SHELLS

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DEFINITION
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CLASSIFICATION
DEFINITION

what is a shell?
- A shell is a thin structure composed of curved sheets of material.

- The curvature plays an important role in the structural behavior, realizing a spatial form.

- A shell is the most efficient way of using the material and can be very useful in case of storage of fluids and solids (uniform loads).
CLASSIFICATION

structural typologies
Elliptic shape
Parabolic shape
Hyperbolic shape
DEFINITION
CLASSIFICATION
REFERENCES
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Sydney Opera House
Metropol Parasol
National Ballet School
Sydney Opera House | 1957-73 | J. Utzon | Sydney
Geometry
Spherical solution: Shells as parts of a sphere
Materials
- white and cream mate tiles
- precast concrete ribs
- steel wire
Structure
Three hinged arch
(determinate system)

Vertical loading

Horizontal loading
Concept
Continuous and visual structure
Free form
Materials

- microlaminated wood
- steel
- reinforced concrete
Cuba’s National Art School - ballet | 1961-1965 | Vittorio Garatti | Havana,
Concept complex of domes connected to each other by organic layering of catalan vaults
Materials
- brick
- tile
- reinforced concrete
Structure
hemispherical on pendentives domes

rigid-node dome
thank you