

Oscar Niemeyer: When Concrete Meets Glass

A Fenestration Study by
Reliance Fenestration



“I am not attracted to straight angles... I am attracted to free, sensual curves.”

Emotional Architecture

Rejecting the rigid grid.

The Luminous Partner

Glass not as barrier,
but partner.

The Dialogue

Structure (Weight) vs.
Transparency (Lightness).



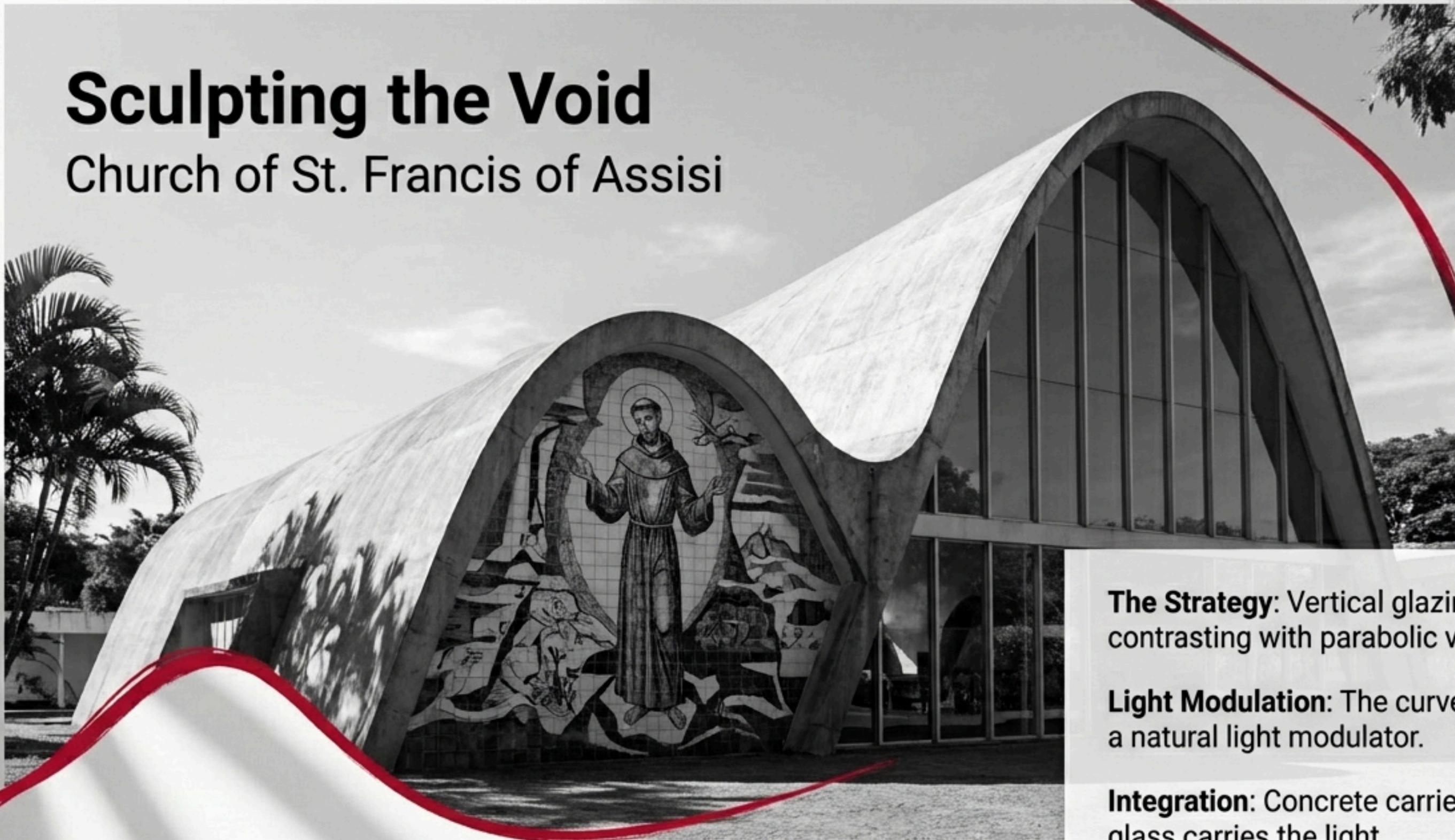
Early Innovation: The Brise-Soleil

Gustavo Capanema Palace (1930s)

- **Technique:** Adjustable concrete louvers (brise-soleil) functioning as a kinetic façade.
- **Performance:** Maximum light filtration with minimum glare; ventilation without sacrificing privacy.
- **Legacy:** The façade as a living machine.

Sculpting the Void

Church of St. Francis of Assisi



The Strategy: Vertical glazing planes contrasting with parabolic vaults.

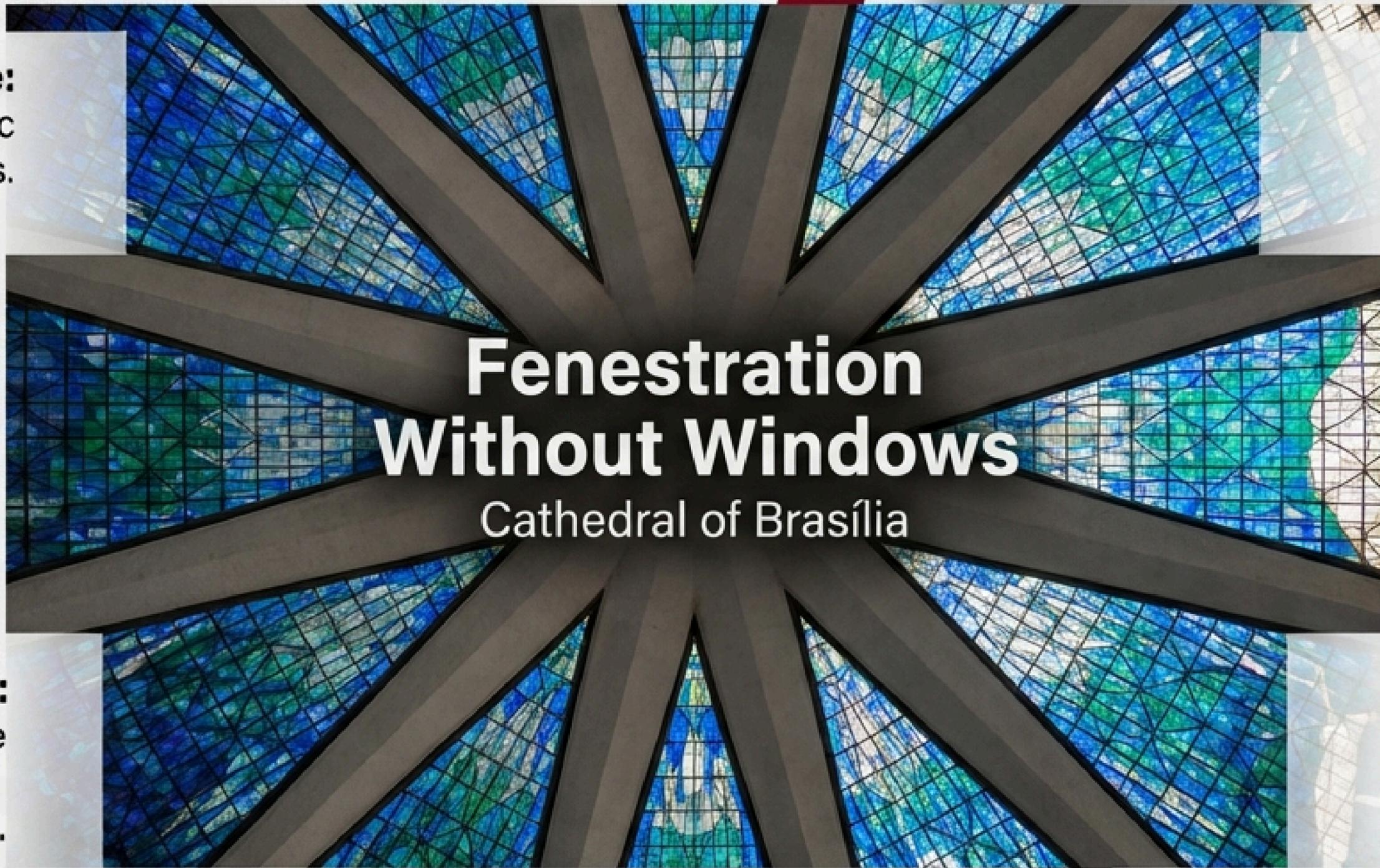
Light Modulation: The curve itself acts as a natural light modulator.

Integration: Concrete carries the drama; glass carries the light.

Brasília: A Laboratory of Transparency

Redefining civic architecture from stone fortresses to transparent volumes.





Structure:
16 hyperbolic
concrete columns.

Materiality:
Triangular fiberglass
panels and stained
glass.

Fenestration Without Windows

Cathedral of Brasília

Strategy:
No "windows"—the
structure is the
glazing system.

Climate:
Reflecting pool diffus
glare before light
enters.

The Towers:
Bureaucratic Efficiency

The Curtain Wall vs. The Shell

The Shell:
Symbolic Shelter



Knowing when to expose (Modular Glazing Grid)
and when to conceal (Opaque Concrete).

The Glass Veil

Palácio da Alvorada



→ Layering: Glass recessed behind structural colonnade

→ The Lantern Effect

Fenestration is not just the glass; it is the shadow created by the structure.

Panoramic Curvature

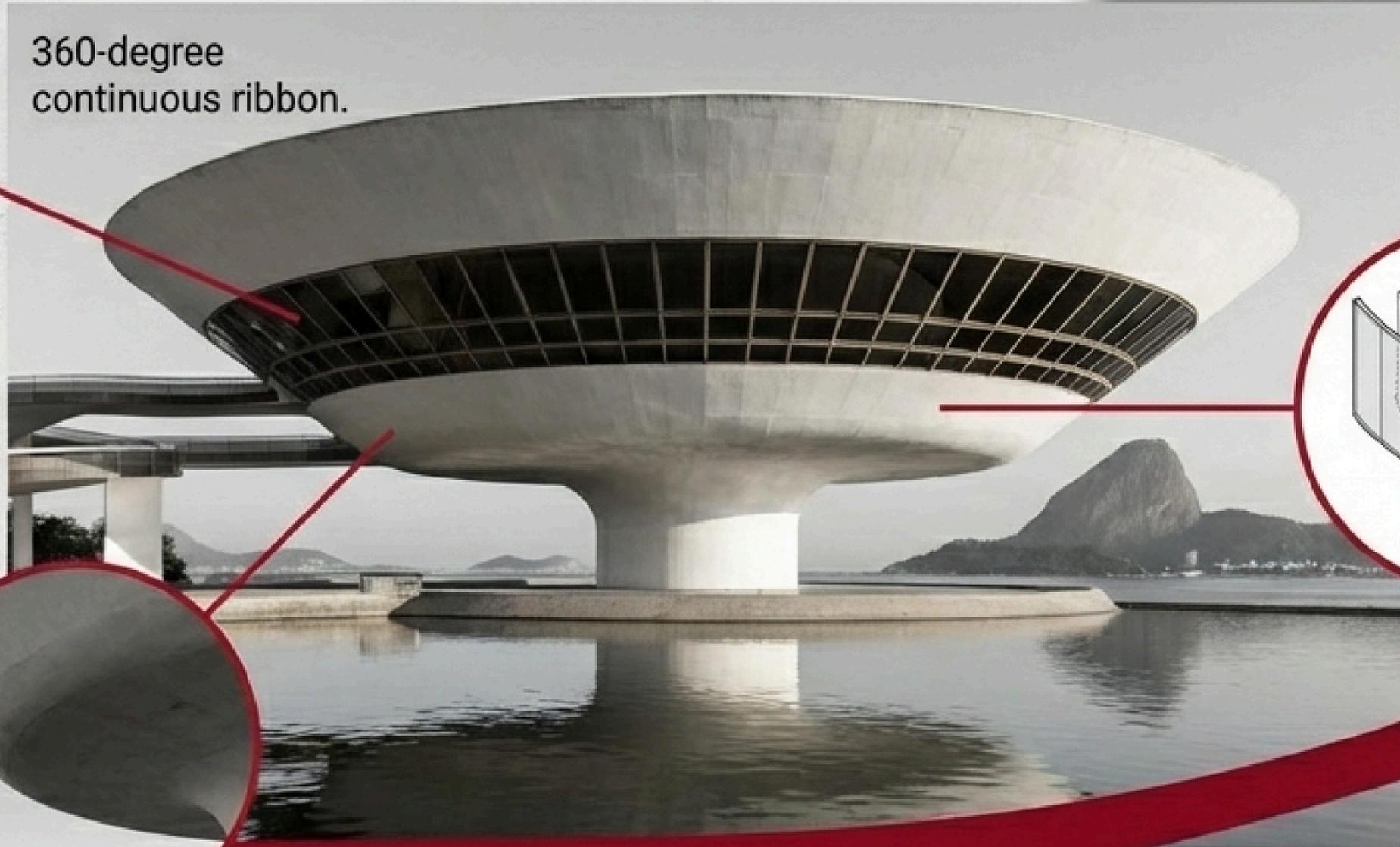
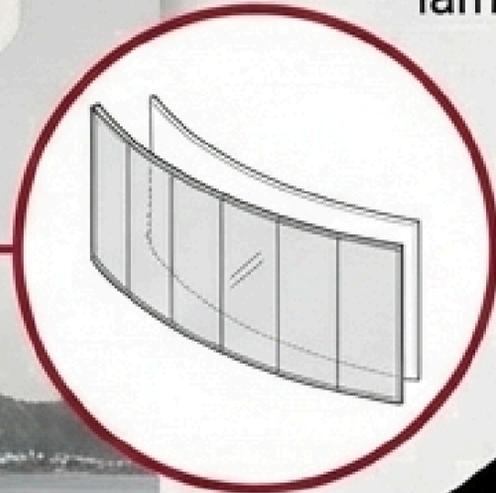
Engineering the Horizon

360-degree
continuous ribbon.

Custom curved
laminated panels.

Passive shading
via projection.

Challenge: Radial framing systems designed to dissolve
the boundary between art and the bay.



Scale & Rhythm

Copan Building

Mass Climate
Response. ←

Technique: ←
Continuous
concrete brise-soleil.



→ **Scale:** Shading
thousands of
residential units.

→ **Result:** Passive
design strategies
applied to high-
density living.

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Reflections of the City

Paris Headquarters

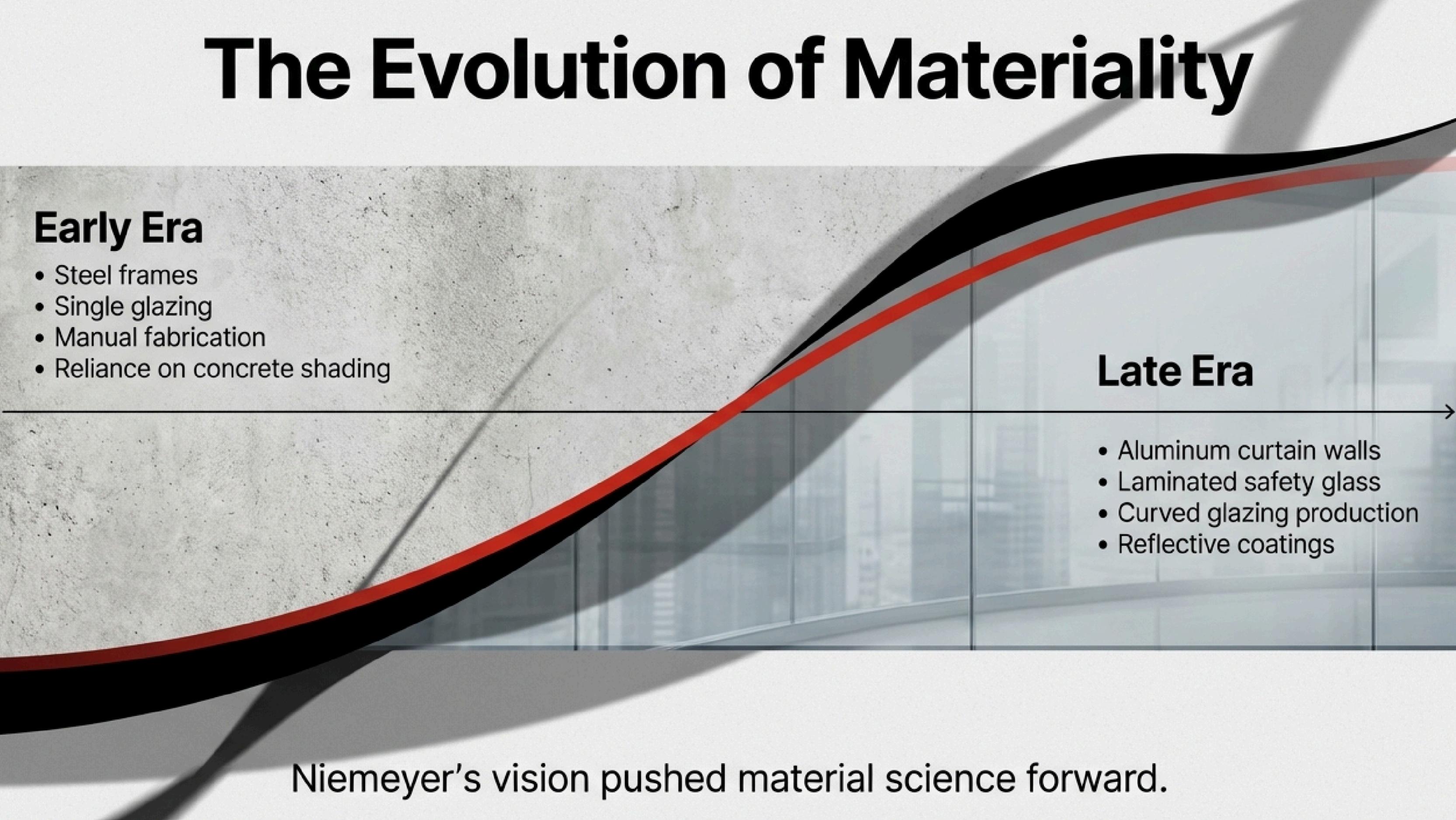


Technological Refinement: Concealed structural mullions and reflective glazing.

Context: Leveraging 1960s advancements in float glass and aluminum.

Takeaway: Using technology to integrate the building into the urban fabric.

The Evolution of Materiality



Early Era

- Steel frames
- Single glazing
- Manual fabrication
- Reliance on concrete shading

Late Era

- Aluminum curtain walls
- Laminated safety glass
- Curved glazing production
- Reflective coatings

Niemeyer's vision pushed material science forward.

Niemeyer's Fenestration Principles

- 1. Glass as Void Filler:** Occupying negative space between structure.
- 2. Ribbon as Horizon:** Connecting interior to landscape.
- 3. Structure as Shade:** Integration of brise-soleil and overhangs.
- 4. Transparency as Ideology:** Political and social openness.
- 5. Integration of Art:** Stained glass and murals as facade elements.



Architectural Intent. Delivered.

Bridging Vision and Reality.

Niemeyer relied on custom engineering to achieve his curves. Modern architecture demands even higher performance.

- **System Architects, Not Catalogues:** We translate complex intent into deliverable reality.
- **Global Sourcing:** Access to the epicenter of technological excellence.
- **Performance:** Thermal breaks, smart materials, and vacuum insulating glass (VIG).

“Concrete Embraced Glass.
Light Danced Free.”

Let's build the future together.

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