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architecture
history
&
theory
ARC 60804



The Architectural Comparisons Between *Villa Rotonda* & *Duomo Di Milano*





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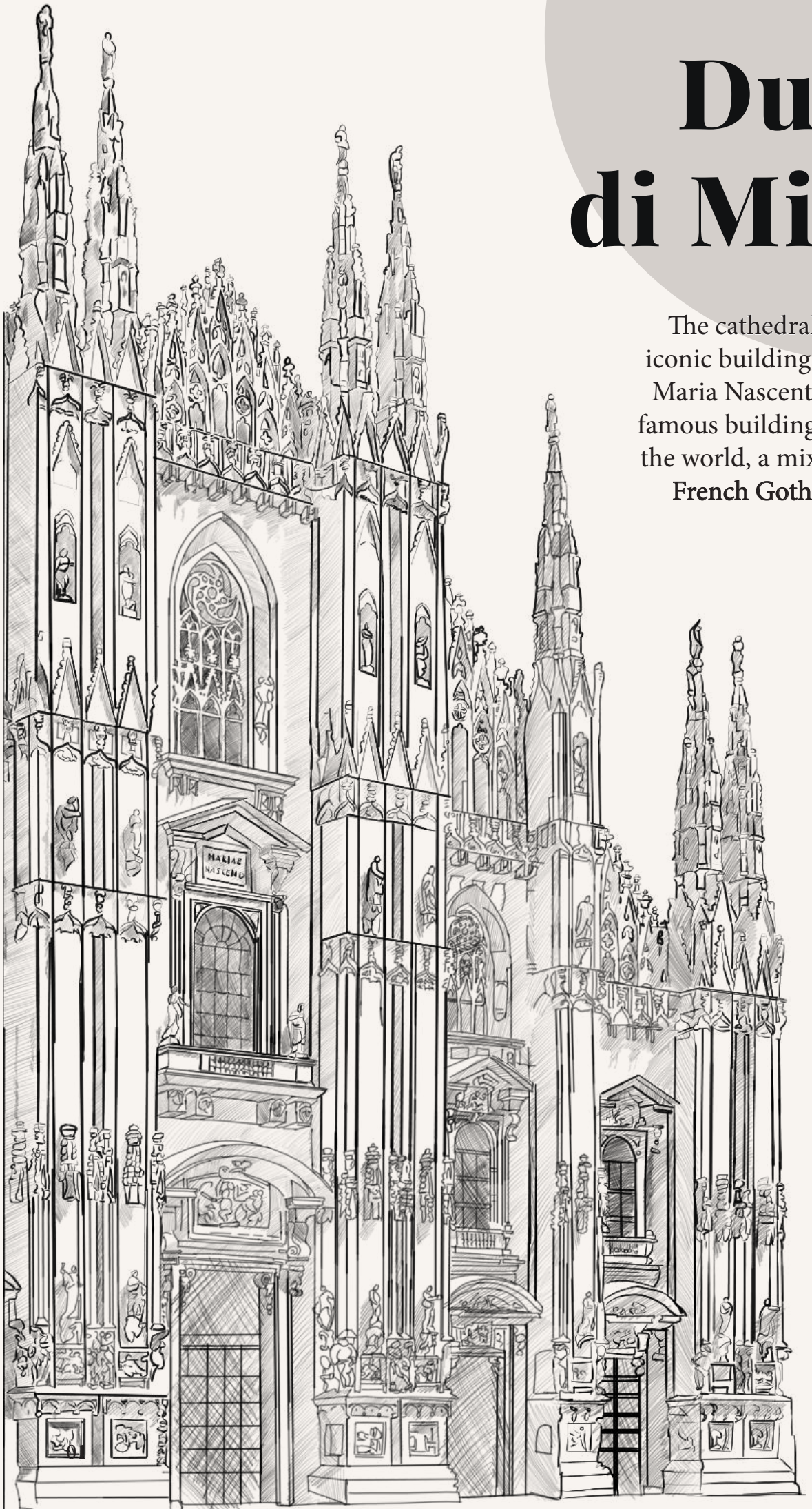
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Duomo di Milano



The cathedral of Milan, the city's iconic building, dedicated to Santa Maria Nascente is one of the most famous buildings and complexes in the world, a mixture of **late Gothic**, **French Gothic** and **Renaissance**.



This project was initiated in 1386 by the ambition of the **Duke of Milan Gian Galeazzo Visconti and Archbishop Antonio da Saluzzo** who wanted to give the city a religious monument worthy of its importance.

The Duomo di Milano is considered **the second largest Roman Catholic cathedral in the world**, after Seville. On this issue there are divergent views, as are those who argue that the third, placing first St. Peter's Basilica in Rome, but this building is not a cathedral.

Fast facts of the building:

It has over 3000 statues, and it took more than 6 centuries to finish.	There are more than 100 architects working on this project.	It is decorated with 135 spiers directed to the sky, the highest is the spire with a statue of the Virgin Mary, with a height of 105 meters.	From a great height, the building of the cathedral looks like a Catholic cross.

HISTORY &

1386

Simone da Orsenigo
The contruction of a new cathedral is decided when the old one becomes too small for the population.

1587

Martino Bassi replaced Pellegrino Tibaldi.

1592

Host a contest open to the best Architect of Rome, France and Spain.

16

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SIMONE DA ORSENIGO

& TIMELINE

09

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d **Picchino.**

1648

Francesco Caskelli propose a new design which was a reinterpretation of Tibaidi's Design in a pseudogothic style.

1657

Gerolamo Quadrio replaced the architect of that time.

1805

Upon Napeleon's pressure, the work were completed within 7 **years.**

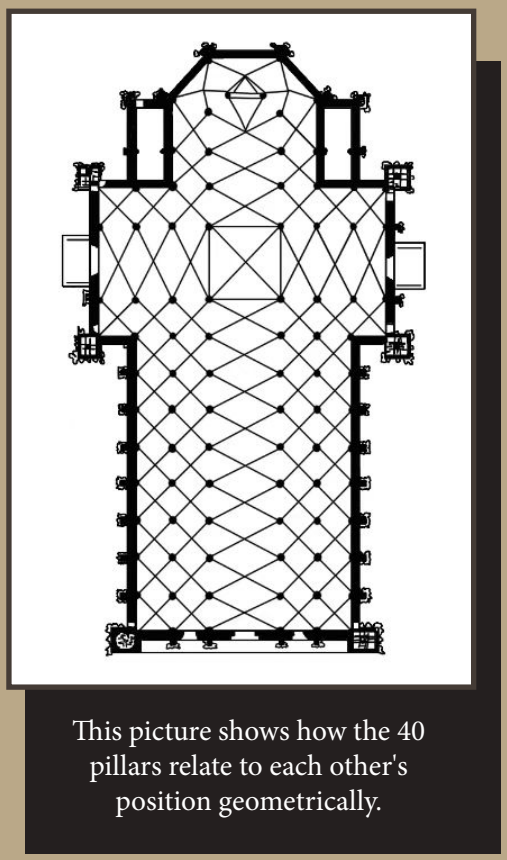
Notable Architects in This Project:

1387 Simone da Orsenigo
1387 Zeno da Campione
1387 Marco da Campione detto da Frixono
1389 Giacomo da Campione
1389 Nicola Bonaventura o da Benaventis di Francia
1389 Stefanino o Tavannino di Castelseprio
1391 Giovanni Fernach di Frimburgo
1391 Giovannino de Grassi
1391 Lorenzo degli Spazii da Campione o di Laino
…
1806 Carlo Amati
1813 Pietro Pestagalli
1854-1860 Office vacant
1861 Giuseppe Vandoni
1877 Paolo Cesa-Bianchi
1904 Gaetano Moretti
1907 Luca Beltrami
1912 Adolfo Zacchi
1963 Antonio Cassi Ramelli
1964 Carlo Ferrari da Passano
1988 Benigno Mörlin Visconti Castiglione

ARCHITECTURAL LAYOUT

The building has a **cruciform plan** in the form of a Latin cross that covers nearly 12,000 square meters, is 157 meters long, its widest part measures 93 meters in transept and can accommodate 40,000 people inside. It consists of **a nave with four side-aisles**, crossed by a **transept** and then followed by **choir** and **apse**.

Highlight its 135 needles and statues around about 3400, including 96 giant gargoyles. The needle is the highest with the statue of the Virgin, measuring 108 meters.



This picture shows how the 40 pillars relate to each other's position geometrically.

The roof of the **cathedral** is renowned for the forest of **openwork pinnacles and spires**, set upon delicate **flying buttresses**. This allows for the rays of colored light to filter through the **Gothic windows**, true works of art, creating a solemn and mystical atmosphere.

The roof is open to tourists (for a fee), which allows many a close-up view of some spectacular sculpture that would otherwise be unappreciated.

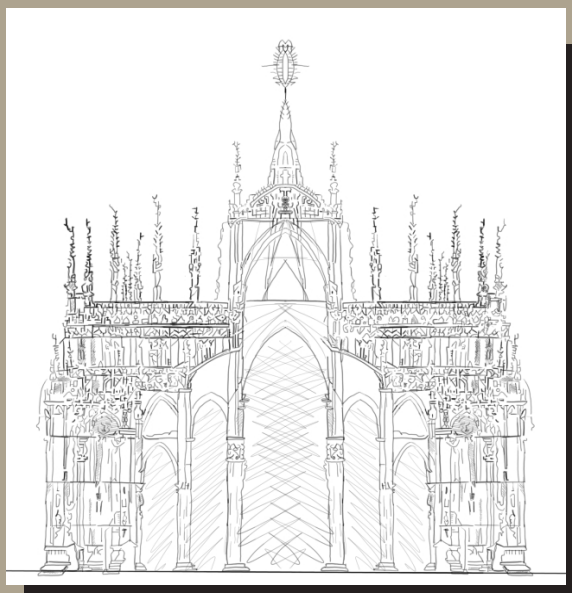


The circular hall is covered by a **Pantheon-like dome** topped by an oculus and a lantern; the **fresco paintings** of the upper part of the hall and the dome were made by Alessandro Maganza while those of the lower part are by French painter Louis Dorigny.

Curved masonry on the exterior strongly echoes classical architecture. The smooth surface plays with the sunlight, making the massive structure prominent on the landscape.

Until its completion in 1887, it passed through the hands of different architects, making it the product of many ingenious and creative artists, among whom stands the architect Simon Arsenigo who is credited for the first design, with many more others in his wake.

CONSTRUCTION, STRUCTURE, MATERIAL ANALYSIS



The dimensions of the main temple of Italy are amazing:
Length - 158 m
Height - 58 m

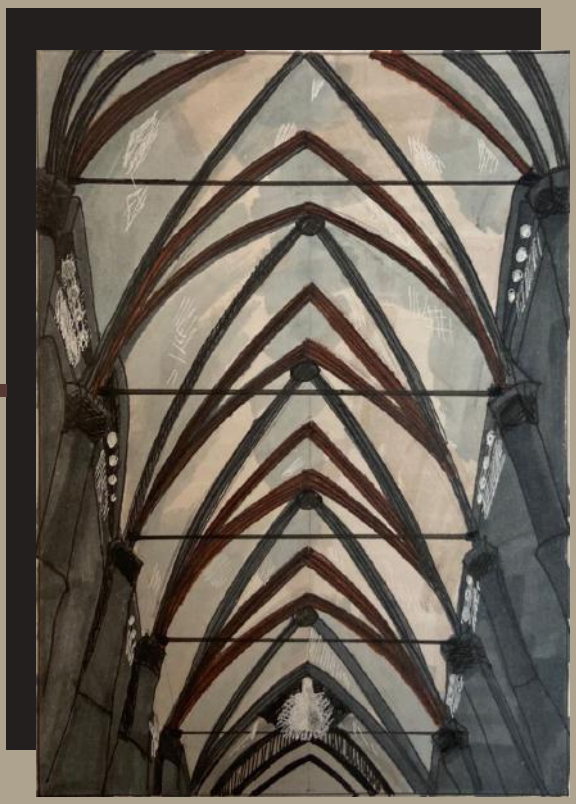
The **flying buttresses** were added as **decorative elements** years after construction started and iron tension ties connect at the base of vaults. **Lateral thrust** is not absorbed by flying buttresses, but rather **vaults and ties**.

By contributing dead load to the structure, the decorations do in fact serve a structural purpose. The tension ties also reduced deformation and tension.

The long construction and the constant change of architects led to a mixture of styles:
Gothic and Renaissance

There are 3400 statues on the facade of the building.

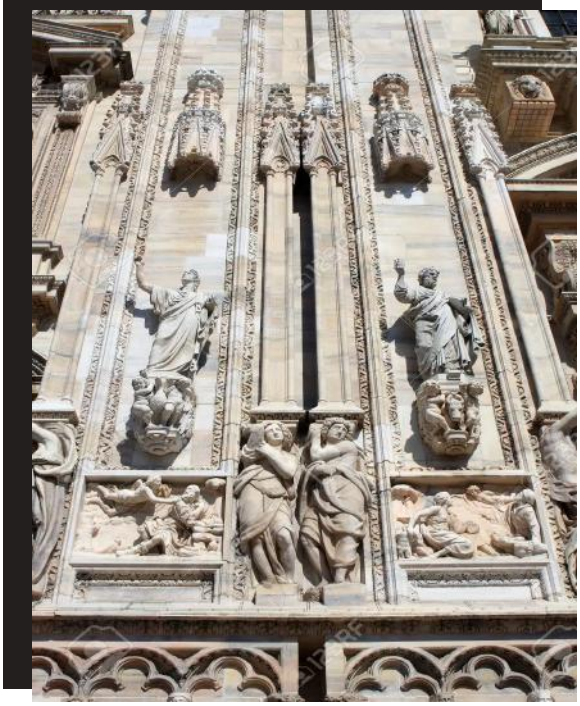
Due to the large number of pointed structures, the building seems weightless and airy.



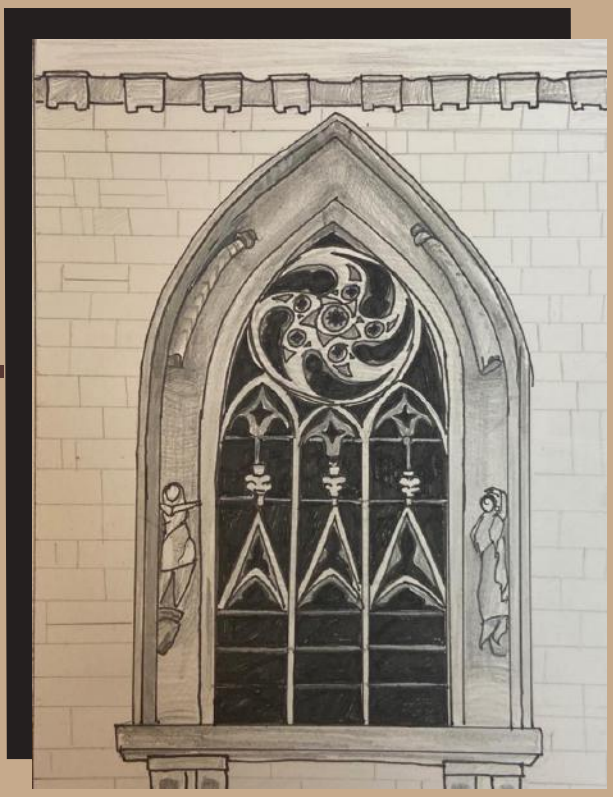


Milan Cathedral is the **largest marble building in the world.**

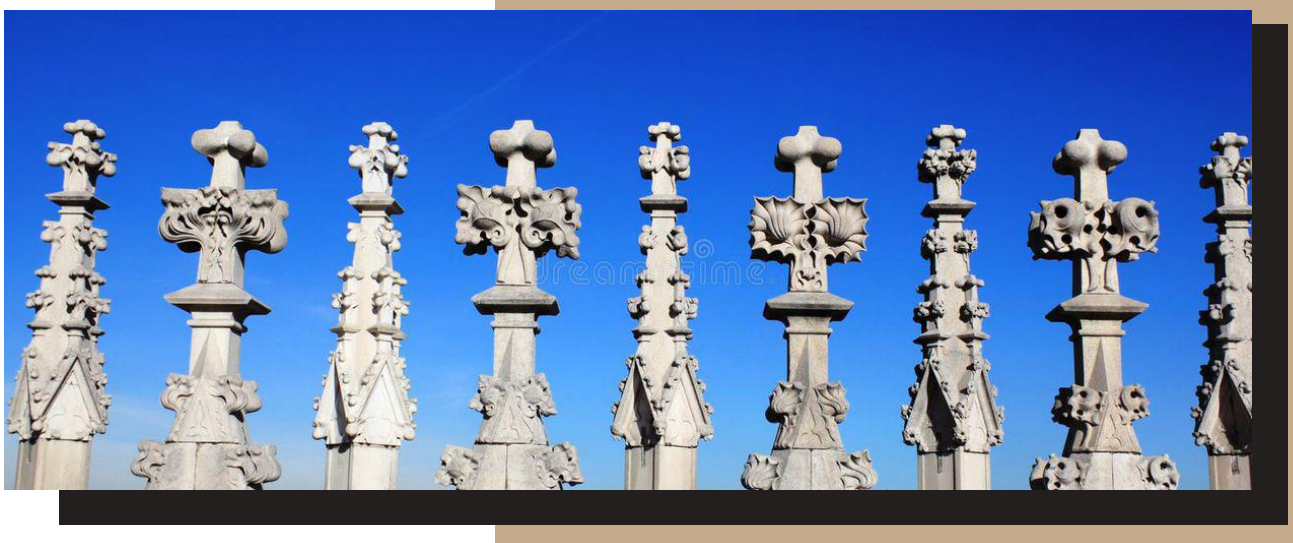
The entire cathedral is made of white marble, which is almost never found in other similar buildings in Europe.



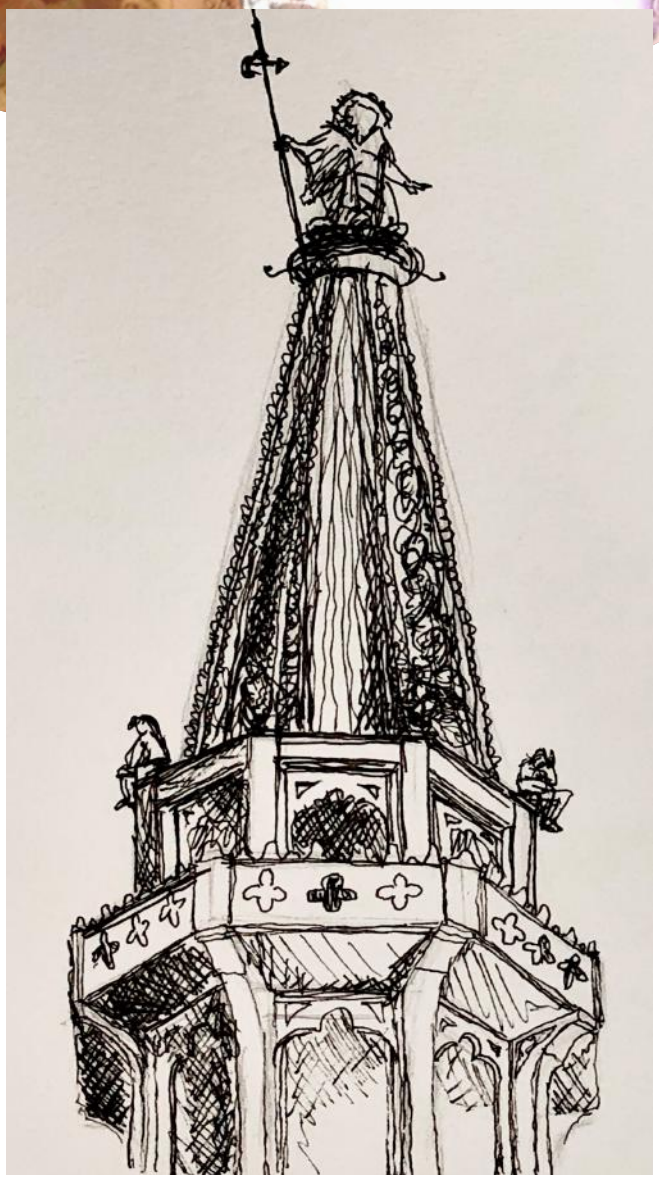
Most of the interior decoration was completed by 1630 circa; it comprises impressive fresco paintings by various **late-Renaissance artists** including Anselmo Canera and Alessandro Maganza, sculptures by Lorenzo Rubini e Gianbattista Albanese, and stucco decorations by Ottavio Ridolfi and Domenico Fontana, among others.



Despite the large number of interior walls used to subdivide the space, not all form load-bearing structural elements; only **the exterior shell and the walls** of the building **carry the weight of the building**. Relatively small windows in the outer walls help maintain the integrity of the masonry construction.



Design Elements



Sculptures:

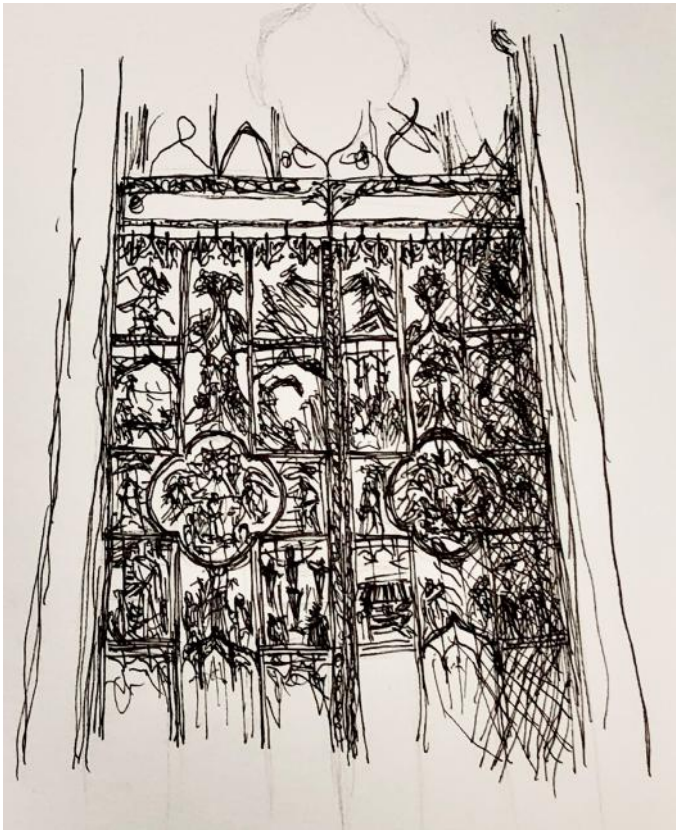
The roofs are open to the public, allowing a close view of some sculptures of great quality. The forest of pinnacles and spires can be seen from there up close.

Access:

Access to the cathedral is made through **five large bronze doors** from Piazza Duomo.

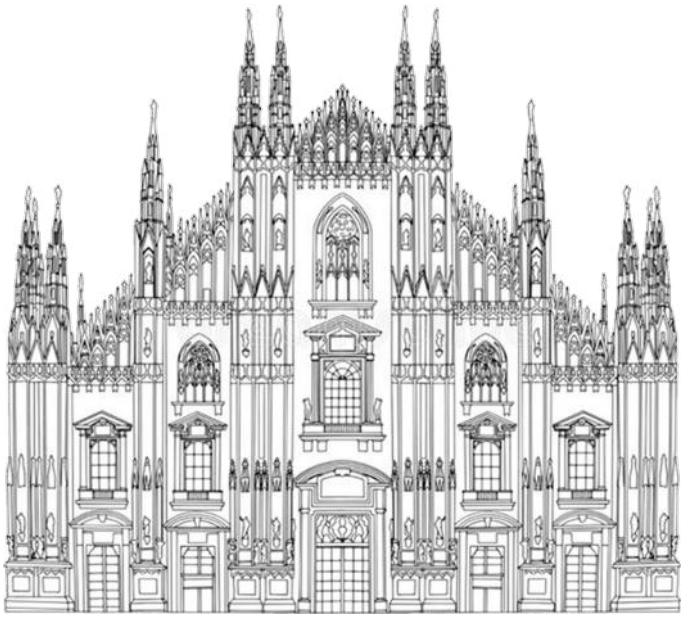
This door is dedicated to the Virgin Mary and each of their boxes has a biblical chapter that refers to the life of the Virgin.

The design started in 1582 when construction of the main gates of the Temple began, but it was not until 1682 that its development started, and until 1908 is when the front door was first opened.



Facades:

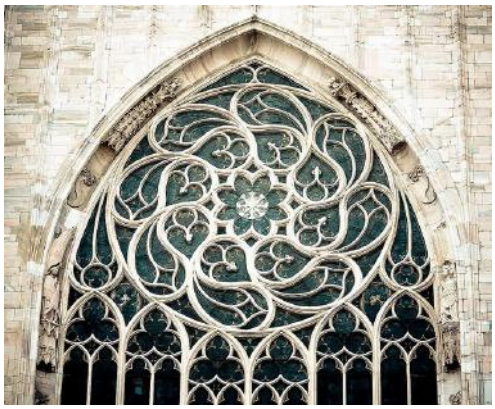
The original draft of the facade was by **Pellegrino Pellegrini**, known as Tibaldi, but suffered several modifications. The construction of the facade was performed between 1805 and 1813 and **was finally completed in 1814**, with an area of 4500 square metres and embellished with hundreds of statues.





Windows:

On each of the doors we can see seventeenth century windows. The one on the main entrance, a balcony in 1790 is dominated in turn, as are the two adjacent windows of the other great **nineteenth-century Gothic style**.





VILLA ROTONDA

Introduction:

Villa Rotonda is a Renaissance villa just outside Vicenza in northern Italy, designed by Italian Renaissance architect Andrea Palladio. The villa's correct name is Villa Almerico Capra Valmarana, but it is also known as "La Rotonda", "Villa Rotonda", "Villa Capra", and "Villa Almerico Capra".

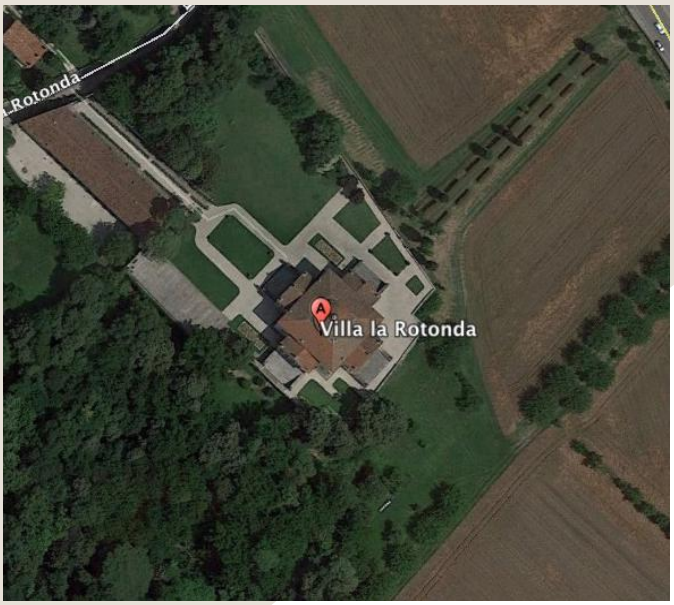


Facts about building:

Countless buildings all around the world were modeled on its design. Some of the most prominent examples are Chiswick House in Greater London, Mereworth Castle in Kent, and the White House in the United States.

The last owner of the villa was Mario di Valmarana , a former professor of architecture at the University of Virginia.

In 1979, the American film director Joseph Losey filmed Wolfgang Amadeus Mozart's opera Don Giovanni at the building.





Chiswick House

History & TIMELINE

1565

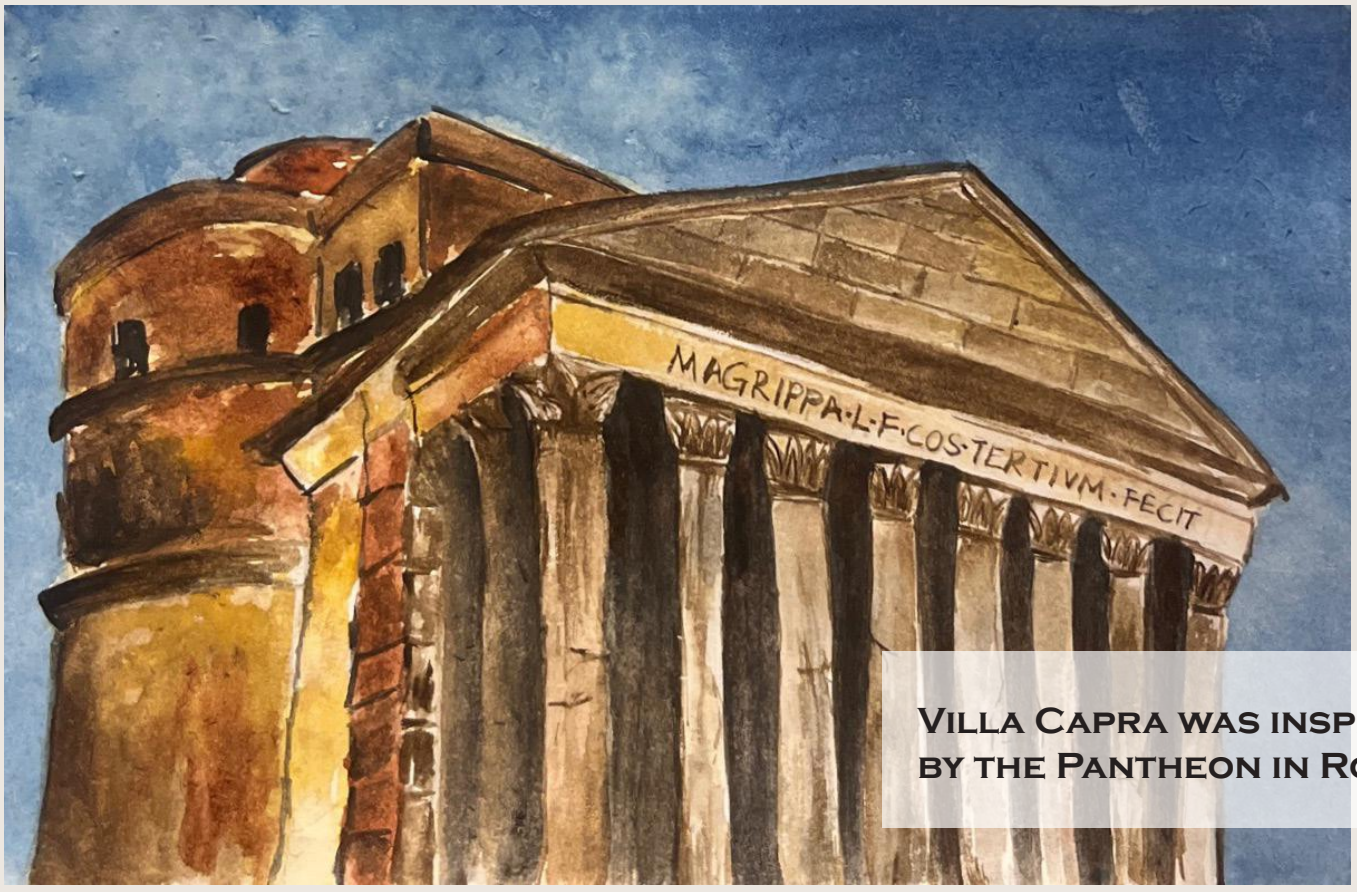
A priest, **Paolo Almerico**, on his retirement from the Vatican decided to return to his home town of **Vicenza** in the Venetian countryside and build a **country house** to create a place for his recreation, a building that he could spend his last years between lethargy and 'holy agriculture' .

1571

According to records, **Paolo Almerico living in the villa in 1571 (or 1569).** Building **renovations still continued** even after the structure was completed.

1580

Palladio died and a second architect, **Vincenzo Scamozzi**, was employed by the new owners to oversee the completion.



Villa Capra was inspired by the Pantheon in Rome



circa 1630

Most of **the interior decoration** was completed by 1630 circa; it comprises of impressive **fresco paintings** by **various late-Renaissance artists** including **Anselmo Canera and Alessandro Maganza, sculptures** by **Lorenzo Rubini e Gianbattista Albanese, stucco decorations** by **Ottavio Ridolfi and Domenico Fontana,** among others.

2nd half of the 17th century

The **lower part** of the **central circular hall** was decorated by **French painter Louis Dorigny.**

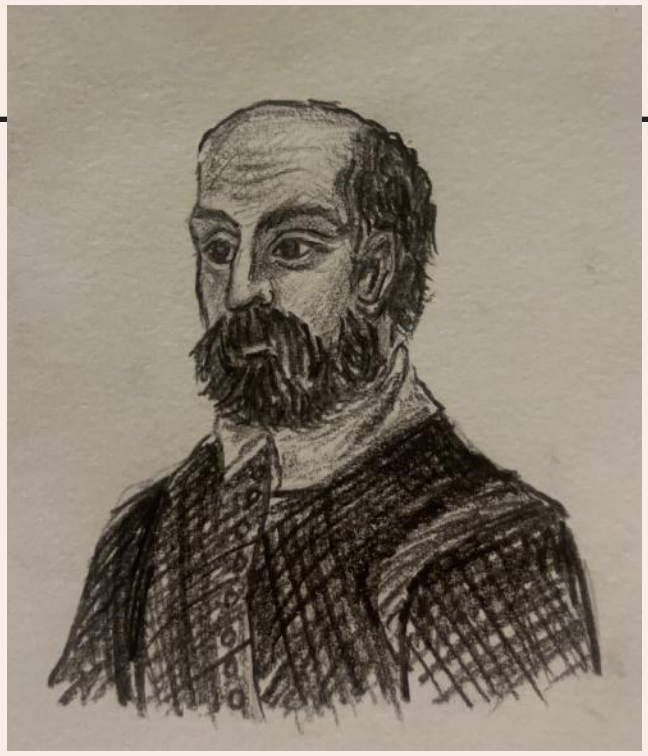
1912

Acquired by count Attilio Valmarana, the villa is owned today by his heirs and **open to the public** since 1980.



Sculptures





Andrea Palladio

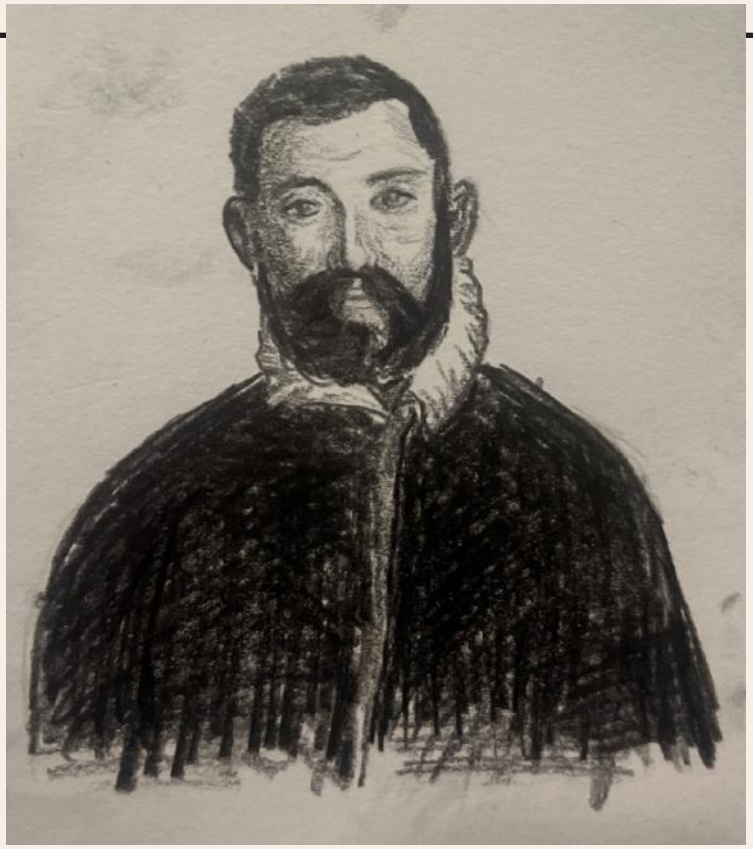
Andrea Palladio (1508-1580) was an **Italian Renaissance architect** active in the Venetian Republic, best known for **country houses and villas**. Palladio was a great fan of ancient Roman and Greek architecture and incorporated various classical elements into his designs.

Most of his designs for what is now referred to as the "Palladian villas of the Veneto" were inspired by ancient temples and buildings. He designed dozens of similar structures in the area and many of them are included in a UNESCO World Heritage site referred to as the "City of Vicenza and the Palladian Villas of the Veneto."

The Architect

Palladio died in 1580 and his **successor**, Vincenzo Scamozzi, was employed by the new owners. One of the major changes he made to the original plan was to modify the two-storey central hall.

Scamozzi made several changes to Palladio's original design; for example, he arguably modified the shape of the dome – which in Palladio's The Four Books of Architecture is as a much taller semi-circular dome – to resemble that of the Pantheon in Rome, though it is debated whether the change was made by Scamozzi or by Palladio himself.

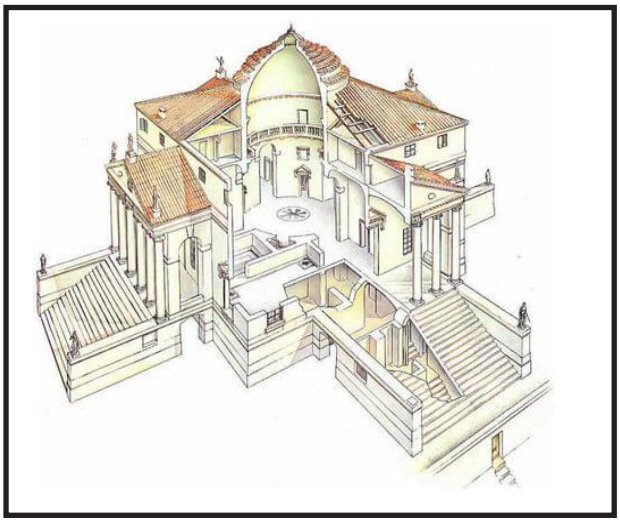


Vincenzo Scamozzi

ARCHITECTURAL LAYOUT OF BUILDING

The design is for a completely **symmetrical building** having a **square plan with four facades**, each of which has a **projecting portico**.

The whole is is contained within an imaginary circle which touches each corner of the building and centers of the porticos.



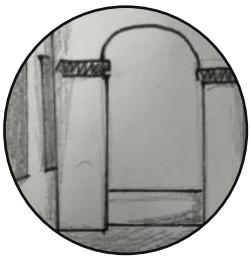
Works spaces for the villa's servants are hidden in a low level underneath the first floor, which is accessed via staircases hidden inside the walls of the central hall.

Each portico has **steps** leading up to it, and opens via a small cabinet or corridor to the circular domed central hall. this and all other rooms were proportioned with mathematical precision according to palladio's own rules of architecture.

In order for each room to have some sun, the design was **rotated 45 degrees** from each cardinal point of the compass.



South porch



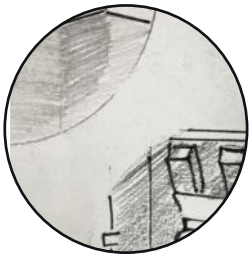
Oval window



Cornice



Stairs



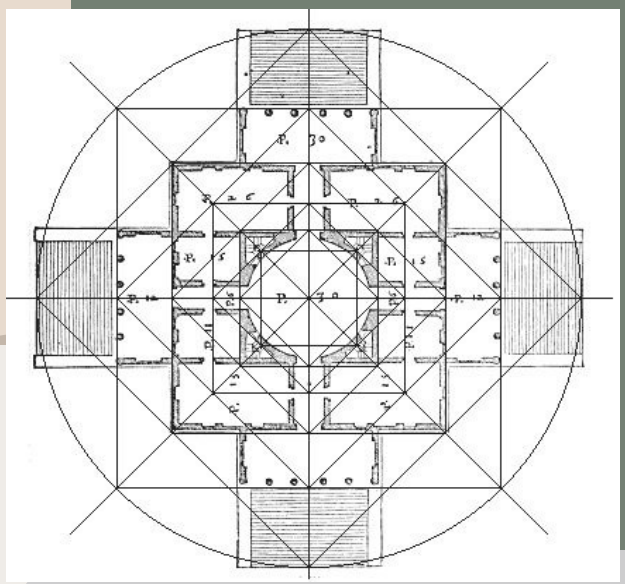
Ionic columns



Gables

Each of the four porticos has **pediments** graced by statues of classical deities. The **4 porticos** of the building are supported by **6 Ionic columns** and are decorated with **statues of ancient deities**. The interior of the building is even more fascinating as it was decorated by immense **frescoes** painted by the brothers Alessandro and Giovanni Battista Maganza and Anselmo Canera.

FLOOR PLAN



The structure is **four-square and bilaterally symmetrical**, highlighting Palladio's mastery of classical geometric forms and symmetry.

Each of the four porticos has pediments graced by statues of classical deities. The 4 porticos of the building are supported by 6 Ionic columns and are decorated with statues of ancient deities. The interior of the building is even more fascinating as it was decorated by immense frescoes painted by the brothers Alessandro and Giovanni Battista Maganza and Anselmo Canera.



Building construction, structure & materials analysis

Construction

STRUCTURE ANALYSIS
Despite the large number of interior walls used to subdivide the space, not all form load-bearing structural elements; **only the exterior shell and walls of the building carry the weight of the building**. Relatively small windows in the outer walls help maintain the integrity of the masonry construction.



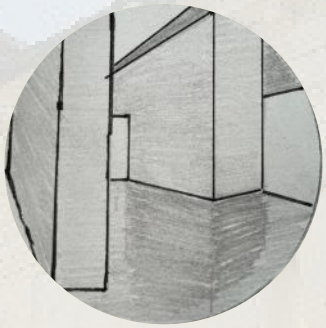
1. Complex geometry affects the load paths and creates **overstressed regions**.
2. Regularity both in plan and elevation reduces the possibility of coupled torsional and lateral motions during earthquakes.
3. Centre of mass and stiffness coincide per floor pure mode shapes.
4 **Complex plan shape** with **projections** induces torsional movement.
5.Small plan aspect ratio: favours rigid diaphragm action.
6. **Use of shear walls** in both horizontal directions: avoid torsional and mixed modes of oscillation.
7.Shear walls continuous from the bottom to the top of the building increase of stiffness.
8. Different number of bearing walls in each plan direction existence of strong and weak axis.
9. Different number and size of openings on the perimeter walls in each one of the two plan directions reduction of in-plane strength.

Materials

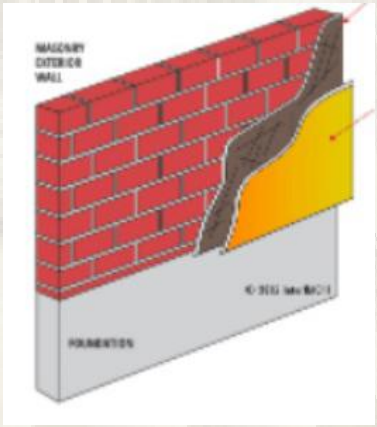
Coated brick and stone were used for most construction.
Palladio's villas were built with the work of stucco-covered brick, most of the elements, including columns, were of such material. The s**tone was reserved for the finest details,** such as bases and capitals of columns, and frames of windows or garrisons.

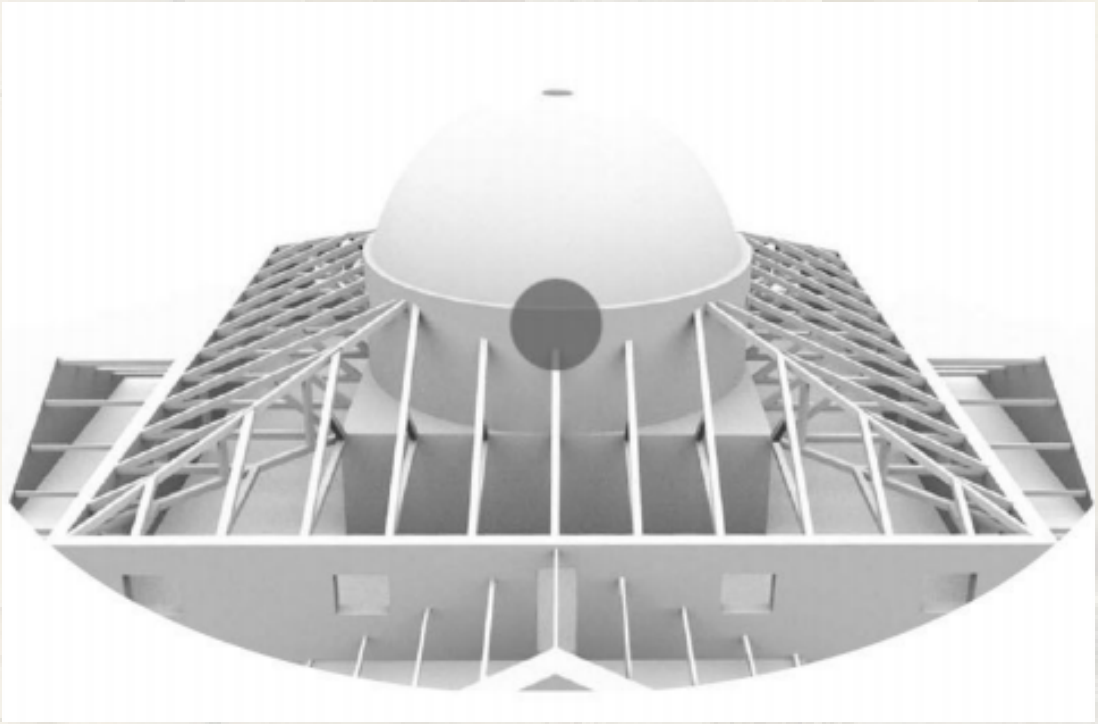


Stone



Coated brick





BRICKWORK

BARREL / CROSS VAULTS

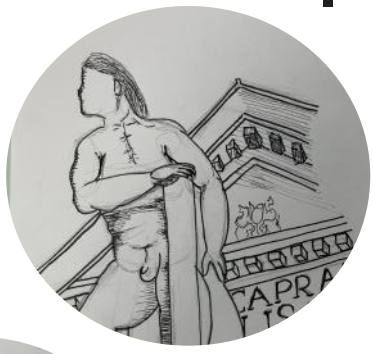
VICENZA STONE

VENETIAN BATTUTO

WOODEN ELEMENTS

MARMORINO PLASTER

Design Elements





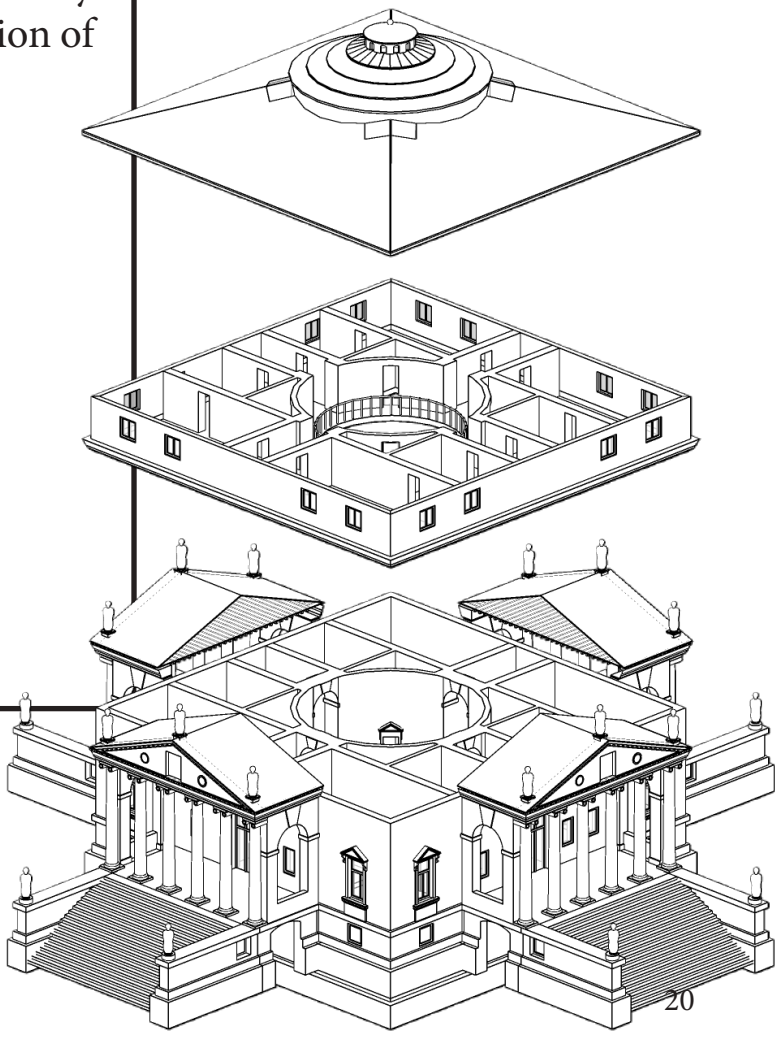


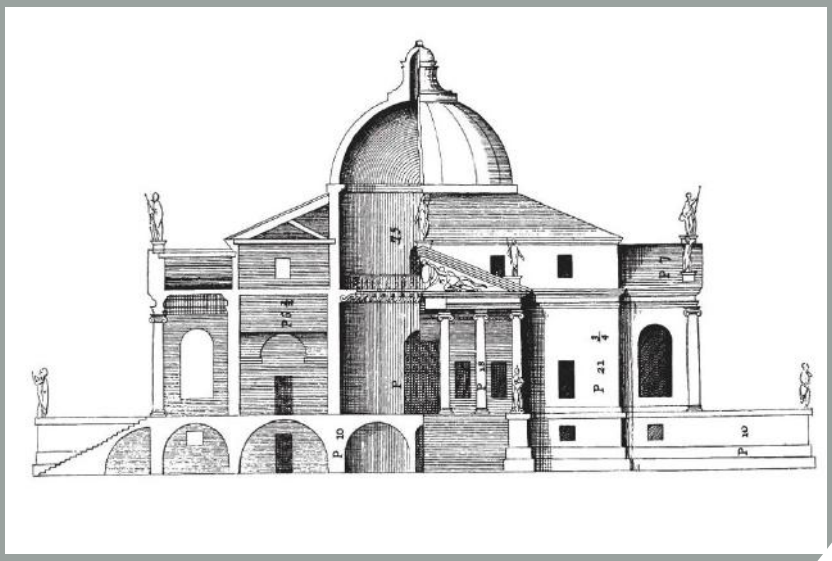
It was built at the time of the **Italian Cinquecento**, when the church decided to take control of the arts.

In the case of Villa Capra, it was specifically commissioned by a clergyman, and is **represented in various allegories to religious life**.

The house itself is a **suburban residence** that served as a meeting place for the aristocracy in the region of Vicenza and the celebration of leisure activities for the literary class.

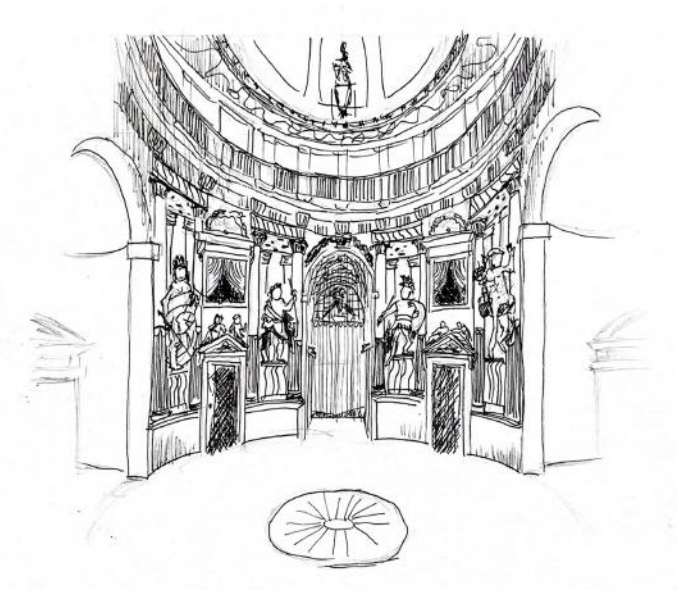
Ornaments fill the interior in the form of plaster pediments, mantles, and frescoes. The ornate nature of the artworks **amplify the feeling of grandeur** experienced in the Villa, while communicating the owner's status.

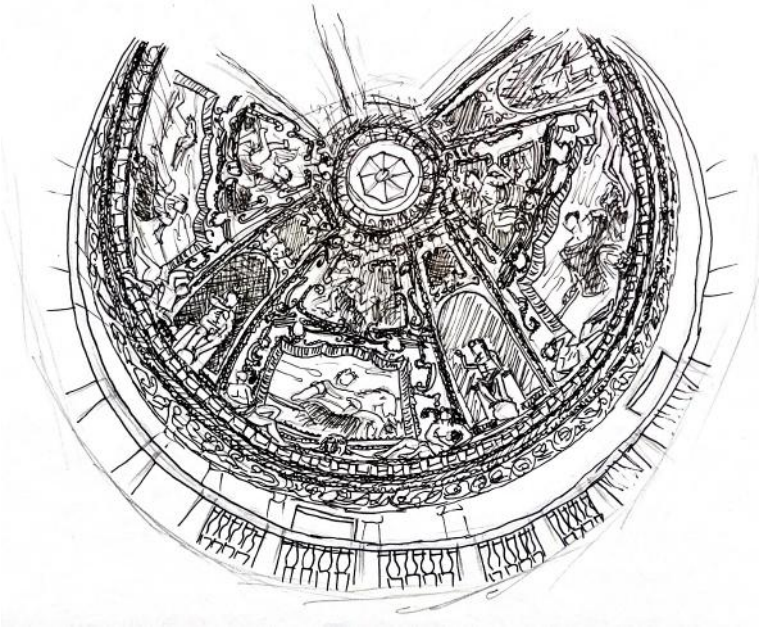




When viewed in section, the building exhibits a sense of **hierarchy**. The lower level provides a wide base that grips and connects with the landscape. The height of the main section exceeds human scale, increasing the experience of grandeur within the space. The highest point completes the transition from connecting with the earth to reaching toward the heavens.

Ornamentation fills the interior in the form of **plaster pediments, mantles, and frescoes**. The ornate nature of the artwork amplifies the feeling of grandeur experienced in the building, while also communicating the owner's status.





The highlight of the interior is the **central, circular hall**, surrounded by a **balcony** and covered by the **domed ceiling**; it soars the full height of the main building up to the cupola, with walls decorated in trompe l'oeil.

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