UNIVERSITY OF OREGON
School of Architecture and Allied Arts

Design Communication II /// ARCH 222 /// AAA /// Spring 2018
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Graduate Employee: Ryan Maruyama

Exercise 2.2a /// Material Affect: Lighting

The in-class demonstration, blog post, tutorial, and lab sections will walk you through rendering commands using global illumination (GI), a sun system, a rectangular light and a point light (we will also show material mapping).

Purpose: To create 'phenomena' in architecture.
The purpose of this exercise is to transform variations in a **quantitative** geometry into a **qualitative** effect.

operation 1, Convert: Convert your 2D patterns into plain black line work by selecting all (CTRL A) and setting a black stroke and no fill. Vary line weight and line type (solid, dashed). Dashed lines will be "cut" lines. Print copies to 8 1/2 x 11 paper. *You may need to scale your tiling pattern to fill the paper.

operation 2, Cut: Cut dashed lines, fold solid lines. Do not cut holes in the paper; try to only cut slits. Make your own rules - you may want to redo the Convert step as needed. // In the future you may use the laser cutter.

operation 3, Test: Using a lamp or direct sunlight, test your unit module **system.** What lighting effects does it create? What other AFFECTS does it support? **Roll** the piece of paper. You may have to delicately help free open some of the slits but **do not** force them - the natural bend of the sheet will systemmatically vary unit openings.

operation 4, Catalog: "Look at what you did!" **Photograph** and **name** (3) conditions of your "affect" on a black background, moving the light closer and farther from the paper. Photograph not the paper but the shade pattern that evokes a human experience.

Repeat these steps in two to three iterations. **OBSERVE.** Try to control the system from the unit module operation of solid/dashed lines, print, and then cut. Calibrate the various conditions of the affect. Can you control the system from the BOTTOM UP?!

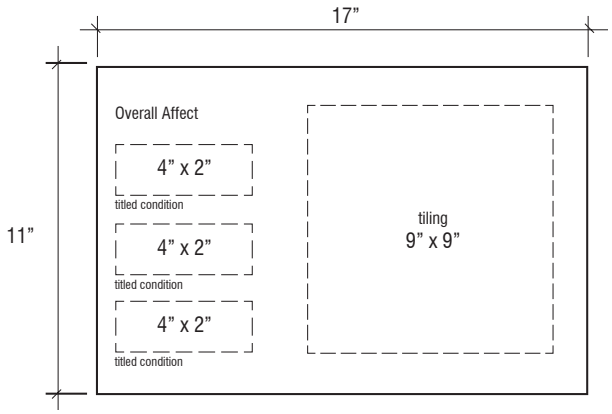
Document using the template. Name the affects (left) and show 4" x 2" zoomed photos of the affect. Name the conditions. Edit the photos in Photoshop to emphazise contrast and B&W. Clip your solid/dashed tiling pattern to the 9 x 9 space. Control line weights.

Deliverables:
[1] 11 x 17 + Tadao Ando reading (see blog post)

Learning Objectives
- To generate systematic affects from a unit operation.

Evaluation Criteria:
- Ability to transform a 2D pattern to a 3D affect.

Schedule:
Assigned: Tuesday, May 1
Upload Due: 11:59 PM, Monday, May 7
Print Due: 8 AM, Tuesday, May 8

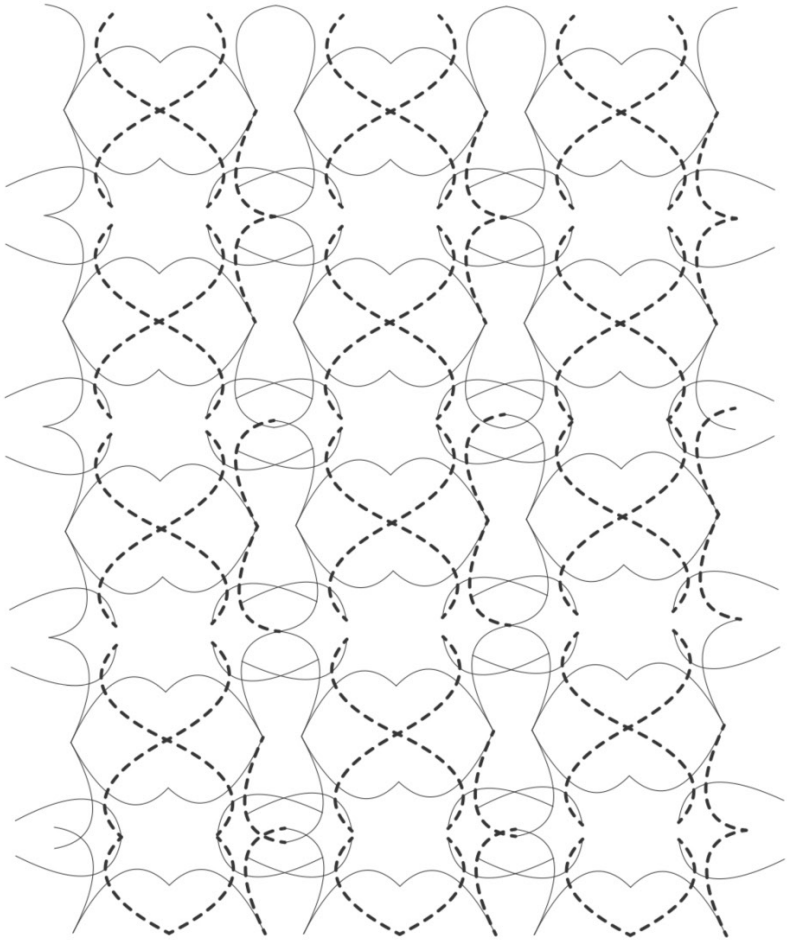


XOXO

Catch

First

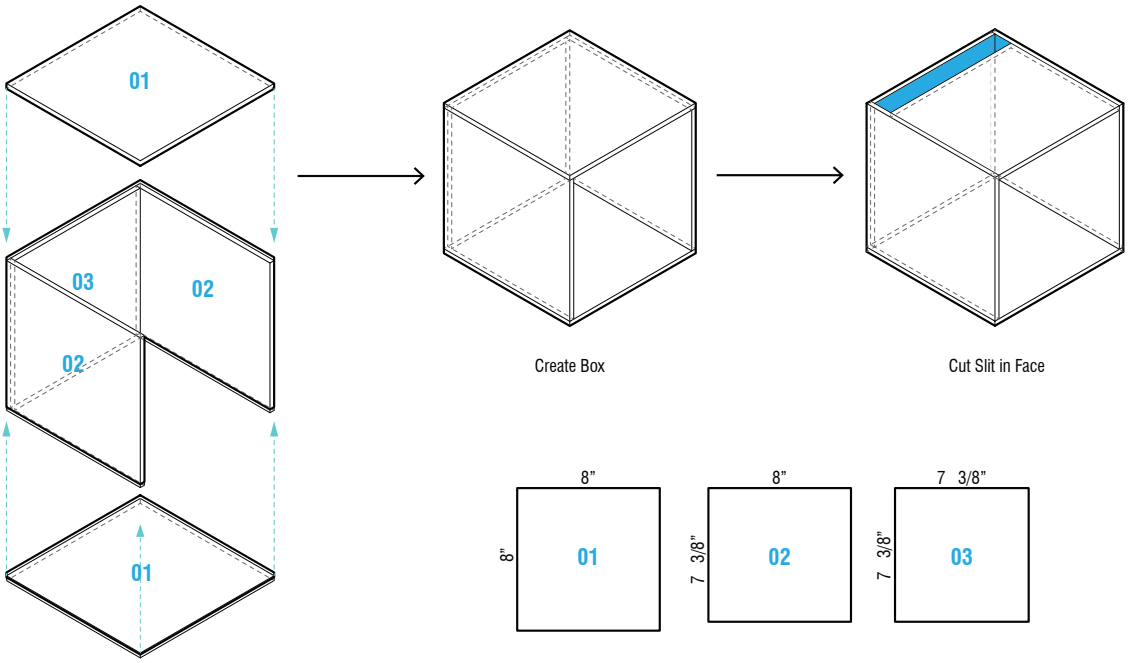
Baseship



Exercise 2.2b /// Analog Parametrics: Lighting Simulation

Purpose
The purpose of this exercise is to simulate lighting with real light and Vray light.

Create a physical box using foam core. Make **cut 1**. Photograph (3) lighting positions using a desk lamp.
Create a 3D virtual box. Make **cut 1 (Boolean difference)**. Render (3) lighting positions using Vray.
Create a 3D virtual box. Make **cut 2 (Boolean difference)**. Render (3) lighting positions using Vray.
Create a 3D virtual box. Make **cut 3 (Boolean difference)**. Render (3) lighting positions using Vray.



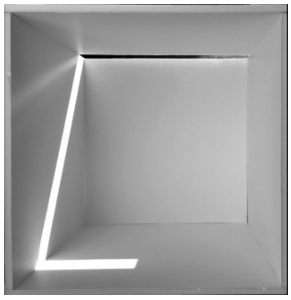
Deliverables:
[1] 8.5 x 11 or 11 x 17. See next page for layout.

Learning Objectives:
- To generate systematic affects from a unit operation.

Evaluation Criteria:
- Ability to transform a 2D pattern to a 3D affect in Rhino 3D.
- To use Rhino 3D to test a human experience.

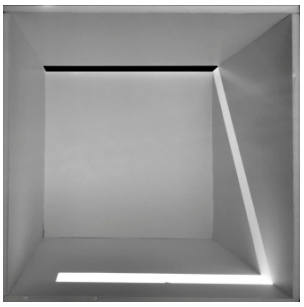
Schedule:
Assigned: Tuesday, May 1
Upload Due: 11:59 PM, Monday, May 7
Print Due: 8 AM, Tuesday, May 8

Exercise 2.2b /// Analog Parametrics: Lighting Simulation



1A. *TIME_NAME*

1B. *TIME_NAME*

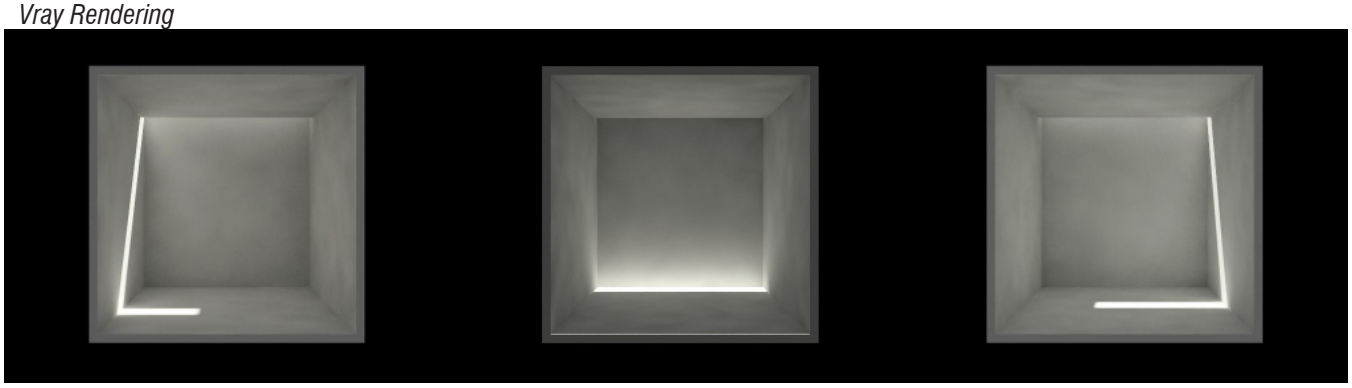


1C. *TIME_NAME*

Physical Rendering

Cut 1

Vray Rendering



1A. *TIME_NAME*

1B. *TIME_NAME*

1C. *TIME_NAME*

Cut 1

2A. *TIME_NAME*

2B. *TIME_NAME*

2C. *TIME_NAME*

Cut 2

3A. *TIME_NAME*

3B. *TIME_NAME*

3C. *TIME_NAME*

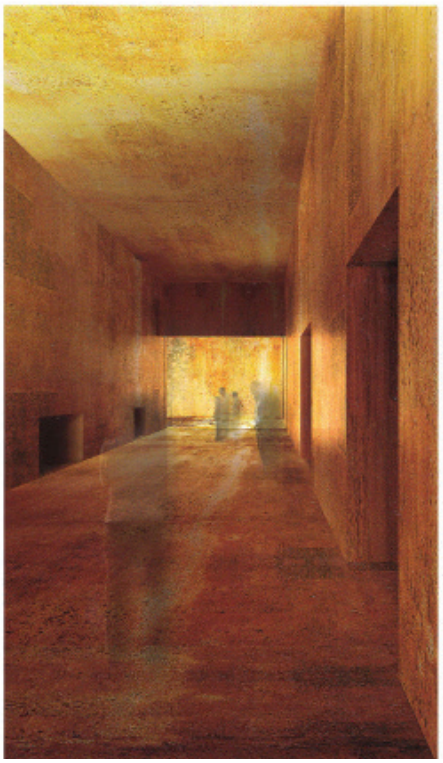
Cut 3

Exercise 2.2c /// Rendering and Collage

Render one interior space of your project. Attempt to create layers of lighting affect.
Layers: 1) Make2D line work
2) "Entourage" (people and things) for scale
3) One or more material samples/landscapes (context)

Purpose
The purpose of this exercise is to simulate lighting to investigate geometry and material affect and systems logic.

Speranza Architecture,
Push | Pull House



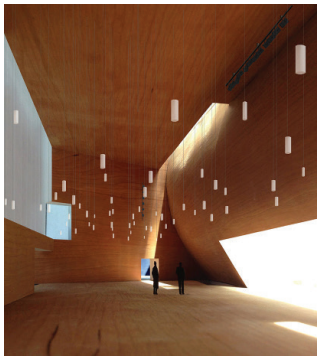
RCR Arquitectes, Crematorio

Tutorials:
Vray for Rhino
Rhino 3 (Camera setup)

Deliverables:
[1] 11 x 17

Learning Objectives:
- To learn to simulate light.
- To learn to study the experience of your projects from the inside out.

Evaluation Criteria:
- Ability to render light using Vray for Rhino
- Proficiency of 3D modeling in Rhino 3D.
- Ability to use Rhino and Adobe Photoshop to test human experience.



Steven Holl Architects, Kennedy Center

Schedule:
Assigned: Tuesday, May 2
Upload Due: 11:59 PM, Monday, May 8
Print Due: 10 AM, Tuesday, May 9