School of Architecture
CLEMSON ARCHITECTURAL CENTER
Charleston, South Carolina

The Gibbes Installation

a digital, manual, and perceptual production

BY ROBERT MILLER, PROFESSOR
AND JOSHUA ALLISON, LECTURER

In 2003 the Gibbes Museum of Art invited the Clemson Architecture Center in Charleston (CAC) to design and construct a temporary installation in front of its historic Beaux-Arts façade. We were asked to do three things:

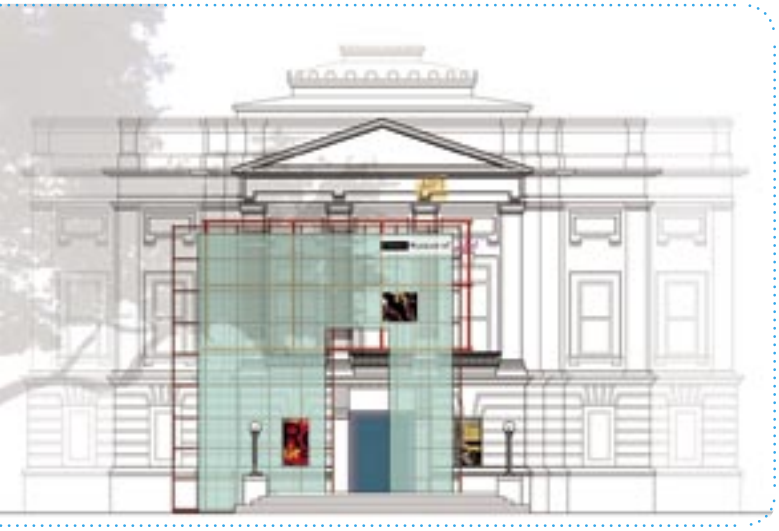
PERCEPTION: To call attention to the building, putting it on the cognitive map of Charleston for both visitors and tourists.

CONCEPTION: To alter the public conception of the institution, updating people's image of the Museum.

RECEPTION: To transform the entry sequence, getting people to come inside (once they find the building).

CONCEPT

Restricted to a temporary installation of two-years duration, we proposed to accomplish this mission with some irony: by covering up the most valued and only visible part of the façade. By installing a screen over the building's temple front, and using that screen as a canvas, we could bring the Museum's activities out to the street and stimulate a healthy debate about the nature of the institution as well as the building's virtues–and problems.



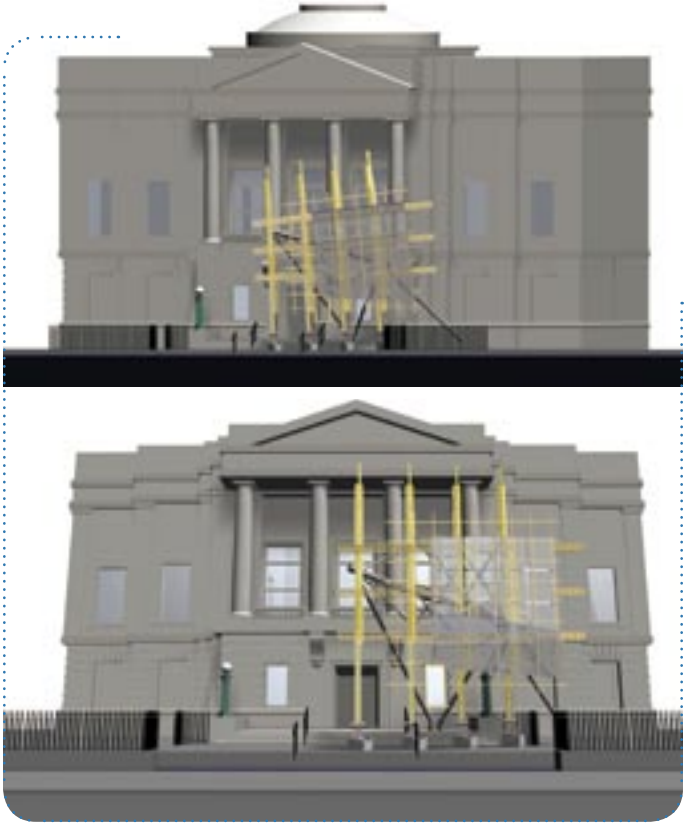
DESIGN DEVELOPMENT

A careful analysis of Frank Milburn's original design of 1903 revealed a sophisticated composition that employed subtle compositional and perspective devices. The layering of the building is especially effective at creating an illusion of center projection, a visual ploy that is now diminished by vegetation planted around the building. The original design moves have been catalogued and redeployed in the Installation in such a way as to enhance, yet transform, the Beaux-Arts principles.

In critique of the emerging design, however, we discovered a severe limitation in hanging a screen across the façade: it was restricted to two-dimensional effects, these being effective only upon entry. By pulling the screen off the building, a new spatial capacity was made possible between building and Installation that also transformed the movement sequence both into and out of the Museum.

With the Installation pulled away from the building, it had now to be re-designed in perspective, and perspective, we had already learned, was a critical feature in the original design. Setting up a centered axial approach, the carefully composed layering of the Gibbes exploded the temple-front toward the viewer: the closer one gets, the more dramatic the apparent projection of the center of the building. This phenomenon, not evident in elevation, is only activated in perspective.

To incorporate but transform the working of perspective as a fundamental aspect of the Installation, we reversed its role vis-à-vis Milburn's design. While the Gibbes is essentially flat and orthogonal, the Installation is skewed and topsy-turvy; standing on axis, however—just where the Gibbes façade is activated in perspective—the Installation visually flattens out and aligns with the building behind. Thus, the Installation calls attention to the role of perspective in the original design, but employs it in an obverse way.



DIGITAL MODELING

As a consequence of its perspective role, the Installation could contain no right angles—not in any of its three axes. Because this was a design/build project, we initially planned to deal with this complexity by making every connection field adjustable. When this proved to be both technically complicated and beyond our budget, we turned to **form·Z**. If we could not build a large and exacting structure by adjusting its visual alignments on site, then we would have to rely on a digital model.

Because the Installation was to be tuned to an existing building, we first needed extremely accurate three-dimensional of the existing setting. This was obtained (complements of Thomas & Hutton Engineering Co.) with a high-definition scanner. Essentially a laser that scans the built environment, the device correlates readings from two or more positions to arrive at a three-dimensional read-out of both horizontal and vertical elements within its field of view. (The readings in our case were accurate to within 1/8"). DXF data from the scan was imported into AutoCAD from which a raster drawing was made and exported to **form·Z**. (The millions of points recorded by the scanner exceeded the capacity of **form·Z**'s Re-Engineer plug-in, which we used later for smaller detail additions.)

To verify that **form·Z**'s perspective algorithm would approximate site conditions—one would not want to construct a perspective-sensitive design that worked digitally, but not in real life—we took field measurements of a pole-relative-to-the-museum, and compared these to a digital simulacrum. We believe **form·Z**'s digital environment will adequately replicate the actual viewing conditions.

FABRICATION

Prefabricated entirely by students, the Installation is in its third semester of construction. Made primarily of wood, it also includes carved limestone, steel, and lexan sheets.

Perhaps the most interesting component of the project, relative to the Installation's perspective design, is a three-dimensionally skewed grid of approximately 28' X 28' X 6". Using dimensions and angles generated in **form·Z**, a pattern was laid out upon a custom deck; then, vertical templates (each at different angles) were affixed to the pattern. This great formwork then allowed the grid, skewed in three dimensions, to be built up from eleven layers of ½" plywood, each attached and encased in epoxy.

Other components of the work were similarly informed by **form·Z**. The dimensions and placement of four structural piers, of identical proportion but of unique size, were developed in the software. Patterns were then plotted at full scale and used in fabrication.

Lastly, steel components developed in **form·Z** were exported to AutoCAD, whose files were sent to a steel fabricator's C&C laser cutter.

SUMMARY

The project is scheduled for on-site installation in January 2007. All of the engineering and the majority of the materials have come from donations in the architectural and construction community around Charleston. It is our hope that the project will bring attention to a great institution and appreciation of a remarkable Beaux-Arts building.