Wall systems

- Complimentary
  - Monofunctional components
  - Loadbearing layer inside

Diagram of principle  Construction detail  Diagram of principle  Construction detail

Image by MIT OCW.
Wall systems

- Complimentary
  - Monofunctional components
  - Loadbearing layer outside

Diagram of principle

Construction detail

Diagram of principle

Construction detail

Image by MIT OCW.
Wall systems

- Complimentary
- Synthetic
  - Non-hierarchic element with multiple functions
  - Compact systems or sandwich systems
Wall systems

- Complimentary
- Synthetic
  - Example: Polyurethane wall

Photographs removed due to copyright restrictions:

Glass House, New Canaan, USA (Johnson, 1995)
Gate House, New Canaan, USA (Johnson, 1995)
Wall systems

- Complimentary
- Synthetic
  - Example: Straw wall

Photographs removed due to copyright restrictions:

Tscheppa House, Disentis, CH (Schmidt, 2002)
Simonton House, Pudrum, Nebraska
Openings

- Reveal, sill and head/lintel

Photograph and floor plan removed due to copyright restrictions:

Van Heusden House, Laax, CH (Olgiati, 1964)
Openings

- Reveal, sill and head/lintel
- Positioning and size
- Thermal and sound insulation
- Water/moisture protection
  - Opening rebate
  - Rebate between sash and outer frame
Building Elements

- Openings
  - Reveal, sill and head/lintel
  - Positioning and size
  - Thermal and sound insulation
  - Water/moisture protection
  - Window placement in opening’s depth
    - Architectural appearance
    - Thermal bridges
Openings

- Outer and sash frames materials
  - Untreated wood
  - Painted wood
  - Wood inside and metal outside
  - Plastic frames (PVC)
  - Aluminum or steel

- Glass types
  - Float
  - Window
  - Rolled or patterned
  - Wired
Roofs

- Provide shelter
- Finish off building
- Keep water out

![Diagram of building elements](Image by MIT OCW)
Roofs

- **Cold deck**
  - Waterproof layer separated from insulation by ventilation cavity
  - No vapor barrier necessary

Image by MIT OCW.
Roofs

- Cold deck
- Warm deck
  - Waterproof layer laid immediately above thermal insulation
  - Vapor barrier on warm side of insulation
Main reference for lecture contents:

- “Constructing Architecture” by Deplazes: pp. 140 - 146 + 286 - 289 + 184 - 200 + 211 - 224

Additional readings relevant to lecture topics:

- "Fundamentals of Building Construction" by Allen
- "Building Construction Illustrated" by Ching & Adams
  chapters on roofs, openings, wall systems