

Design Communication II /// ARCH 222 /// CoD/// Spring 2020

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Exercise 2.2a /// Material "Affect": Light

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 approximately 8 units per page. Draw by hand if no printer.

operation 2, Cut: Cut dashed lines (or 2-3 sides of unit). Do not cut holes in the paper; Do not bend units open. If necessary make new rules with a marker // 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 **90 degrees**. You may have to delicately help free open some of the slits but **do not** force them - the natural bend of the sheet will systematically 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 shaded 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. Show 4" x 2" zoomed photos and name "affects" / feelings (left - generative idea). Show your solid/dashed tiling pattern to the 9 x 9 space (right - instructions). Control line weights.

Deliverables:

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

Learning Objectives

- To generate systematic affects from a unit operation.

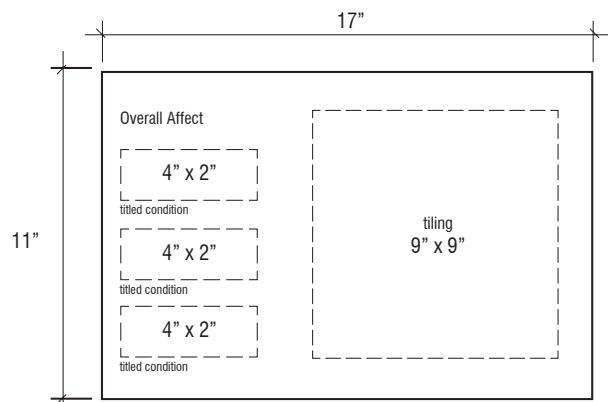
Evaluation Criteria:

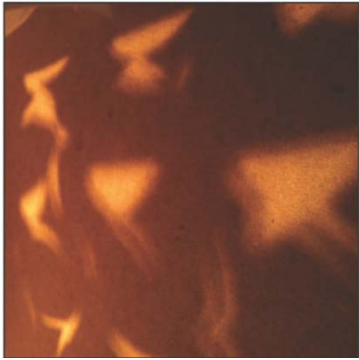
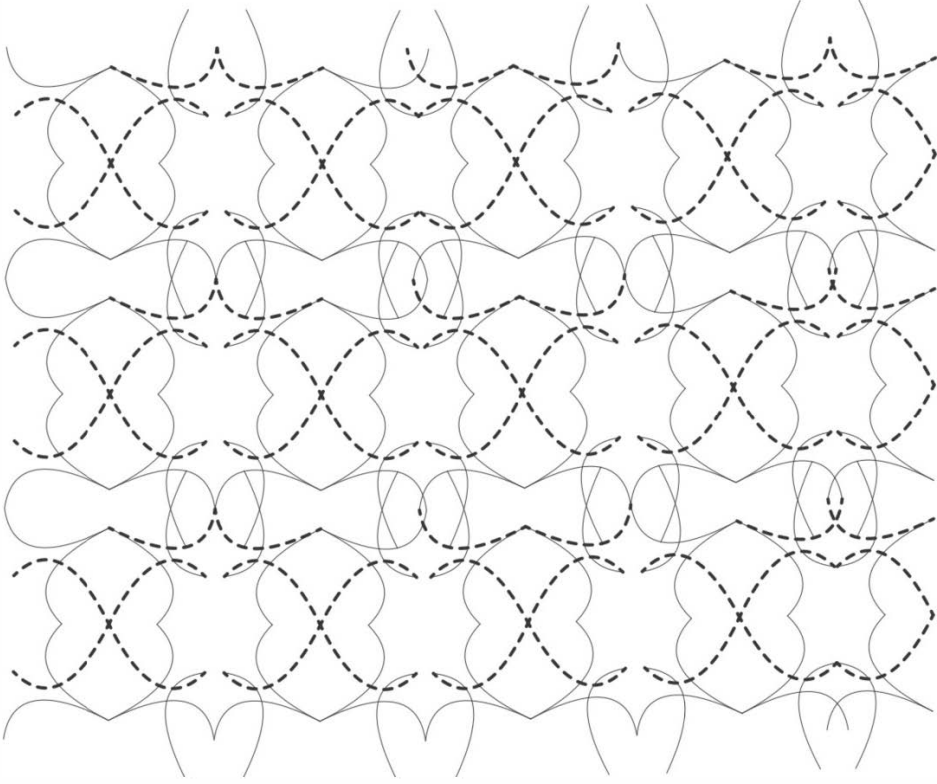
- Ability to transform a 2D pattern to a 3D affect.

Schedule:

Assigned: Tuesday, April 28

Upload Due: Monday, May 4, 11:59pm





CATCH



BASESHIP



XOXO



FIRST



Exercise 2.2b /// Analog Parametrics: Lighting Simulation

Purpose

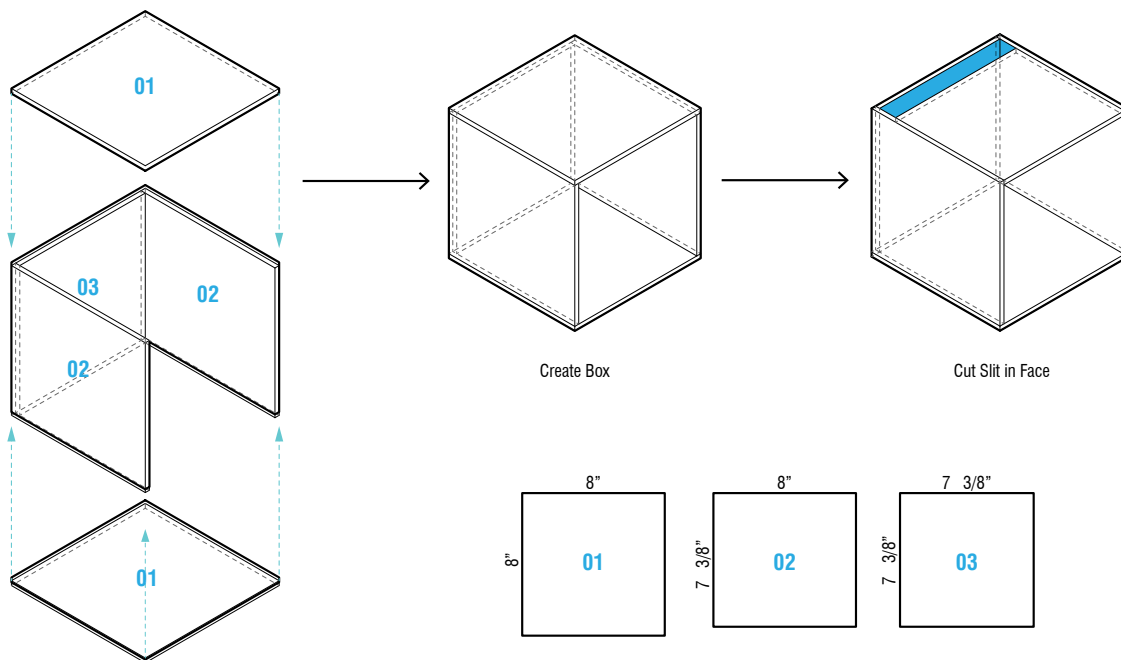
The purpose of this exercise is to simulate lighting with real light and Vray light.

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:

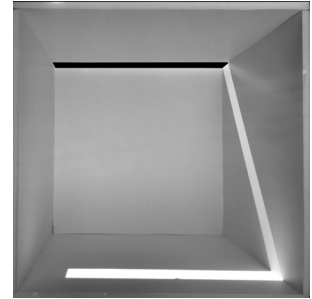
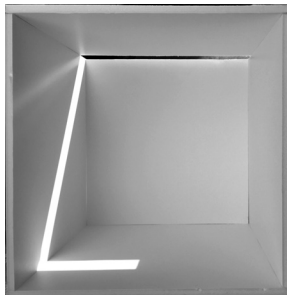
- Ability to transform a 2D pattern to a 3D affect in Rhino 3D.
- To use Rhino 3D to test a human experience.

Schedule:

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Exercise 2.2b /// Analog Parametrics: Lighting Simulation



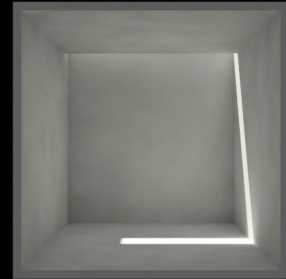
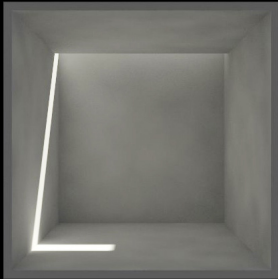
1A. TIME_NAME
Physical Rendering

1B. TIME_NAME

1C. TIME_NAME

Cut 1

Vray Rendering

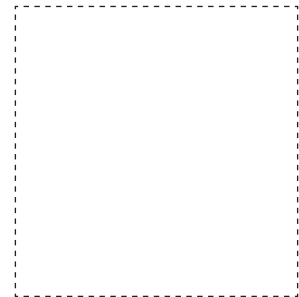


1A. TIME_NAME

1B. TIME_NAME

1C. TIME_NAME

Cut 1

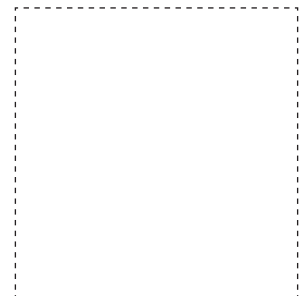


2A. TIME_NAME

2B. TIME_NAME

2C. TIME_NAME

Cut 2



3A. TIME_NAME

3B. TIME_NAME

3C. TIME_NAME

Cut 3



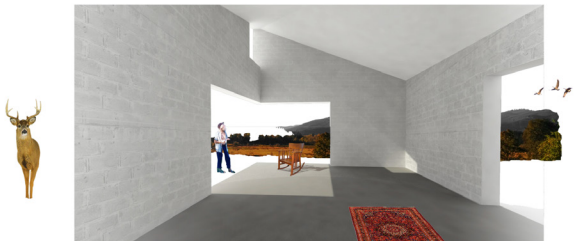
Exercise 2.2c /// Rendering and Collage

Render one interior space of your project. Attempt to create layers of lighting affect.

- Layers:
- 1) Make 2D 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



Tutorials:

Vray for Rhino
Rhino 3 (Camera setup)

Deliverables:

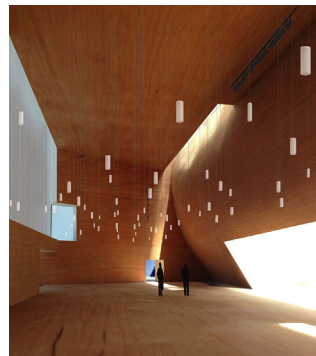
[1] 11 x 17

Learning Objectives:

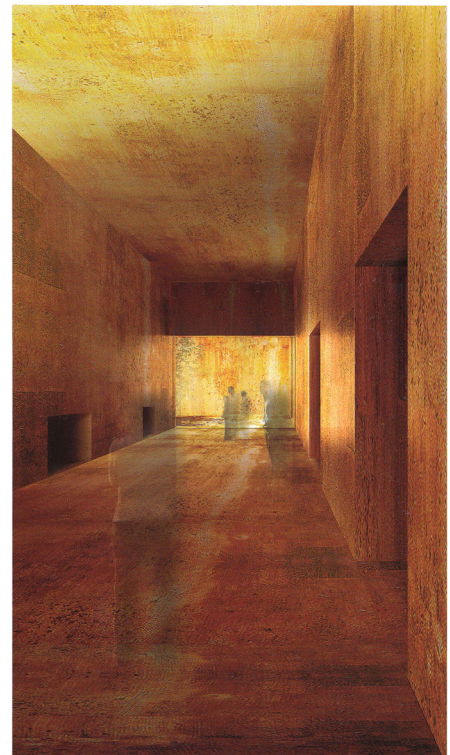
- To learn to simulate light.
- To learn to study the experience of your projects from the inside out.

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



RCR Arquitectes, Crematorio

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