

3-2002

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Alice MinSoo Chun  
*University of Pennsylvania*

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### Recommended Citation

Chun, Alice MinSoo, "The Viewing Machine" (2002). *Proceedings of the 18th National Conference on the Beginning Design Student*. Paper 17.

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# The Viewing Machine

Alice MinSoo Chun

University of Pennsylvania

Technology in architecture, rhetoric of construction, often expresses an erotic search for knowledge. As Marco Frascari explains, "Technology is the fertile factor for the architectural production of elegant meanings, it deals with both the construction- the logos of techne (elegant art)— and the construing—the techne of logos (rhetoric)."1 In this case technology translates from figures of thought into figures of site, and figures of making. It may be construed as a condition that attempts to answer the question: How does one begin? The curriculum developed for the Undergraduate Architecture Program at the University of Pennsylvania provides a place for the cultivation of technology through the demonstration of architectural strategies for making. This is explored through a constant variable, the interest in building: the delight in experimental construction is the adventure into the space of the unknown condition, between conception and execution. This adventure, into the constructional unknown, uses technology and the discipline of drawing as a poetic act. In this sense, technology is demonstrated along with cosmology as it reconciles the art of construing and constructing. One vehicle for this reconciliation is through a process and product called the viewing machine taught during the first year of architecture. Most of the students, beginning the Bachelors of Arts in Architecture, are quite young and eager to explore the

Fig. 1: Collage

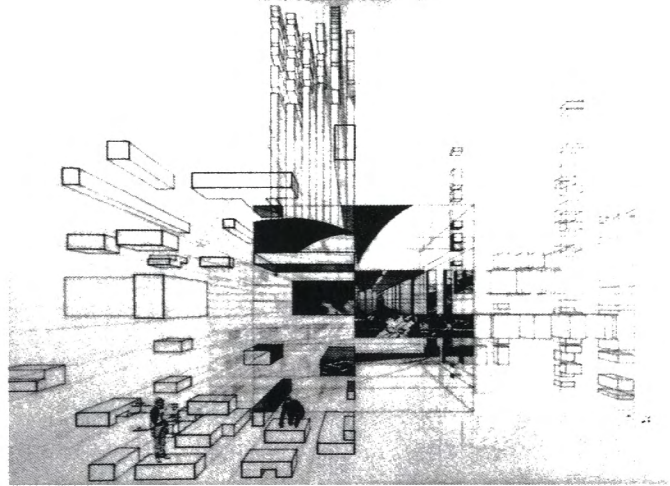
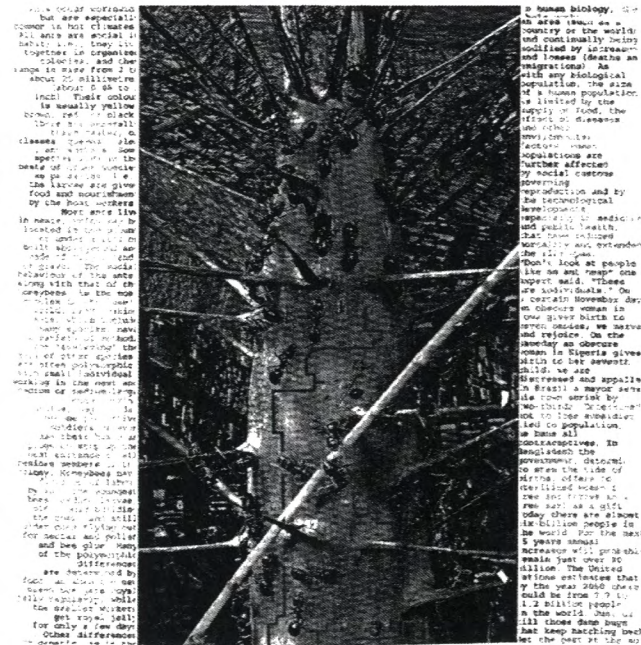
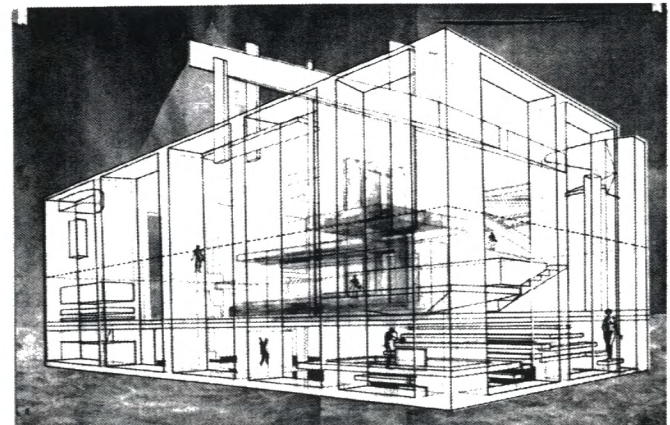


Fig. 2: Speculative Perspective

unknown. The studio meets for three hours, two days a week. The studio begins with an exercise in perspective and speculation.

In the viewing machine, site and sight are explored in conjunction with this exercise in speculative drawing incorporating geometry, perception, and precision with precise instruments; the plan, being the construction of a heptagon and the projection of a perspective, is developed as an interpretation of a given narrative. These drawings are in themselves a type of artifact or construction of sorts, as Erwin Panofsky describes the conception of modern space in Perspective as Symbolic Form. "Hence homogeneous space is never given space, but space produced by construction.... it is a technique that symbolizes a certain triumph of the 'distance denying'

Fig. 3: Speculative Perspective





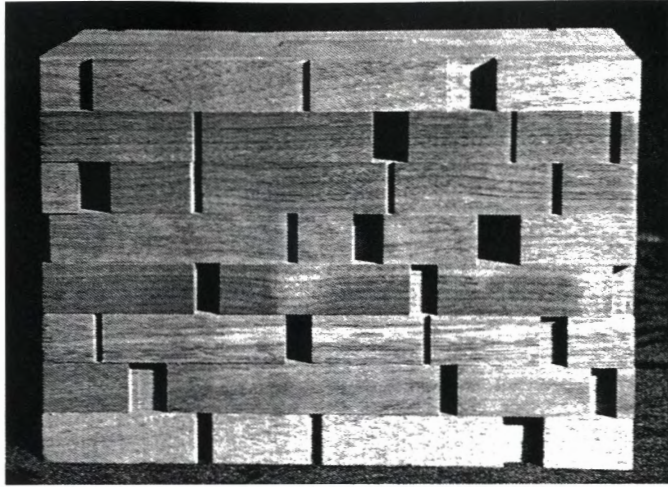


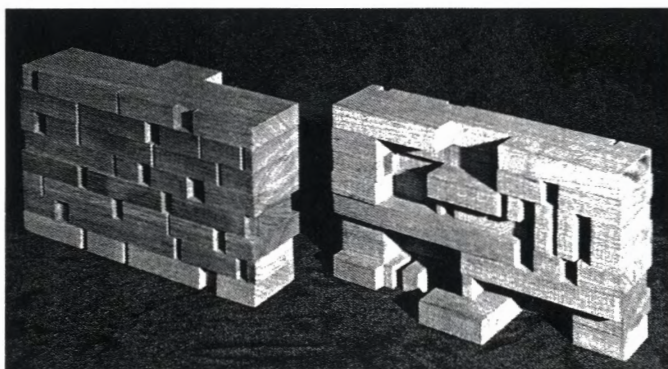
Fig. 4: Viewing Machine

human struggle for control...consolidation and systemization of the external world, and an extension of the domain of self.<sup>2</sup> The allegorical nature of these graphic interpretations begins to alter the ground on which architectural development dwells.

The process of making of the viewing apparatus is the next step that explores the phenomenon of perception, experience and design through building. To use and make the viewing device the student must be a witness and master of metis. The device does not hold bounty to urban or rural space. This viewing machine feeds from the landscape, city and the imagination as conditions of sight/site. Optical devices and instruments, such as the camera obscura or Lucinda are researched then presented to the studio. Studies of hinged or joint conditions are then appropriated into the construction for viewing. Testing the boundaries of materials is explored through trial and error. The machine is required to carry a "contaminant" (mirror, lens, liquid, glass, figure, etc.) within the viewing hinge or frame. Selection is through risk and chance, knowing and savoring the concealed moment when it will reveal a new view. This contaminant causes an overlapping, twisting, or collapsing between the viewed space and the machine space.

Reinterpreted for construction, the instruments are coddled and built into a personal viewing artifact. A process of play within a frame mechanism affect and inform the viewer of

Fig. 5: Viewing Machine



possible relationships between the viewer and the viewed, the near and the far. The act of play is intertwined with the discovery of space within drawing and building. Traditionally, culture strives to understand stability, once this is done, a game of variation begins, which is the natural tendency of the intellect. These variations are both respectful and transgressive of the set of rules defined by the player/student.

The poetic analogue to the process of measurement, calculation, and cunning as pursued through an underlying strategy of the studio, is seen through the figure of Metis, (the ever-changing and polymorphic goddess, daughter of Ocean). This figure of discovery and knowledge is critical to the manifestation of architectural possibilities. The notion of calculation and measure, transformation and reciprocity becomes woven into the components of inventions, drawings and constructions, which are assembled along with an inherent creative process of intuition, necessity, and desire.

Measure and geometry, calculation and speculation are nurtured for the translation of the imagination into graphic and tangible material. In many respects this translation, is just as important, to the education of an architect as building a proper wall or producing a set of coherent construction documents. As Ann Bergren explains:

"Metis engages both the mental and manual prowess, both language and material. Metis works by continual shape shifting, turning the morphe of defeat into victory's tool. Its methods include the trick or trap (dolos), the profit-gaining scheme (kerdos), and the ability to seize the opportunity (kairos). Each of these exploits the essential forms of Metis, the 'turning' (tropos) that binds opposites, manifest in the reversal and the circle, in weaving twisting, knotting, and in every joint. The mistress or master of Metis knows how to manipulate 'the circular reciprocity between what is bound and what is binding'. Etymologically, Metis is derived from verbal root meaning 'to measure' with its implication of calculation and exact knowledge. A traditional connection between Metis and the builder's skills is seen in the figure of Athena, daughter of goddess Metis, who teaches making (poiesai) of elaborate chariots to 'builder men' (tektonas andras) and weaving to maidens (parthenikas)... Metis does not completely revise architecture out of its dependence on foundational concepts but alters the ground upon which this foundation rests."<sup>3</sup>

The site is in a sense measured scientifically, as well as phenomenologically with the help of the apparatus. The challenge is to represent the experience and the essence of place through a series of drawings that evoke time, memory and viewing through the machine. Drawings are not merely tools for communication but vital instruments for investigating reality and its structure. Observations and recordings of the hybrid space of the site proceed with themes, settings, and elements selected from it. The construct of this experience and its discoveries attempt to record a dimension or measure between, the physical and the pata-physical, (space and time, movement, memory, senses, death and rebirth, etc.). This method of measure works to embrace imaginary and physical relation-



ships to build a condition of programmatic possibilities. It is closer to what Martin Heidegger describes in *Poetry Language, Thought*: "...The taking of measure is what is poetic in dwelling...Measure taking is no science, Measure taking gauges the between which brings the two, heaven and earth, to one another. This measure-taking has its own metron, and thus it's own metric."<sup>4</sup>

"Geometry meaning, 'earth measurement' connected the need of ancient Egyptians to redefine land properties after each flood of the Nile."<sup>5</sup> This notion is revisited with drawing the experience to the site. Viewing through the machine, the student must draw, construct, and craft a succession of maps and topographical sequences derived from the experience of employing the artifact, in addition, literal recordings and survey of a site are plotted. The maps and sequence of drawings require cunning to weave, collapse, and knot other perceptual or intangible phenomena, (sound, wind, time, regeneration, movement). The pata-physical observations and reinterpretations of them are expressed through projective ways of seeing, (perspective, collage, and montage). The dialogue of relationships between the uses of mediums tests the extents of the material as well as creates a phenomenal dimension (opacity, transparency, translucency, depth of field, etc.) "Every man-made form - and in particular, every architectural form - does not exist solely as a static consequence to an otherwise irrelevant act of production, but conversely, that the nature of form is inlaid in the process of making."<sup>6</sup>

Programmatic sequences generate a narrative of an implied spatial experience, along with the interpreted archeology of the site. The plans, sections, and elevations are tracings of this story that is invented. Program is concealed where the desire for order is to be set by twisting and knotting, reversals of fortune, where opposites are bound. In this case program is the effect of the imagination. As Viollet-le-Duc states: "An architectural program includes a partly revealed and partly concealed narrative of what is expected to go on in the spaces designed by the architect."<sup>7</sup> The concealed program allows for the discovery of something unknown. It becomes a generator of new views. This method of making asks of the student: How can your visual image captivate, maneuver, seduce and catch a subject inside a field of vision...cause a desire to see more? What is the desire or wonder that is caught fixed in the drawing and urges the maker to put something into operation?

Drawing discipline and the discipline of drawing are explored as the interaction of knowledge and communication. A result of the process of employing the elements of the cosmology in metis through the viewing machine, it may be thought of as a theoretical as well as an empirical conundrum. It is a process for the translation, exploration and representation of the intangible, yet it is also the construction of an artifact or product, drawing or detail. One aspect of this translation explores the visual dimension by re-presenting idea and issues of technology, (the poetics of making) through the implementation of methods in construction such as assembly, collage and montage: the philosophy of the butcher's knife vs. the surgeon's

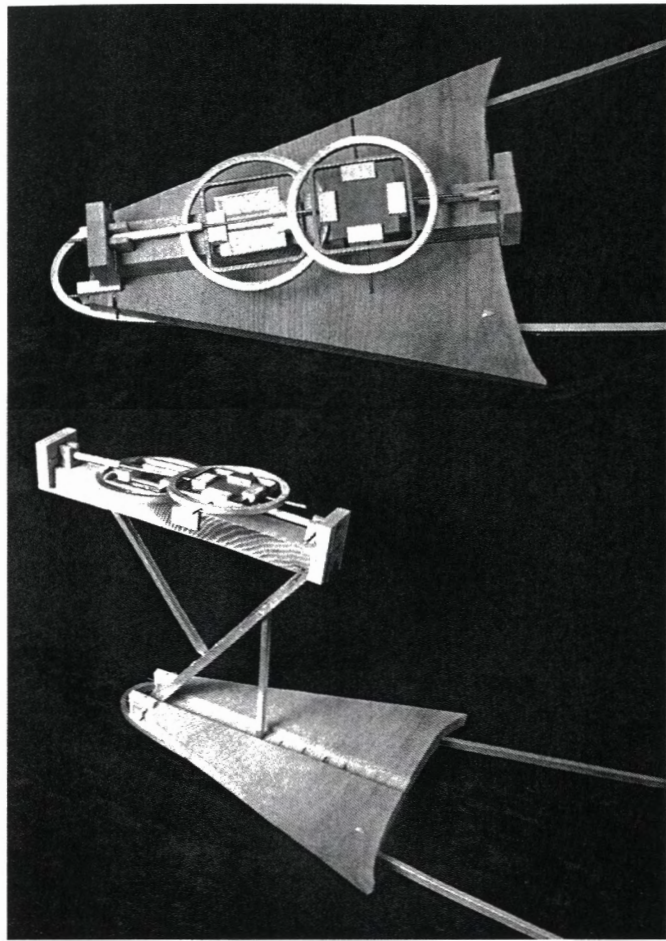


Fig. 6: Viewing Machine

knife. It is this precise use of sectioning, cutting, and layering, that the beginner begins building. This step is devoted to the conjuring of idea as a tectonic between the eye of the mind and the body of building possibilities.

Invention relies on how one sees, being just as relevant as what one sees. Representation of the invisible: time, memory, speed, and motion, are articulated through the construction and strategies of geometry, proportion, and assembly. The cosmology of how something is made is woven with the technology of what is made, thus the origin of technology is necessary for the representation of cosmology.

Cosmology here is both order and discourse of space and object. Cosmology may be defined as the language of the world as a totality of phenomena, spatial and temporal, ordered within a harmonious plan. In historical western tradition, the language of architectural cosmology manifest itself through a plan devised by proportion and geometry, a necessary scaffold around a haphazard human experience of the phenomenal world. Cosmos for the Greeks also referred to the tension between order/adorning and chaos of the mundane. "This cosmetic kosmos on the female body was about making Hera visibly beautiful by donning wonderfully crafted artifacts up about her body, and then asking Aphrodite for desire."<sup>8</sup>

Architecture deciphers the structure of physical and pata-



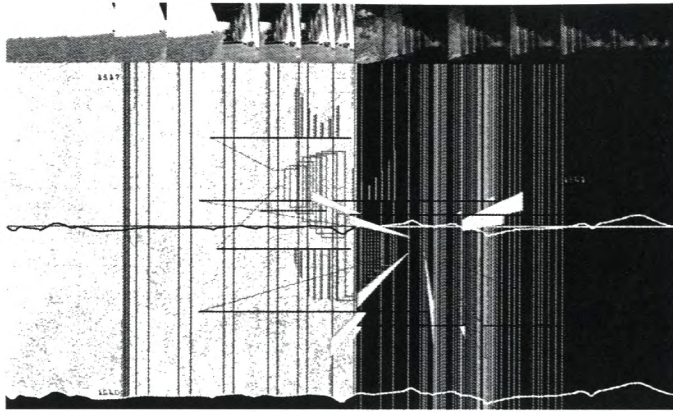
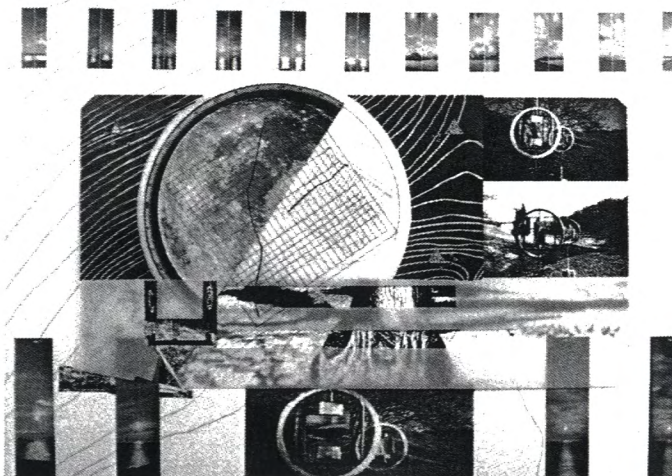


Fig. 7: Sight/site Survey

physical reality through the production of wonder and cosmology in tangible forms. Forms and lines depicting the imaginary, ethereal, internal and hidden to idea, thought, gaze or glimpse.

"Pataphysics is the science of imaginary solutions, which symbolically attributes the properties of objects, described by their virtuality, to their lineaments. This is a science of that which is super induced upon metaphysics, whether within or beyond the latter's limitations, extending as far beyond metaphysics as the latter extends beyond physics."<sup>9</sup> The evidence for this necessity for seeing the invisible is directly appropriated in architecture, the same way mechanical relations are appropriated in physics to philosophy. As a skilled user of graphics and illustrations Newton knew that thought is free to roam in many different directions, but explanations can only be provided and understood only through the mediation of the senses. "Perception can guide thought to a limit and beyond that limit, thought must proceed by the sheer force of abstraction. Before one reaches that limit and beyond that limit, however it is not inconvenient to use that mode of drawing that is closer to the Euclidean mode, or mode of geometric correspondence. Causal mechanical relations ideally suited to be shown, were also computed and verified through planar geometry. The notion of visual representation was necessary to identify mechanical

Fig. 8: Sight/site Survey + Viewing Machine



causality. It is no wonder that three of the most important developers of classical mechanics- Galileo, Descartes, and Newton were all excellent makers and drawing masters, who believed in cosmology."<sup>10</sup>

The final step in the process investigates a possible intervention on the site. This is demonstrated through a poetic logic. The site is read in order to appropriate the experiences recorded. Here the play of representation folds in on itself. The demonstration of poetic logic shifts between the possible intervention, the reality of nature, and the acts that record that possibility. This is intensified such that the bodily experience, informed by the senses, is bound to a precarious perch between the real (or mundane), and the unreal: the known and the unknown... This swings back the chimerical limb of demonstration and its role in the locution of the viewing machine. Through an empirical aesthetic, this locution reveals the world to be more real than it is.

It could be perceived that the origins of poetic logic came from Vico. In the *New Science* Vico states: "Logic comes from logos- from fabula (fable) carried to Italian favella, speech. In Greek the fable is mutus (mute) because speech was born out of mute times, as mental or sign language came before vocal or articulate language. Whence logos means both word and idea. Poetic monsters and metamorphosis arose from a necessity of this primary human nature, its inability to abstract forms or properties from subjects. By their logic, they had to put subjects together, or to destroy a subject in order to separate its primary form from the contrary form, which had been imposed on it... In Roman law, children born of prostitutes are called Monsters because they have both the noble and the bestial, coming from uncertain origins. And it was as being monsters of this sort we shall find that children born of noble women with out benefit of solemn nuptials were commanded by law of the Twelve Tables to be thrown in the Tiber."<sup>11</sup>

The de-mostration occurs when there is knowledge. It is no longer an unknown entity but evidence as its own witness. In the act of translation, we regulate the proliferation of monsters and pataphysics by representing their existence formally. Architectural pataphysics is then de-mostrated. Here is the moment where we look back to understanding technology as a method that transgresses the mundane into the cosmology of uniqueness. Pataphysics examines the laws governing exceptions, and will explain the universe supplementary to this one: or, less ambitiously, will describe a universe which can be - and perhaps should be - envisaged in place of the traditional one, since the laws of that are supposed to have been discovered in the traditional universe are also correlations of exceptions, albeit more frequent ones, but in any case accidental data which, reduced to the status of unexceptional exceptions, possess no longer even the virtue of originality. Demonstration through a poetic logic is the evidence of this process. As acts of knowledge, all real acts of construction begin with the unknown. This position that urges the quest for knowing, kindles the process of logic that translates the imagination. To demonstrate is to make an act of knowledge.

The architect gains knowledge through acts of making and in turn, the predicament of the beginner architect becomes the predicate of architectural cosmology through demonstration.

### Notes:

- <sup>1</sup> Marco Francari, *Under the Sign of Wonder: Seminar on Thaumaturgic Architecture*, (Philadelphia, University of Pennsylvania, 1991).
- <sup>2</sup> Erwin Panofsky, *Perspective as Symbolic Form*, (New York: Zone books, 1991).
- <sup>3</sup> Ann Bergren, "The( Re) Marriage of Penelope and Odysseus: Architecture, Gender, Philosophy," *Assemblage 21*, Cambridge, MIT Press 1993.
- <sup>4</sup> Martin Heidegger, *Poetry Language Thought*, (London: Harper & Row, 1971)
- <sup>5</sup> Manfredo Massironi, *The Psychology of Graphic Images*, (London, Lawrence Erlbaum Assoc. Inc., 2002.)
- <sup>6</sup> Giuseppe Zambonini, *Seminar: Notes for a theory of Making in a Time of Necessity*. (Philadelphia, University of Pennsylvania, 1990.)
- <sup>7</sup> E.E. Viollet-le-Duc, *Historie D'une Masion*, (Paris: Henzel 1873, reprint Brussels: Mardaga, 1979, 104.)
- <sup>8</sup> Indra Kagis McKewan, *Socrates Ancestor*. (Cambridge Mass: MIT Press, 1989)
- <sup>9</sup> Alfred Jarry, translated by Simon Watson Taylor, *Exploits & Opinions of Dr. Faustroll, Pataphysician*. (Boston: Exact Change, 1996)
- <sup>10</sup> Manfredo Massironi, *The Psychology of Graphic Images*, (London, Lawrence Erlbaum Assoc. Inc., 2002.)
- <sup>11</sup> Giambattista Vico, Trans. T.G. Bergin, *The New Science*, (Ithaca: Cornell University Press, 1970)

### Figures:

(All work completed in the first year of the architecture program)

1. Collage: Darby Forman
2. Speculative Perspective: Andrew Evans
3. Speculative Perspective: Farzana Gandi
4. Viewing Machine: Lydia Lee
5. Viewing Machine: Lydia Lee
6. Viewing Machine: Steven Tran
7. Sight/site Survey: Eric Ho
8. Sight/site Survey + Viewing Machine: Steven Tran.