

ARCHITECTURAL DESIGN II

Project 1: Form & Function: Expression of Truth/Beauty

Theory / Conceptual Issues:

The relationship of form and function has been a central theme in architecture since the enlightenment. The core issue is whether a building's form should truthfully express its function or should it be independent of its function. The outcome of this issue provides a rationale for architectural design. 17th century architect Claude Perrault was one of the first architectural theorists to separate the issue in this thesis of positive beauty and arbitrary beauty. Perrault was also a medical doctor and understood the function of the human body and that beauty can be expressed in that function. According to Perrault, positive beauty plays a normative role of standardization and perfection in design that typically is expressed through the classical rules and language of architecture (i.e., the science of Math/Music ratios, proportions and geometries that underlie designs up until the Enlightenment). Arbitrary beauty on the other hand is subjective and culturally constructed. It can be expressive of function and its particular circumstances and requirements, like our bodies. The late Nineteenth Century architect Louis Sullivan coined the contemporary phrase, "form follows function... It's the Law." Sullivan was talking about all things living and how their shape was based on function, i.e., fish, birds, people. This is the concept as we know it today.

This project examines the relationship of form and function in architectural design. It encourages the awareness of truth, whatever position the designer takes, and promotes the arbitrary aesthetic of "functional" beauty.

This project also examines the method and process of

This is a project that focuses on elevation as the design generator

Creative Design Process:

1. Use of prototypes: for selecting the span/form (bring in 10 pictures of bridges plus 3 that open)
 - a. research various prototypes
 - b. conceptual analysis of each as reductive diagram
 - c. selection
2. Use of analogies: for selecting the movement/function (bring in 5 min. artifacts that move)
 - a. find common mechanical things that move (open, swing, draw, lift, etc.)
 - b. find common ergonomic things that move (joints, rotations, etc.)
 - b. conceptual analysis of each as reductive diagram
 - d. selection
3. Conceptual Combinations:
 - a. 9 possible solutions min. (could be additional combinations depending on orientation of movement)
 - b. select two preliminary combinations based on criteria given in class
4. Integration and transformation:
 - a. merger of two concepts for form a new and original entity
 - b. account for all places where function interacts with form
 - c. expression of form and function becomes the new aesthetic
5. Design Development:
 - a. turning your design concept into a workable functional solution
 - b. critical, rigorous, objective accounting of all the functional forces on the form
 - c. integrating the new patterns of structure with the existing so it looks like it fits

Design Hint: Don't try to hide the function in the existing form and patterns, rather pull it away so it can transform the form into something new. Form follows function, not function fits form!

3 X 3 Tables:

Draw in a 3 X 3 table: the span (form) diagrams along the top and movement (function) diagrams on the left side. Inside the box for each, draw thumbnails of what it would look like to apply this movement to the form. In addition, please indicate how the structure would be modified to allow for the 30' W x 40' H opening to occur. This can be done on AutoCAD or can be drawn on an 8.5" x 11" sheet of paper formatted with a thumbnail of the span at the top and the movement on the side to explore the solution. The hand drawn thumbnails need to be photographed for the Internet portfolio and be incorporated into the 3 x 3 table.

List the pros and cons of each combination of conceptual prototypes and movement/function analogy. Select two solutions to develop: one, where the solution is the most apparent (the end solution is known); and 2, where the solution is the most obscure (the end solution is unknown). It is more likely that the most apparent solution will be the easiest to solve but will lack the creative potential that the more obscure solution allows; since the end solution is apparent from the start.

Critical Focus:

When combining each of the two solutions, the focus will be on critical focus of each design decision where the conceptual prototypes and movement/function analogy intersect. If neither is transformed (they both still look the same), then the process lacked this critical aspect.

Assignment:

All buildings must, in some way, resist the forces of gravity to create a space in which its function is allowed to take place. This project will use a structural sliver of a span called a bridge as a platform to attach a function. The structural bridge will support a pedestrian walkway. The function in this case is the ability of the walkway on the bridge to open, allowing a 30' wide x 40' object to pass through.

The project will be assessed on structural clarity, functional expression and the creative transformation that takes place.

Design Criteria:

Pedestrian bridge, physically handicapped accessible, no slope greater than 1:12.

Span = 190'; Width = 12'; Clearance = 40'; Max. Height = 100'

No Structural members can be longer than 20' and shall be 1' x 1'

The bridge must also support a small structure on the span. The structure is an observation tower with a kitchenette, rest bedroom and bath room. It must be a duplex arrangement (two stories) approx. 250 s.f. total. The bridge can have moveable parts to achieve the 40' height clearance, i.e. draw bridge, elevator bridge, swing bridge, etc. Symmetrical designs are prohibited. Structural components cannot be larger than 1' x 1' and the structure cannot be covered or encased in a skin.

Procedure:

Week 1: Each student shall compile a series of different bridge types, i.e. suspension, arch, truss, etc. from research conducted at the library. Oral reports will be given next class period. Preliminary ideas will be developed.

Week 2: Design sketches and rough study model.

Week 3: Design development and drawing.

Week 4: Web presentations and animation or model.

Submission requirements:

Project 1: Form and Function

Web Presentation Requirements, items to include:

Project statement (i.e., why are you doing the project and how has function transformed the prototype)

Span prototypes - images and simplified diagrams (3 min.)

Movement analogies / function - images and simplified diagrams (3 min.)

Conceptual combinations table (3X3)

Preliminary designs (2 min.)

One final design in 3-D

- Elevations
- 3-D views of entire project (3-4 min)
- Detailed 3-D views of move mechanism (3-4 min)
- Animation of transformation process
- Animation of functional movement

Presentations must be entirely web based; on-line (no presentations from AutoCAD itself).

All students must make an oral presentation as part of the project (**No absences or late projects will be allowed**). Peer journals will be collected.

Project Due Date:

4 weeks from date given.

Bibliography:

Francis Ching, Architecture: Form, Space & Order