

Department of Architecture
School of Architecture and Allied Arts
University of Oregon

ARCH 281 Fall 2005 Intermediate Architectural Design I

ASSIGNMENT 6: STRUCTURE AS FORMGIVER



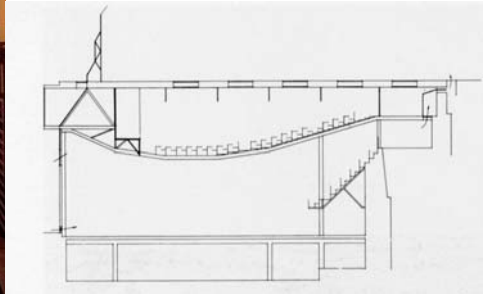
Palestra, Foro Romano by Luigi Moretti

- OBJECTIVE**
- To consider structure as space-defining and light-defining elements.
 - To experiment with vertical elements (bearing walls, piers and columns) and horizontal trusses and beams
- QUESTIONS**
- Where do you want visibility, translucency and opacity? How can walls or piers shelter activity while opening up to exterior connections?
In each major public area, how can you incorporate focal glow, ambient luminescence, play of brilliants? Is it best achieved with side, top or low lighting? How can the building structure and interior elements work with natural light?
- PROCEDURE**
1. DOCUMENT & REFLECT:
 - Consider pin-up comments and fill out the worksheet questions about your own project and fill out the self-evaluation form.
 - Create Portfolio pages of a) your Daylighting model, and b) your Performance Space scheme, c) revise the Threshold page to match.
 2. PLAN THE STRUCTURE: Consider how you could support the roof and floors of your building. Can you create a logical system without making it boring? Can the theatrical grid or seating structure do double duty as support? Plan a tool kit of modular pieces (heavy walls, columns, beams and non-bearing panels)

For this building, assume perimeter walls are ~1' thick bearing walls, (i.e. concrete masonry units CMU with interior and exterior finishes) with openings for glass or thin non-bearing curtain wall. Roof or floor structure should be built of steel or wood.

Rules of thumb: Horizontal trusses or beams need to be roughly 1/10-1/12 of their span (i.e. a 43' span requires a 43" to 51.5" deep truss).
 3. EXPERIMENT IN SKETCHES & MODEL:
 - Sketch options for the structure in plan, section and axonometric at 1/16"
 - Create a digital model or a 1/8" physical model that shows the main structure. Create at least one alternate option (piers instead of columns)Print out section, plan and axonometric, poche digitally or by hand.
 - After your first critique, add major interior partitions - they can vary from a piece of fabric to thin framed panels to massive bearing walls.
 4. EXPLORE LIGHTING: Plan your design objectives. Use your 1/8" model or create a room model at 1/4" or 1/2' for daylight study. Find and capture interesting views. Adjust openings, reflectors and materials to manipulate the light to meet these views. Create experimental perspective renderings by printing digital images for underlays or by working images with Photoshop.

SCHEDULE	Mon. Oct. 31	- Mid-term self-evaluation, pin-up notes & Portfolio pages due. - Katrina Disaster Relief Charette (in-class)
	Wed. Nov. 2	Structure drawings due, start model in class.
	Fri. Nov. 4	Daylighting talk, 115 LA from 1:00-2:00pm Structural model due
	Weekends	See a local performance, examine and take notes on the environment.
	Mon Nov. 7	Daylit perspective views due. Begin Façade studies
	Fri Nov. 11	Second Pinup



Gymnasium, Alexandra De la Sota from <http://icar.poliba.it/storiacontemporanea/navigatore.htm>

REFERENCES STRUCTURE and LIGHT

- Plummer, Henry, *Light in Japanese architecture* AAA NA6 .A12 1995 June (*non-circulating inspirational picture book*)
- Rice, Peter, *An Engineer Imagines*, London : Artemis, 1994. TH140.R5 E44 1994 (*stories that explain how an engineer works with material properties to realize design ideas*)
- Berger, Horst, *Light structures, structures of light : the art and engineering of tensile architecture*, Basel ; Boston : Birkhauser, 1996. AAA TA663 .B47 1996.
- Brookes, Alan, *Connections : studies in building assembly* , Oxford ; Boston : Butterworth Architecture, 1992. TH2025 .B763 1992 (*case studies of high-tech buildings*)
- Detail magazine, NA2835 .D4 (*exquisite German modernist components and assemblages*)
- Mainstone, Richard, *Developments in Structural Form*, Cambridge, Mass. : M.I.T. Press, 1975. AAA TH145 .M2796 1975b (*a visual survey of structures*)

"Every day you may make progress. Every step may be fruitful. Yet there will stretch out before you an ever-lengthening, ever-ascending, ever-improving path. You know you will never get to the end of the journey. But this, so far from discouraging, only adds to the joy and glory of the climb."

-- Sir Winston Churchill (1874 - 1965)

