Monumental Ephemerality

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William Green, chair

William Galloway

Mario Cortes


Architecture consists largely of placing something between earth and sky.
Eero Saarinen

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Abstract





This thesis completes the process of making architecture. It is a small project designed and built full scale. The act of realizing this work of architecture offered opportunities and limitations that do not exist within the confines of a desk project but, I believe, ultimately produced a stronger project. This is a piece of micro-architecture.

In order to create a project that is realizable for a thesis, I chose a small program: to design an exhibition structure that could be used outdoors to display and sell handmade items such as pottery. Since the use is temporary, the structure is designed to be portable, thus the assembly and disassembly of the building becomes a significant influence on the design. Beyond budget, weight and volume of the collapsed structure were significant design constraints.

This thesis is not just an exploration of tectonics. A great deal of effort was spent to ensure that the inside of the structure is still perceived as an outside space even though it provides protection from the weather and the activities of the street. A membrane keeps the water out while letting the light in; it blocks vision while transmitting shadow, and, while screening large areas from view, it reveals glimpses of people, activities, and the sky beyond.

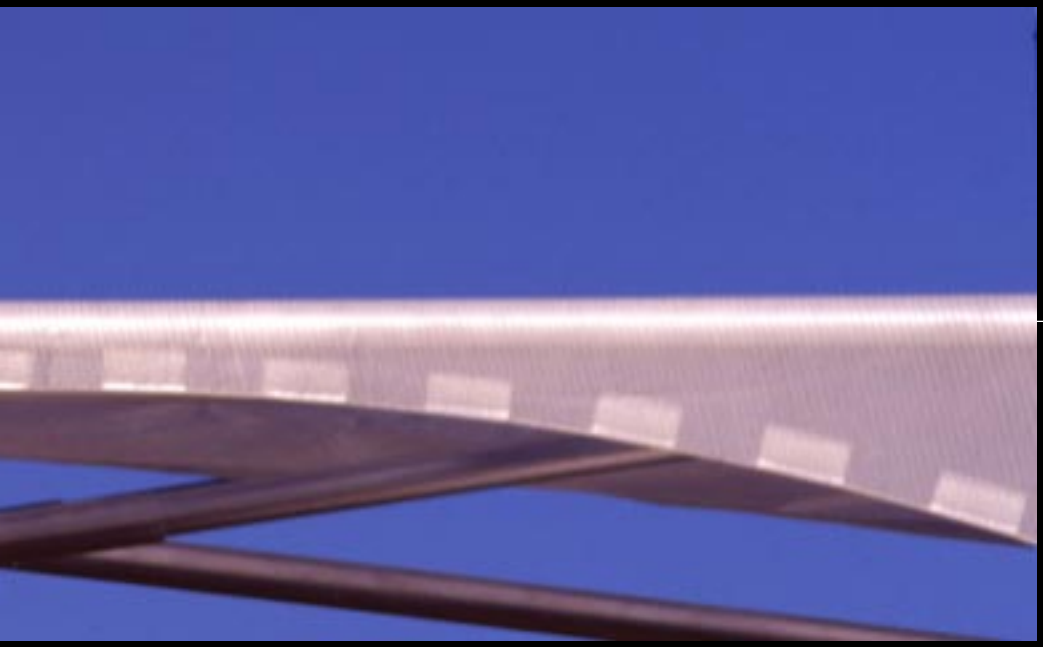
The lightweight aluminum structural frame visually dissappears. The fabric roof and side panels provide the main visual mass for the building and they are perceived mainly through the quality of light that they transmit and reflect. One looks at a structure but sees only its ephemerality.

This project embodies movement.

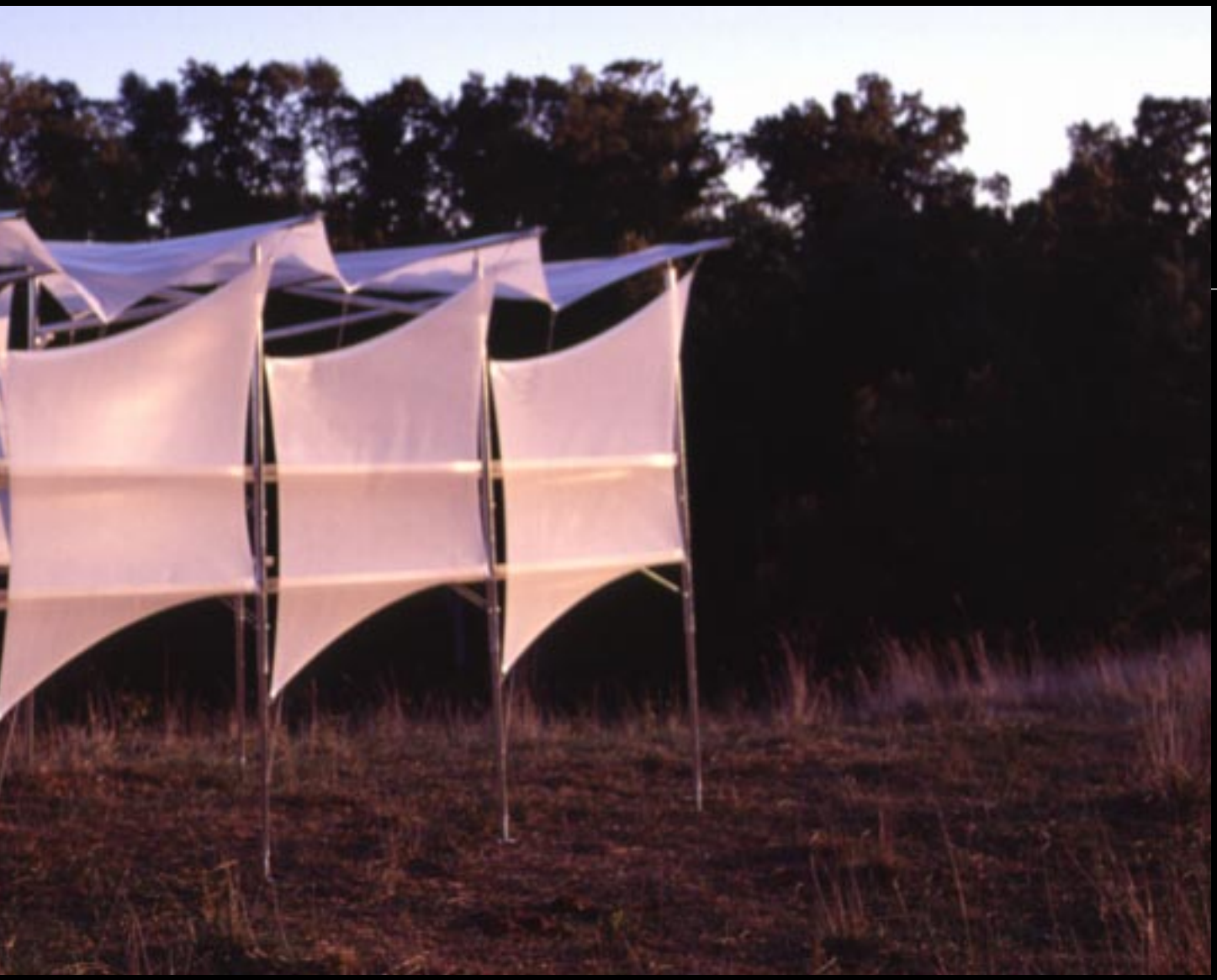
Moving images and moving people.

Moving views from a safe repose.

Moving products on a busy street.



Moving ideas and using technology.



It's about picking up and moving out.

And the changing light of the moving sun.

Consequently, it is about standing still in a moving world.

Assembly

Parts List

Lower Leg (7):
- 1/4-20 Bolt
- Foot Plate
- Neoprene Washer (2)
- 3/4 Threaded Rod
- Ball Bearing
- PVC Insert
- 1" Conduit
- Spring
- Push Button (2)

Columns (7):
- 1.25" Conduit
- Nylon Plug
- 5/16 Threaded Rod
- 5/16 Nut

Beam w/Hinge (6):
- 1/4-20 Screws (2)
- Hinge Plate
- Knurled Nuts (2)
- 10-24 Threaded Rod
- Hinge Rotator
- 10-24 Screws (2)
- Nylon Bushing
- 4-40 Screws (4)
- 1.25" Conduit
- Nylon Plug

Beam Extension (6):
- 1" Conduit
- Spring
- Push Button (2)
- Nylon Plug
- Tube End
- 10-24 Screw

Short Extension (1):
- 1" Conduit
- Tube End
- 10-24 Screw

Shelves (10):
- Hanging Pins (2)
- 4-40 Screws (4)
- .040" Shelf

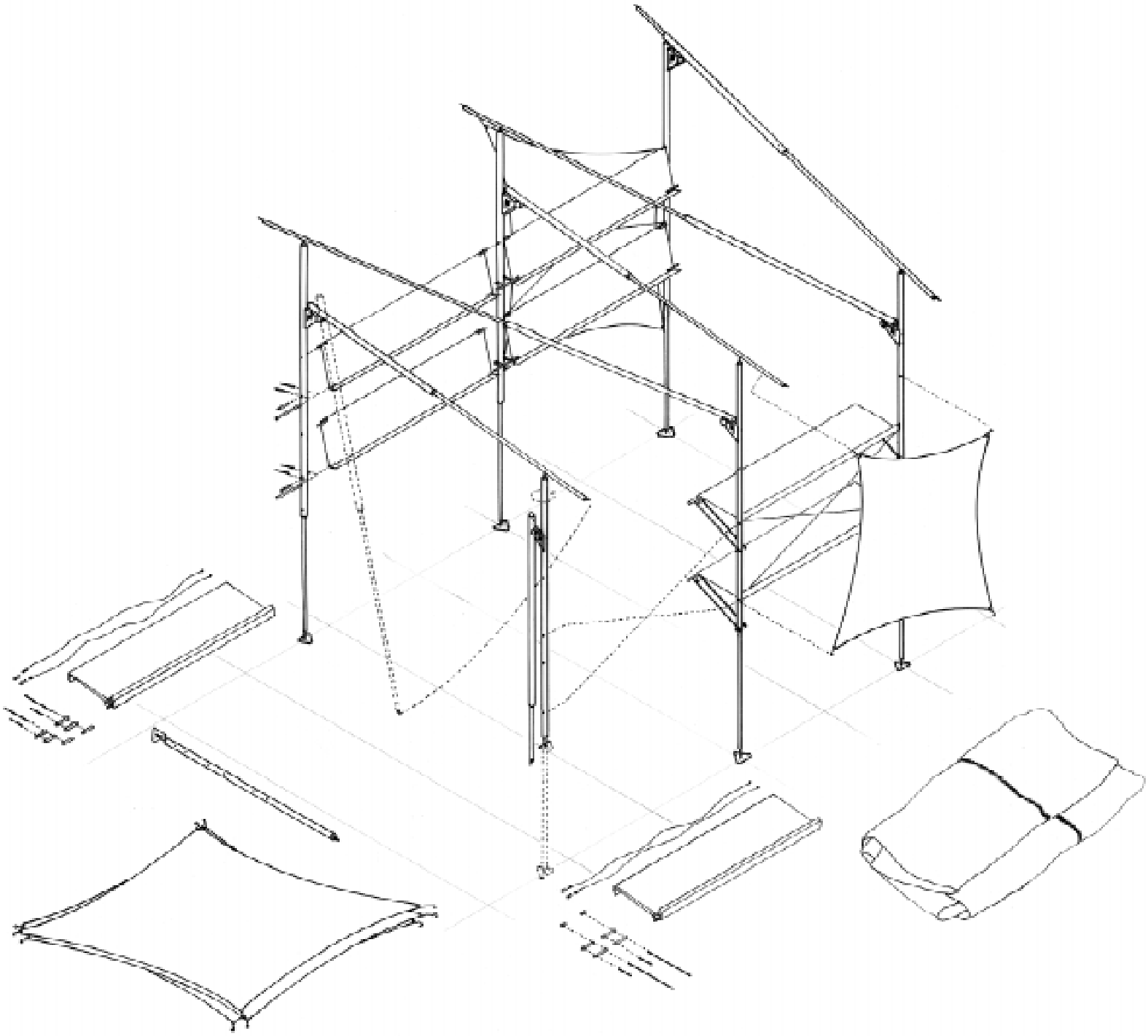
Shelf Supports:
- 10-24 Rod Long (20)
- 10-24 Rod Short (20)
- 10-24 Rod Ends (8)
- Prop Pins Long (6)
- Prop Pins Short (8)
- Resting Pins Long (6)
- Resting Pins Short (8)
- Support Pins (22)

Cross Bracing (4)
- Cable (2)
- Crimp Ends (4)
- Eye (2)
- Tensioner

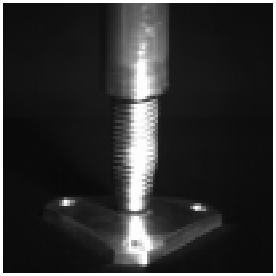
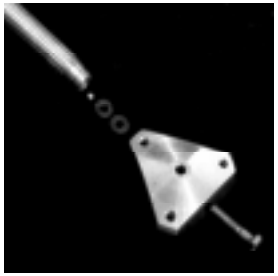
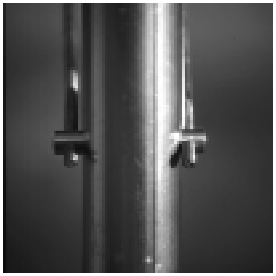
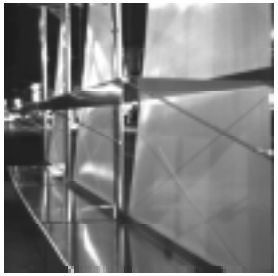
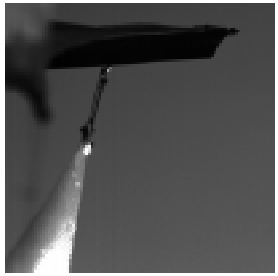
Side Panels (5)
- Cotter Pins (4)
- 1/16" Line (4)
- Ferrule (4)
- Tape
- Mylar Panel

Roof (1)
- Cotter Keys (7)
- 1/16" Short Line (7)
- 1/16" Long Line (5)
- 1/16" Perm. Line (2)
- Ferrule (14)
- Tape
- Wide Tape
- Mylar Panels (7)

571 Total Parts
- 133 Stock
- 160 Single Cut/Bend



Afterward

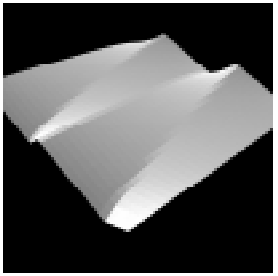
This project started as a means of demonstrating the preeminence of the built reality over the architectural presentation. Ideally, the built reality presents an architectural idea. This reality is what people experience when they interact with architecture even if the idea often remains elusive. There is no plaque, architect, or critic to explain a design that is silent. It seems odd then that this structure is experienced through this book that is clearly a presentation of a reality rather than the reality itself. This book re-presents the architectural intention, thereby bypassing the architectural reality, and thus demonstrating the preeminence of the presentation over built reality.

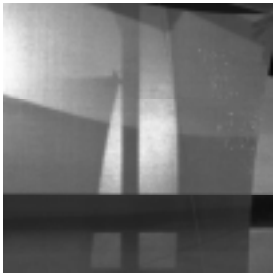
The process of constructing this project, however, has produced a stronger, more complete, and more believable project than the original concept models. Fabric with the right level of transparency was only found by visiting canvas, awning, and sail makers. When other options proved to costly, the choice to use aluminum conduit was made only after weight, structural concerns, and cost factors were evaluated. The decision to make the project, rather than just design it, meant that all factors had to be considered and all decisions had consequences.

An exhibition structure was chosen as the project since it deals with many issues facing architects today: the budget is limited, the site is generic, construction (setup) must happen quickly, and the design should have some presence. As a thesis, it is large enough to create an architectural space while remaining small and simple enough for one person to build.

Today the site for many projects is truly generic. The environment offered by one industrial park, suburban lot, or strip mall is much like any other. Worse, the surroundings of a site often change before a project is complete. Projects in these environments must have an autonomy independent of their external conditions. Each craft fair offers a new site and a new set of conditions. This structure has feet that pivot over surface







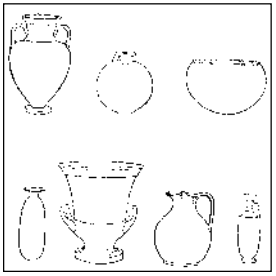
irregularities and adjust for elevation changes while allowing the rest of the structure to remain unaffected. The side panels visually screen out external noise to form a more meditative internal space where fine crafts can be appeciated but the sides are incomplete. The gaps between the panels provide a visual connection to the activity outside creating a more open, less enclosing space.

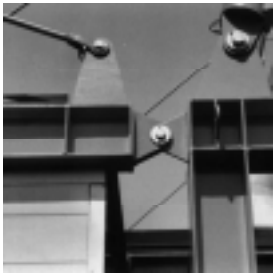
This structure meets stringent weight and volume constraints. Originally, intended to be moved by car, the structure was compressed small enough and light enough to pass as check-through luggage (two bags 76 and 54 pounds). The budget, $500, purchased very little material and helped set the packaging goals. To acheive the required sizes, all tubes telescope and the main structural joint is hinged. These hinges along with most other joints are adjustable to ensure precision allignment of all parts even as they wear. This lightness and adjustablity make the structure easy to erect and precise when setup.

Mylar sail cloth was chosen because it provides the desired level of transparency and opacity. It also is inelastic. In experimenting with 1/4 scale models of the side panels, this turned into an advantage since the perimeter cable could be eliminated. The roof was designed in CAD and cut along with the side panels on a computer controlled cutting table in about ten minutes, an example of technology providing custom parts affordably. The edges provide the only support for the roof; it floats above the structural frame and fosters the sense of lightness.

However, the ideas that work today won't always work; they must constantly be reevaluated. Every project offers an opportunity for learning. One must try something a different in each project in order to seize that opportunity. By growing through each project, by mastering new techniques, by improving each idea, architects can ultimatly build a future worth remembering.

Sources




Arnheim, Rudolf; *The Dynamics of Architectural Form;* Berkley: University of California Press, 1977.

Arnheim's views on the perceptibility of phenomena in architecture are insightful and enjoyable. His idea of a consistent perceptual cues appears in the upward visual lines in my project.

Berger, Horst; *Light Structures, Structures of Light: the Art and Engineering of Tensile Architecture*; Boston: Birkhauser, 1996.

Berger show, through his projects, the role fabric in light structures. This books goes beyond a collection of examples and provide modelling techniques and formulas for stress calculations.

Buchanan, Peter; *Renzo Piano Building Workshop: Complete Works*; London: Phaidon Press, 1993- Volumes 1-2.

Piano's organic details and appreciation for materials provide the best moments in his large body of work. Buchanan's books are the best including photographs, drawings, and sketches.

Ford, Edward R.; *Details of Modern Construction;* Cambridge, MA: MIT Press, 1990-1996.

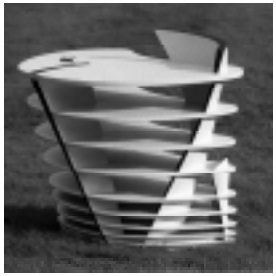
By looking at the built work, Ford exposes the myth of monolithic construction. The rhetoric of modern architecture desires honesty in construction but what you see is generally what the architect is willing to show you. Ford shows us the rest.

Harbison, Robert; *Thirteen Ways: Theoretical Investigations in Architecture*; Cambridge, Massachusetts: MIT Press, 1997.

Harbison presents ten theoretical ways of looking at architecture that vary from the architectural mainstream. In looking at these position, we question and broaden our own sense of architectural theory.

Hartoonian, Gevork; *Ontology of Construction: on Nihilism of Technology in Theories of Modern Architecture*; Cambridge: Cambridge University Press, 1994.

Just the succinct history of tectonics in architectural theory makes this book worthwhile; but the further analysis of meaning within construction makes it invaluable for understanding the current tectonic position.


Horden, Richard; *Light Tech: Towards a Light Architecture;* Boston: Birkhauser Verlag, 1995.
Horden, Richard; *Light Architecture;* Ann Arbor, Michigan: University of Michigan, College of Architecture, 1996.

Light weight and suffused with light are the best words to summarize Horden's work. His idea of micro-architecture proposes the construction of small projects, usually portable, at full scale that inspired this project.

Jencks, Charles; *The Architecture of the Jumping Universe: a polemic: how complexity science is changing architecture and culture*; London, Academy Editions, 1995.

Jencks would claim that there is no architecture without theory. Here, he supports that premise by showing how modern scientific theory permanently changes architectural design.

Jiricna, Eva; *Eva Jiricna, Designs*; London: Architectural Association, 1987.

Jiricna brings fashion and architecture together in a way that compliments both. Her designs support the presentation of goods without the architecture disappearing or upstaging the products. The book layout show the same attention to detail as her work.

Lambot, Ian [ed].; *Norman Foster, Foster Associates: Buildings and Projects*; Hong Kong: Watermark, 1989-1995 Volumes 1-4.

From the foot of a table to the structure of a high rise, Foster brings materials together with extreme clarity. These books provide that best documentation of design and prototyping work that characterizes this office.

Riley, Terence [exhibit organizer]; *Light Construction*; New York: Museum of Modern Art: Distributed by Harry N. Abrams, 1995.

This exhibit presents more on light than on construction but the examples of reflection, transparency, and translucency in these projects challenge the convention that sun is the only light in architecture.

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Curriculum Vitae

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Master of Architecture, Virginia Tech, 1997