Digitally Manufactured Housing

Larry Sass
Dan Smithwick & Dennis Michaud
MIT

Effective computing

Machining that is computer controlled

Assembly Only construction sites

Customized home delivery for culturally sensitive design

- New Orleans – 109,000 House lost
- 7 years @ 75/day
- Mass Customize 75 designs
- Mass Produce
Digitally Fabricated

- Outdoor or Indoor Digital Factory
  - Any Shape
  - Machines Scale
  - Complexity is in the cutting

- Advantages
  - Design models used for cutting
  - Controlled manufacturing
  - Low Energy (Flat packed)
  - Controlled waste
  - Precise

- Impact
  - Broad approach to housing
  - Luxury or low cost housing
  - Process works with many materials
What is digital fabrication

Computer model
“Precision measuring”

“Laser cutting”
Precise Cutting in Studio

“Prototype”
Error Detection & Correction

Scale Objects : 6
Inspiration
Computing a model

1. Precise measuring
2. Manufacturing Layered
3. Automated Assembly
Production: Design
(Design Grammar)

Step 1

Production: Product Modeling

(*Construction Grammars*)

**Step 2**

**G0:** Introduction of initial shape

**G1:** Section definition (materials)

**S1:** Analysis: applied forces and cartesian grid

**S2:** Analysis: rib definition

**S3:** Structural sections & difference

Figures by MIT OpenCourseWare.
Production: Manufacturing
(Computing for manufacturing)
Step 3
On-Site: Structure
(Assembly Only)
Step 4
On-Site: Ornamentation
(Multi-lateral Layering)
Step 5