

# The Architecture of Antoni Gaudí

Fall Semester 2019 (Langley Hall, room A224)

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## Lecture 3: Stereo-Statics

Partis Pris:

**Parabolic:** A sacred symbol drawn from the sacred stones of Montserrat, an outward manifestation of a natural purity that has been lost. A perfection of the circular Roman or pointed Gothic arch, legs inclined, do not meet ground at a right angle, thrusting against the earth receiving its own weight, determining form by own measure, not the caprice of man.

**Bóvedas tabicadas:** Vault made of tiles (rajoles) bonded together with high-strength, quick acting mortar, laid without scaffolding, to function as a cohesive unit, a monolithic board or pot cover, where loads transfer down without lateral thrust.

"The board vault is the most precious element of our construction, it permits us to execute with simplicity and rapidity the most complex forms, it does not require falsework, and it has great resistance in relation to its lightness and to the simplicity of its components."

**Catenary curve:** Hanging freely under the forces of gravity acting evenly along arc, in a natural state of equilibrium rest.

**Equilibrated Structure:** Architectural form and structural engineering unified as one, without distinction between the two, loading forces coincide within profile of the structure, without division between lateral and vertical, balanced with the ground.

**Escaléristas:** Specialist stairway builders who obtained the curve for the staircase vaults by hanging a chain from two ends and then inverting this form, traditional Catalan method to construct stairs often supported by only one wall.

**Stereo-Static Model:** mechanical calculating machine made of weighted strings representing structural pillars and arches, inverted to be acted on by gravity in tension, determining inclination angles and directional thrusts automatically, replacing traditional graphic-static mathematical calculations with an empirical making by the hands.

**Architectural synthesis:** Distinction between supporting and supported elements dissolved.

**Grotto:** Search for a space and light that are once more enclosed, once more sacred.

### Tangiers Mission (1892-1893)

Leitmotifs:

Transforming the two-dimensional, planar parabolic arch in linear series into a three-dimensional, spatial volume in rotation.

Idealized model expressing the equilibrated world of the medieval feudal society, artisan cooperative, industrial colony, and religious community.

### Colònia Güell Crypt (1898-1914)

Leitmotifs:

Not enough to give workers their daily bread, must transform their souls, corrupted by alcohol, atheism, and anarchism.

Structural materials exposed, revealing manual work, homage to industrial colony of working class.

Imperfect, dispensable, overfired burnt bricks elevating their nature by use for a sacred place, redeeming materials and the hands that crafted them.

### Park Güell (1900-1914)

Leitmotifs:

Aristocratic colony of individualized cottages nestled in a natural setting, Catalan industrialists seeking autonomy.

Viaduct porticos along sloped incline, elevating roads without excavation, while providing footpaths protected from weather, whose parabolic section determined by the natural properties that give structure and weight to the earth, symbolic return.



Colònia Güell Church, painted in gouache by Antoni Gaudí over inverted photograph, 1910.  
Note the inclined columns with strings visible from the underlaid photograph of the stereo-static model.