

ANTHONY VISCARDI**TITLE: WITH DRAWING: to see if you see what you see****Topic: Architecture****Authors:
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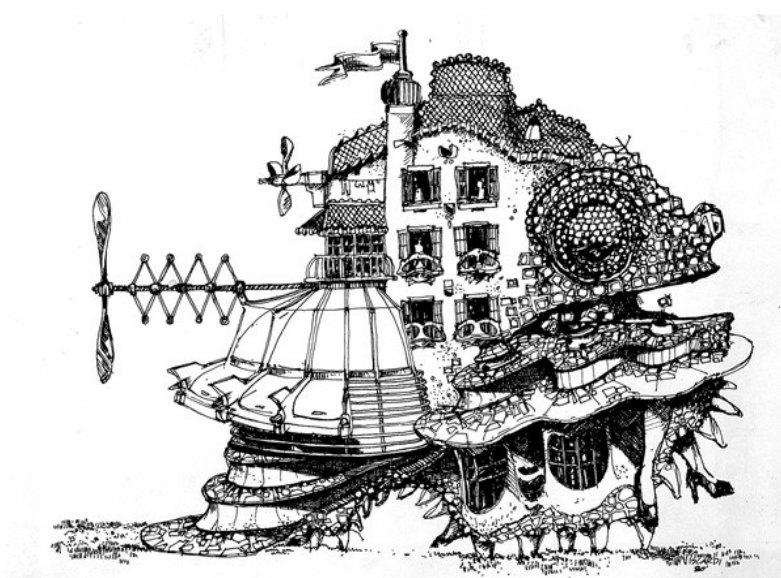
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Drawing is a way of engaging memory and imagination simultaneously, both exchanging roles to form orders that both stimulate and regulate experience. Early drawing consisted of tracing ones shadow to remember its object when gone. The line of the profile of a missing lover gives stimulus to our memory in a time of loss but it goes beyond just recalling the precise image of the missing object in one’s memory for it can become the vehicle to enter into ones imagination. It both draws and with draws from its sources and allows entrance into imaginative recollections and collections of time past, present, and future. Drawing is a mechanical process, just as the writing of these words are. It engages one’s mind through the mechanics of the hands and the implement in use. Its form is in the forming. It is physiologically a journey into this discourse of what we know and what we can discover through the training of a line on a surface. A line can be a representation of something or it can present its own nature. It relies on memory to gain meaning, but it can also trigger new meaning in its process of defying the immediate identifiable symbol in its ambiguity, direct new prescriptions of its own reality. It is with the tactile sense of the eye that one’s hand can provoke images that go beyond the known to ignite inner worlds at play. This paper will demonstrate a series of drawing techniques that I have employed in my design studios and in my own personal explorations into form making. I have applied different modes of drawing for different purposes within the pedagogy of my design studios. These drawings are all done by hand and through this unique personal instrument I will attempt to show how important it is to reinforce hand drawing as one of the more important generative arts in our educational institutions.

**Keywords:**

Hand Drawing, analytical and intuitive, representation, imagination

DRAWING, TO SEE, IF YOU SEE, WHAT YOU SEE

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*av03@lehigh.edu To see one engages a more inclusive vision,
a multi directional mental faculty where
contemplation, imagination, forethought, and true understanding
are possessed. It is awareness that allows vastness
to exist, unlimited by conscious sensors but clarified
by discernment. Seeing moves beyond expectation to
imagination and allows for revelation and transformation to exist.
Dougan (1)*

THE INTRODUCTION

Through the act of drawing, the eye acquires a tactile sense. As the eye moves from one surface to the other, it caresses form allowing the hand to translate a series of lines into an architectural tale. The world is perceived through a focused view and rendered by a disciplined hand. For me, drawing allows time to be frozen and for a pregnant moment, I am enveloped by the presence of the world that surrounds me. My visual notebooks are traces of the present, recording memories in line. They are evidence of my personal being... my signature of the moment. Drawing has always attained a magical essence to its being for me. It possesses the ability to assign physical presence to non-physical being. As a young boy, I remember watching my uncle (who was one of the original illustrators of Superman) taking a line for a walk and at the end of its journey making it become a presence, a recognizable entity before my eyes. This was magic. Drawing became a threshold into another world... Alice's looking glass. It mediated between what was and what could be, it provided me with the ability to enter into imaginative realms of constructed wonder. Drawing from this point on became my means to enter into unknown worlds and to ignite my imagination.

Probably the most poignant of my earliest experiences with architectural drawing came also with my Uncle Nick, the artist. It was in his fifth story apartment in New York City. He pressed a piece of clear plastic onto the window, handed me a sharpie felt tip and asked me to draw what I see and to see what I draw. It was hard because you had to focus close and far at the same time, allowing the glass to act as the mediator between my eye and the perspective world in the distance. When I finished my tracing, he pulled the plastic from the window, laid it out on his drawing board, and to my utter amazement, perspective was born. I truly believe that this experience is what made me want to become an architect for the world now became spatial field. Now as a professor of art and architecture, I strive to pass on to my students this gift of constructive perception and hope it instills the wonder, amazement and love of drawing for them as it did for me.

“I DRAW IN ORDER TO SEE”

The foremost goal in the education of an architect is to prepare and sharpen one’s ability ‘to see’ and to use that vision to constructively imagine architectural ideas (construing) and have the technical confidence and ingenuity to build those ideas into physical form (constructing). It has been said the ‘gift’ of the architect is his/her ability to transform a simple line or dot—a cold abstraction

drawn on a two-dimensional surface—into a concrete three-dimensional reality—a building. The ability to move back and forth between the twodimensional representation and the three-dimensional interpretation takes great skill, talent, and experience. It is the primary lesson all students of architecture must learn. Whether it is the dimensions of the space we inhabit and move within or the space defined by the objects or forms that occupy it, there can be no visual communication that is formless and spaceless. As artists and architects, we are concerned with giving graphic expression to the perception and expression of space and form as representation. The continuous movement back and forth between these dimensions is the first step toward the development of design thinking/making.

I incorporate drawing in all my studios in a variety of ways; drawing as observation, documentation, representation, presentation, generation, speculation, translation, analysis, abstraction, and interpretation. In this paper, I will attempt to demonstrate these techniques and the vital role they play in the creative design process of my architectural design studios.

I will address two primary questions proposed in the ACSA brief for this session; first, what is the current state of drawing in the discipline and practice of architecture, and what are the qualitative relationships between design media (particularly those related to drawing) and the built work?

And second the material nature in the act of drawing provoked by the statement; “It might be argued that drawing, as it is defined, requires the presence of physical forces and resistances during the operational act– the tooth of the paper and the pressure and movement of the hand leaves a visible residue of lead or graphite on the page.”

FORMAL AND MATERIAL IMAGINATION

Gaston Bachelard refers to *formal and material imagination* in the book *Water and Dreams*:

“Formal causes tend to stem from intuitive and associative image production. These images derive from psychological projections and picturesque forms. They usually provide an analytical reading to create an object. Yet besides these images of form, a certain type image is provoked solely and directly from our immediate confrontation, interpretation, and manipulation of matter. These images may be assigned category by the eye but only the hand truly reveals them.” (6)

I would like to use these two categories to speak about the different drawing techniques I use in my design studios. The former tend to dwell in the realm of observation and analysis while the latter facilitates a more sensual and perceptual understanding of form. Both commingle in their ability to help the student grasp a more haptic understanding of the world in which they live. In

the following studio descriptions, I will present the role of drawing as a catalyst for discovery and interpretation. Each has its own objectives yet all of them incorporate different forms of similar techniques of the prescribed drawing skills. Most importantly, they are all done by hand.

FORMING RELATIONSHIPS THROUGH ANALOGY

Studio Title: Arms Wings and Mechanical Things

In order to establish this studio as a setting for wonder, research, and invention, this experimental studio emphasized the process of design inquiry. The specific programmatic requirements of the project were withheld at the beginning of the studio, and instead, the students undertook a series of intensive exercises (which were cumulative in effect) based on a series of analogical studies. Analogy was an effective device for creative invention, since parallel readings were implicit at many levels, from surface meaning to operative functioning. Analogical exploration also allowed the students to assimilate complex forms and processes from realms outside of the architectural discipline¹. The students were thus enabled to discover architectural form and use in a manner unencumbered by preconception and conventional program.

Drawing Constructions / Constructing Drawings

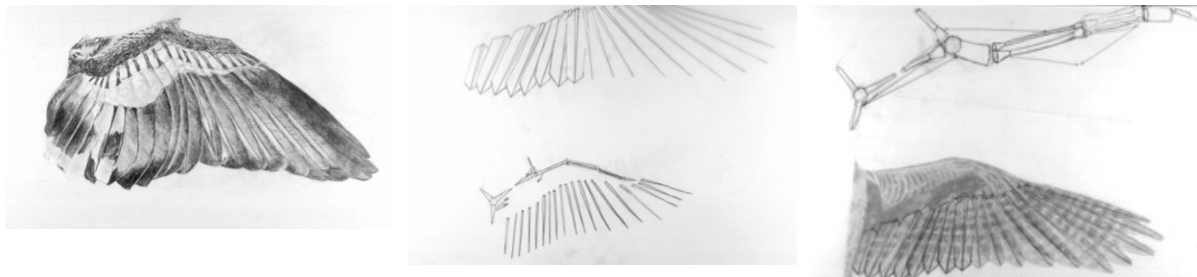
In this process of investigation and discovery, drawing acts as a means of construction, of ideas, of images, of analysis and of association. The drawings will be viewed as scaffolding; a temporary architecture used to help concretize an idea that leaves its trace in your final construction, allowing 2-D and 3-D to collude in the process of design.

This drawing exercise will consist of three layers:

observation/analysis, interpretation/translation, and transformation/fabrication

Each layer will look at a different aspect of the wing: a realistic look at the nature of its parts, a geometric abstraction, and a mechanical extrapolation. Each sheet conveys a distinct view of your specimen. All sheets are pencil on Mylar except the first sheet, which is on watercolor paper stock.

This series of observations begins with a detailed enlargement of a particular wing scaled up at least double in scale. This means of magnification and rendering intensifies ones focus to prevent shifting attention to quickly assuring that observation will not be short-circuited into translation as mere imitation. It is more important to continue the seeing process by forcing hand/eye coordination to slow down permitting a closer look. It will allow the mind to wander generating creative associations to occur while rendering tonal gradations. This releases the daydream. It is in that zone that tangential coincidences collude to form new interpolations of hand/ mind and mind/ hand thinking.



observation/analysis.....as is

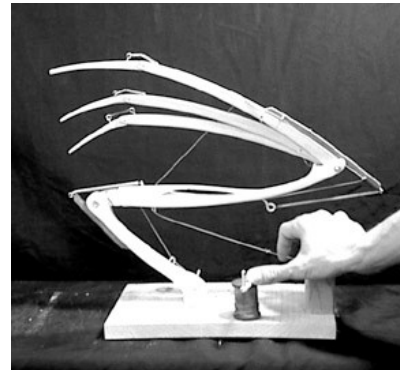
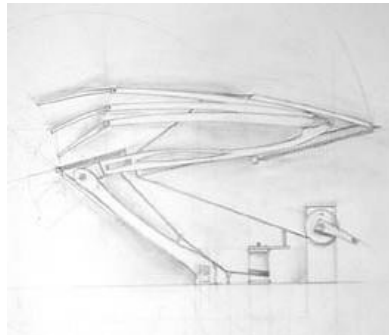
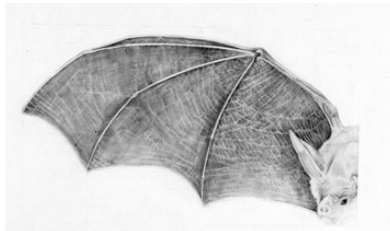
We began looking very close so the eye could attain a tactile sense—inhabiting the detail. After reviewing an initial photographic visual collage, each student clarified a particular perspective that would direct this next phase. Students now choose an appropriate image of their wing to further his/her research. Draw the wing in pencil at least twice the size of the photo to be placed in the middle of a 24x 32 piece of watercolor paper [hot press] leaving at least a 6” border on all sides for even closer studies. This first sheet is to be purely observation of the actual wing analyzing its parts through realistic close up rendering.

interpretation/translation.....as ab

The next sheet is on Mylar and drawn in pencil to interpret the workings of the wing in a more geometric construction. This technique requires a translation of the parts into a geometric vocabulary viewed as an overlay upon the preliminary realistic drawing. This **abstraction** will allow you to see the workings as interpreted through geometry.

transformation/fabrication.....as ob

This final sheet of Mylar will transform the visual information into a construction analog to direct the fabrication of a series of tectonic devices...workable, buildable **objects**



a MATTER of transFORMATION

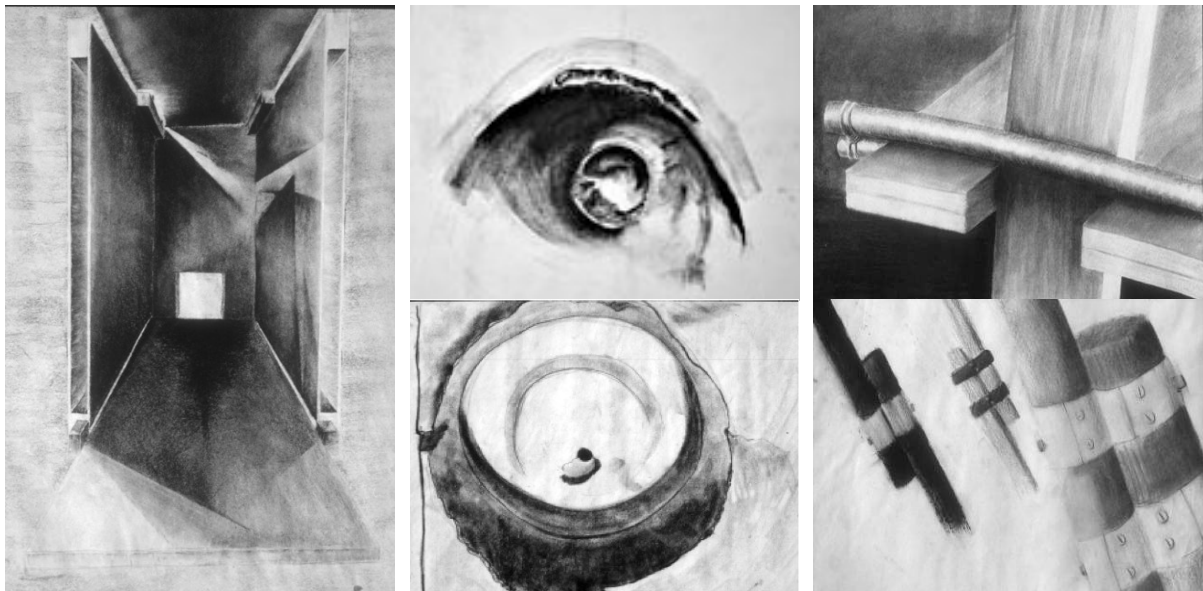
studio title: “ The DayDream Machine”

“Slow it way down. Bring it right up to your eyes. Speed it way up. Look at it from across the valley. Then the sensuality of the familiar objects of the world overpowers their habitual representations. And moves. No longer an instance of a type. No longer, even a being. A becoming. And crafting creation is becoming becoming” (6).

CHARCOAL DRAWING

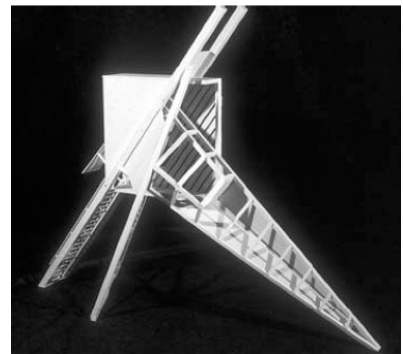
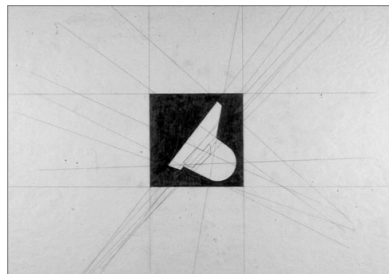
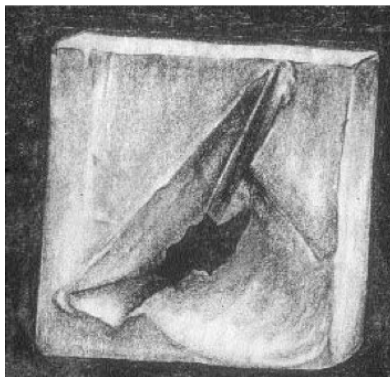
While the formal imagination is farsighted, capable of expanding the field of vision to create webs of complex geometric precision in caverns of virtual space’--the material imagination is nearsighted and caresses the imagination. Another type of seeing is required at this point, a vision of touch. “*Haptic* is a

better word than *tactile* since it does not establish an opposition between two sense organs but rather invites the assumption that an eye itself may fulfill this non-optical function” (7). Haptic vision calls on all the senses to release the phenomenal potential of the materiality of space, form, and light and to coerce it to collude in our total understanding of an architectural encounter. The proper medium of expression must be extremely sensitive to touch, revealing intimate surface and texture, so as, to have one’s eye be equivalent to the touch of the hand. I have employed an exercise for several years now that I developed after teaching with the late Giuseppe Zambonini at Georgia Tech. I have called them, “looking small and Drawing Big.” It involves looking at a very small portion (from \square ” to 2”) of a larger object in sharp light and in charcoal drawing that portion to fill a full sheet of 18”X 24” newsprint. The actual size and shape of the charcoal in the hand while drawing with the long edge of the charcoal causes the hand to gesture valued planes that define space rather just outlining planes to be filled in. Doing large drawings with the medium of charcoal allows one’s vision to become visually tactile. Now through light and shadow the design student caresses the form with a medium that is sensitive to the lightest touch. The line now exists as the boundary between planes of value. It is revealed through an absence, rather than a presence. A line no longer describes the perimeter of shape but the intersection of light, space, and form. It lies inbetween. The solid and void relationship is expressed through gesture and touch. These drawings provide implicit information that is absorbed into the design process, revealing itself in the way form eventually envelopes spatial conditions such as light, texture, materiality and surface.



The pedagogical intent of this design studio was to take into account this notion of the ‘novel look’ as well as to provide a means for interactive dialogue between the formal and the material modes of imagination. The studio used a consciously planned sequence of six transformational design exercises, or steps, to develop the students’ visual acuity in response to formal cues and to demonstrate the affinity of technique and materiality with

the construction of an idea. The primary modes of representation were plaster casts, charcoal drawings, geometric projections, sectional drawings, and structural models. For the first exercise of the studio, each student constructed four casts to act as templates for the study of light and mass; each 1" deep by 4"x4" plaster cast contained the impression of an object selected by the student (step 1). In order to elicit a material and visceral mode of imagination, and to hone their skills in observation, the students drew a series of large textural drawings in charcoal of each cast (step 2). For these drawings the students were to isolate a small area (1"x1") of the cast and enlarge it to 18" x 24," filling the "field" allowing the students to examine of nuances of light and shadow. Simultaneously, the students drew "palimpsest drawings" or sectional figures of pochè; orthographic projections were drawn as trajectories of the geometries of the 4" x 4" block – the "container" -- and the remaining impression left from the inserted object – the "contents" (step3). For the sake of brevity, I will not describe the four following steps in this progression but say that they entailed a similar process as the previously described studio in that a series of interpolated constructions followed leading to the making of an architectural project. Footnote the JAE article)

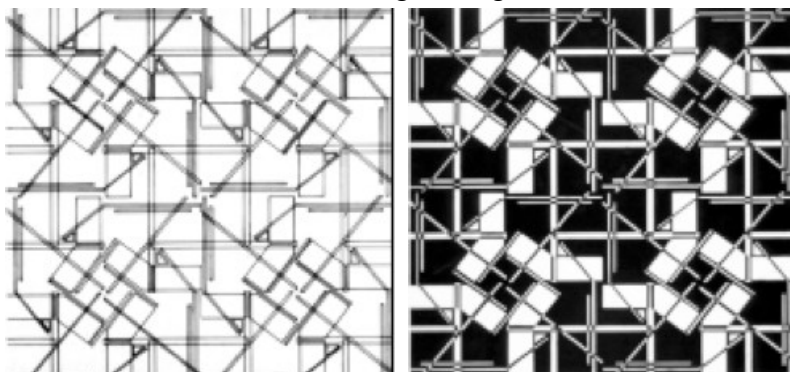


Both of the example studios I have just described incorporate the material and formal imagination in a dialogue that generates built form.

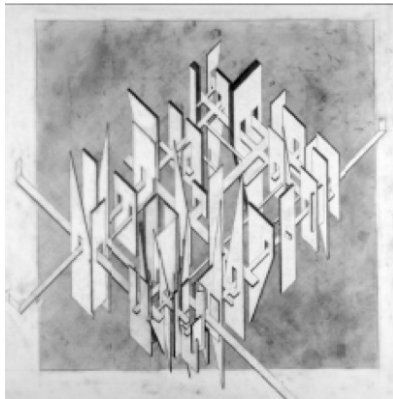
THE GROWTH OF A DRAWING: MULTIPLES

Studio title: Form from Form

In this next studio exercise, I will isolate the formal imagination as the focus of a discussion about the drawing as a generator of form.



This modeling exercise begins with a 2-D map and subjects it to growth by generating rhythmic permutations regulated by basic symmetrical principles of multiplication: Translation, Reflection, Rotation, and Extension. Different from the previously described exercises where subjective interpretations led to formal conclusions, this time objective rules of organization will translate the idiosyncratic nature of the individual element into networks of smooth and striated space. In this instance, the grid provides the network of operation to transform individual elements into fields of space where new orders locate around shifting centers. The transformation seems to unfold automatically, forming symbiotic unions of fortifying orders, as well as, parasitic formal relationships that dissolve and reveal new overlapping orders simultaneously, as can be seen in the grids and drawings of the artist/mathematician, M.C. Escher.

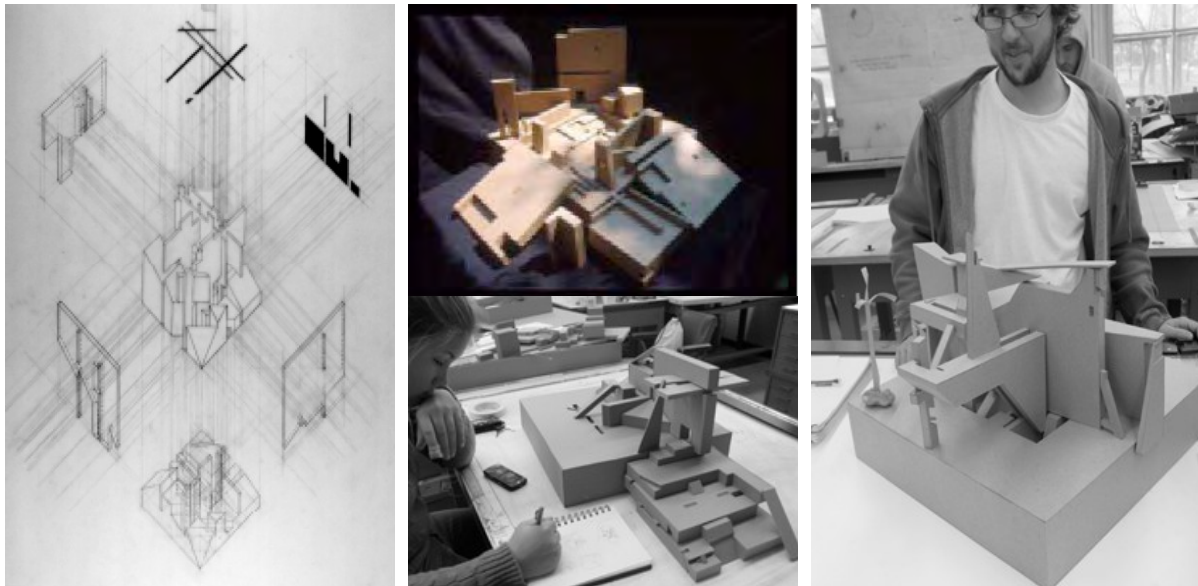


These formal exercises conclude in a weekend charette where each student invents a formal translation of one of the stories from Italo Calvino's, *Invisible Cities*. Now through an axonometric sketch drafting technique, analogous to the rhythm exercise, each student derives collective form through repetition as a power and not symmetry as a form. The extension of their plan element as it moves within and without the warf and woof of a striated field that "unleashes the power of repetition as a mechanic force that multiplies its effect and pursues an infinite movement." In *A Thousand Plateaus*, Deleuze and Guattari point to a comparison of patchwork to embroidery and though they may display equivalents to themes, symmetries, and resonance that approximate each other, their space is not at all constituted in the same way. There is no center in the patchwork; its basic motif (block) is composed of a single element; the recurrence of this element frees uniquely rhythmic values distinct from the harmonies of embroidery... [thus] raising "mechanical" relations to the level of *intuition*." (9)

DRAWING AS A SELECTION PROCESS

The process of evolving the drawing along with the model opens up a continuous feedback loop between the two distinct forms of vision. The haptic vision attained through the act of making is verified in the process of recording its coordinates in the graphic visual plane. This transforms the drawing from being merely a document of images to a *constructing drawing* where the act of drawing is one where *form is drawn from form*. The drawings of the 20th century Venetian architect Carlo Scarpa are a poetic example of this form of

architectural analysis where every mark on the paper assists in the construing and leads in the constructing of an idea. Scarpa's way of seeing/drawing continues creative design thinking through the entire process toward the realization of form. The design process is non-linear, acquiring a cyclical reverberation with itself. When drawing is given the opportunity to go beyond representation, it becomes fluid and forges a multiplicity of relationships and conditions. This type of analytical drawing requires a farsighted perspective in order to recognize a system of peripheral formal proportions and relationships. Pencil on Mylar is used in a sketch/draft space as a trajectory of form creating an architectural network of interconnecting ordering systems. As a net, it reveals geometric assemblages through the intersection of lines extending into 3-dimensional space. Within this wire frame, volumes seem to be forged by lines and planes intersecting in a process of growth. All the formal laws ascribed by Paul Klee in his Pedagogical Sketchbook come into play as *form forms form* in time and space.



KIT OF PARTS

The next series of exercises use orthographic projection as a technique to draw out a new kit of parts. Through a *scaffolding* of lines that act as trajectories of the original visual map, formal elements are extracted, modified, construed, and constructed. The *scaffolding* must be clearly drawn to extend the field of 3-dimensional readings of form.

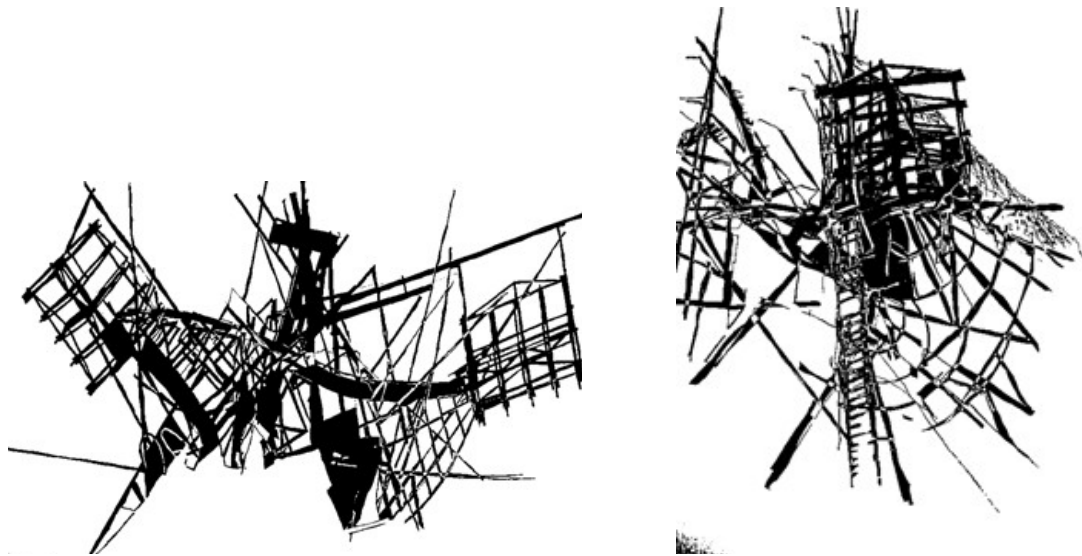
Through a series of analytical drawings, each student develops a formal language into a personal 'kit of parts'. This selection process provides a syntax through which the student can negotiate a multiplicity of new formal assemblages. Because all the parts are derived from the same spatial generator, they inherit a formal semblance. This facilitates the construing of strong compositional assemblages. Each drawing develops through the intersections of a formal matrix. Elevational facades are cut from the solid/void relationships as they meet the limit of the membrane of the 4X4 cubic frame. Each student is encouraged to make a minimum of 20 parts that range in size and scale. Included in this set is a derived base that serves to imprint a new field

of play (or building plane). The drawing is now catalogued through a process of inventorying each individual part. A plan, elevation, and axon of each part is compiled on several sheets of Mylar. At this point, the drawing is used as a set of construction documents in order to build the new kit of parts out of cardboard, twice the scale depicted. The increase in scale is very important because it forces the student designer to build up elements of constituent parts to provide appropriate structural stability to the enlarged form. Now that each student has constructed a set of architectonic building blocks, they are ready to play the game. "In childhood each of us mastered creation in space. Playing with blocks is intuitively close to the central act of making architecture. Whereas children position solid forms to make their castles, the architect composes volumes, which may be either solid or void. This study of design picks up where we as children left architecture--with blocks of special shape and dimension, coordinated so that complex ideas of spatial order can be expressed directly and eloquently." (10) These blocks will now act as constituent forms subjected to increasing constraints that get more rigorous. With the introduction of programmatic readings and narrative, what began as a lesson in the art of reading form, eventually weaves together the once artificially autonomous components of form, content and function in the making of an architectural project.

Insert drawings with sectional poche

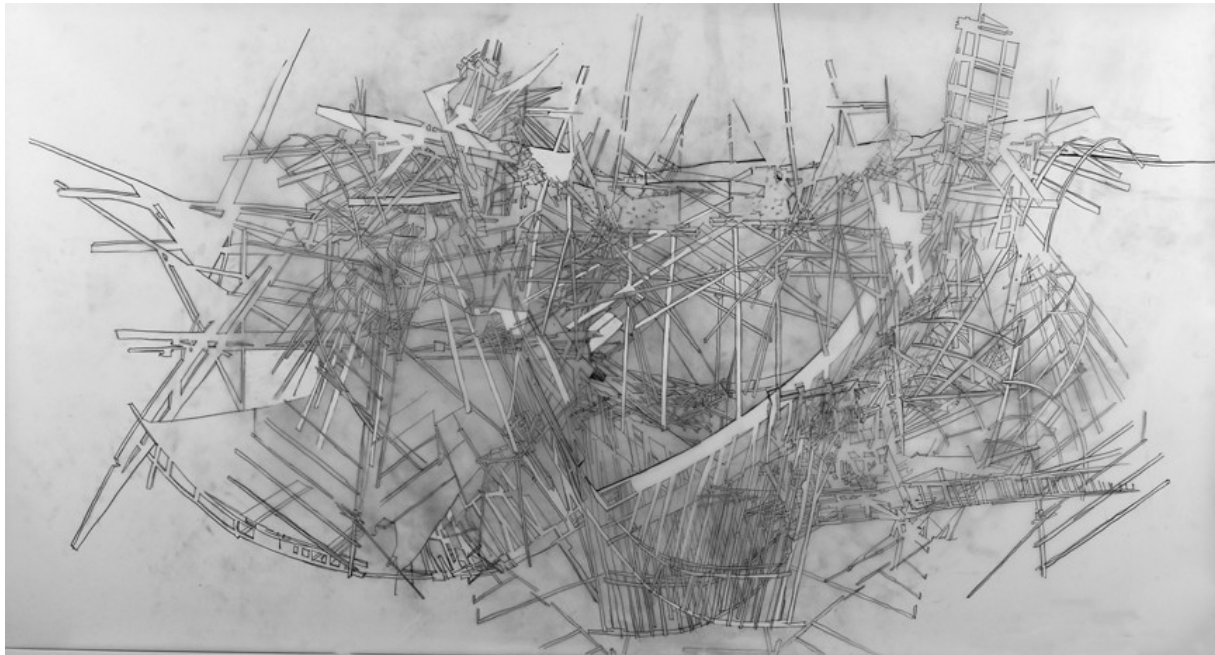
TRACING TIME TO MEASURE SPACE

Studio Title: "Shadow mapping"



The shadow as defined by Arnheim in *Art and Visual Perception* is a layer (or volume) of darkness seen as lying upon or in front of an object and as having brightness and color values different and distinguished from those of the object itself. The shadow has an *interdependent life*, one that is tied to the object that initiates its presence and motion, yet its transparent and immaterial essence takes the form of the object on which it falls- "it is born of one thing and reveals something else, articulating the latent potential of reality..." The shadow takes on a life of its own as the mediator between the visible and invisible, the static and

the dynamic, the conscious and the unconscious states of its own reality. It is a simulacrum, releasing its symbiotic contract with its origin, to generate a 'hyperreal' (Jean Baudrillard pg.1 "*Simulacra And Simulation*").



Shadow Map 0100 by the author (3 feet by 6 feet pencil on Mylar)

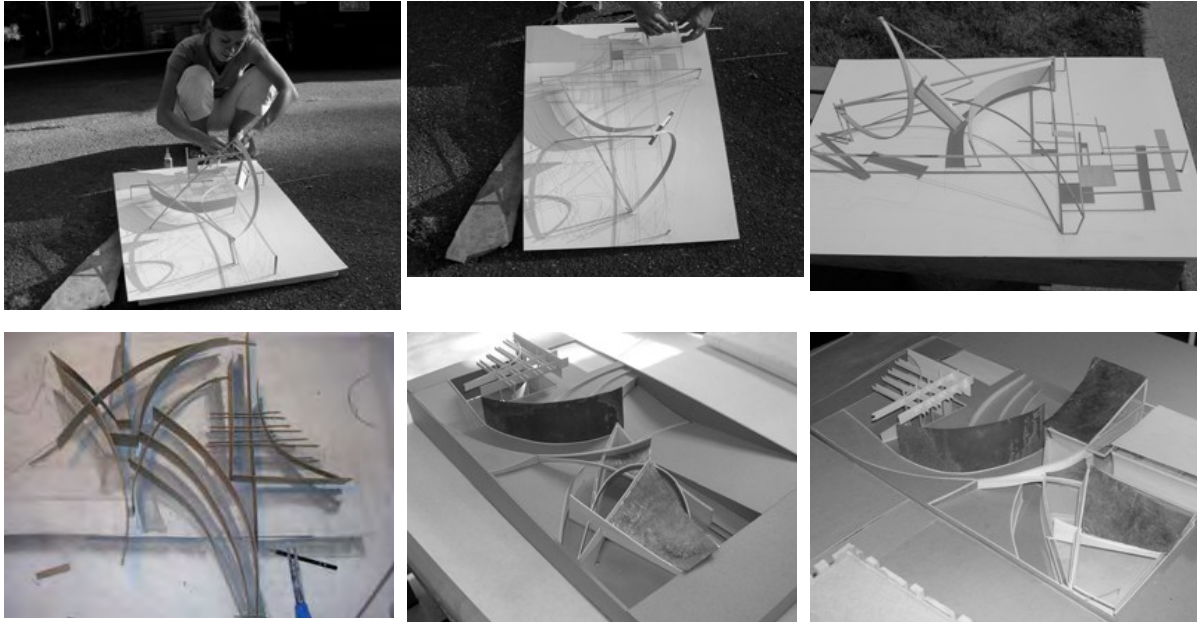
The drawings presented in this section are a part of my personal investigations for over 20 years into the phenomena of shadow mapping. (The most recent work, "Shadow Map 0100," is done with pencil on Mylar in order to allow the hand to smear the graphite in the process of drawing. The graphite residue permits one to erase and evoke new layers of clear Mylar against the complex pencil wireframe). Although they constitute an artistic investigation of their own merit, they have helped me formulate new theoretical precepts in my creative design process as to the forming and shaping of architecture. I have been incorporating these design precepts into my teaching pedagogy in my architectural design studios starting in 1989 at Georgia Tech's College of Architecture continuing to the present at Lehigh University's Department of Art and Architecture.

These images generated by shadows, trace time by representing sequential frames of individual frozen moments into a single image (tracing time to measure space). The mapping of the shadow records the interplay of the object casting shadows, and the reading of the shadow map re-presents, or recasts a new object. The object is built using the language of the shadow as it was cast by the movement of the sun. The map becomes the simulacrum -- the trace to represent

a new experience of reality. The simulacrum usurps the energy to go beyond its procreator, thus allowing it to engage in pure becoming.

In order to establish a means of orientation, a coordinate system, the nine-square grid, is utilized. This grid, similar to the latitude and longitude lines in a map, is an integral element of the object and not a system superimposed over its projection. Therefore, it is transformed as is the object in the process of its construction. The tracing of the object's shadow as recorded at three intervals, morning, noon, and evening becomes the construction drawing of the object.

The object itself undergoes transformation during the day as the design schema, is being formed by the shadows it casts. These traces of light, almost like X-rays, present a latent image of what was to come. This construction of the shadow becomes a record of its own making, or a map. The significance of the object exists only in its role as the precipitator of its trace, or shadow field. The field of light itself becomes the determinant of the structure; it manifests itself only by its



effects on the behavior of things within it. After the shadow map construction, the object is dismantled leaving only a trace, a map of its former existence, and the potential for its re-constructing. As a further exploration, the map is now used as a means to decipher the three dimensional re-forming of the shadow into new models and palimpsests of drawings.

“IL DOLCE FAR NIENTE”

Studio title: Architectural Sketching in Italy



I would like to finish this paper with ink pen drawings drawn by my students and myself on our study abroad programs in Italy. For me drawing allows time to be frozen and for a pregnant moment I am enveloped by the presence of the world, that surrounds me. My visual notebooks are traces of the present, recording memories in line. They are evidence of my personal being... my signature of the moment.

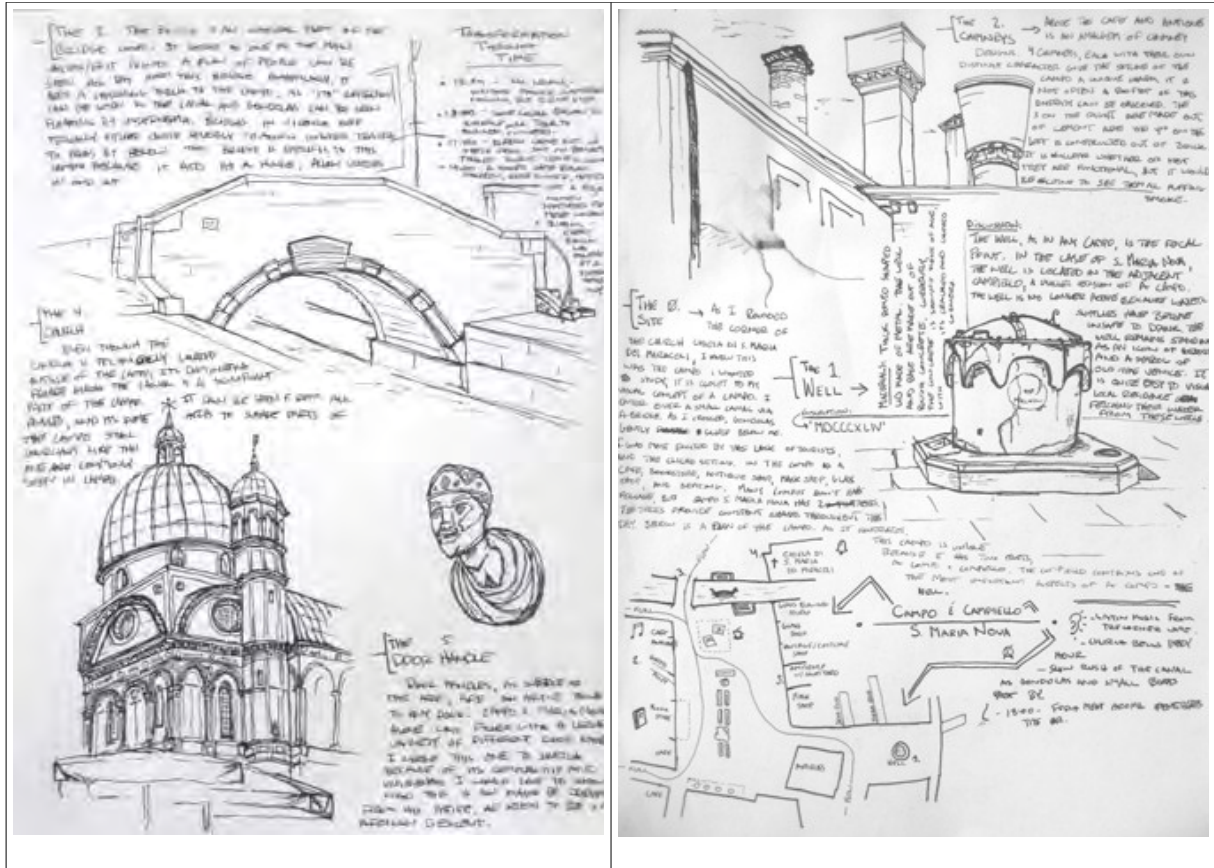
Teaching my students about drawing when we are abroad become a series of site/sight lessons that invite silence and for the moment, stills time. In Italian, a phrase encapsulates the experience of drawing at a café in a piazza. "Il dolce far niente" means, the sweetness of doing nothing. In the act of drawing, the world seems to come to a halt because you are in a direct intimate relationship with your surroundings.



The technique I employ with these drawings incorporates measurement. Just as in the earlier drawings I spoke about tracing time to measure space, in these exercises it is reversed one measures space to still time. It is very important for these drawings to be done with an ink fountain pen, a *stilographica*. The pen must have weight so that it lies in your hand allowing you to caress it rather than grip it. It is the weight of the pen that tells your hand about the nature of the mark to be made. The point has two sides, which allows for a range of line weights. I try to convince my students to spend a little more money than usual for this pen for it is instrumental in generating the character of their drawings. To begin with, I establish a vertical line in the scene that will become their first mark. This is usually the corner edge of a building in the distant picture plane. Without incorporating any perspective rules, I have them create a frame from which they will measure the relationships between all the lines in the scene. Slowly the picture unfolds and spreads like a drop of ink fallen upon wet paper. The drawing is an accumulation of measurements and relationships. These type drawings are very slow for one's eye acquires a tactile sense touching every crevice in the facade and transmits these visual sensations by hand onto the paper one line at a time. Within one week of drawing exercises, every student's

drawings improve by almost 100%. They become freed by the permanence of the ink because every line finds its final place within the completed composition. There are no mistakes, the process is additive. By drawing one line at a time, I mean that like a spider web the drawing seems to construct itself where every line connects to the former line to finally form a complex organization. I have found that this type drawing also unravels the logic of the building through the more haptic process of hand-eye coordination and careful observation and measurement. The use of the analytique method also allows one to compose a tablet of individual images that collectively like details of a building tell the story of the drawing. Serial drawings employed a means to understand the nature of public places, as well as, way finding in a medieval city.





After four weeks of these drawing exercises weather, they are analytiques of Scarpa buildings or serial drawings about place making in a piazza, all the drawings become important to each student's means of recording what they see, *in order to see if they see what they see.*