4.510 Digital Design Fabrication
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Digitally Manufactured Housing

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Effective computing

Machining that is computer controlled

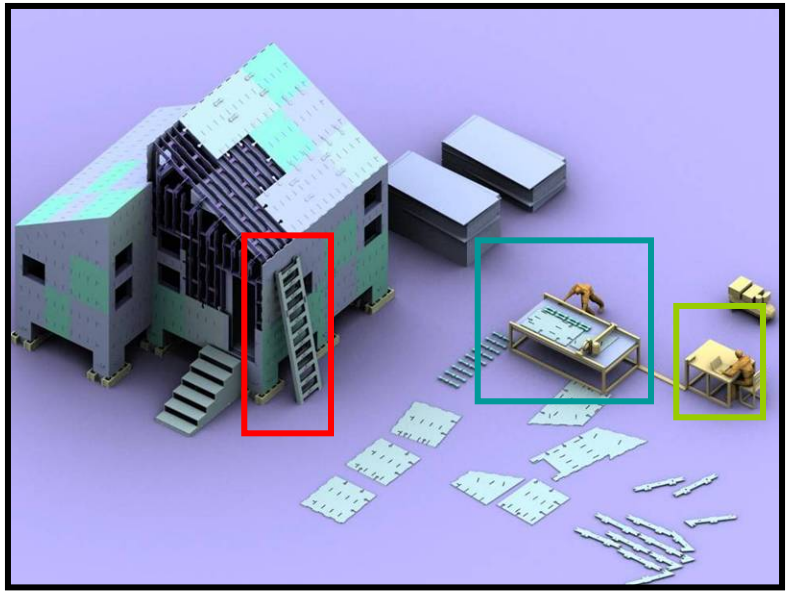
Assembly Only construction sites

Customized home delivery for culturally sensitive design

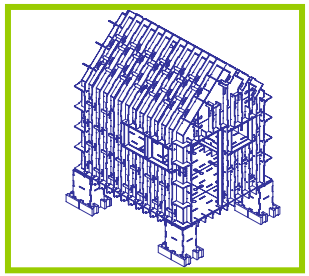
- *New Orleans – 109,000 House lost*
- *7 years @ 75/day*
- *Mass Customize 75 designs*
- *Mass Produce*

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



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Computer model
"Precision measuring"

"Laser cutting"
Precise Cutting in Studio

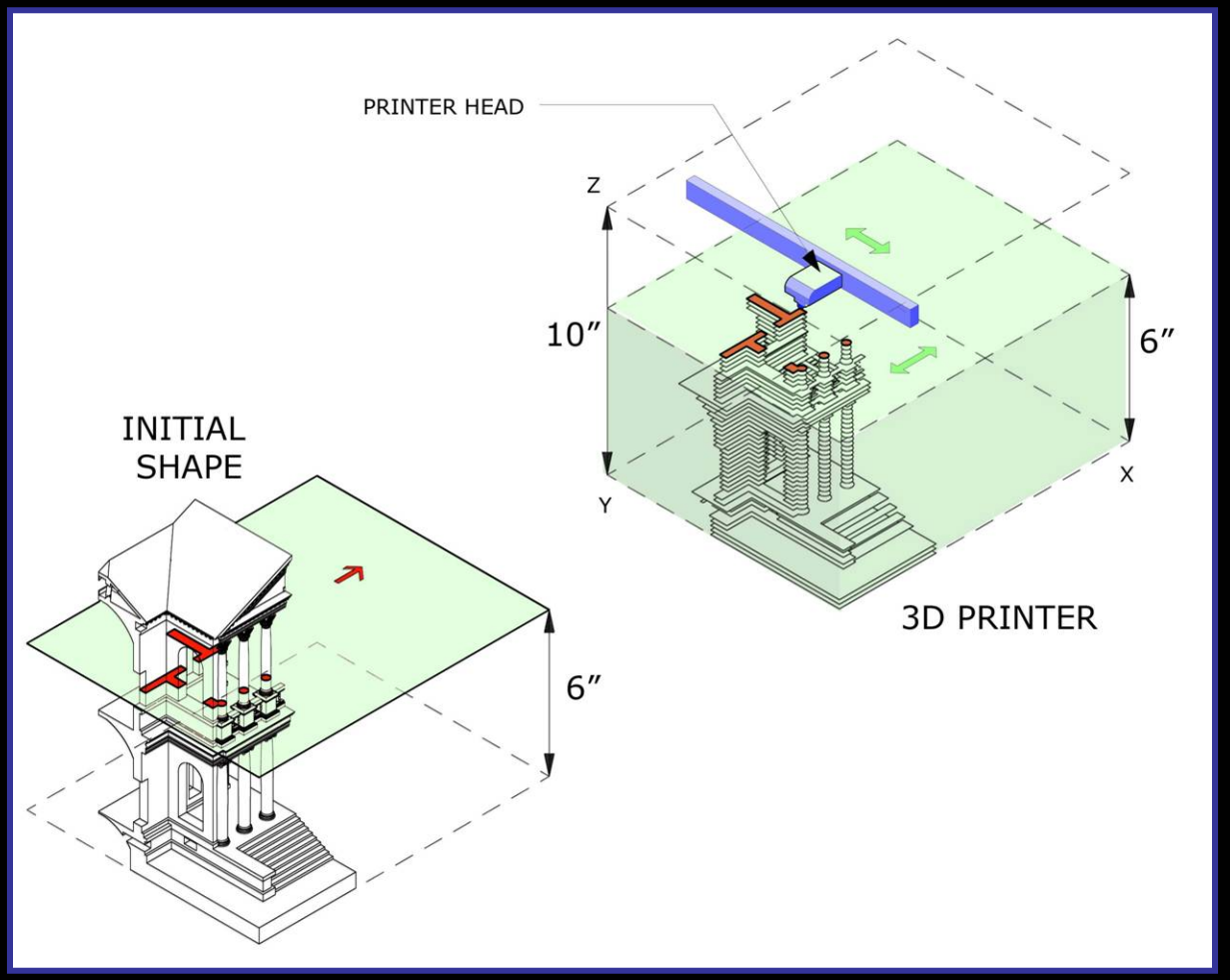
"Prototype"
Error Detection & Correction

↓ Scale Objects : 6

Inspiration

Computing a model

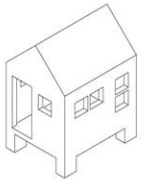
1. Precise measuring
2. Manufacturing Layered
3. Automated Assembly

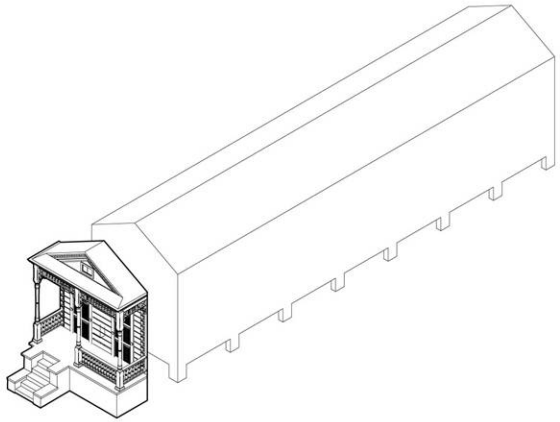


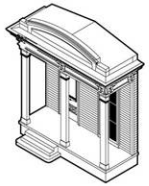
Production: Design

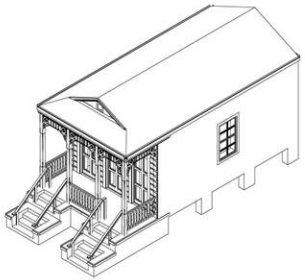
(Design Grammar)

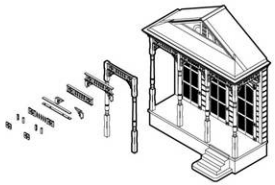
Step 1











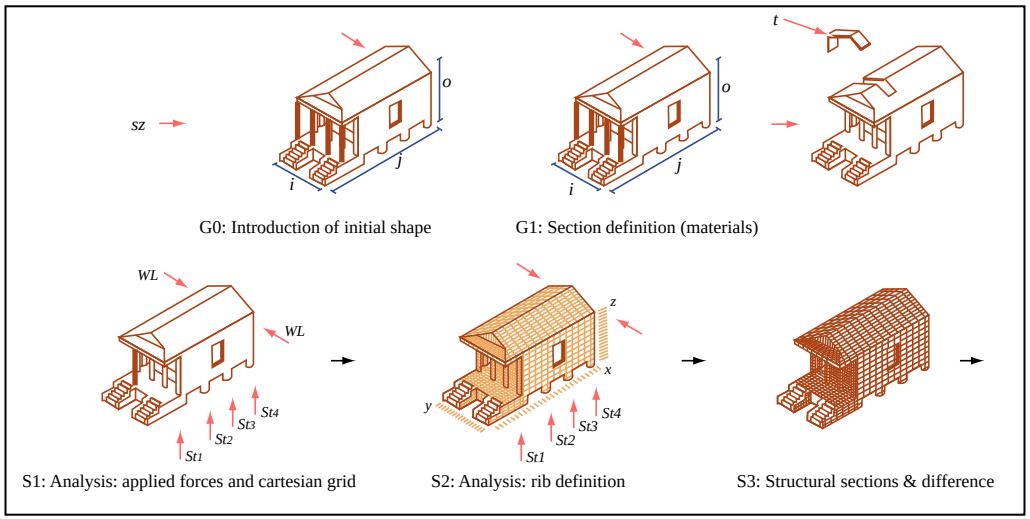
Stiny, G., *Palladian Grammar,* Environment and Planning B, Vol. 1975

Duarte, J., *Siza Grammar,* Environment and Planning B, Vol. 2004

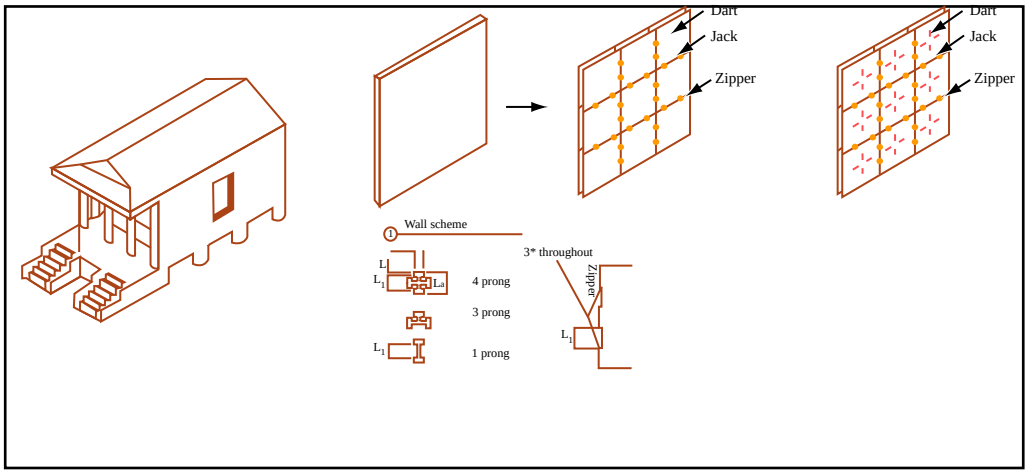
Production: Product Modeling

(Construction Grammars)

Step 2



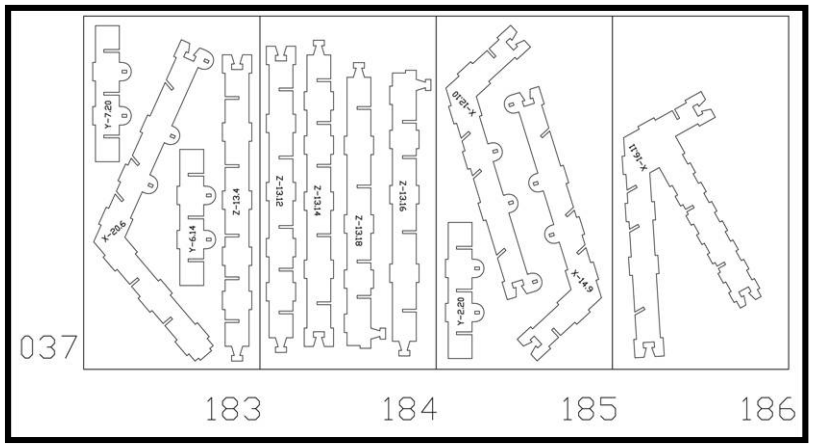
Figures by MIT OpenCourseWare.



Production: Manufacturing

(Computing for manufacturing)

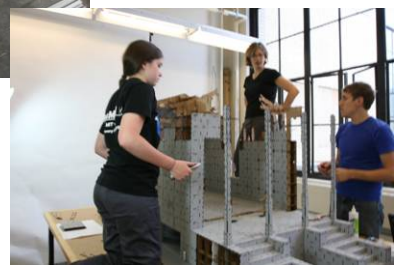
Step 3



On-Site: Structure

(Assembly Only)

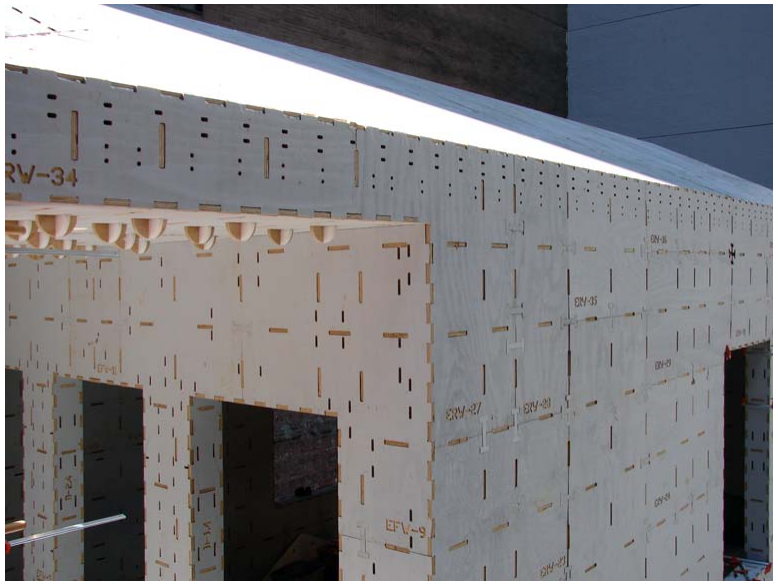
Step 4

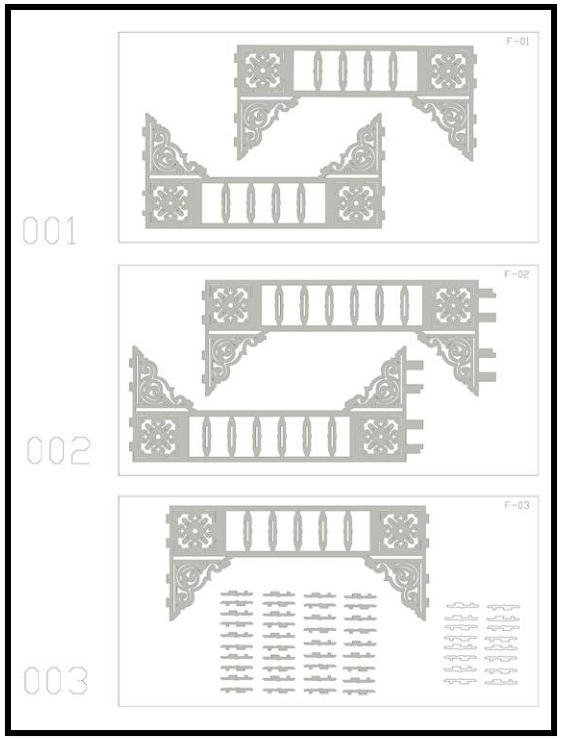


On-Site: Ornamentation

(Multi-lateral Layering)

Step 5





Design and Machines