

# Architecture Studio: 2<sup>nd</sup> Year Fall

Fall 2009, CMU, Arch #48-200, M/W/F 1:30-4:20  
Class Website: [www.andrew.cmu.edu/course/48-200](http://www.andrew.cmu.edu/course/48-200)

Coordinator: Kai Gutschow  
Email: [gutschow@cmu.edu](mailto:gutschow@cmu.edu)  
Off. Hr: M/F 12:00-1:00pm & by appt. in MM202

(8/23/09)

## PROJECT 1 – LIGHT TRANSFORMER

"No space, architecturally, is a space unless it has natural light...  
Structure is the giver of light... I sense light as the giver of all presences...  
Material is spent light.... Shadows belong to light... The sun never knew  
how great it is until it struck the side of a building." - Louis Kahn  
"Architecture is the masterly, correct and magnificent play of  
volumes brought together in light." - Le Corbusier

### THE MINDSET

The goal is to study light, and to see how we can modulate light, and thereby transform space and the experience of architecture. The project is life-size, allowing us to test and evaluate issues of "performance" in a more architectural manner, in relations to our own bodies. All architecture is collaborative and interactive. Teamwork stimulates dialogue and encourages richer and more substantial results in a short spurt of time than is possible by yourself.

### THE PROJECT: 5 Steps

**I. COLLECTING:** Each student is to find five (5) different interior "light conditions" and record them in 5 separate hand drawings (min. 18"x24"). You may search anywhere in Pittsburgh. Seek variety: try different kinds of rooms, different sizes, light from above or the side, north light and south light, light during a particular instant, or the changing light over time, light with color, reflected light, light at night, rays of light, shadows, dappled...

**II. DESIGNING:** Each studio will be divided into four teams. As a team, find a space with an interesting, defined source of daylight, in which you are allowed to temporarily "install" a "light transformer."

Design a device that substantially changes, alters, filters, amplifies, disperses or redirects the quality and nature of the light in the room. Design interactively and iteratively as a group, work quickly, try many variations, experiment boldly, think "outside the box." Think about light *and* shadows. Consider the entire ROOM!

You may use any materials that will transform light. Consider materials, with different values of transparency, translucency, opacity, reflectivity, absorbancy, color, perforation, porosity, etc. You must be able to built it in a week.

Be sure to consider the many qualities of light in architecture: how it streams *in*, and how it lets us see *out*; how it passes *through* multiple layers (the atmosphere, the trees, the window pane, then your device); and finally how it washes down a wall, projects onto, or reflects off of surfaces. Your design should consider and include layers for light to pass through, and surfaces to project onto.

Record the process, and every idea in careful sketches on 8.5x11" paper. Constantly force yourself to put into words and concepts HOW you are altering the light, what the qualities/experiences are before and after.

**III. CONSTRUCTING:** Once you have reached a consensus on the nature of your "light transformer" installation, purchase materials, and begin experimenting at 1:1 scale in the studio, and then "on site" in the actual space. Keep experimenting to create even more amazing results on site. Please respect the spaces you work in! "Art Installations" are illegal at CMU without permissions!

Your construction must actually "work". Do not make a "model" that approximates your ideas. Make the actual "light modulator device." Performance counts. Remember: this is about altering the quality and nature of light in the room!

**IV. MODELING:** Record the light situation before and after your installation, and at different times of the day, with a regular camera. Then digitally model the entire room and the light qualities before and after your installation using VRAY software (see IDM2 website for help sheets). Work to make your digital model as close to the "real" as possible. Then use your digital model to identify how your device would transform light in other seasons and times.

**V. REVIEWING:** We will review: 1) the design process by looking at group process sketches; 2) the design, by looking at a large (24"x36") section (or sectional perspective) showing the light passing through your light transformer; 3) the performance, by looking at photographs and digital model showing how you transformed the light; 4) the prospect, by looking at renders of different times; 5) the actual light modulating device.

*A list of final requirements will be handed out in the 2<sup>nd</sup> week.*

