ARCH 2011 – Design Studio I

Introduction

For this semester we want to change the notion of pattern and bring it closer to architecture and its materiality. Obviously, the studied patterns of the first semester were wholly material and demonstrated that all material patterns, be it the markings on an angel fish or the packing of ice, have architectural organization. All materials, when sufficiently mobilized, find ways to organize themselves. Even in human crafts we find similar ways to create patterns, as long as the materials are allowed to be flexible and to configure step by step into a final shape. This applies to the forging of iron as much as for the weaving of baskets or the cooking of a dish.

Likewise, we want to now prioritize material techniques to generate individually distinct patterns, and also to research more possible interactions between architecture, site and program. This semester will be based more on material experimentation than the acquiring of digital skills, and we will develop both materiality and technique in the realm of "analog computing" – a term that can be applied to Semper's Stoffwechselthese (ex. textile weaving becoming stone carving), Gaudi's catenary techniques (ex. hanging chains becoming stone arches) or Frei Otto's form finding (ex. wrinkled paper becoming a concrete roof). Note that the techniques range from the ornamental to the structural, and anything in between.

Program and Site

The studio will focus on the transformation of the existing Federal Reserve Bank building on Peachtree Street in Atlanta. The place of architecture in the expression of the status of banking has always been very prominent. For instance, national banks tend to be built in stone (and in classical style), while commercial banks often choose glass and steel (in high-tech) to express transparency and reliability. Clearly things have changed since the collapse of Lehmann Brothers in 2008. What role can architecture play in the tense field of the politics of values? Should architecture play it safe and clean up old symbolisms, or does it need to help invent a new symbolics, or should it even go further and invent new types of interaction within the public realm? With the above mentioned references to Semper and Otto this will have the following consequences:

1) Students can choose to prioritize the cladding or dressing of the existing building with the materials/techniques studied (see below). This is the most ornamental and Semperian option. When choosing this option, the project will have to be developed to a very detailed scale and include the building of large models of facade solutions.
2) Students can also choose to dress the building and duplicate or thicken the surface and study how such a system can become more structural and programmatic. This will involve a degree of reprogramming of the existing building.
3) Students can choose to let the dress wander off and explore the public space in front of the Federal Reserve and see if the facade skin can become a roof. This is an option that explores anything between Semper and Frei Otto.
4) Students can choose to use the material techniques to fully replace the existing building and explore the structural and programmatic properties of the studied systems.

Materials and Techniques

For the materials, there will be several options, starting with 1) flexible threads (from yarn to plastic tubes to wood fibers); 2) flexible strips (from paper to cardboard to wood); 3) rigid sticks (wood); 4) flexible surfaces (from rubber, to textile to paper). This is somewhat analogue to Semper's The Four Elements of Architecture, though very freely interpreted. His materials range from heavy stone foundations, to wooden stick-like elements, to textile threads, and ending with the climate control of the hearth, creating four states of aggregation ranging from solid to gaseous.

Our four elements are subsequently researched within the realm of certain techniques. Some techniques will fit exactly with the proposed material (weaving with thread), others less, and some not at all (weaving with rigid sticks) – this is intended to introduce the problem of transferring the diagram to architectural materials early in the process.

There are two groups from which to choose the techniques. The first group has more precisely described techniques where existing figuration (the type of loop, knot or interconnection) lead to specific patterns:

Lacework – complex figuration in an preexisting grid
Macramee – complex figuration created through knotwork
Knitting – single thread connections with loops
Plaiting – weaving with flat strips
Weaving – works from a loom with elements fixed in one direction
Braiding – multiple elements interwoven into single strips or surfaces
Quilting – aggregation of patches

The second group offers a more abstract sense of technique, where individually distinct figurations have to be invented leading to specific configurations:

Felting – nesting of loose fibers or strips into a surface or volume (nesting)
Pleating – folding a surface with sharp creases
Interlacing – any type of configuration of preset figures (ex. Gothic)
Figuring – develop sets of figures and configurations from the given materials
Combing – working from parallel elements
Wettening – making flexible elements configure through sticking (ex. woolthread)
Draping – a surface with curved folds

Note that the research in these techniques can differ dramatically when choosing from the materials. For instance, weaving with rigid sticks, paper strips, or yarn will generate very different outcomes. Students should carefully think about how to make rigid sticks pliable -- one can use small hinges, or split the material so it becomes bendable, or simply accept the rigidity and create angular connections.

Learning Objectives

Visual + Technical Communication Skills:

Students will continue to hone their ability to produce clear, descriptive architectural drawings in plan, section, elevation and axonometric and to use appropriate representational media, such as traditional graphic and digital technology skills, to convey essential formal and programmatic elements at each stage of the design process.

Research:

Students will refine their ability to analyze a fundamental architectural issue, via the generative use of diagrams, evidence derived from precedents and readings, and construct a basic argument that will serve as parameters for the design of a simple architectural proposition. In essence, develop a critical framework and the ability to apply that framework toward a design intervention.

Fabrication, Assembly and Construction:

Students will interpret and apply the basic principles utilized in the appropriate selection of construction materials and assemblies, based on their inherent characteristics and performance, including their environmental impact and reuse.

Architectural Program + Site/Context:

Students will classify, compare and explain basic circumstantial contextual forces operating at a specific urban scaled site and apply knowledge to the interpretation of an architectural program.

WEEK 1

Assignment 1 / Pinup 1: 1.a. Find and sort material on the selected technique; 1.b.short description of the technique (250-500 words) 1.d. Build analogue models (at least 6 models) that characterize different sub-types or sub-techniques.
Choose a material that is related to the technique that you are studying (for example yarn or thread for textile techniques.(10 points)

WEEK 2

Assignment 2.a.b. / Pinup 2: Develop a matrix of sub-types through 2.a. additional physical models and 2.b. through 2d diagramming of the models (10 points)

Martin Luther King, Jr. Day Holiday

WEEK 3

Assignment 3 / Pinup 3: Select 4 different materials with different material properties. 3.a. Document the properties of the choosen material itself (isotropic, anisotropic) and 3.b.study the effect on the orginal technique. For example: When you used yarn or thread to study textile techniques, it is advised to choose paper or cardboard in this stage. You will also need to develop variations on those elements, for instance: bundle strips; split strips; fill hollow tubes; vary the properties of the thread (hairy to smooth); vary the shapes (lengthening, widening etc). (20 points)

WEEK 4 + 5

Assignment 4 / Pinup 4: Students will all (in pairs) build models of the site and start applying their material techniques to it. The models can be simple as in clay or cardboard but also more structured (woven or made out of strips)
(20 points)

WEEK 6 + 7

Assignment 4 / Pinup 4: Apply the previous techniques to the facade system of a given building. Transfer the research from analogue models to a digital model
Explore programmatic possibilities through diagrams in 2d and 3d. Decide to develop your project in one of the following ways (50 points):

1) Students can choose to prioritize the cladding or dressing of the existing building with the materials/techniques studied (see below). This is the most ornamental and Semperian option. When choosing this option, the project will have to be developed to a very detailed scale and include the building of large models of facade solutions.
2) Students can also choose to dress the building and duplicate or thicken the surface and study how such a system can become more structural and programmatic. This will involve a degree of reprogramming of the existing building.
3) Students can choose to let the dress wander off and explore the public space in front of the Federal Reserve and see if the facade skin can become a roof. This is an option that explores anything between Semper and Frei Otto.
4) Students can choose to use the material techniques to fully replace the existing building and explore the structural and programmatic properties of the studied systems.

WEEK 8 + 9

Assignment 6 / Pinup 6: Develop your project further based on the comments from the midterm review and as discussed with instructors.

WEEK 10 + 12

Assignment 7 / Pinup 7: Develop your architectural project in 3d representations, plans, sections and elevations (40 points)

Spring Recess 2012

WEEK 13

Assignment 8 / Pinup 8: Final model as fitting to your scheme and concentration (20 points)

WEEK 14 + 15

Assignment 9 /Final review 9: Final presentation (100 points)