

VIRGINIA SAN FRATELLO

STUDENT WORK

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The following projects were completed by students at Clemson University, California College of the Arts, The University of Arizona and San Jose State University in studios and seminars taught by Virginia San Fratello.

Digital Design Build Projects:

THE CONCRETE DESK, THE CURTAIN, THE CONSTRUCT

Interior Design Studios:

GOLDEN GATE VALLEY BRANCH LIBRARY RENOVATION, GILROY

HOT SPRINGS RETREAT AND SPA, HOUSING GENOVA

Foundation Level Studios:

THE HERMITAGE

Material Studies

CASTING, THERMOFORMING, LASERCUTTING

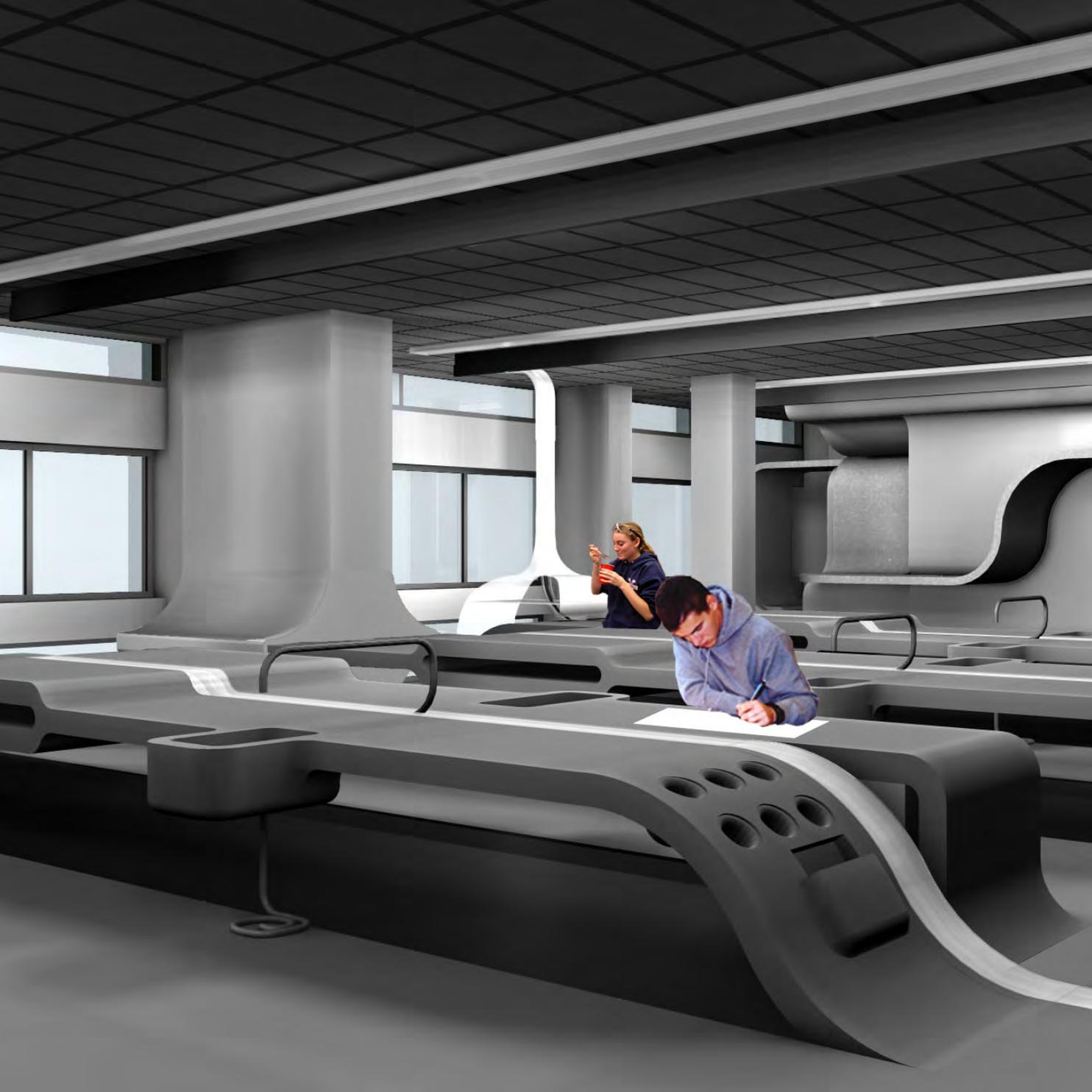
Object Design:

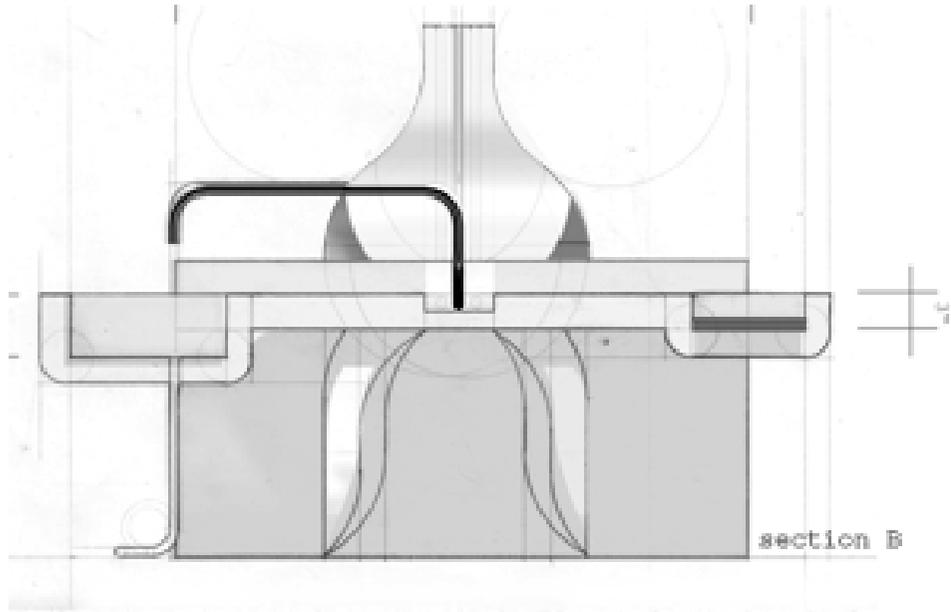
THE DISHES OF NEW ORLEANS

CONCRETE DESK

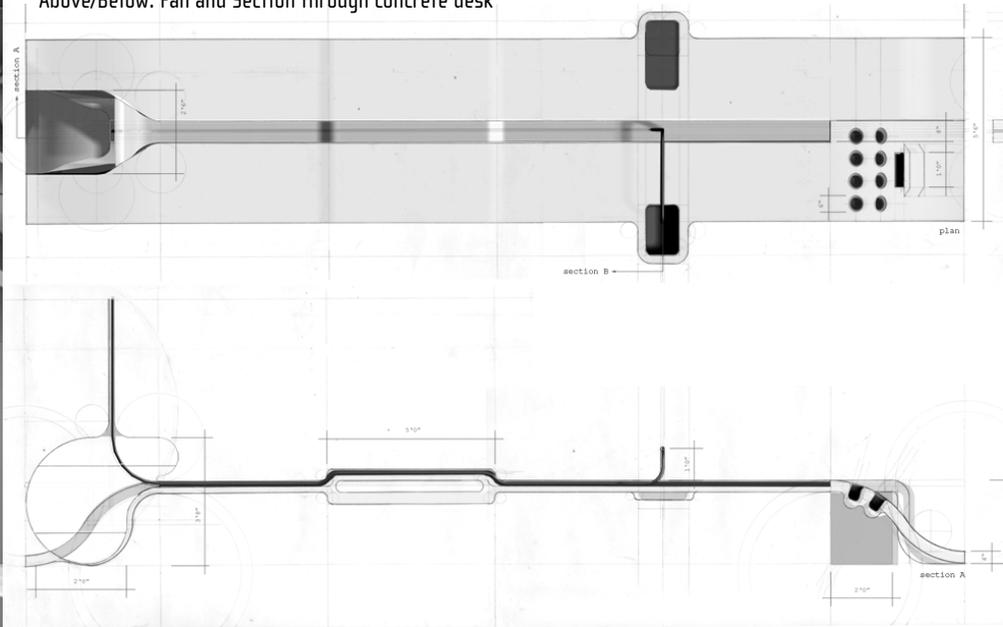
Virginia San Fratello and Rob Silance, professors at Clemson University's School of Architecture collaborated with Jennifer Carpenter, of TRUCK product architecture, to bring an innovative new class to Clemson University. Working in teams, seven architecture students designed and proposed new desks for the graduate architecture students. Not so unusual – except the two winning scheme will be realized at full scale. A hybrid of furniture and environment, the designs address overlapping programs of the academic design studio: drawing, building, eating, cooking, sleeping and playing. The winning design takes advantage of digital methods of fabrication and relies heavily on a collaboration with another department within the university. As part of a preliminary exercise for the project students were asked to design a prosthetic devise as an extension to their existing desks. In the design of the prosthetic, students were asked to not only consider traditional tasks performed by architects such as drafting and model building but to also consider other activities that occur in studio such as eating, sleeping and various forms of entertainment.

Three students proposed a twenty-eight foot long, lightweight concrete communal desk that facilitates group projects and encourages communication, networking and physical interaction. The desk contains a sink that can be used for preparing dinner or soaking wood for models. A heating element can be used for cooking or bending modeling materials. The concrete desk has been engineered by the Civil Engineering Department and will be made of a lightweight concrete admixture that contains glass bubbles and polypropylene fibers for reinforcement. Every year the civil engineering students fabricate a concrete canoe from the admixture that they have developed over the years, this year the civil engineering students and the architecture students will come together to make the concrete desk.





Opposite: Proposed concrete desk in studio
Above/Below: Plan and Section through concrete desk



In addition to being an innovative design using advanced materials, the concrete desk utilizes computer applications and digital information as a way of defining the final architectural construct. The wood formwork for the concrete desk will be fabricated using a CNC router. Students use the 3D modeling software program formz to model the desk and used the sectioning tool to “cut” the digital model of the desk into a 2D pattern that will be used to guide the laser cutter. The CNC will follow the pattern and cut each piece of wood for the form and the students will laminate the wood pieces together to construct the formwork. In a traditional sense the form then becomes the pattern for the desk itself as the concrete will then be cast onto the form again and again. This method of production allows the students to manufacture the formwork them selves saving time, money and reducing the amount of woodworking expertise that would normally be required for such a construct.

The first prototype of the concrete desk will be constructed in the courtyard between the Civil Engineering Department’s building and the Architecture School. The desk will function as an outdoor studio that can be reserved by students and faculty.

Design Student: Chris Shelly
Engineering: Ben Harrison, Matt Frankel
Construction: Chris Shelly







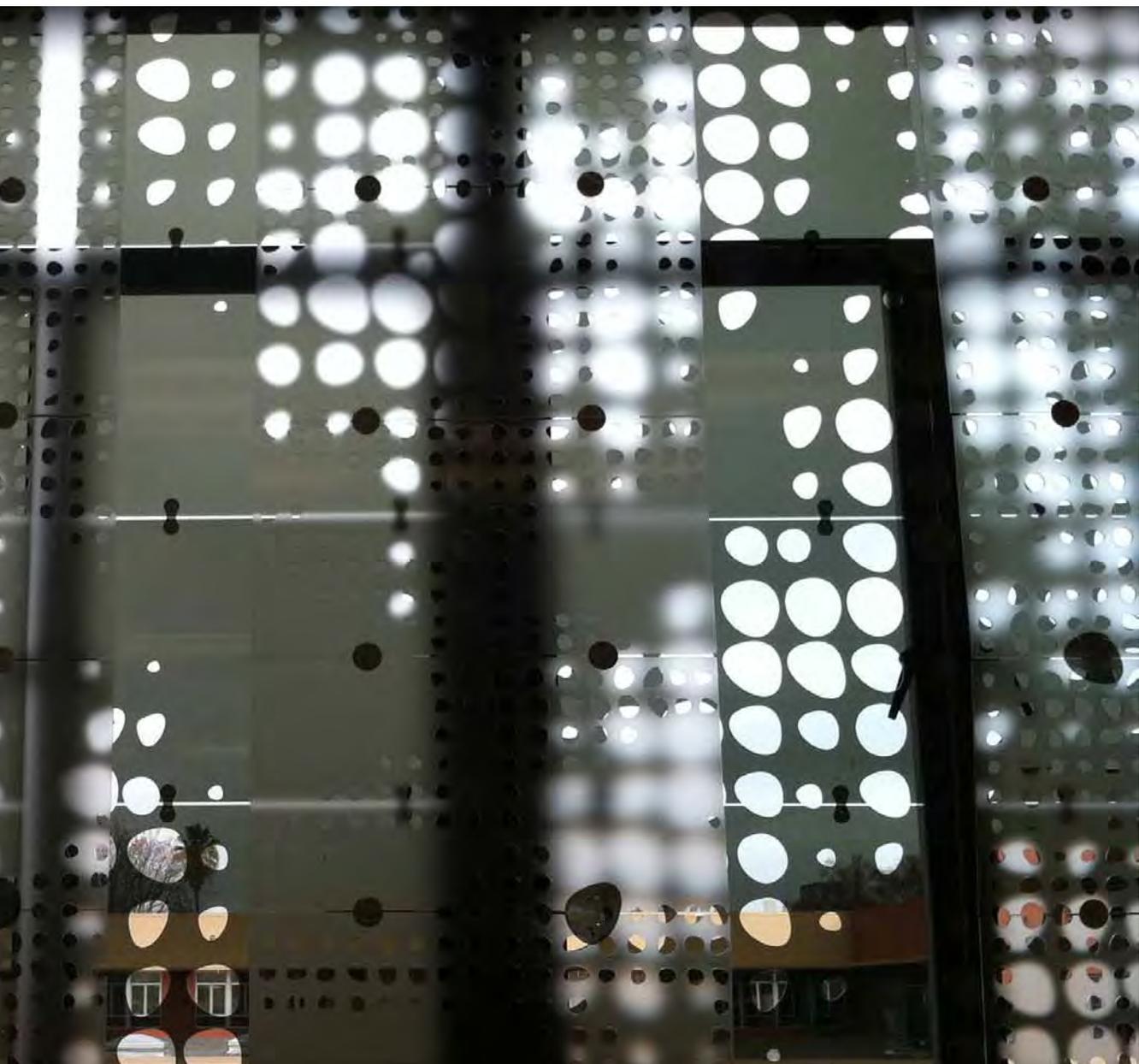


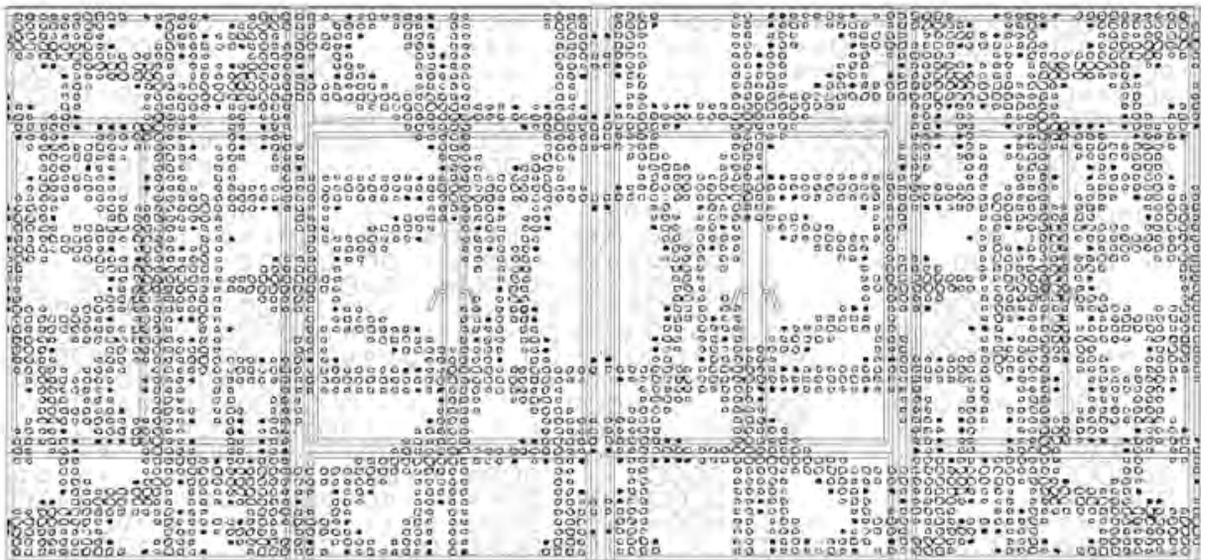
THE CURTAIN

In recent years the culture of digital fabrication has heavily influenced the culture of architecture and design education. This seminar will examine the poetics of craft through the lens of digital design and CAD/CAM fabrication and rapid prototyping. We will explore CAD/CAM techniques and invest heavily in a process of designing digitally and the translation from the computer to 1:1 scale. Students will be asked to design and fabricate a modular, light weight curtain wall for a particular building and location and a flexible storage and display system. The curtain wall will be a responsive layer of the building envelope that explores new and sustainable potentials of the architectural surface. We will analyze exterior environmental conditions such as heat, sunlight, shade, rain, sound, pollution and interior conditions such as the presence of the body, light, temperature fluctuations, programmatic requirements, etc... in order to best design a rigid curtain that has the ability to modulate these conditions. Light weight materials such as ductal concrete, acrylic, polypropylene, aluminum, paper, etc may be explored.

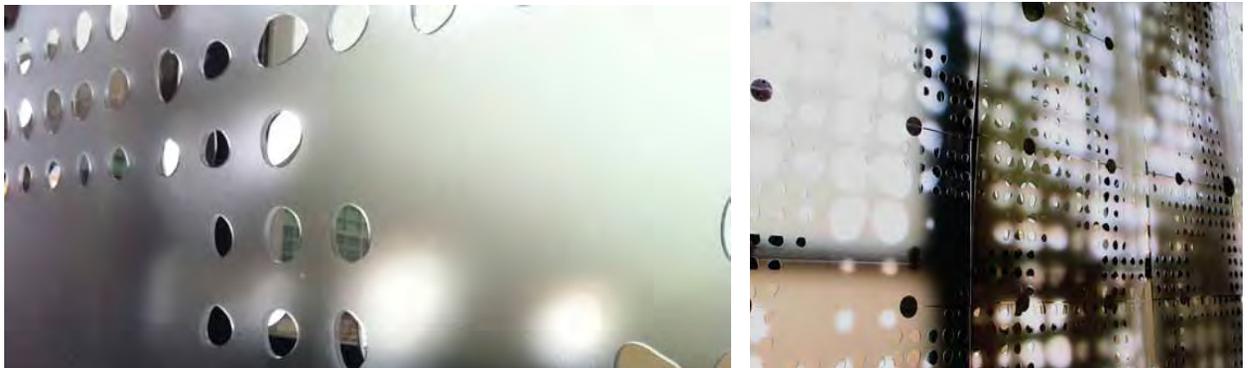




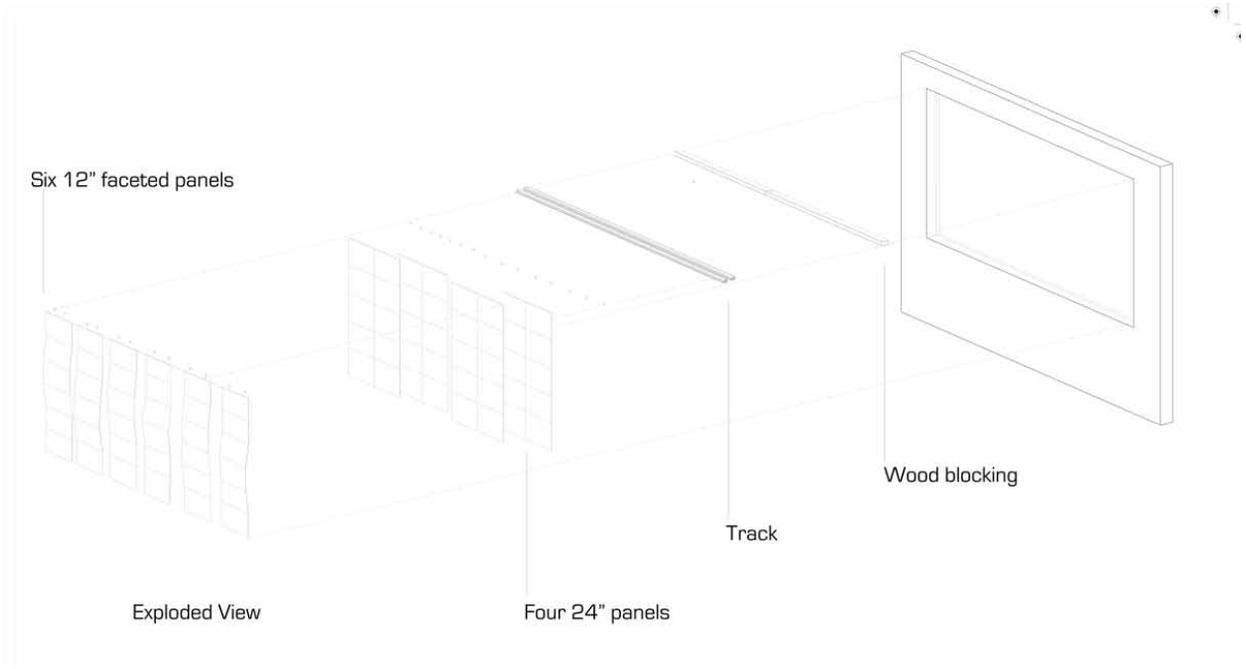




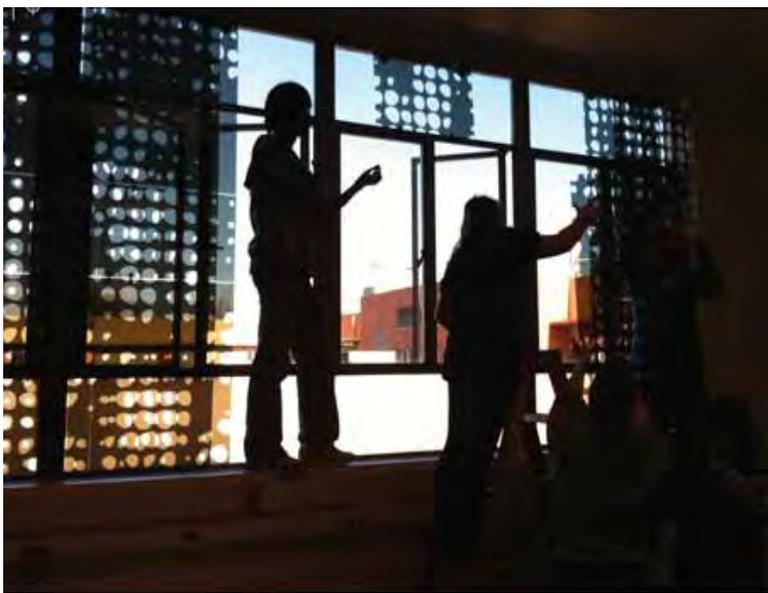
perforated patterns illustrating layered condition



photographs of curtain wall







THE CONSTRUCT

Clemson University's School of Architecture has been selected as one of six schools from around the world to exhibit work at the 17th Annual International Contemporary Furniture Fair in New York City on May 14-17, 2005. Clemson has proposed to build and install a singular, large scale construct that exemplifies an investigation into cross categorical relationships between architecture and industrial design yielding a new hybrid architecture at the turn of the twenty first century .

The premise for this investigation will be to discover a new logic for bringing together different categories of design such as architecture, interior design, graphic design and furniture design. Traditionally, very distinct boundaries exist between these design disciplines, however, the reality of design in the twenty first century suggests that these disciplines have begun to cross pollinate each other in very fertile ways.

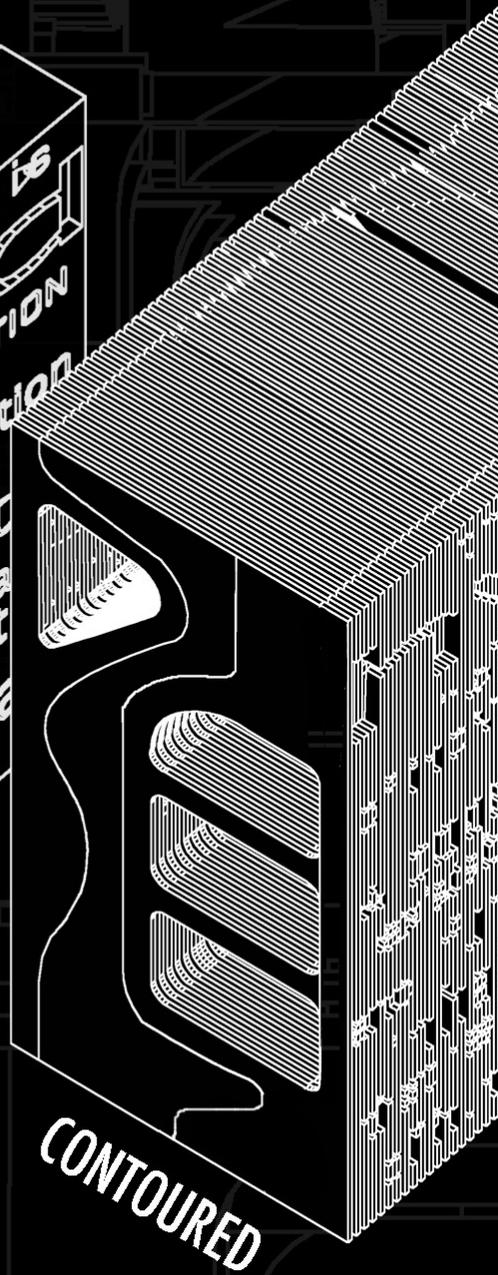
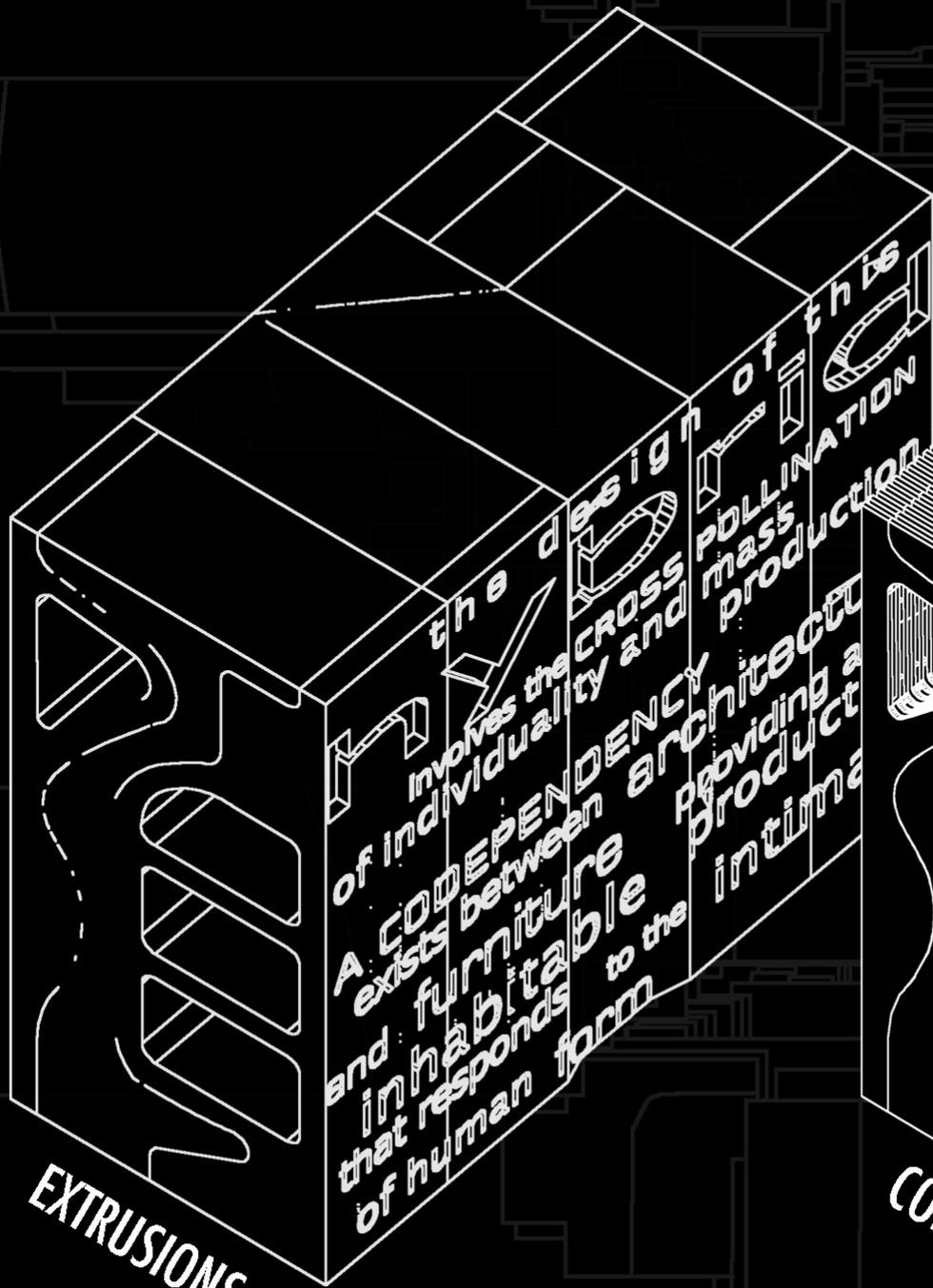
Take, for example, designers such as Hussein Chayalan, a fashion designer who makes skirts that also function as tables, shirts that rely on architectural models of construction such as suspension and inflation and dresses made of vacuum formed plastic and sugary glass or Jennifer Carpenter who designs architectural constructs for the table top. Both of these designers rely on the characteristics of other design disciplines to influence the design of their products. Alternately, designers such as Brendan MacFarlane and Kol/Mac Studio rely on the recombination of pre-existent forms in architecture and furniture to create hybrid derivations of the original that do not always register legible distinctions between the original two products. Each of these designers is very successful at navigating the terrain between the different design disciplines in very different ways creating alternative products and intimate environments that may otherwise never have been conceived.

In this studio, we are examining the nature of the hybrid as a potential generator of architectural tactics and form. Through the cross profile referencing of traditional architectural constructs such as floor, wall and ceiling and industrial designed products including but not limited to chair, table and plate we will begin to create new architectural hybrids that have the potential to fuel alternative programmatic and functional conditions allowing us to reevaluate existing relationships and activities we have long taken for granted.

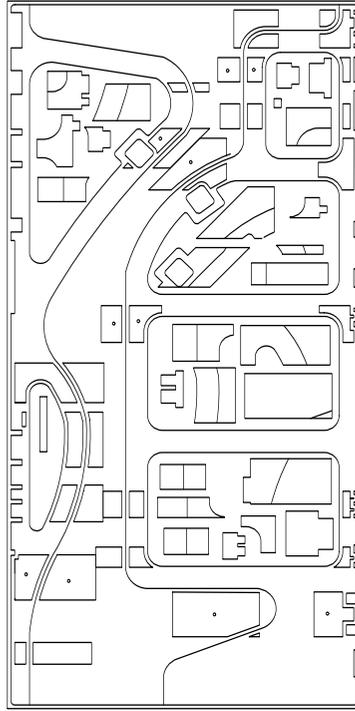
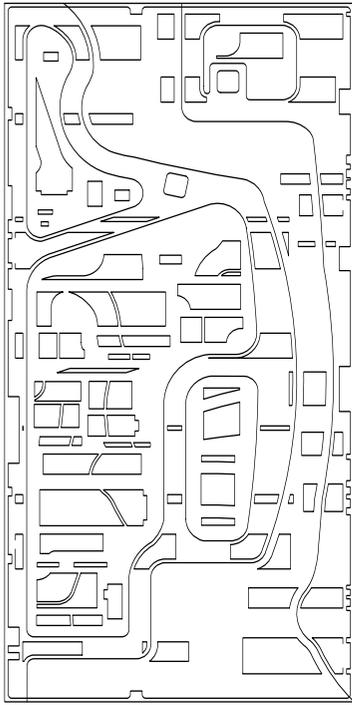


Unfolding the CONSTRUCT



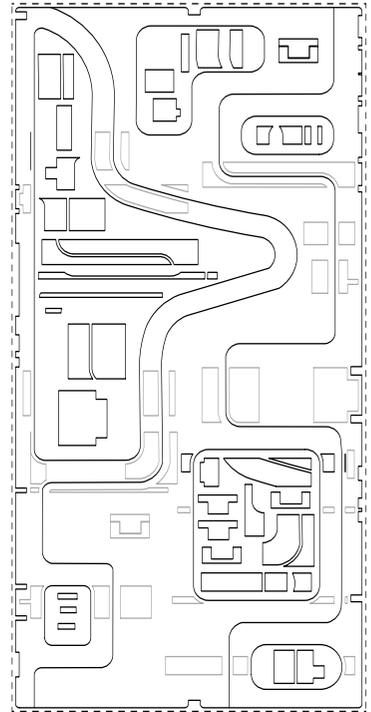


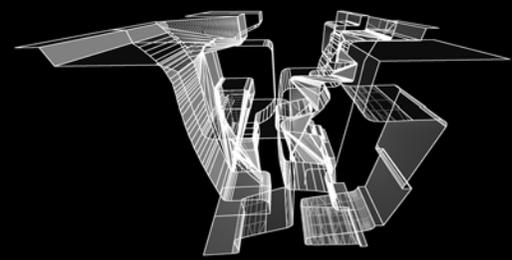
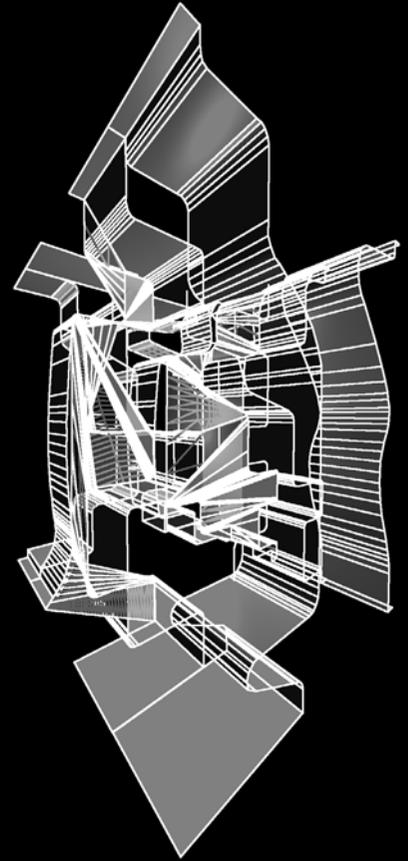
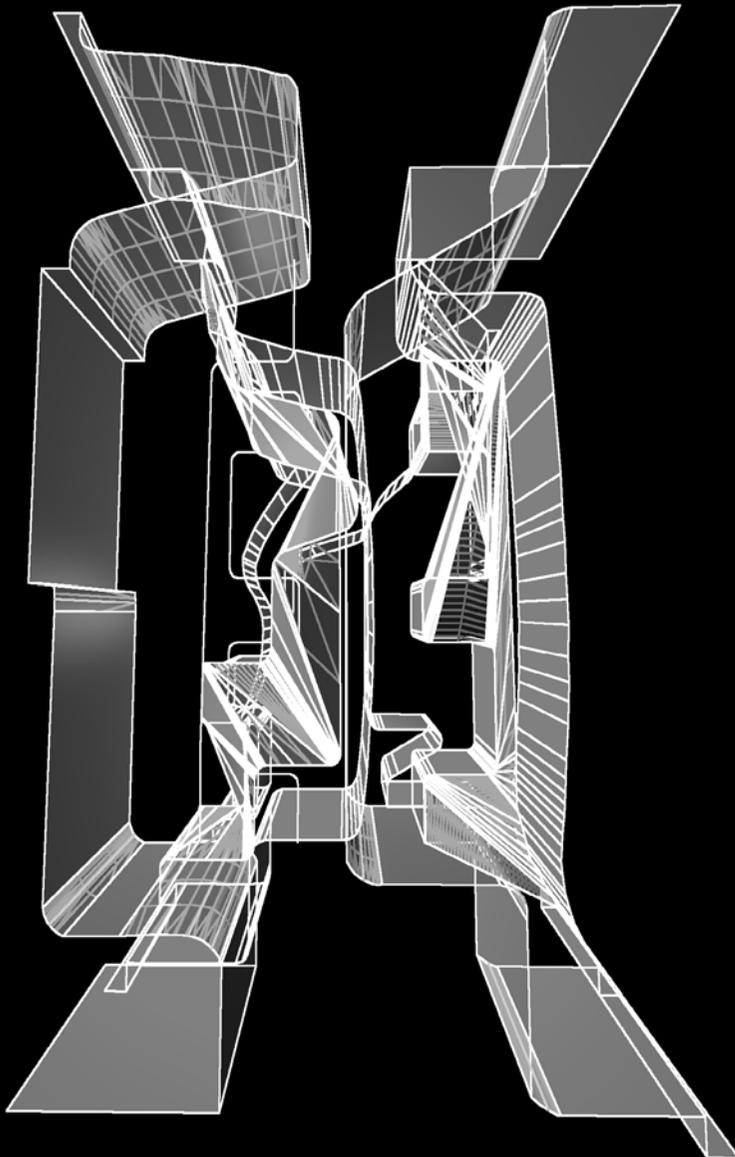




example of CNC cutfiles







Architectural landscape / Furniture:

The CONSTRUCT is a displaced landscape that responds to the human body. It is a room, a wall, a floor, a table, a bookshelf, a seat and a bed. The CONSTRUCT is derived from a very specific set of antropometric dimensions, suitable for furniture that are skinned to create a surface. These surfaces are stitched together to form an architectural landscape.

Words / Structure:

In addition to considering how the human body might occupy the CONSTRUCT, students became concerned with how one might understand the progeny of the CONSTRUCT. As designers we are often faced with the difficult task of explaining a design process that may or may not be evident in the final product, could the process become a crucial part of the final product? Concept, visualization and process are often given priority over the final product in design pedagogy but relegated to nothing in the industry of design. Therefore, the process, as a text, became an integral part of the final product, the CONSTRUCT simply cannot exist without it. By embedding the text into the construct, one can describe the design process to other architects, interior designers and furniture designers at the International Contemporary Furniture Fair in New York where the CONSTRUCT was first exhibited. The embedded text becomes a literal notation that not only communicates the concepts behind the project but also holds the CONSTRUCT together, it is the structure. When the construct assembled and fully upright the text can be read, it transcends our understanding of architecture or furniture to become a sign or a vehicle for communication. When the construct is unfolded, it can be occupied but the words can no longer be read or understood only experienced spatially. The literal inhabitation of the words becomes a new space for knowledge, contemplation and understanding, a real space of information.

Mass Production / Customization:

The students understand that they are designing a CONSTRUCT that considers the relationship between architecture and industrial design, that the goal is to create a singular example of "hybrid architecture" through cross pollination. This means acknowledging that most furniture and almost all industrial designed products are mass produced and manufactured by machine. Simultaneously, the understanding that most acts of building at the scale of architecture are custom and are erected with the same construction techniques that have been in use for hundreds if not thousands of years. The acceptance of these two polar conditions opens the door for students to allow mass production to influence the individual characteristics of the architecture they are creating yielding a construction technique that can be most accurately described as mass customization - a construction hybrid. The construct is composed of sixty eight unique profiles each fabricated by machine in less than one hour per sheet using a Computer Numerically Controlled (CNC) Router. Each of the profiles is generated by contouring the digital model of the CONSTRUCT into sixty eight pieces. Embedded in these contours are the construction drawings for the project. There are no plans, elevations, details or other conventional drawings that represent the assembly, only the dissected visualization.

The CONSTRUCT + Waste:

Realizing there is a considerable amount of wood waste as byproduct using this method of construction, waste is redefined to have a positive connotation by giving it a new use. Instead of discarding the waste, into each piece of waste is cut portions of the text that join the wood profiles together. Therefore the waste becomes equally as valuable as the pieces that we read as furniture. The decision to use the waste came during the visualization process. Because of the way the CONSTRUCT is dissected and represented the waste is presented as equally valuable material. Conventional drawings would only portray the desired end product and the decision to use the waste would be one that is superimposed on the process in order to fulfill a sustainable agenda, however this newer method of visualization forces us to draw and see not only the finished product but all of the material so our understanding of the project forces us to acknowledge the waste as another opportunity for design. The outline of the waste pieces (text) is also etched on the portion of the CONSTRUCT that is kept. This etching serves as a guide for assembling the CONSTRUCT as it is a key to the location of each piece of text or structural element.





Digital Design Build Team:

Melissa Bauld
Sam Bennett
Jeremy Chinnis
Kim DeMars
Megan Duffy
Mason Edge
Matt Frankel
Natalie Gambill
Danny Herrera
Marc Leverant
Derrick Simpson
Tanner Sharpe

Special Thanks to:

Jose Caban, Chair of the Architecture
Department
Jan Schach, Dean of the College of Arts,
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The South Carolina AIA
Stubbs Muldrow Herin Architects
Esther Kauffman
Rob Silance
Ronald Rael
Doug Hecker
Richard Woodward
Chris Shelly

INTERIOR DESIGN

STUDIOS

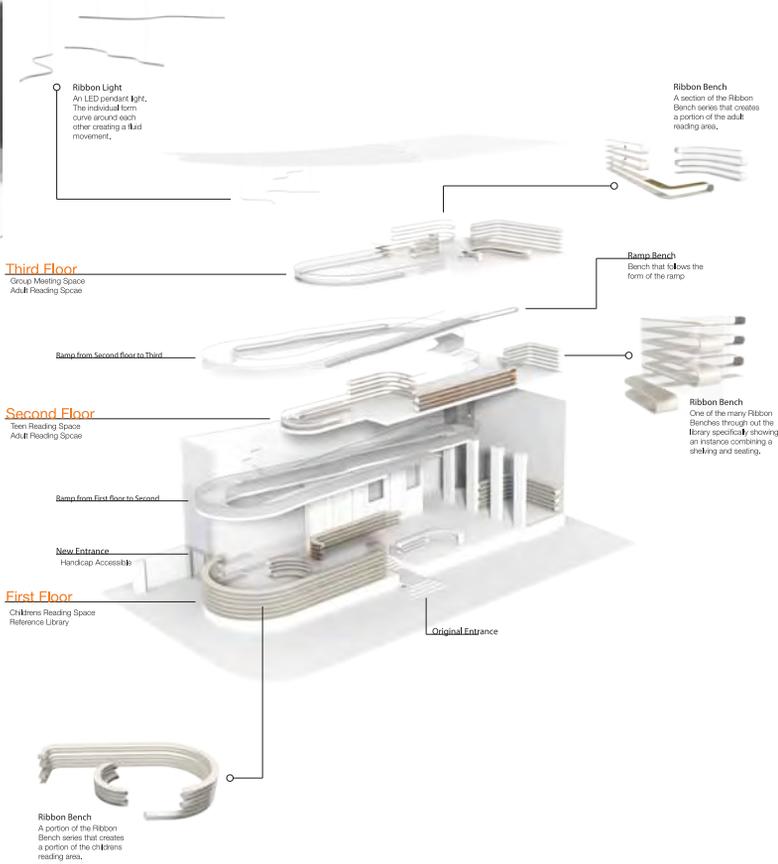


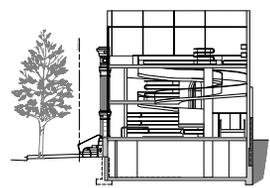
Golden Gate Valley Branch Library

designed by ANH Architects

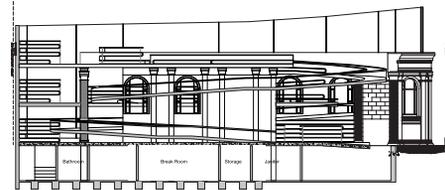
Located in San Francisco, the Golden Gate Valley Branch Library was designed by ANH Architects in 2012. The 100,000 sq ft building is a modern interpretation of the traditional library building, featuring a curved facade and large glass windows. The building is designed to be a community hub, providing a space for reading, learning, and social interaction.

The renovation of the Golden Gate Valley Branch Library is a complex project that involves the integration of new and existing spaces. The building is designed to be a community hub, providing a space for reading, learning, and social interaction. The renovation includes the addition of new reading areas, study spaces, and a ramp to improve accessibility.

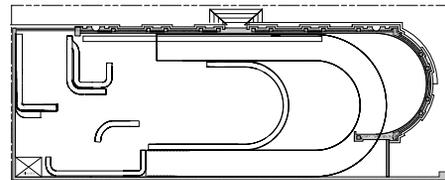




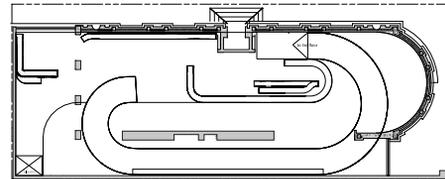
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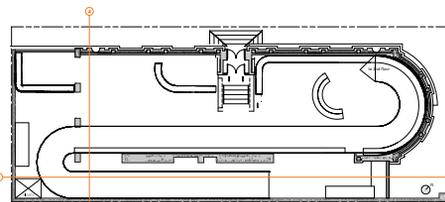
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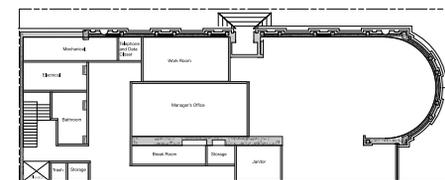
Third Level Scale : 1/16"



Second Level Scale : 1/16"



First Level Scale : 1/16"



Basement Level Scale : 1/16"

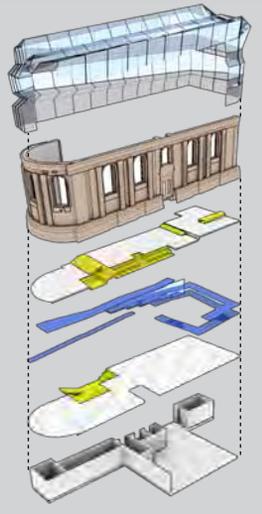
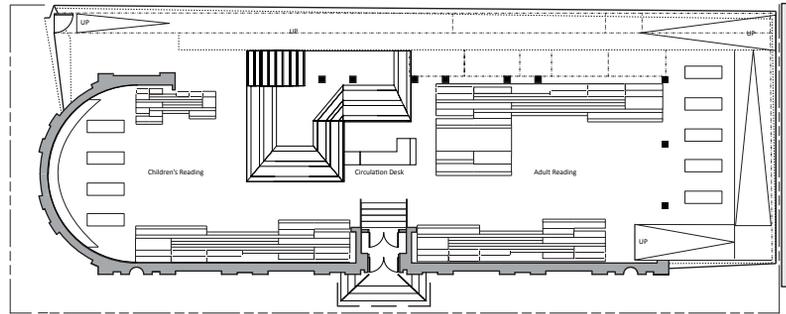
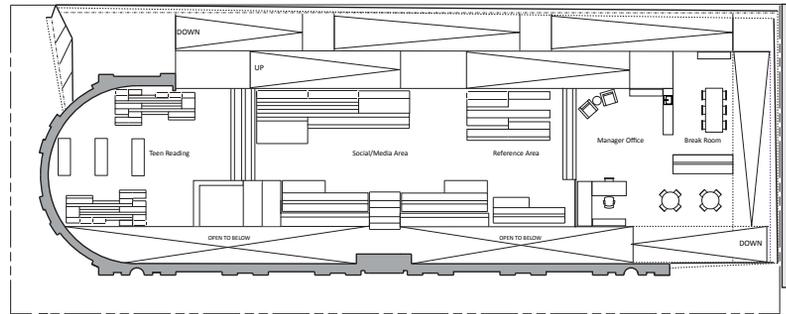
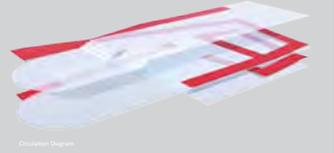
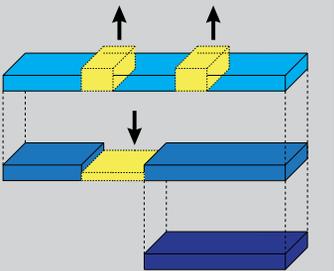


GOLDEN GATE VALLEY BRANCI LIBRARY



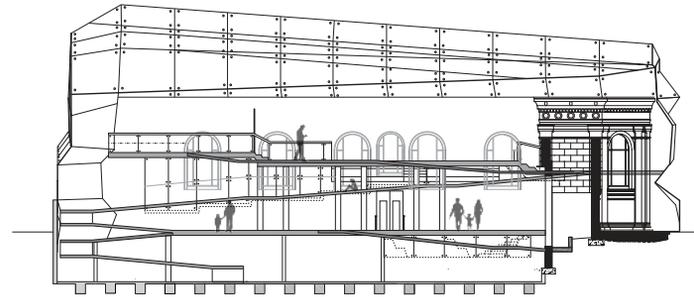
This project is a renovation, addition, and preservation of the Golden Gate Valley Branch Library in San Francisco. The existing building was built in 1932 by Ernest Conrad in the Georgian style and needs to be upgraded in order to meet current seismic standards and accessible access for wheelchair users. The existing north and east walls had to be preserved in the final design proposal. Additionally, the seismic footage requirements needed to be increased to meet the updated program. Finally, the interior plan would need to be completely reconstructed and modernized as to meet 21st century standards.

The design proposal is comprised of a series of folding planes, exploring how folding surfaces can become a generator of form. As a result of this method of folding, spaces become defined by recessed or elevated planes. For example, where the children's level sits on the main level site program, the floor is recessed, creating a sitting and gathering space. In contrast, the mezzanine level is defined by three main sections: teen area, social space, and manager/breakroom, where these program areas indicate a change in floor plane through elevation. As the adjacent program overlaps a unique folding space is created. This new folded zone is one of gathering and interaction, demarcated by the vibrant yellow. A series of ramps provide wheelchair access, but also act as a determining factor in the relationship between the floor plates. The ramps themselves become a celebratory space, inviting the public to gather between the mezzanine and main levels on the monumental stairs and seating elements. Finally, the exterior glass curtain complements the interior program and offers dynamic contrast to the monolithic stone building.

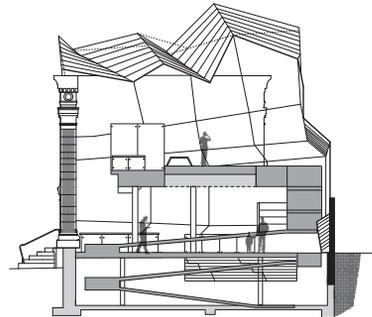




The new building envelope is composed of folded glass surface that corresponds to the interior program and offers sharp contrast to the heavy stone and concrete building. The use of translucent and transparent glass reflect the interior program and also offer visual contrast in both the exterior and interior views. As a result of this luminous glass form, light floods the library and exterior views of the San Francisco bay from the mezzanine level are capitalized on.



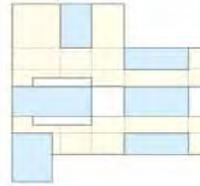
Front Section Scale: 1/8" = 1'-0"



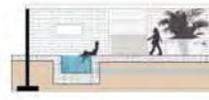
Right Section Scale: 1/8" = 1'-0"



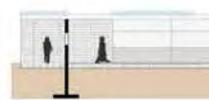
bookshelf (+) seat design



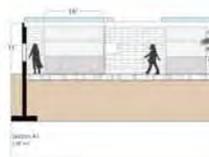
Spa Building Plan
12' x 12'



Section A-A
12' x 12'



Section B-B
12' x 12'



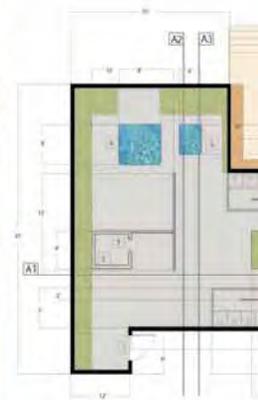
Section C-C
12' x 12'



Interior view of main lobby

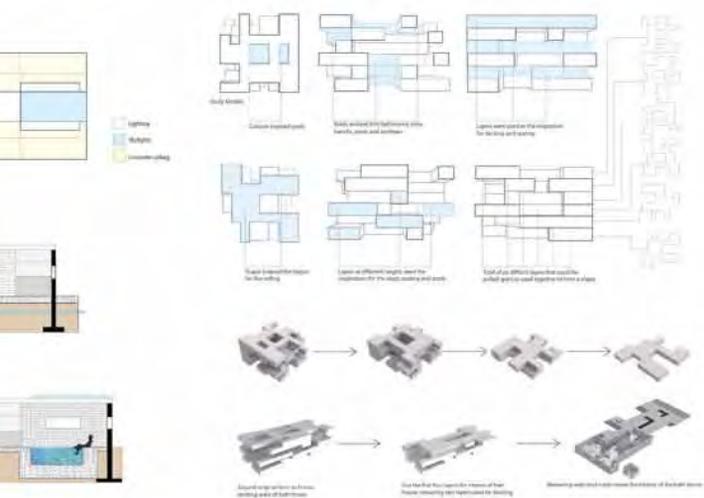


Interior view of hot and cold pool



Floor Plan
12' x 12'

Gilroy Hot Springs



Concept:

A new concept for the Glass Hot Spring has been designed using the two interesting forms that were created in Munich, and placing the forms inside the existing walls of the bath house, and new concept was created.

The existing brick was left and the iron model that was designed was placed inside the existing floor plan of the bath house. A large wooden deck was created to take advantage of the slope of the hillside and the existing concrete that was left to offer.

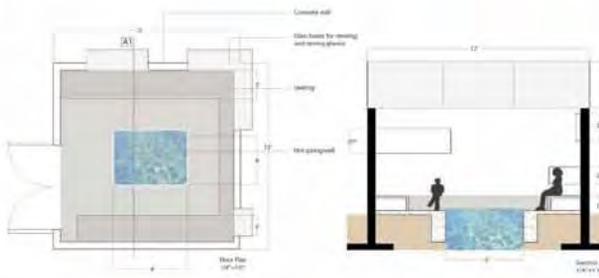
The interior of the bath house meets all the requirements that were specified. There is a reception desk, a small library facility for storage of towels, two outdoor conventional bath (temperature and cold), bathing platforms, rest area for 20 or more people, one indoor conventional bath, both dressing area for men and women and a bathroom for men and women.

The design for the Hot Spring Wall meets that of the large bath house. The interesting forms were once again used but in a much smaller scale. The use of our cut area used in this design to maintain the area of the surrounding. The wall is designed to fold around them people at a time and in a place fit and relax and enjoy to natural water from the spring.

Materials:

The materials that are incorporated into this design include: concrete for the flooring and seating, frosted glass, brick, glass, decking materials and water.

Concrete
Glass
Frosted Glass
Masonry wall
Stone
Text wood Decking



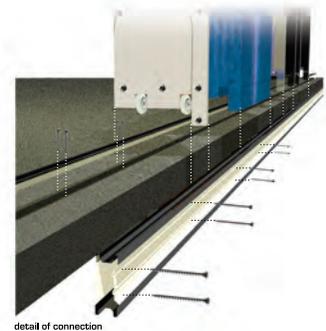
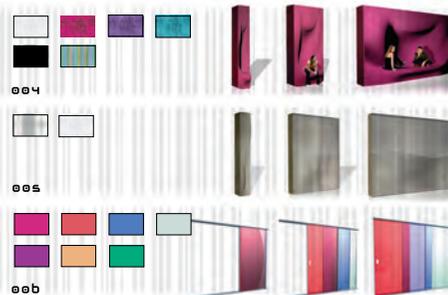
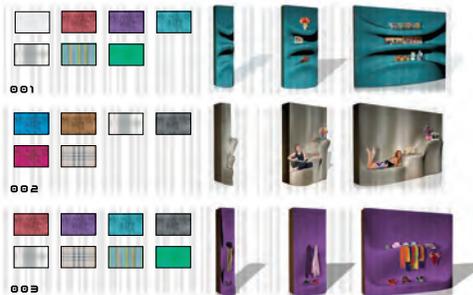


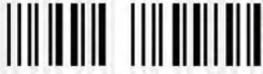
coded housing is skinned with an architectural product that is concerned with creating affordable, adaptable spaces which enable users to personalize the color, style, and layout of their living spaces. the product, which was inspired by the melo softwall and the concept of the universal product code, is a fire-retardant, amiel waterproofed paperwall system that doubles as furniture and storage space. the product uses homogeneous paper construction to expand and contract to create or eliminate spaces and storage wherever needed. each moveable wall segment's color and style is chosen individually by the resident to suit his or her own personal needs, thus creating a highly personalized living space that is flexible to the various needs of daily life. each segment connects magnetically to adjacent segments, creating a wall of products whose pattern, sequence, and texture creates a dynamic, fluid external facade on the coded housing unit.



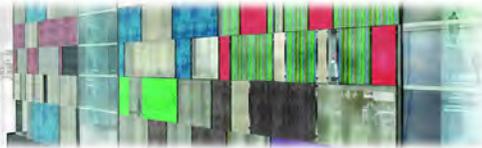
coded housing

mark ottens & janis powler





coded housing
MARK GREBEK & JENNIFER COWLEY



coded housing is a proposal for an apartment complex in the port city of genoa, italy. the building program is concentrated on creating affordable, personalized apartments in an effort to avoid the monotony and sterility of typical standardized housing. each apartment is equipped with a track system which enables the building to be skinned with a sequence of retractable paper walls without color, pattern, and order is picked personally by each resident to suit his or her own tastes and needs. the building unit, like the paperwall skin, is inspired by the universal product code, and uses the skin to "code" the building with each resident's personalized sequence. each of these movable walls face a public park area and the coding created is visually construed throughout the apartment via changes in material, notching, mullions, and colored glass balconies which face the seaside area. the result is an apartment complex that is affordable, personalizable, adaptable, and enables each resident to easily reorganize his or her own apartment from both the seaside area and from the road and park area.

plan, 3rd floor residential



enlarged plan, market value 2 bedroom + subsidized 1 bedroom



back exterior facade, coded beach front balcony spaces



section A

site plan

genova, italia

SHUTTERED APARTMENTS

The shuttered living product is designed to specifically address issues of resident self-sufficiency, social interaction, and commercial opportunities. With the purchase of an apartment, the resident also acquires rights to a private parking space and decked space, both of which may be rented out so that the purchase of an apartment can function as a source of income for the resident. In order to enhance the social interaction among residents, the ground level of the building houses laundry and child care facilities. There are also gardens on the roof as well as a pool on the residential authority floor level gardens, thus creating a sense of ownership that goes beyond the walls of their apartments and into a slightly more public (and more communal) space.

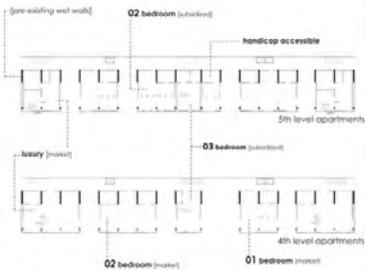
To encourage in connection with the residents to the public and to create the lively "boardwalk" atmosphere intended for the port, spaces have been left open for commercial development on the bottom level of the complex.

In order to build a sense of connection between the residential points and the commercial points, a large walkway (on both ground and upper levels) perforates the building mass. As a result, the building "frames" views of the ocean and boardwalk which allows for both physical and visual connection. The roof on the upper levels may be enclosed, furnished and programmed by residents until that point in time and then with another apartment type. In the end, the roof may become a sort of temporary extension of the living space.

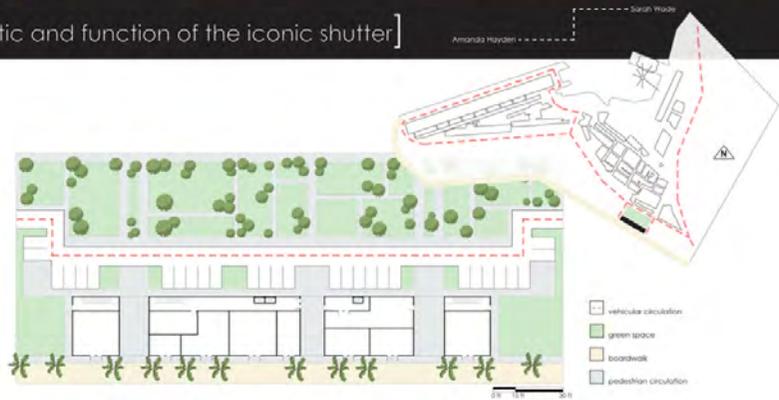
The shuttered living spaces available are as follows:
 - 02 bedroom (subject) apartments, 40 by market
 - subdivided 2 bedroom apartments, 12 by market
 - subdivided 3 bedroom apartments, 12 by market
 - market value 1 bedroom apartments, 12 by market
 - market value 2 bedroom apartments, 12 by market
 - market value penthouse (luxury residence), 12 by market

Each complex houses only 3 of each apartment type with the exception of the luxury apartments of which there are only 2. While the apartment types are also defined by their structure allows for a flexibility in the apartment's layout configuration. For example, an apartment which is independently designed to accommodate 2 people may be extended by the addition of a bedroom to house 4 or 5 people. The entire width of each apartment can actually span on tracks which allow for easy room re-configuration. The entire side walls of each apartment contain a pocket door which may be opened or closed at the whim of the resident. Neighboring apartments may be opened to each other if the two residents so decide.

The project also considers an alternative to its product. The complex is designed to be "cushion bed" or "100m" operation with the established reef walls and support structure completely operational in the initial phase of construction. As consumers purchase the apartment plug products, the void of the structural shell will fill.

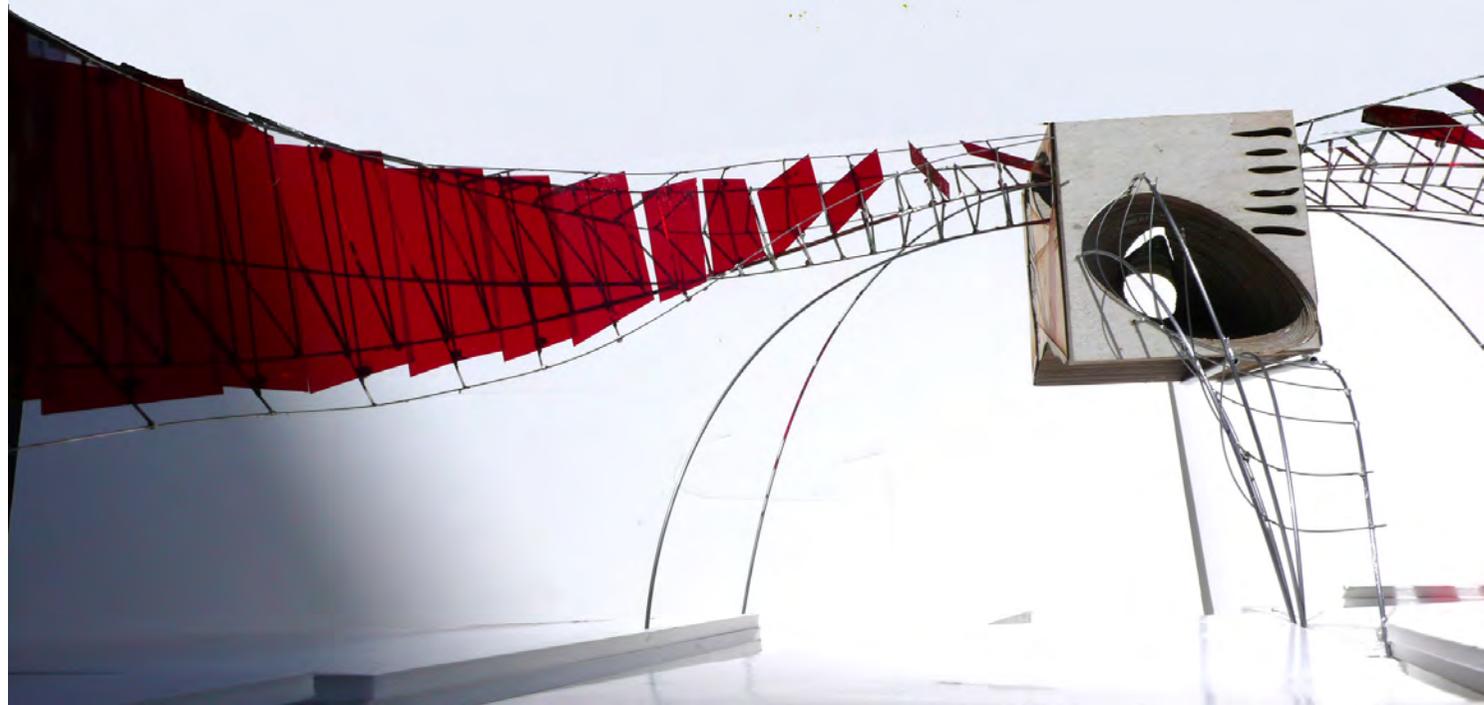


SHUTTERED LIVING [reconsidering the aesthetic and function of the iconic shutter]



PROCESS HERMITAGE

The first year of design education is comprised of 3 components: Design Studio, a Topics Seminar and a 3-D Modeling Seminar. ARC 202 employs the foundation skills learned in the pre architecture program to begin investigating the relationship of space and performance through the examination of movements of the body, both as discrete actions and as an experience in spatial sequences. Ergonomics, human experience and programming are examined in a cumulative progression of projects. The studio emphasizes the development of design processes including value identification, design formation, digital and analog modeling techniques and the synthesis of idea with spatial resolution. The experience of space to an architect is decidedly different than that of the user, thus, course also examines the internal and external influences, which order architecture. Sets of basic principles and architectural elements provide a design vocabulary for the composition of architectural constructs, while continued refinement of oral and visual communication skills further the effectiveness of expressing architectural ideas. Students will be taught lessons that provide the opportunity for their progress in developing their intellectual, compositional, and communicative (graphic and oral), skills, with a focus on digital visualization and design.

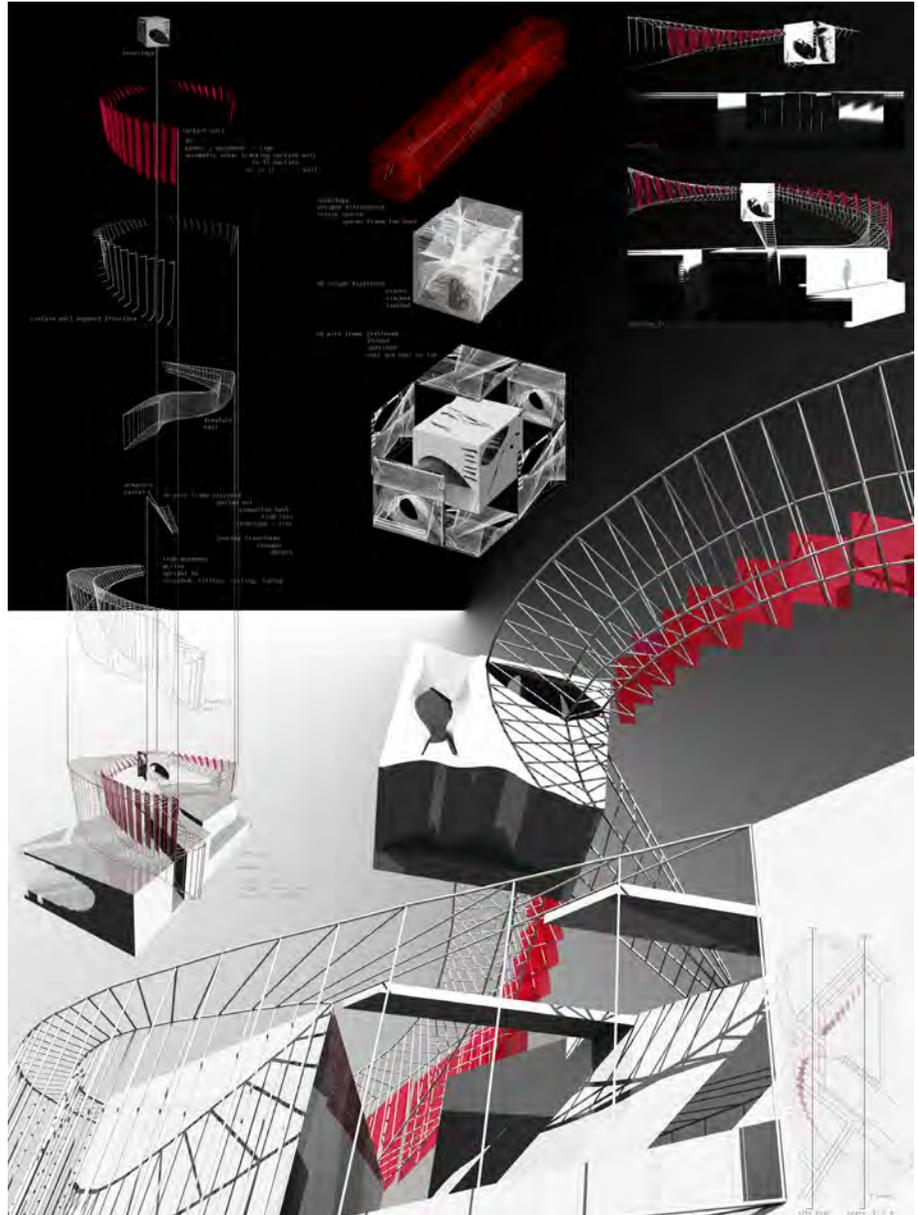


Meditation Hermitage:

Students were asked to use 3d software modeling applications to model a meditation hermitage which included a place to sit, stand, lay and climb. Using techniques of contouring, unfolding, and egg crating, among others, students were able to get their designs out of the computer for fabrication. Students used the laser cutter, 3d printer and traditional hand craft methods such as castings to arrive at their final models.

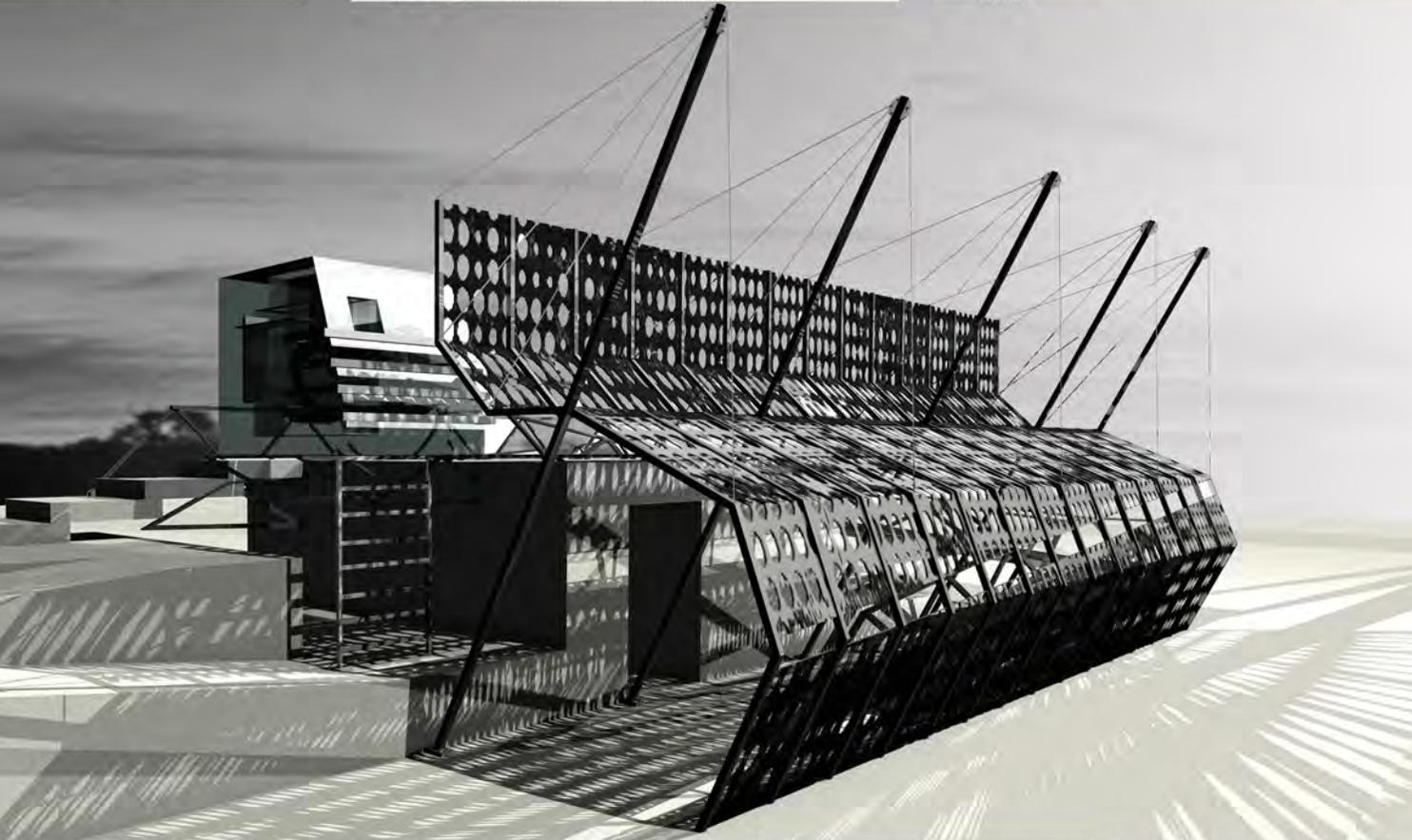
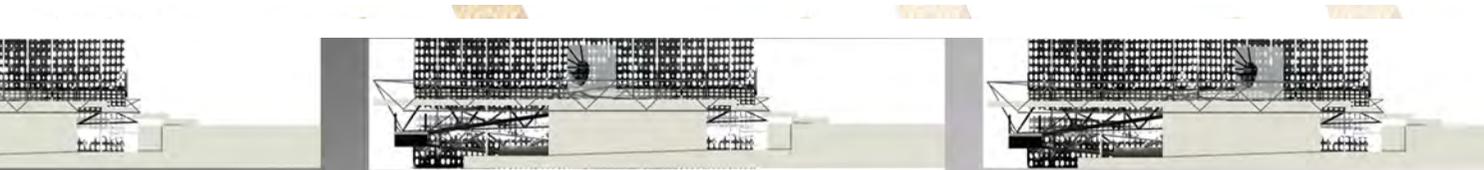
Following the hermitage assignment, students were asked to design a structure that would support the hermitage in a landscape they had designed in an earlier project. The structure had to mediate between the landscape and hermitage, it was also a path to the hermitage. Structural issues were addressed through the analog modeling. Students were then asked to digitally model their structural designs for representation.

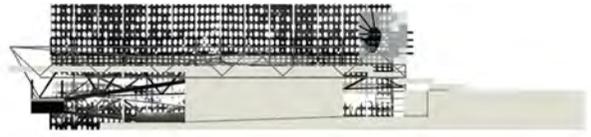
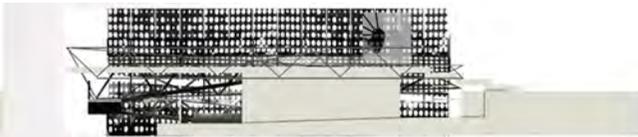
At the end of the semester each student had designed and drawn a landscape, a space for occupation - the hermitage, addressed structural, circulatory and threshold issues, built a 1/2" scale model and designed 2 presentation boards. Additionally students learned how to translate their digital models in plans, sections and working drawing.









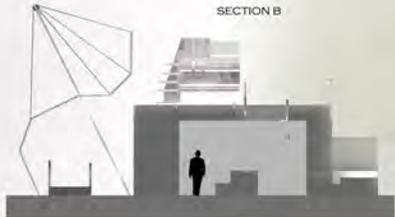


SECTION A

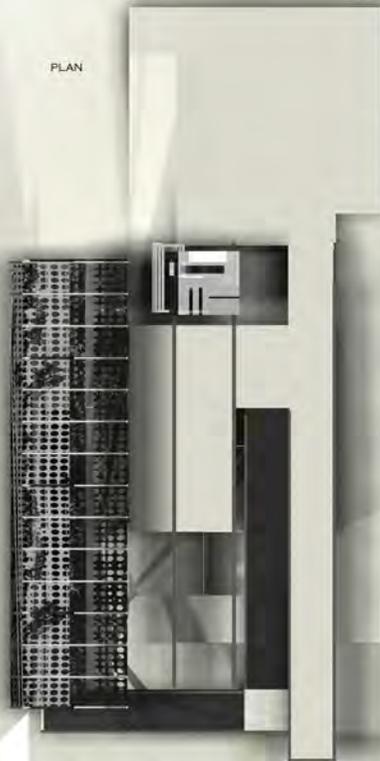
PLAN



SECTION B



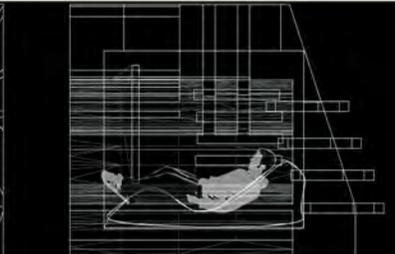
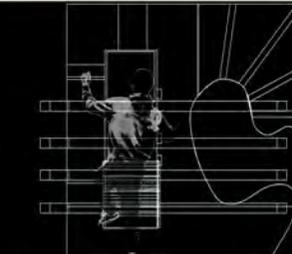
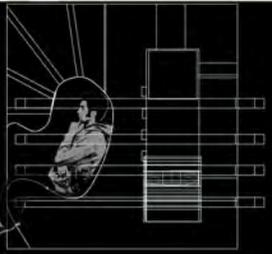
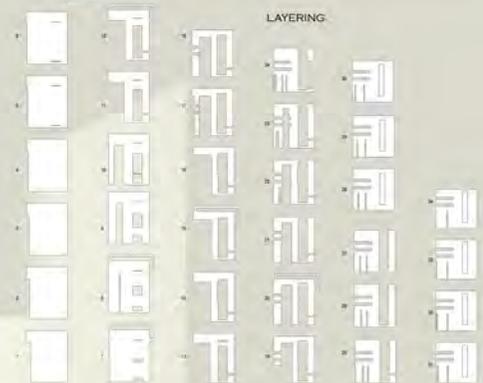
SECTION C



-HERMITAGE-
 THROUGH THE PROCESS OF SUBTRACTION FROM A GIVEN 10' X 8' X 6" SOLID, THREE SPACES WERE DESIGNED TO INHABIT THE HUMAN BODY IN THE LAYING, SITTING, AND CLIMBING POSITIONS THAT RESPOND TO THE IDEA OF FRAMED VIEWS. THE HERMITAGE WAS ANALYZED AND CONSTRUCTED USING A COMBINATION OF TWO METHODS; LAYERING AND FACE-PLANING. A TINTED GLASS MATERIAL WAS CHOSEN IN ORDER TO OPTIMIZE VIEWS AND ALLOW FOR SOME LIGHT PENETRATION.

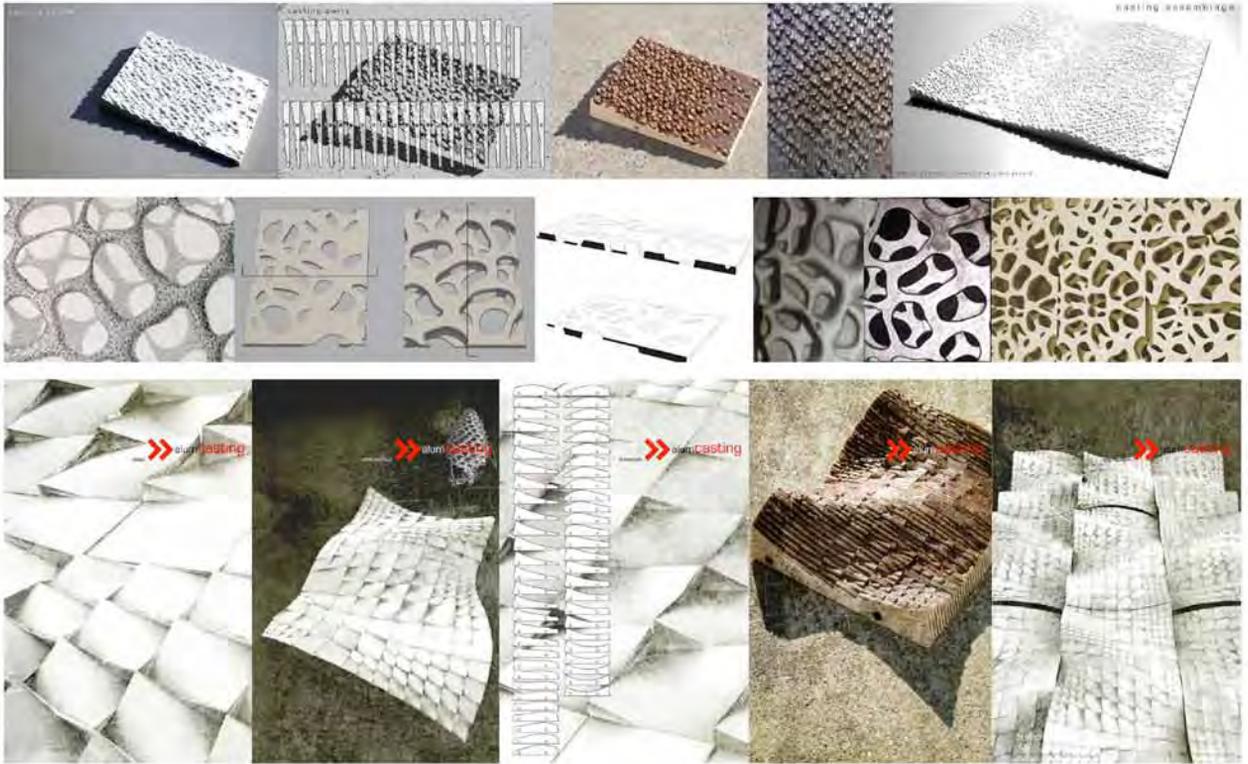


LAYERING

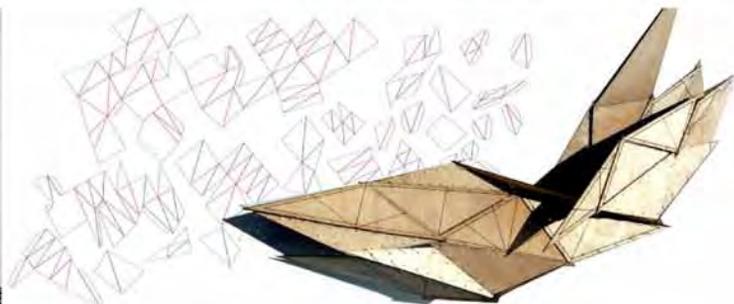
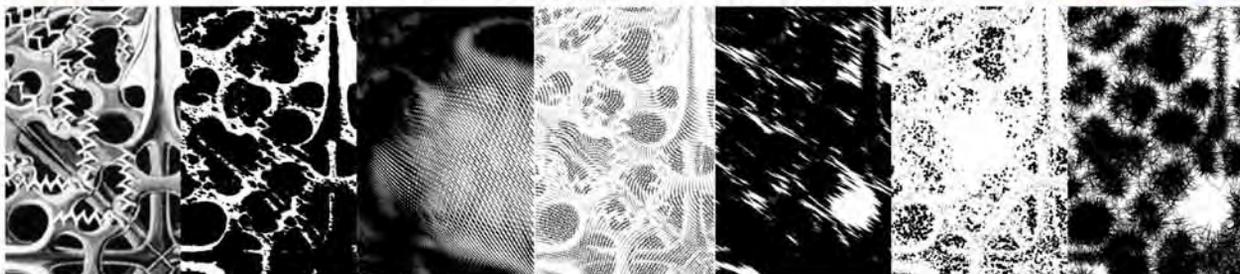


MATERIAL STUDIES

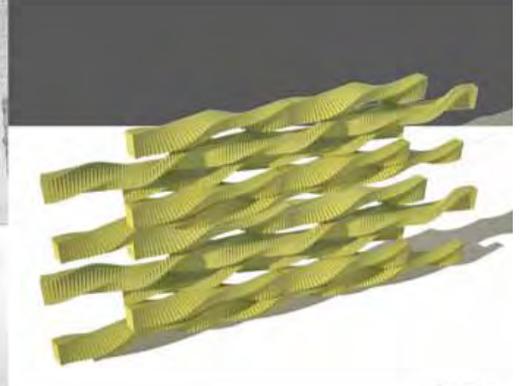
In recent years the culture of digital fabrication has heavily influenced the culture of architecture and design education. This seminar will examine the poetics of craft through the lens of digital design and CAD/CAM fabrication and rapid prototyping. We will explore CAD/CAM techniques and invest heavily in a process of designing digitally and the translation from the computer to 1:1 scale. Students explored different modeling, fabrication and material methods through a series of short assignments that included using vectoraster and the laser cutter, casting with variability, the unfolding of polyhedra and thermoforming.



laser cut formwork, metal casts



vectoraster pattern studies, laser cut study models



digital models, contoured digital models, lasercut positives / formwork, vacuum molded formworks and concrete casts

DISH

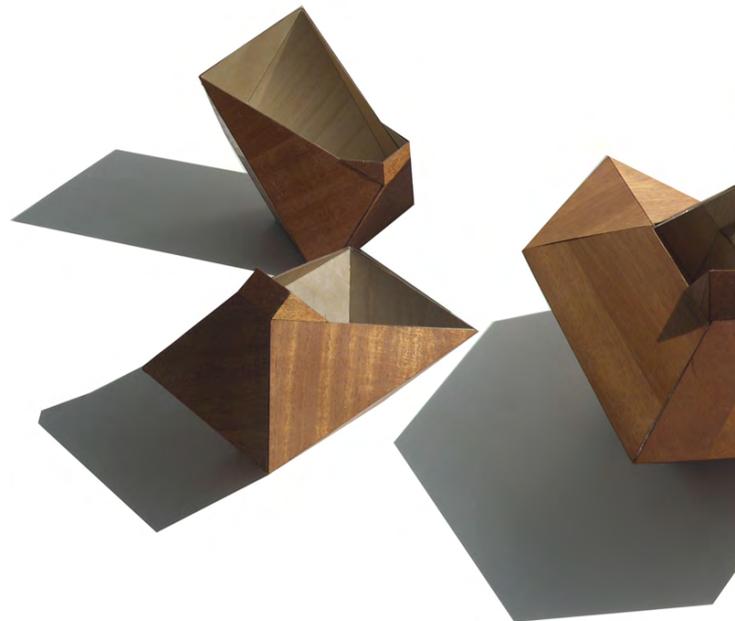
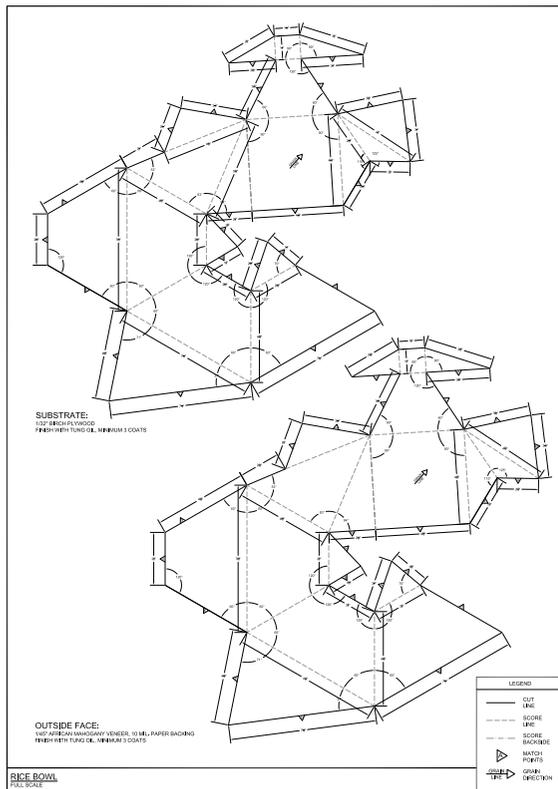
What can be learned by examining the intersections of the preparation of meals and the production of space, the ritual of dining the design of meals and the process of dish design? What do we create when we set the table? You are to choose a food (entrée, dessert, aperitif, appetizer, etc.) that is a part of the New Orleans regional cuisine (old or new) and design a new dish for consuming the chosen food item. The new dish should subvert traditional ways of presenting and consuming the food item(s), and should instead hyper assert or amplify the functions associated with the cooking, storing, serving, eating and disposing of the food. The new dish should elaborate the preparation and consumption and simultaneously be a desirable mechanism of architecture. You should consider how smelling, seeing and tasting become intertwined with the device to aid in the ingestion of the food and how the device is oriented towards the body. Consider the dish a performative space for food. Additionally, cultural practices associated with eating or drinking your chosen food should be considered. What is the site in which that food is regionally consumed, for example, Is it mobile? Is it shared? Requirements:

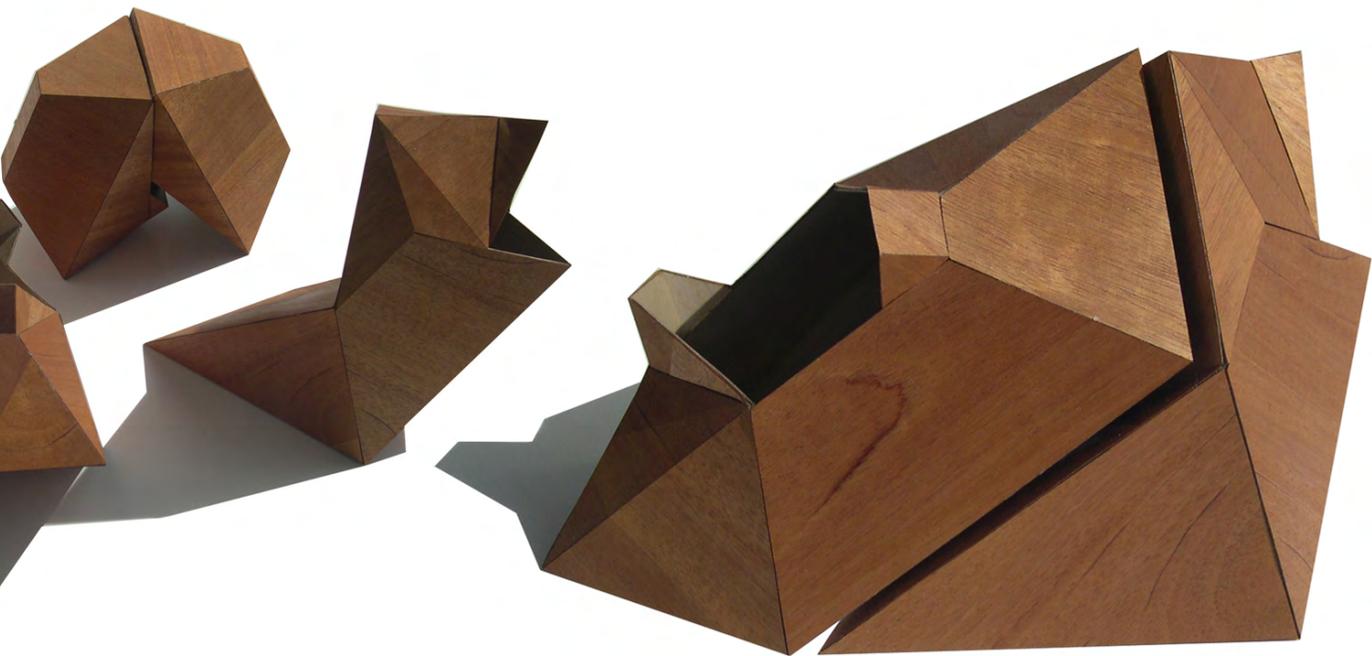
The final product must be a full scale prototype. It is not intended to be a study model or to be representational and should be made of a finish material and must be fabricated using the CNC, 3d Printer or laser cutter.

NEW ORLEANS DISHES

NEW ORLEANS, LOUISIANA

The folding of cultures and traditions that created gumbo inspired the bowls' form, fabrication process and materials. french Bouillabaisse, African okra, Spanish peppers, German sausage and Native American file powder are some of the elements that combined in Louisiana to become what is now gumbo. As a result of many influences there are multiple variations of the recipe which require versatility in serving and consuming. The rice and gumbo bowls have been separated to allow each person to create their own combination. The bowls also sit in different positions, depending on how they are being used (filling, passing, pouring). Two layers of veneer wrap around each other to make the bowls – birch on the interior and African mahogany on the exterior. Digital templates were used to cut and score the materials on a laser cutter, allowing the layers to align and the bowls to interlock.

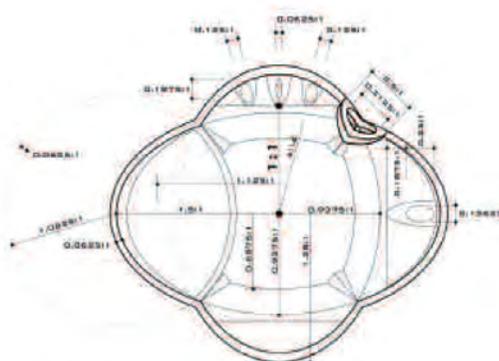




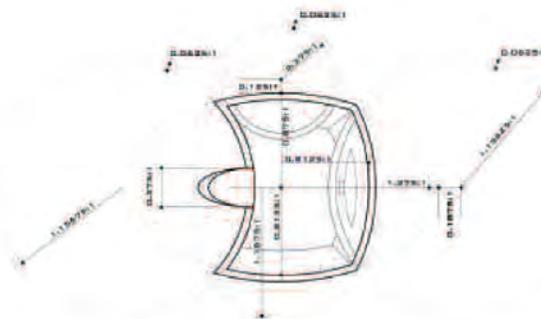


The design for the bronze bread pudding dish was built around the measure of time, temperature and volume. The final design includes a central mixing and cooking well with 4 outer measurement chambers that hold the ingredients of bread pudding. A water well is also included as a measure of cooking time through evaporation. The dishes were modeled in formz and casting molds were created using a Z-corp Z310 rapid prototype printer with Z-cast at the medium. The final product was cast in bronze.

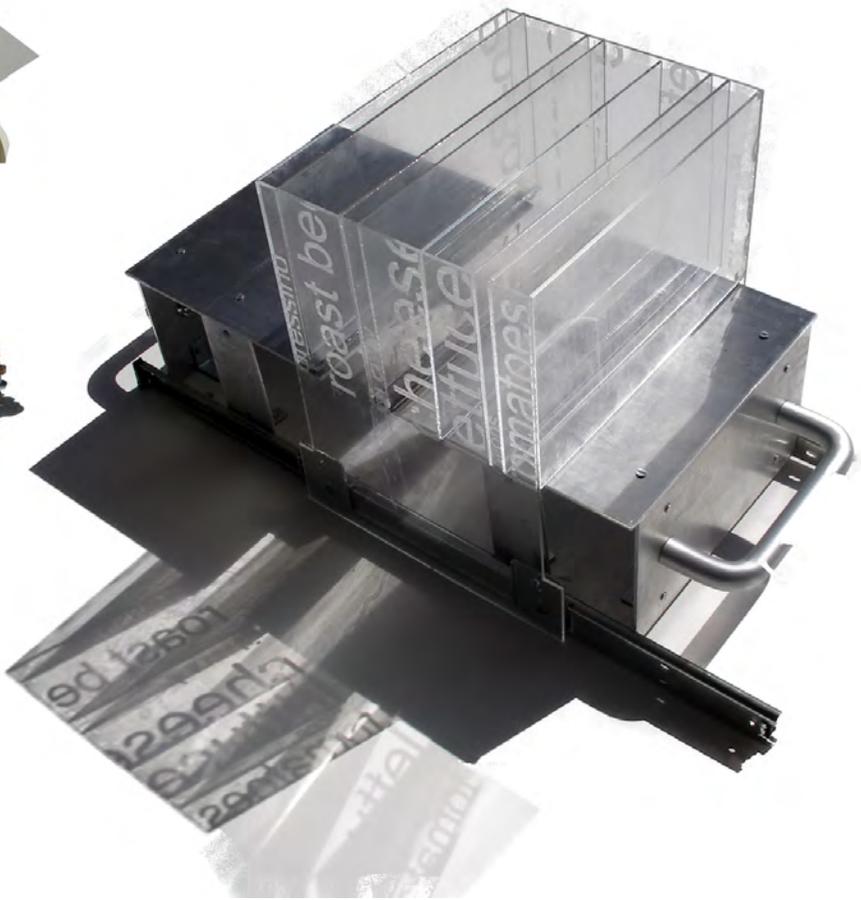
Design Student: Tim Takacs

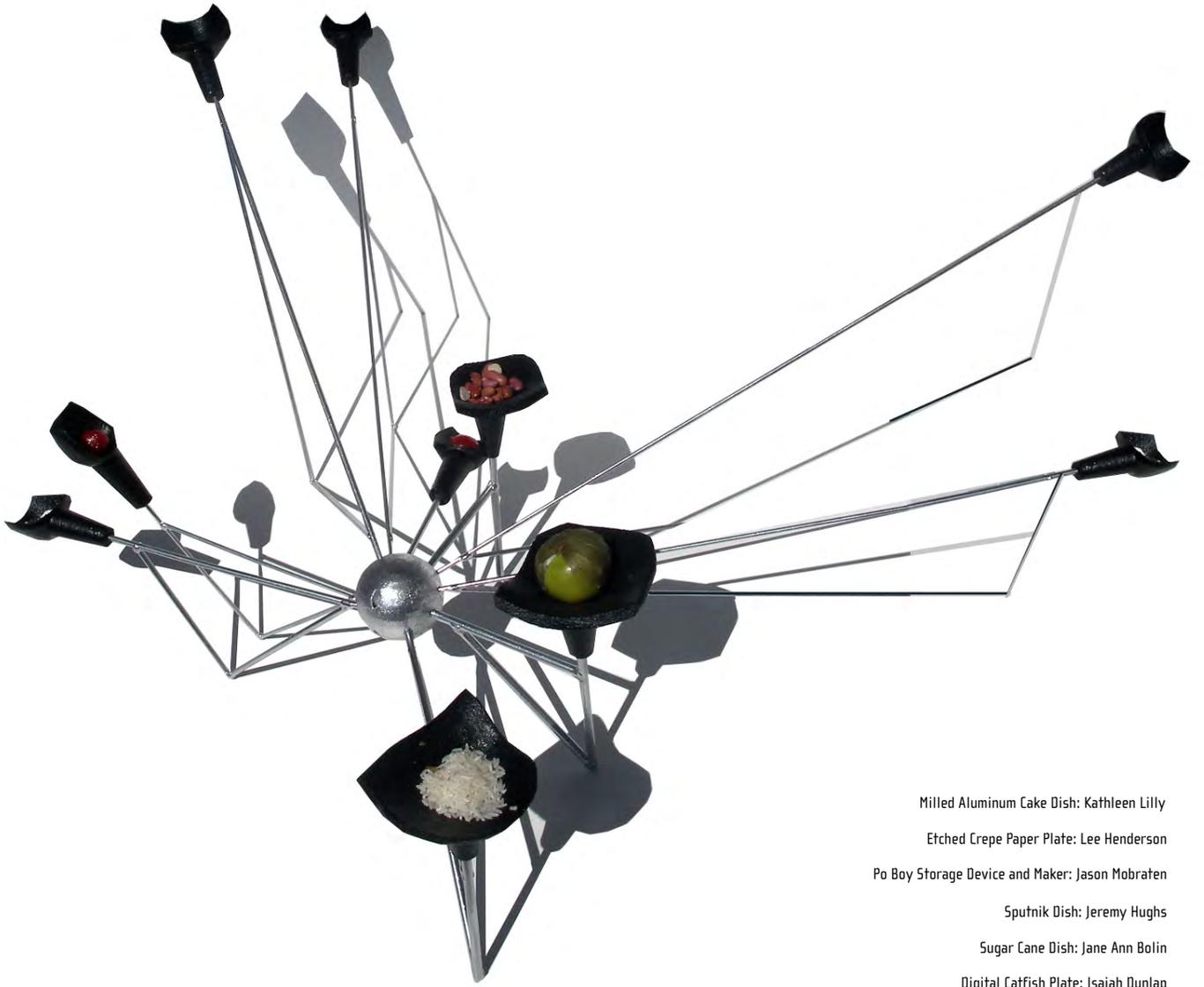


LARGE BOWL PLAN



SMALL BOWL PLAN





Milled Aluminum Cake Dish: Kathleen Lilly

Etched Crepe Paper Plate: Lee Henderson

Po Boy Storage Device and Maker: Jason Mobraten

Sputnik Dish: Jeremy Hughs

Sugar Cane Dish: Jane Ann Bolin

Digital Catfish Plate: Isaiah Dunlap