rome*. Tenth Edition ed. 1901, Boston, MA: Lee and Shepard.

Parts to a Whole or a Whole of Parts?

1. Clark, W.G., *Lost Colony*. Perspecta 1997, Vol. 28: p. 114-125.

Appendix A - Architectural References

Appendix B - List of Questions

Appendix C - Reading List

Appendix A Architectural References

Several architects and works were studied during this year. I am indebted to these contributions:

1. Sculpture Pavilion - Zurich, Switzerland, by Max Bill
2. Brion Cemetery - San Vito d'Altivole, Italy, by Carlo Scarpa
3. Igualada Cemetery Park - Igualada, Spain, by Enric Miralles
4. Belvedere Gardens Mausoleum - Salem, Virginia, by SMBW Architects
5. Ohel Jakob Synagogue - Munich, Germany, by Rena Wandel-Hoefler and Wolfgang Lorch
6. Munich Cemetery Complex - Munich, Germany, by meck architekton
7. Pavilion for Sculpture - Arnheim, The Netherlands, by Aldo Van Eyck
8. Cénotaphe à Newton, by Étienne-Louis Boullée

Appendix B List of Questions

In many ways, this is a book of questions. This appendix is dedicated to some of these questions. In some cases the questions have been slightly modified and sequentially reordered to help them stand alone and perhaps offer relevance to readers outside their original context.

1. What is harmony? (83)
2. What does it look like? (68)
3. Should harmony be understood as cause or effect? (iii)
4. Does harmony exist out of time or completely in it? (iii)
5. ...[is] asymmetry irrational? (5)
6. Is any rationalization required? (68)
7. If rules, or lack thereof, are individually derived, how is this revealed? How is it questioned? (5)
8. Is not a square everything except what physical reality or graphic representation is used to demonstrate it? (8)
9. How many ways can a question be asked? (1)
10. What sustains you? (12)
11. How can we come to know something new if it did not already exist? (13)
12. To exist is to have a will. Birthright or Privilege? (14)
13. If it be true that there are no new ideas, what then is the role of design and designer? (15)
14. What is there? (21)
15. Why Knot? (25)
16. Is architecture like knots in this regard? Simultaneously both problem and solution? Or does architecture negotiate a middle ground between these polar conditions? (29)
17. How might architecture counterpoint the rhythm of landscape? (41)
18. My horizon, where will we go today? (45)
19. What does being look like? (47)
20. What can we say about the feeling of center? What of man? What is his center? What of mankind? What is our center? (61)
21. Parts to a whole or a whole of parts? (65)
22. Can one exist without the other? (37)
23. In what orders should architecture meet the sky & the ground? (65)
24. Which way is up? (23)
25. How does something without physical properties be so central in a discussion about things essentially physical? (89)
26. How should something be ended? (68)

Appendix C Reading List

In addition to cited works, readers might find the following sources helpful in research.

1. Ariès, P., *The hour of our death*. 1st American ed. 1981, New York: Knopf : distributed by Random House. xvii, 651 p., [12] leaves of plates.
2. Curl, J.S., *A celebration of death : an introduction to some of the buildings, monuments, and settings of funerary architecture in the Western European tradition*. [2nd rev. ed]. ed. 1993, London: B.T. Batsford. xxiv, 408 p.
3. Etlin, R.A., *The architecture of death : the transformation of the cemetery in eighteenth-century Paris*. 1984, Cambridge, Mass.: MIT Press. xiv, 441 p.
4. Jackson, K.T. and C.J. Vergara, *Silent cities : the evolution of the American cemetery*. 1989, New York: Princeton Architectural Press. ix, 129 p.
5. Miralles, E., *EL croquis. enric miralles - 1983-2000*, ed. R. Levene. 2002, Madrid: Fernando Marquez Cecilia.
6. Moos, S.v., [1940-]; Frei, Hans.; Gimmi, Karin.; Rüegg, Arthur, [1942-]; Bill, Max, [1908-1994.]; Bill, Jacob.; Aerni, Geogr., Max Bill, arquitecto = Max Bill, architect. *2G: revista internacional de arquitectura = internacional architecture review*, 2004, n.29-30?, entire issue (274 p.), 2004: p. 274.
7. Rossi, A., et al., *Aldo Rossi, architect*. 1987, Milano [London]: Electa; Architectural Press. 118 p.
8. Rossi, A. and P. Eisenman, *The architecture of the city*. 1982, Cambridge, Mass.: MIT Press. 201 p.
9. Rossi, A., et al., *Aldo Rossi : opere recenti* : [mostra, Modena, 25 giugno-5 settembre 1983, Palazzina dei giardini, Perugia, ottobre 1983, Rocca Paolina. 1983, [Modena]: Panini. 105 p.
10. Scarpa, C., et al., *Carlo Scarpa, architect : intervening with history*. 1999, Montreal, Quebec, Canada, New York: Canadian Centre For Architecture ; Monacelli Press. 253 p.
11. Semper, G., *The Four Elements of Architecture and Other Writings*. 1989: Cambridge University Press.
12. Young, B.J. and G. James, *Respectable burial : Montreal's Mount Royal Cemetery*. 2003, Montreal ; Ithaca: McGill-Queen's University Press. lv, 226 p.

Chris graduated from James Madison University in 1991 with a Bachelors in Communications. After a successful 13 year run in marketing and client services, Chris decided to explore his interest in architecture by earning a Masters degree from Virginia Tech.

Chris can be reached at:
chris.schellhammer@gmail.com
www.schellhammer.info

This publication will soon be available as an eBook at various outlets. Contact Chris for information or visit www.schellhammer.info/positions

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