

Lecture 2 – Colades de Guix (washes of plaster)



Welcome back to **Antoni Gaudí's Influence on the Contemporary Architecture of Barcelona and Bilbao.**

Housekeeping Items for New Students:

Please add **your name** appears under **Participants** button, to be called on.

Muting everyone (background noise)

Questions > **Raise Hand** & **Chat questions to Erin (co-host).**

5 to 10 minute break & 10 to 15 minutes at end for **Q&A**

POLL: #6 Which prefer: Cantini mosaics, Walter's terrace, Randy's park, Kahn's clouds, Brill's tunnel?

Today: Colades de Guix (**co-LAH-dis day GEEse**) **Gaudi's Plaster Castings**

First, a brief background on plaster or in Gaudí's case, gypsum.

Plaster is traditionally a building material for **protective finishing of walls/ceiling**. Its primary advantage is **retrograde solubility**, becoming less soluble at higher temperatures, so **when heated becomes a dehydrated powder**, that **can be molded into any form**, shape shifting. When **water is added back**, reacting and liberating heat, **crystalizing**, returning to its **hardened state in a new form**, making it an **ideal material for sculpting form**, the **medium of architecture**.

2x [**Old Economy Village**, 1824]

Clay plaster (**oldest form** of human settlements) made from clay, sand, and water with **plant fibers** (reinforcing) and **manure** (protein binders) **over wood lath** (old growth oak, straight grains without many limbs to get narrow strips), then faced with lime plaster for durability against weather.

Advent of industrial kilns, clay plaster, inferior tensile and compressive strength, gave way to **lime plaster** (durability against weather), then **gypsum plaster**.

1x [Vuoto wall]

Lime plaster (ancient use on **frescos mixing pigments with wet plaster**, **Venetians mixing colored glass fragments** with wet plaster) made from limestone (calcium carbonate) heated to 1500 degrees fahrenheit producing **quicklime** (calcium oxide). Water is added, produces **slaked lime** (calcium hydroxide) and sold as wet putty or white powder. Prior to use, water is added to form a paste, kept in airtight containers, **exposed to carbon dioxide in air slowly turns back to limestone**, increasing in strength, curing in about a month.

1x [Syrian Elephant, Marcus Coates, 2019]

Gypsum (soft mineral, calcium sulfate dihydrate, $\text{CaSO}_4 + 2\text{H}_2\text{O}$) moderately water soluble. **Used by ancient cultures** (Egyptian, Mesopotamia, Byzantine, Roman, Medieval Europe) **for sculpture, deity figures and vessels**, in fine-grained form call **alabaster** (hydrous sulfate of calcium) or **plaster stone**, before advent of steel relative softness (scratched with fingernail, 1.5-2 Mohs hardness) easier to carve. The **Montmartre (mon-mart)** quarries, northern section of Paris' Right Bank, furnished a **burnt gypsum** (calcined gypsum) local artists used (La Belle Époque 1871-1914) Modigliani, Monet, Renoir, Degas, Toulouse-Lautrec, Mondrian, Picasso, Pissarro, Van Gogh, became to be known as **Plaster of Paris**, sought after by Catalan artists of N.Spain, including Gaudí, as it was an **accelerant**, small amounts mixed with lime plaster to stabilize during the long curing, a key ingredient fast-setting mortar of **Bóvedas Tabicadas** (bo-VEE-das tah-BEE-cah-dis).

POLL: #7 Art preference? Realism, Impressionism, Expressionism, Art Nouveau?

[**Gypsum plaster (Plaster of Paris)** made from gypsum heated to 300 degrees fahrenheit. When mixed with water, rehydrates over time, slurry starts after 10 minutes, complete in 45 minutes as crystallization transforms over next 72 hours, into interlocking needles increasing in hardness and strength.]

[**Cement plaster** made with sand, **Portland Cement** (hydraulic lime, heating limestone and clay to form clinker, then grinding and adding gypsum) and water, used in the early 1900s, for making concrete, stucco, mortar and grout. The crystalline silica causes chemical skin burns and lung cancer, requiring high energy consumption to mine and manufacture, releasing of greenhouse gases and air pollutant particulates. One of the lowest cost, widespread and versatile building materials, that contributes to 10% of worldwide carbon dioxide emissions.]

2x [Alhambra]

For the young architects of late 19th century **plaster was also used for casting**. In **1887**, travels with 2nd Marques de Comillas to S.Spain and N.Morocco to make casts of historic **Mudéjar architecture** (synthesis of the **Christian and Muslim civilizations** that combined as the most authentic and **original Spanish contribution to Western art**) for Barcelona World Fair of 1888, including **Alhambra**, studied for its ornamental moldings (honeycomb/stalactite).

1x [Sagrada]

At age 31 (1883) mentor Juan Martorell nominates as **architect Sagrada Familia**, replacing Villar y Lozano.

3x [Nativity]

But in **1892**, the **founder Jose Maria Bocabella dies**, receives large anonymous **donation** through the daughter of Güell, Isabella, **instructed to spend quickly**. Sets to work on elaborate sculptural ornamentation of the **Nativity Façade**, developing an intricate study of **casting natural form**, over next **6 years** (1898).

1x [grass door]

The **Catalan attitude is for straight-forward, strict, hyper-realism** and Gaudí therefore chose to **ornament with clear language derived from nature**. The most **humble elements** found on site, **grasses** in the fields, **turkeys** from the farms.

3x [roosters]

“If nature is a goose, we try to transform it into a swan.” Gaudí content with the **goose, a slavish copy of reality**. At base of the Nativity found **roosters and hens**, as if a **doorway to a country house** – quite controversial on a sacred structure.

Leitmotif (recurrent theme): **natural form (truth)**

“Only the truth of life has meaning, it alone is the **reflection of eternal life**.”

“It is mad to try to represent a fictional object, one can imagine how coldly the public would react to a statue of an unknown person whose antecedents and individual mythology were unfamiliar... it is for this reason that we must reconsider the criteria for **ornamentation applicable to our age, our society, the geographical region** of its origin. The ornamentation must be natural and based on the **purpose of our life**.”

How he achieved this realism is the brilliance of the Nativity Façade, experimenting with **plaster exploring an idea expressed by his sculptor Jose Llimona**, “objects dipped into a paste give the impression of being suspended in the air or in clouds.” In this way, Gaudí **elevated the honest humbleness of the common people**, the plants and animals, **to the spiritual, sacred space of a Cathedral in the clouds**, just as he had done with **the broken mosaics raised to decorative ornamentation**.

4x [birds, flowers]

In the façade, find birds taking flight, flowers blooming, even smallest of insects.

5x [people]

Workers at the construction site, their wives and children, the entire community surrounding the church came to model. The **common people immortalized in stone, reproducing life as it is**. True reality, involving the people it **became a church of the people**.

“Art is beauty, and **beauty is the glow of truth** without which it would not exist. To possess truth one **must study things in depth**. It is **life, which is manifest in the human form through movement**.”

5x [figures]

But, how he did this was one of his greatest innovations.

Manifesto (public declaration): **Colades de Guix (co-LAH-dis day GEEse)**

Gaudí developed a process of **plaster casting to capture the movements of the body, gestures, searching for the plasticity of form, bring façade of stone to life**.

1x [skeleton]

To **capture movement in his architecture**, as in the **sculptural figures**, the **skeletal structure** was of prime importance.

“The most intensive **expression of a figure is provided by the skeleton**, for this is the **basic variable element**. The rest are only details that disappear at a distance.” Bring vitality to the representation of the figure, giving truth and character, isolating a **gesture at its most expressive moment, to grasp an instant of reality**.

Used actual anatomical skeletons, obtained by his sculptor Llorenç Matamala from his friend at the Hospital de la Santa Cruz.

3x [plaster casts]

After a gesture was refined in skeletal form, a **plaster cast was then made of the live model** in the same pose. Creating an **archive of plaster figures** to be studied in **full scale on the façade**, before the **sculptors would then carve the final stone**. Fabrics were draped over to study the pleats composition. Hemp dipped in plaster, to model beards and hair.

His architecture **could not be created on flat, two-dimensional paper**, it had to be **worked out in three dimensions**, in full volumetric form, filling weight and space.

3x [gestured stone]

In the same way he utilized the broken tiles in Trencadís Mosaic, a resourceful way to work with inexpensive materials and labor, by **casting the figures in plaster**, rather than the time-consuming traditional methods sculptures worked on in clay, Gaudí was able **transfer the body's gesture directly to a sculptural form**.

1x [façade at Gaudí's death, 1926]

Parti Pris (organizing concept): **Living Architecture**

In the Sagrada Familia, Gaudí was searching for a Living Architecture, **materials more than tectonic and structural properties**, a **plasticity of form** to **breathe life into the stone**, the building capturing the essence of all living things made by the creator, in their **multitudes of variety and expressions**.

POLL: #8 Nativity Façade: Animals, Flowers, or Figures most interesting?

10:45

(10 MINUTE BREAK)

10:55

Just as Gaudí made plaster casts of Alhambra in 1887 for Barcelona World Fair, **Carnegie was inspired by plaster casts displayed at 1893 World's Columbian Exposition (Chicago World Fair)** and commissioned casts to be made of the world's great architecture and art.

4x [Zodiac Heads, Ai Wei Wei, 2016]

Hall of Architecture (Carnegie Museum of Art, 1907)

Over 140 plaster casts, largest architectural cast collection in U.S.

History of Western architecture from Egypt to the Renaissance.

Belief that a **replica of a masterpiece is superior to a mediocre original.**

Carnegie wasn't interested in costly originals, but in the ideas copies conveyed, he was educating the public, not appealing to the connoisseurs, Grand Tour to Pgh.

Piece molds were taken off original stonework and then puzzled together for the final pour. Deeply carved hollows in the original required deft handicraft and numerous fitted pieces to register the sculptural undercutting.

Casts accurately **simulated the spatial depth of the originals.**

Hall designed by Frank Alden and Alfred Harlow.

The architectural casts, in fact, were buildings without space: Visitors could see but never enter. They remain tantalizing façades.

6x [dinosaur skeletons]

Dinosaurs in Their Time (Carnegie Museum of Natural History, 2008)

Over 230 objects, 75% original fossils of dinosaur **skeletons** – capturing **gestures.**

Apatosaurus louisae, Diplodocus carnegii, and Tyrannosaurus rex—are **holotypes**, the original specimens upon which their respective species are based.

Dinosaurs and other Mesozoic animals are shown in extraordinarily detailed **reconstructions of their respective environments.** Exhibits that reflect accurately the flora and fauna of each period of the Mesozoic era – **Gaudí's honest truth.**

When King Edward VII of England expressed an interest to Carnegie in acquiring a replica for what was then called the British Museum of Natural History in London, so launched a business of replicating Dippy the more-than-80-foot dinosaur for museums worldwide, at least a dozen casts gracing national museums across the world, including London, Paris, and Berlin.

Carnegie's **collection of Jurassic dinosaurs the envy of every other museum.**

Wonderful fossils of Stegosaurus, Camptosaurus, Allosaurus, and two giant sauropods, the holotype Diplodocus "Dippy," and a very large Apatosaurus.

3x

German National Pavilion (Mies van der Rohe & Lilly Reich, 1929) ‘**Barcelona Pavilion**’

Reconstructed (Cristian Cirici Fernando Ramos & Ignasi de Solà-Morales i Rubio, 1986)

"I discovered by working with actual glass models that the important thing is the **play of reflections** and not the effect of light & shadows as in ordinary buildings."

2x [drawing & reflective slabs]

In one of the study drawings for the Pavilion interior, the **careful delineation of the stone wall veining reflected in the glass wall panels**, in contrast to the balance of the drawing rendered austere and blank, speaks to importance of **reflectivity** in the sense of space. Gaudí’s **honest depiction of reality**, not cold, vacant modern glass.

1x

Georg Kolbe's figure sculpture **Alba** ("Dawn")

The **sculpture also ties into the highly reflective materials** Mies used—he chose the **place where these optical effects would have the strongest impact**; the **building offers multiple views of Alba**.

“From now on, in the sense of equality for juxtaposing building and visual work, sculptures were no longer to be applied retrospectively to the building, but rather to be a part of the spatial design, to help define and interpret it.”

4x

Vizcaya Foral Library by in Bilbao (IMB Arquitectos, 2007) Glass skin, **transparency to reveal the structural ‘bones’** behind the curtain wall façade. **Floor slabs revealed as shelves** holding books. The **building expressing its function as a library**, openly and honestly. Obscured in daylight by the texture of words written across the surface, **nighttime illumination brings building to life**.

POLL: #9 Which prefer: Figurative Nativity Façade or Abstract Glass Façade?

11:15

Q&A

11:30