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4.510 Digital Design Fabrication
Fall 2008

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A close-up photograph of a structural assembly. Several thick, orange-colored beams are joined together at a central point. The beams have a slightly textured surface and are set against a dark, almost black background. The lighting highlights the edges and the texture of the beams, creating a strong contrast.

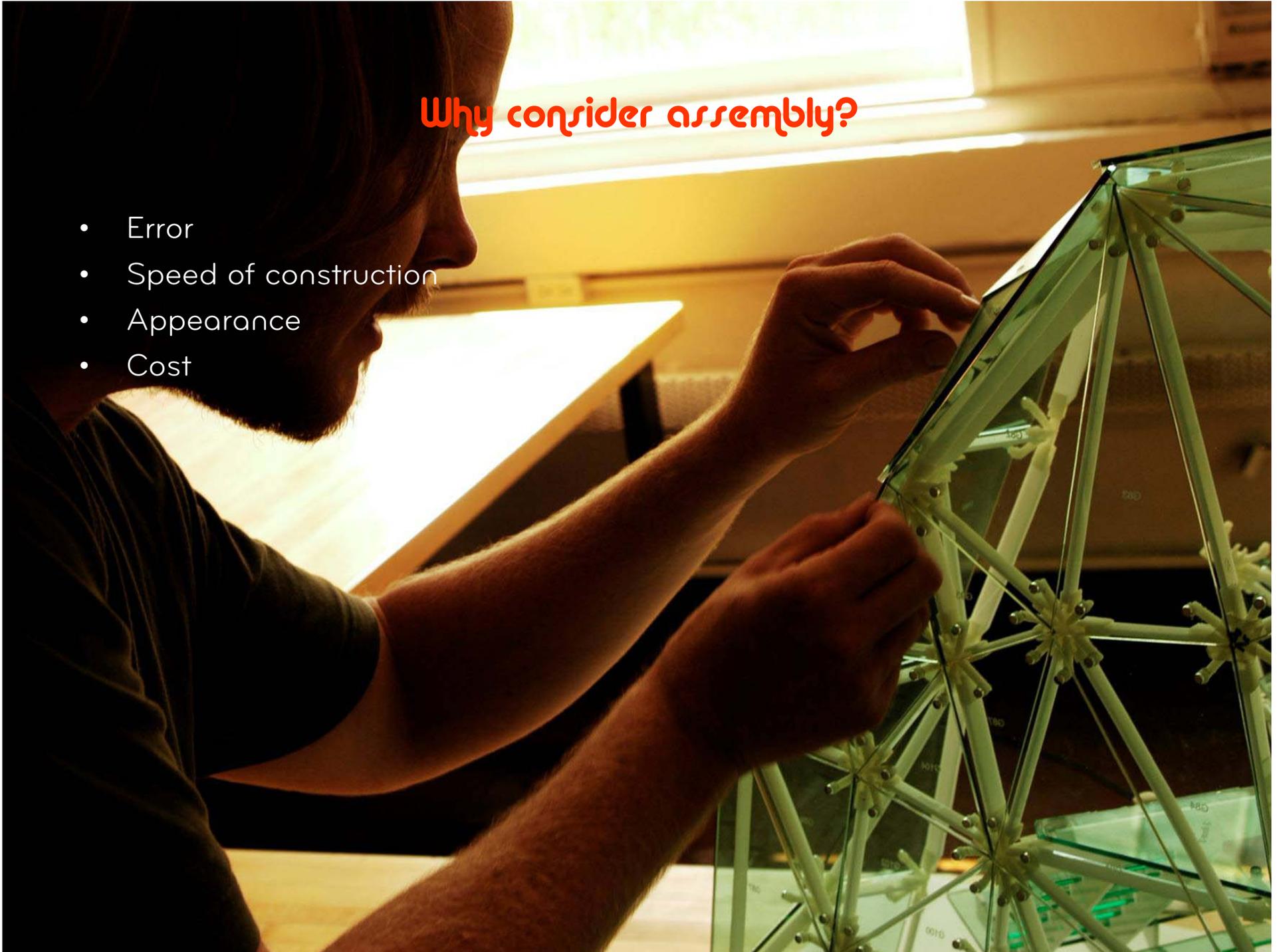
Lecture 5

Manufacturing and Assemblies

Prof. Larry Sass
Department of Architecture

Why consider assembly?

- Error
- Speed of construction
- Appearance
- Cost



What is assembly design?

- Assembly design is an upstream part of the design process
- Helps to identify construction methods and sequence of assembly
- Assembly design is an iterative process as much as it is a destiny





Manufacturing

- Goals
- Methods
- Purpose
- Advantages

Manufacturing Concerns

- Repeatability
- Accuracy
- System Flexibility

Manufacturing Concerns

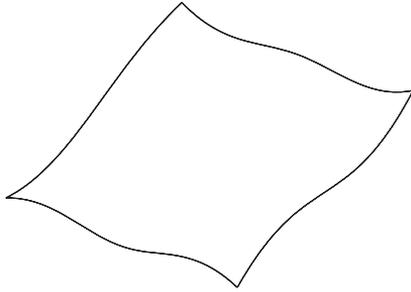


1. Accuracy
2. Repeatability
3. System Flexibility

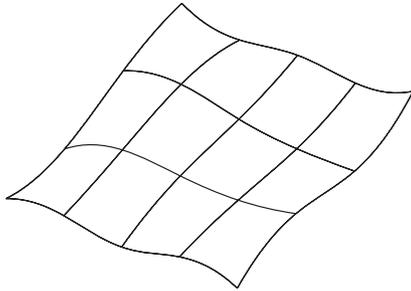


Why is Assembly Design Important For Architects?

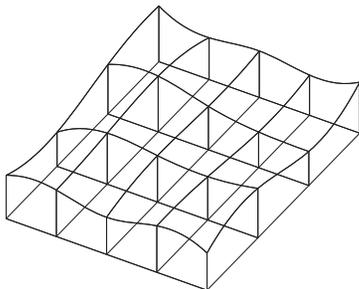
1 Create a Surface



2 subdivide surface



3 extrude shapes



Research Project

2002

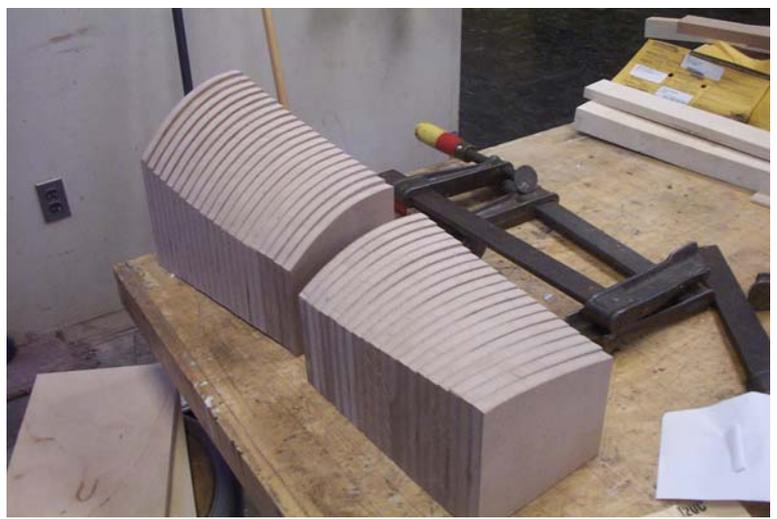
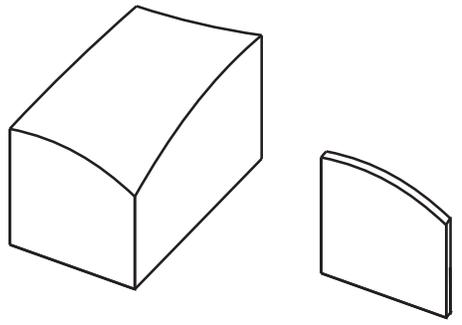
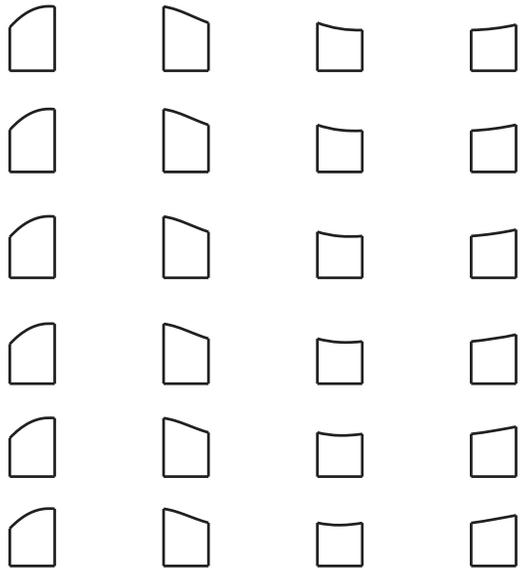
Curved Surface Design

- can curved surfaces be modeled in a design office?

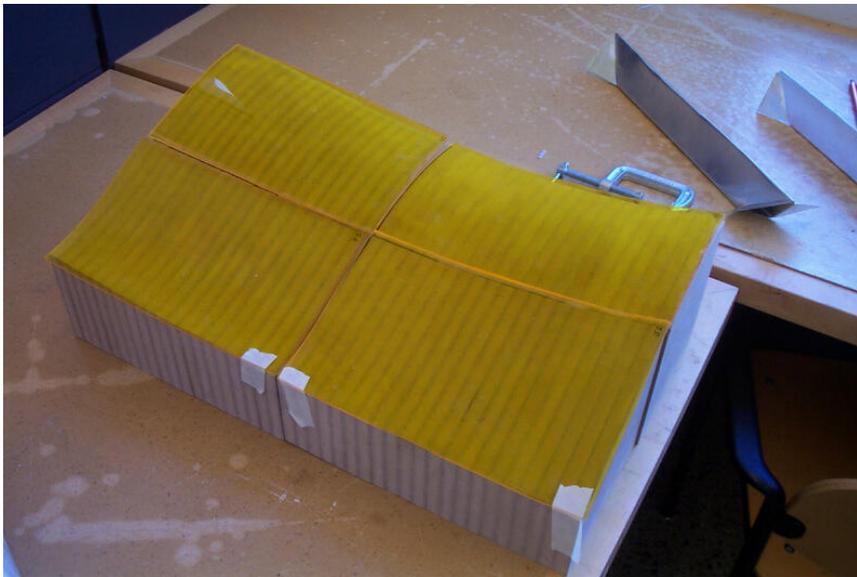
- is it possible to have a continuous surface with no overlapping parts?

- can the surface be waterproof?

4 subdivide into sections



5 test samples



6 final surface and molds



Error in Fabrication

*Continuous Glass Surface
Quarter Scale Construction*

Problems

- 1. Poor relationship between tools*
- 2. Design is a rain-screen*
- 3. Inconsistent connections at joints
from error in measuring, cutting and
assembly*



Graz Museum

Architect: Peter Cook

- *CAD CAM manufactured surface and structure*
- *no overlapping surfaces*
- *rain screen acts as a rain screen*

