- These two civilizations changed the way we practice government
 - Cities in Greece were first to govern through democracy
 - Every citizen has a say in the government
 - Developed a stable legal system
 - Rome ruled through elected representatives in a republican form of government
- These two cultures changed the way we work
 - Cities increased in size and specialized businesses and occupations were created
 - Free market society created great wealth for some
 - Wealth could be spent on art and buildings
 - Painting, sculpture and architecture became professions

- These two civilizations influenced world from the 6th centurey B.C.E. up until today
 - Greece & Rome colonized the known world
 - Greek empire stretched all the way to India and south to Egypt under Alexander the Great
 - •Roman empire Circled the Mediterranean
 - Both cultures traded heavily
 - They brought items back that were not indigenous to their homelands
 - They created a free market

They were "polytheistic" that is, they worshipped many gods

• Both ancient Greece and Rome shared the same "Pantheon" of gods, but gave them different names

•People aligned themselves with the god they individually worshipped

• Created separation due to the divisions

Greece evolved from Mycenaean culture

- Superior at sea
 - traders that acquired massive wealth
 - Colonized from Spain to India
 - Also colonized southern Italy
 - Controlled the Mediterranean
 - Fought wars to protect their interests

Rome grew out of the Etruscan culture

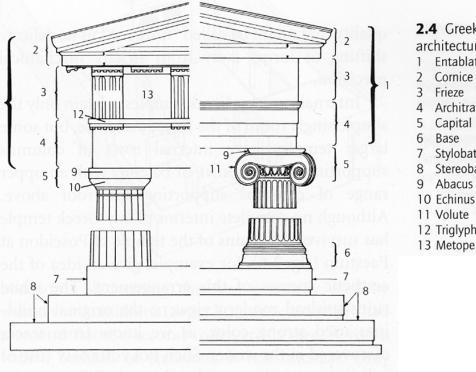
- Culture died out mysteriously.
 - Romans took over the Greeks.
 - Romans colonized all of Europe
 - Started as a republic but became an empire after fighting wars
 - Empire weakened by growing too large
 - Empire weakened by lack of secession
 - Empire fell in 476 C.E. after Ostrogoths invaded

Ancient Greece

• The Orders

The so-called "Orders" were created by the Greeks. The design of carved stone columns supporting building roofs are called the "orders." The Greeks had three: Doric, Ionic and Corinthian. Their design principles are based on mathematical laws of proportion through the Golden Mean, which is a:b = b/a+b, and it calculates to a ratio of 1:1.618. Nearly everything int their building design was based on the ratio of these numbers.

The two columns shown here are Doric on the left and lonic on the right. There is also a Corinthian column that has a capital that resembles a leafy plant. The Roman architects used these and developed additional "orders" of Tuscan and Composite.

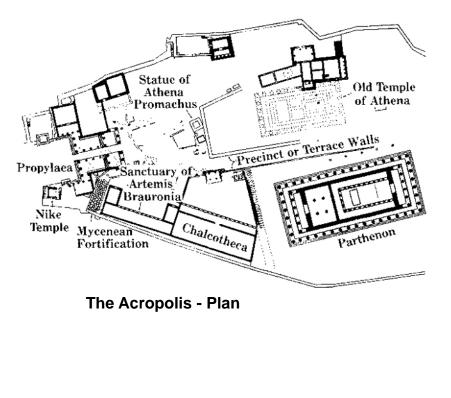


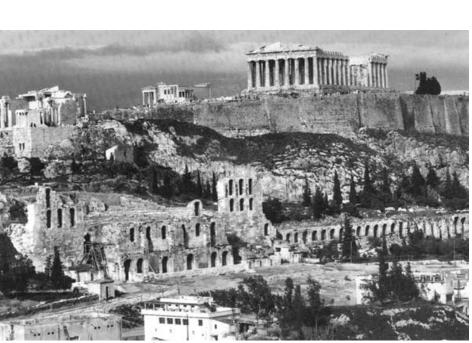


• The Acropolis

• 490 B.C.E.

The Acropolis was the central worshipping place in Athens. Other religious centers in Greece existed like Delphi or Olympus. But since Athens was the capital and the center for commerce and trade, there was given much more detail. The acropolis houses, at least 8 different temples dedicated to major and minor gods. The most prominent god is Athena Polias. Beneath the Acropolis was the Agora, a more civic and commercial area of Greece



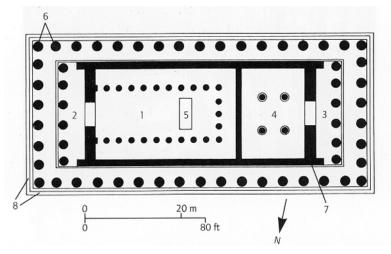


The Acropolis

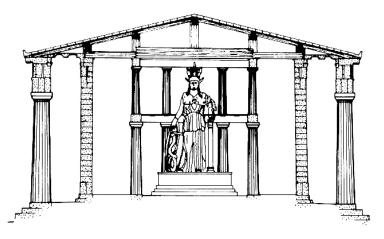
- The Parthenon
 - 447-436 B.C.E.

Located on top of the Acropolis in Athens, Greece, the Parthenon is the prime example of what a Greek Temple should be. It was dedicated to the goddess Athena, for whom Athens was named. The temple interiors followed the golden mean proportions. The columns on the exterior are spaced on the exterior so that the number creates a harmonious ratio. The side colonnade has twice as many plus one columns as does the front colonnade.

There were visual refinements used to create parallax. This is a condition where objects are skewed to achieve a better level of perspective. The corner columns were spaced differently than the middle columns to make up for the fact that they would have light coming from two sides. The columns and entablature are curved to correct perspective proportions so everything seems straight.



The Parthenon - Plan



The Parthenon - Section

- The Parthenon
 - 447-436 B.C.E.

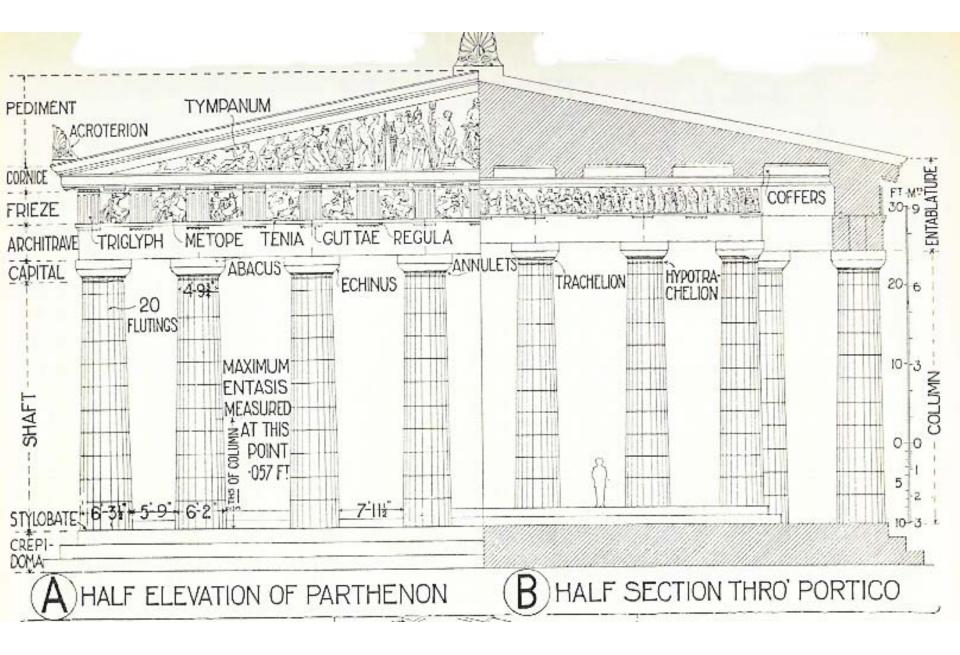
All the interior spaces were painted yellow or blue. The statue of Athena was gilded gold. The roof was made of wood. The temple survived intact until the 1400's when Greece was at war with the Ottomans. They used the temple as a storage place for their munitions. The ottomans found this out and blew the roof off it.

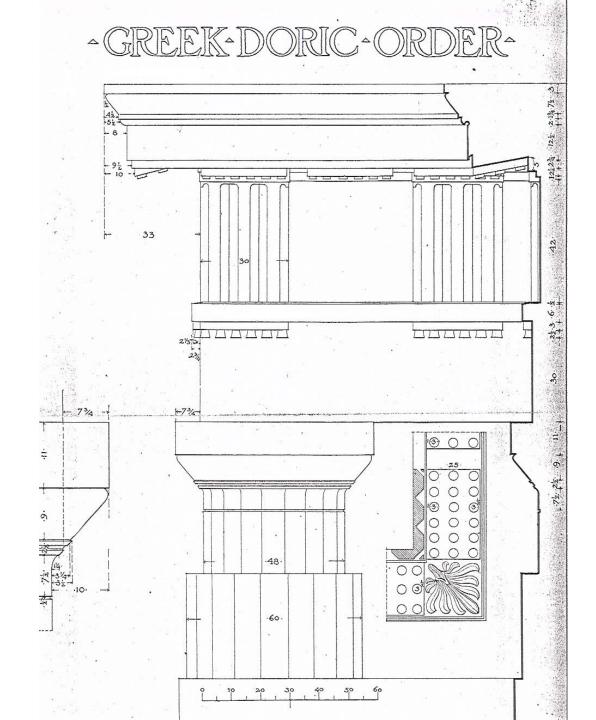
The interior had a pentellic marble floor & walls. The central space holding the statue was the Naos. There was a treasury in the back. The covered portion of the colonnade in the front was the pronaos and the one in the back in front of the treasury was the opisthodomos.

The temple was an amphistyle temple because it was approachable from both front and back. A temple accessible from the front only is a prostyle temple.



The Parthenon, Athens





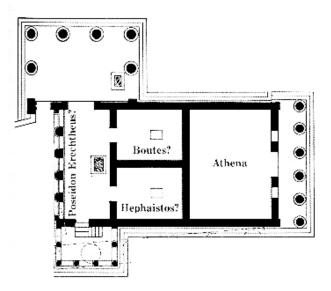
• The Erechtheum

• 420 B.C.E.

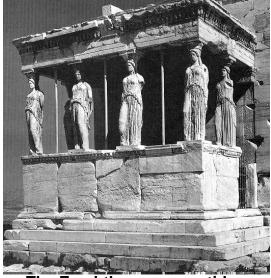
Dedicated to the mystical king of Athens Erechtheus as well as Poseidon, Athena, Hephaistos and Boutes, this temple incorporates breaks from the Grecian norm. By having asymmetrical terraces, this temple breaks from the rigid format in which Greek Architects usually designed.

This Amphistyle temple located on the acropolis, includes sculpture into its design with caryatid statues. Other rooms are adorned with friezes that depict the battle of Poseidon and Erechtheus. Where as the main structure follows the golden section as does the side terraces, the structure as a whole does not fit within a Golden Ratio.

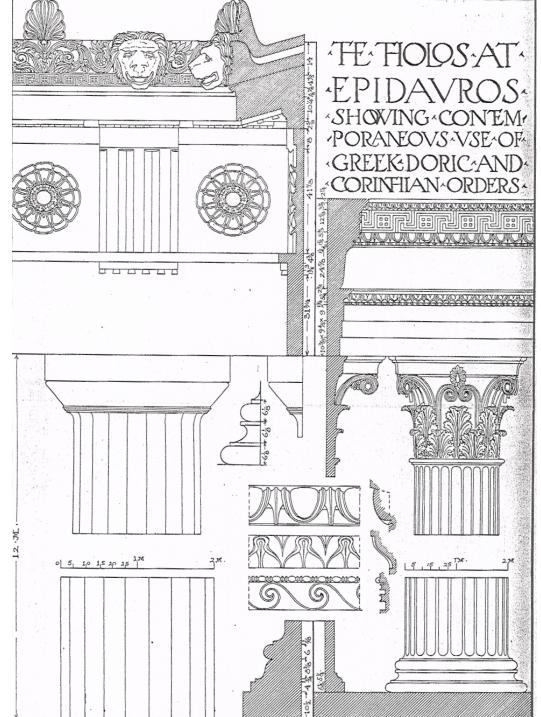
This temple is special. It is believed to house the tomb of Crecops the original founder of Athens. This temple also held the rock that has Poseidon's trident mark where water sprung out of. This temple also held the lamp of Callimachus which burned for a year without filling.



The Erechtheum - plan



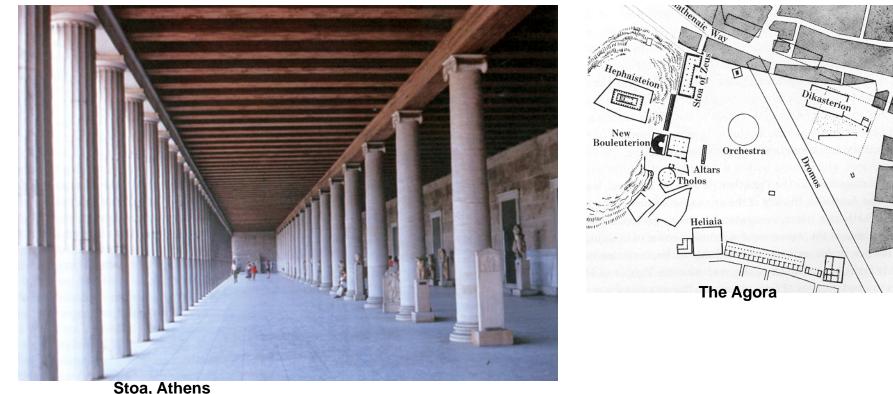
The Erechtheum - caryatids



Greek Doric and Corinthian Ornament

• The Agora

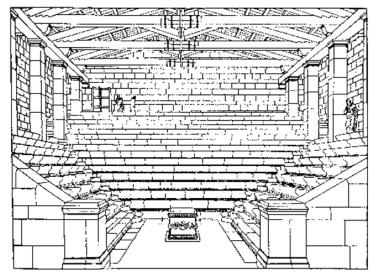
The Agora was the central market hall where merchants could rent space and sell their wears. The exterior colonnade or portico framed the southern edge of the plaza it fronts. The Greeks were very good about creating public space with monumental qualities. The Agora was the mall of its time. The exterior portico was Doric considered a stronger order and the interior portico was lonic. So there was a hierarchy that rang throughout the Greek Architecture. The Agora housed not only the market but a theater for performances, A bouleuterion for governmental meetings, as well as altars and temples to the Gods.



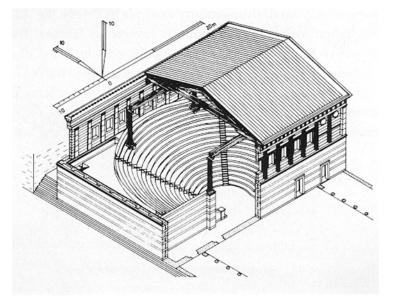
The Bouleuterion

Bouleuterions were the houses of democratic & civil practice. The three governing councils of Athens, The Ecclesia and the Boule or citizen's council. The were the assembly halls where laws were made and enforced. The interior concept was seating in the round. Stone block seating and stairways with Wood Roofs above. Natural light flooded the space through punched openings on all four sides.

Designs for Bouleuterions became increasingly more complex as time went on. The Ecclesia decided to meet due to their size on the mountain of Pnyx. This led to the first amphitheater designs.



Bouleuterion - Interior



Theaters

Theaters are the offshoots of Bouleuterion design. They were meant to seat people in mass. At first for civic function but later more for the arts. Theaters became the home of the Greek Tragedies & Comedies.

Theaters were typically built onto a hillside like in Delphi or in the case of Epidaurus, they were man made structures. The central circle from which the seating radiates from is the orchestra pit where dancing & music took place. The half rounds were then closed off by wooden structured stages framed with Proscenium Arches. This allowed for painted canvas to be hung as backdrops for the performances.



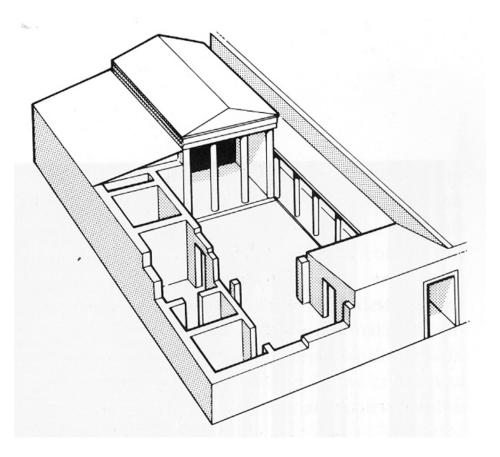
Theater at Epidaurus



Theater at Epidaurus

• The Greek House

Greek secular life was very interesting dichotomy. The public life was a series of events in public gatherings spaces in their towns. Their private life was quite different. The Greek was very introverted. The houses were typically arranged around a central courtyard. All the rooms radiated off of this courtyard. Typical houses had kitchens, bedrooms, storage rooms and a large Megaron for family life. Typically there was a portico that connected the front door to the Megaron. The courtyard typically provided a more protected environment as well as rudimentary air conditioning not unlike the terraces of Knossos.

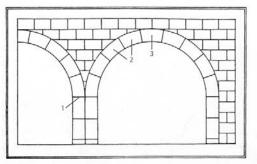


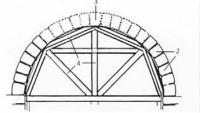
The Greek House

Ancient Rome

• The Arch & The Vault

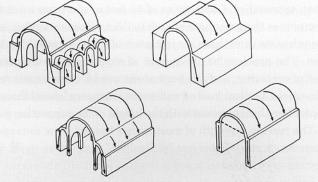
Whereas Greece brought the orders to international design, the Romans developed further the prevailing engineering to create the arch. This allowed for spanning greater distances with more strength since they were made of stone rather than wood. The central keystone was held in place by the voissoirs. During construction they used wood frames called centerings to hold the stones in place until the keystone locked in the arch.

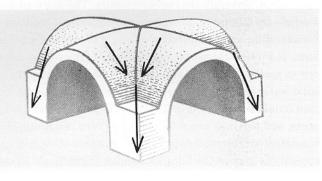






As the arch was expanded three dimensionally, the barrel vault was created. This created higher interior spaces and increased structural integrity. Series of barrel vaults could be strung together because they actually supported one another to create an even stronger structure. As barrel vaults were turned perpendicular to each other, they created groin vaults. These structures influence design all the way up to the present day.





The vault

• Rome

The Main city of the Ancient World. At one point housing over a million people within its walls, Rome needed to develop structures like the arch and vault to spring their designs upward.

Athletics and other sporting events took prominence. Coliseums and Circuses were created to house thousands of people so that they could view the action. Straightforward temples & civic designs provide city centers where people can congregate.

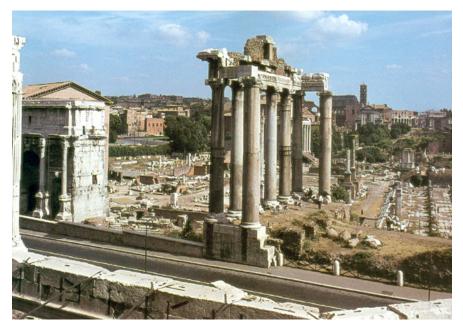
Residential structures became multiple stories. This signaled the birth of the apartment. Each unit had multiple windows to bring in fresh air & light.

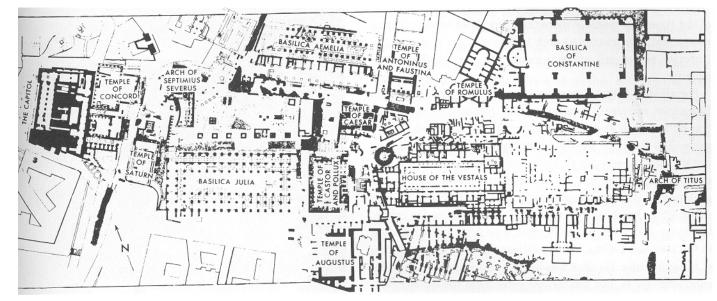
Arches and vaults were used to create aqueducts to bring water to the people. Sewers were built to carry the waste from the city. The town only grew due to the engineering prowess & desire of the emperors.



• Rome

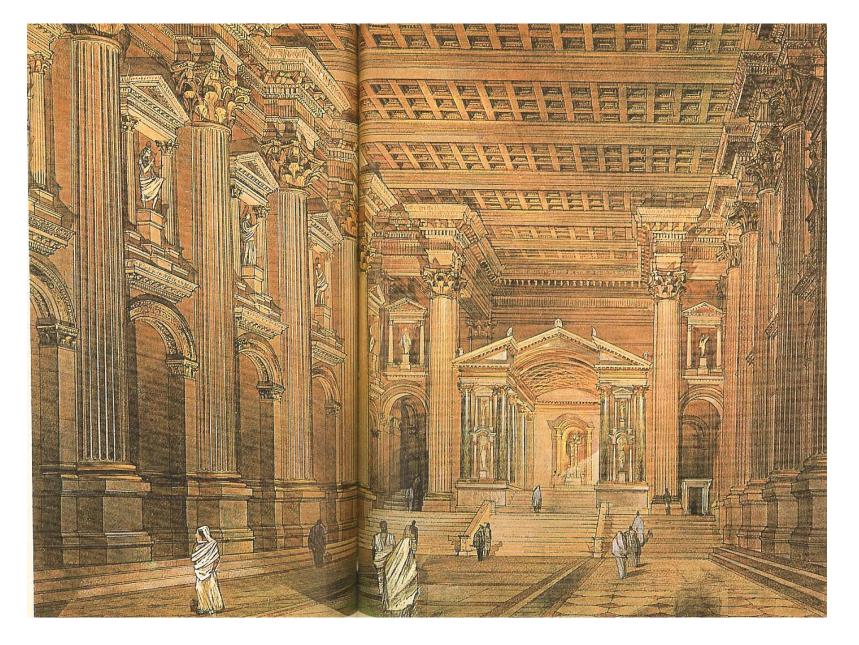
The religious center of Rome was the Forum. This housed the temples of gods, home to their clergy, areas to market, government buildings and Triumphal Arches. The forum is important because its architecture was considered the example that the world followed until the 20th Century. The elements of design influenced the next 2000 years.







Temple of Mars, Rome



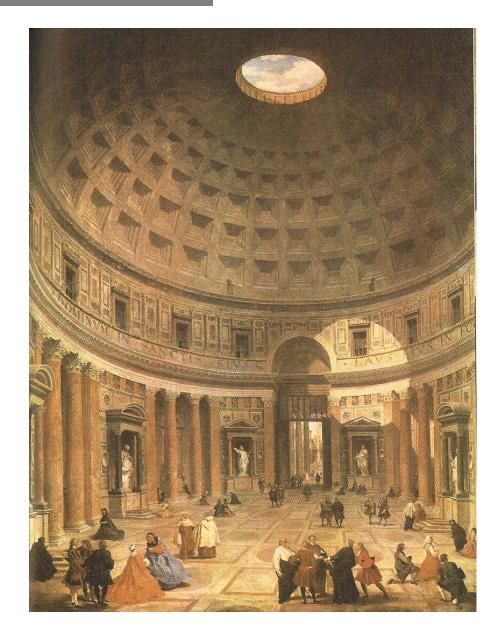
Temple of Bacchus, Baalbek (Lebanon)

• The Pantheon 118 - 128 C.E.

The Pantheon is one of the greatest achievements of the Roman Empire. The dome itself is a perfect circle 142 feet in diameter. It was a temple to all gods. It survives today completely preserved. Amazing since it stood for centuries open to the elements above. The sphere being a golden shape, contrasts with the Greek-like Entrance entablature & pronaos with a rectangular anti-chamber separating the two.

The interior was comprised of travertine floors & Columns. Mosaic tiles adorn the walls. 6 marble statues stand in the apses of the structure. Corinthian columns are the prevailing order. The ceilings is carved stone coffers with a central oculus that provides natural daylight into the space. To enter the sanctuary you must enter threw gigantic bronze doors still operating today with their original hinges.

This building influenced religious design in the west for the next 2000 years.

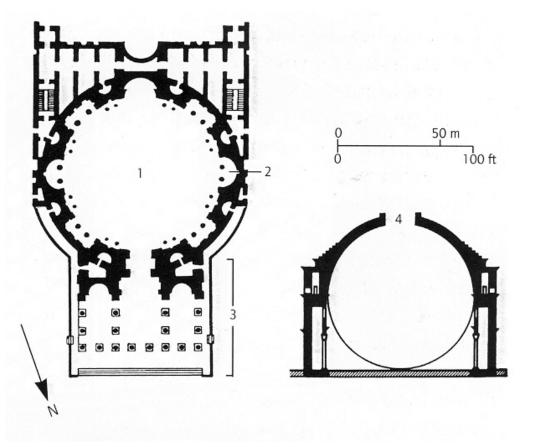


• The Pantheon 118 - 128 C.E.

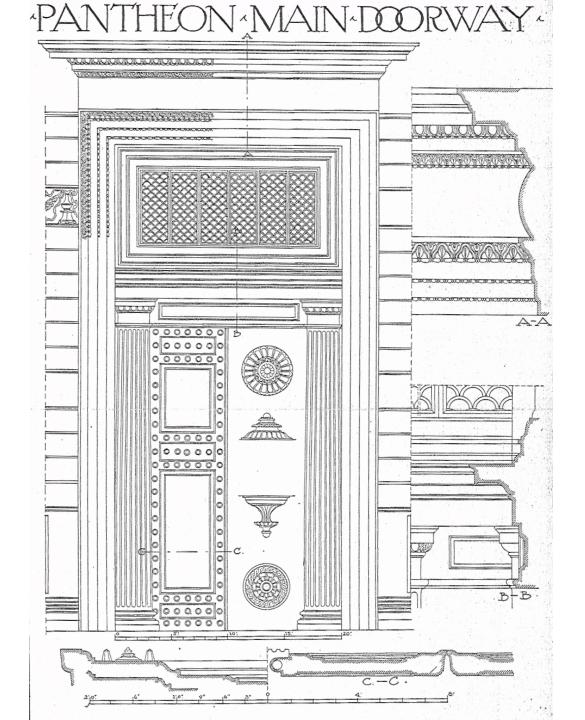
The Pantheon uses freestanding columns & pilasters engaged columns to carry the orders through the building. The Pilaster although invented by Greeks, was widely popularized by the Romans.

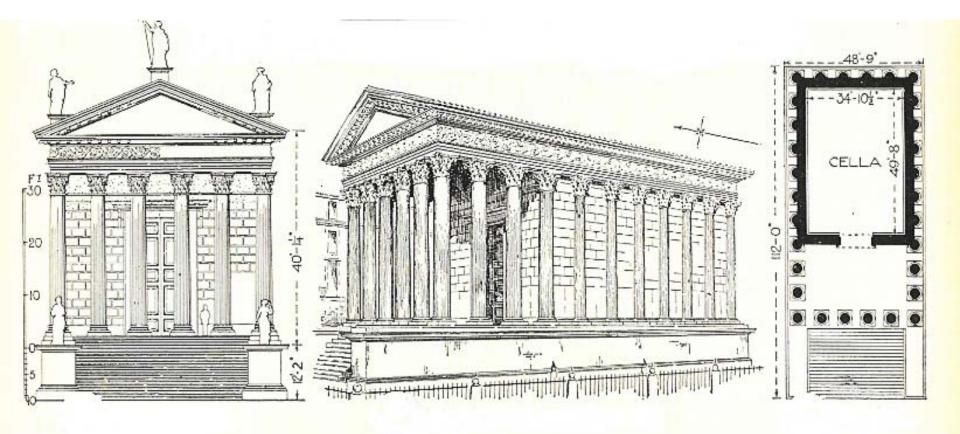
Again the spaces are a combination of a square intersecting with a circle. (two golden forms)

To enter a person must pass through a series arches and framed openings until they enter the central hall. The coffers help to lighten the ceiling structure so that it provides less thrust on the side walls.

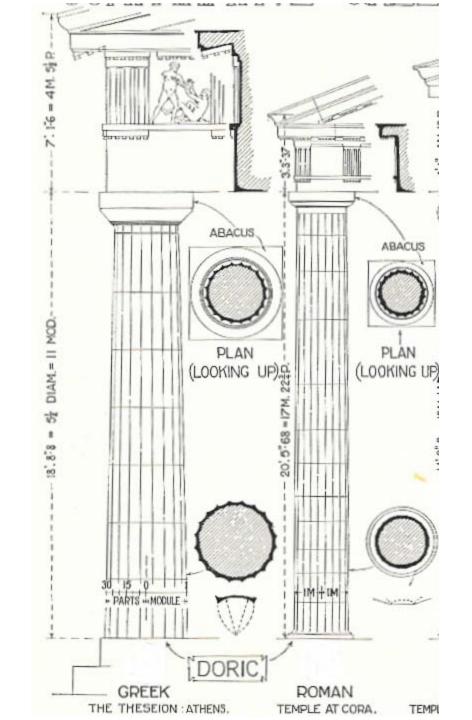


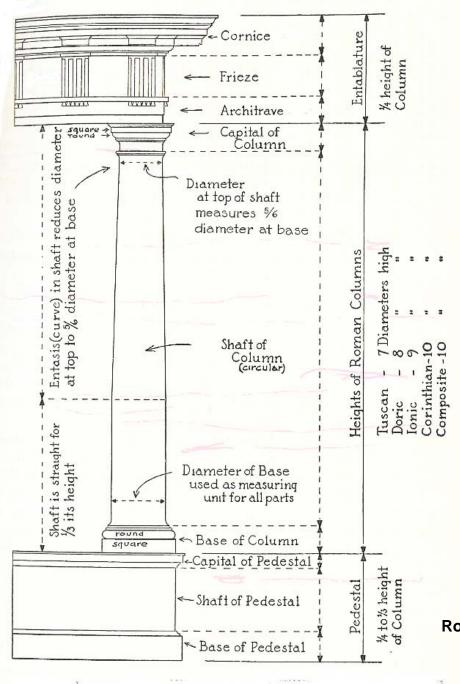
The Pantheon, Rome



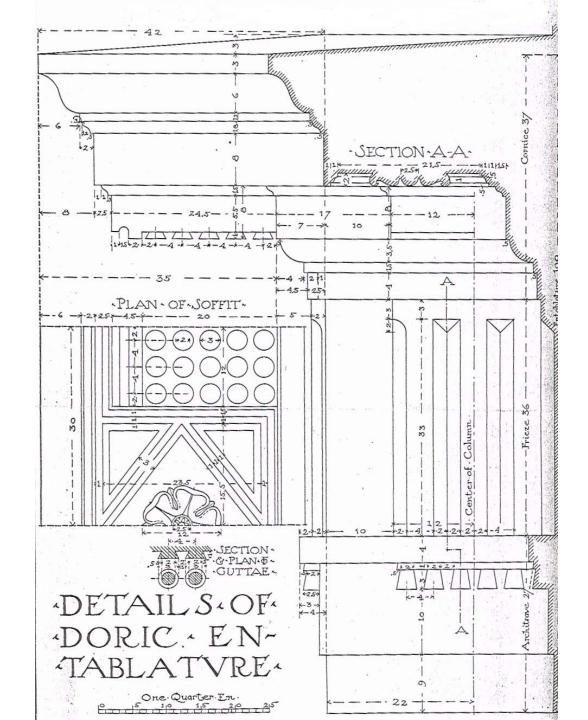


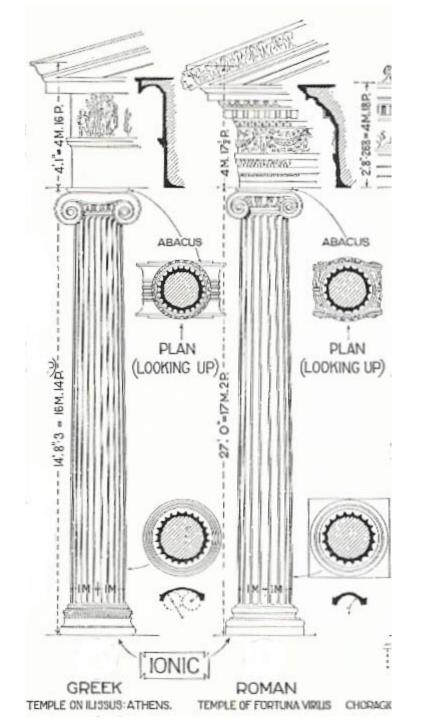
Maison Carre, Nimes, France

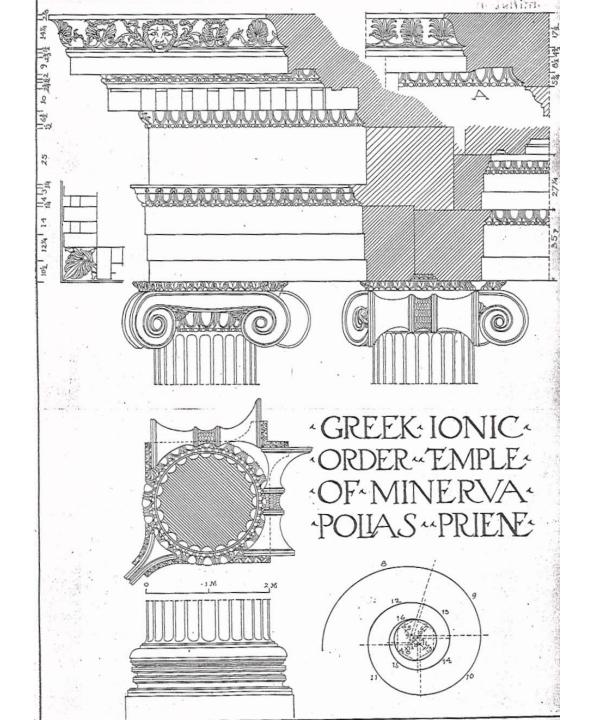




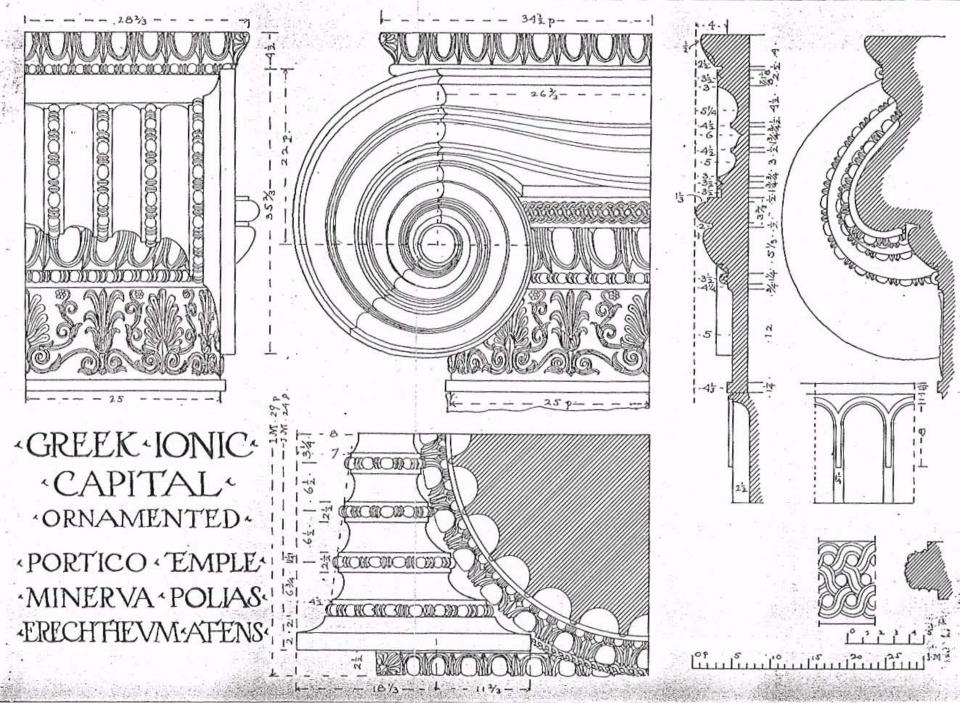


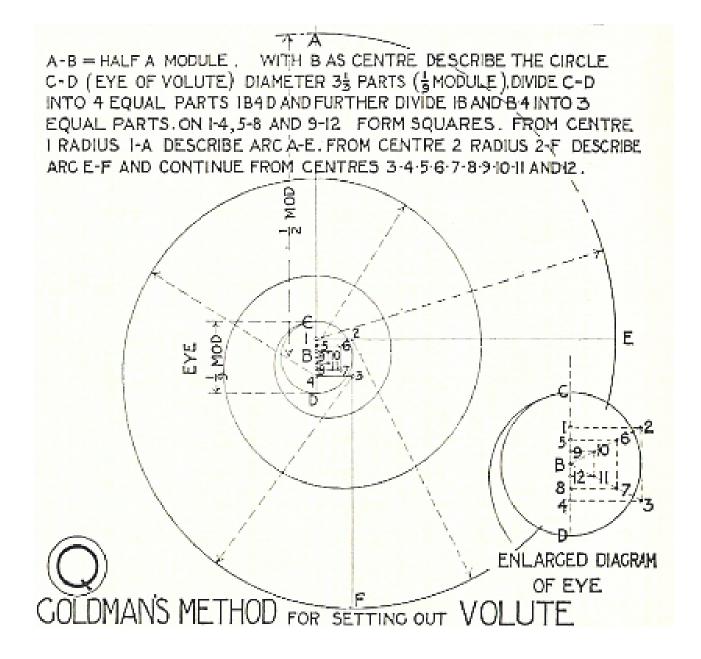


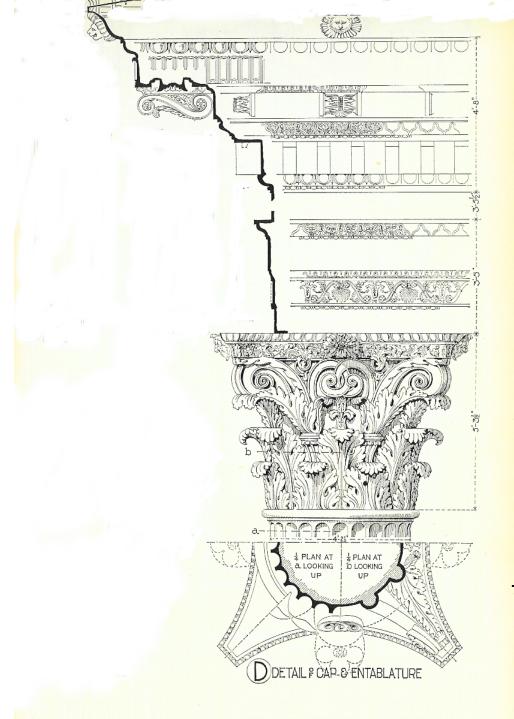


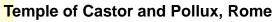


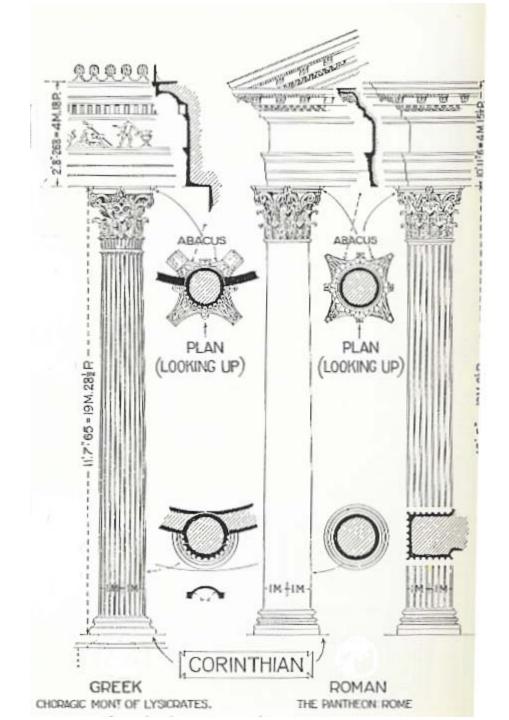
Greek Ionic Ornament

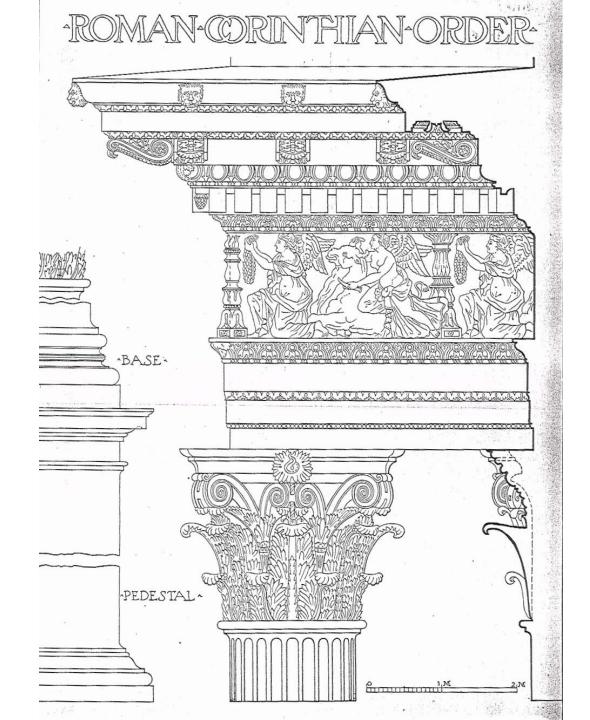


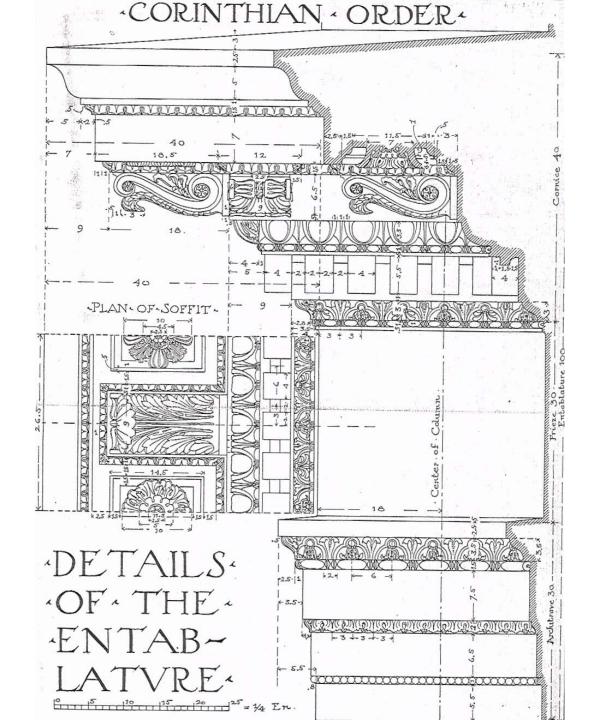


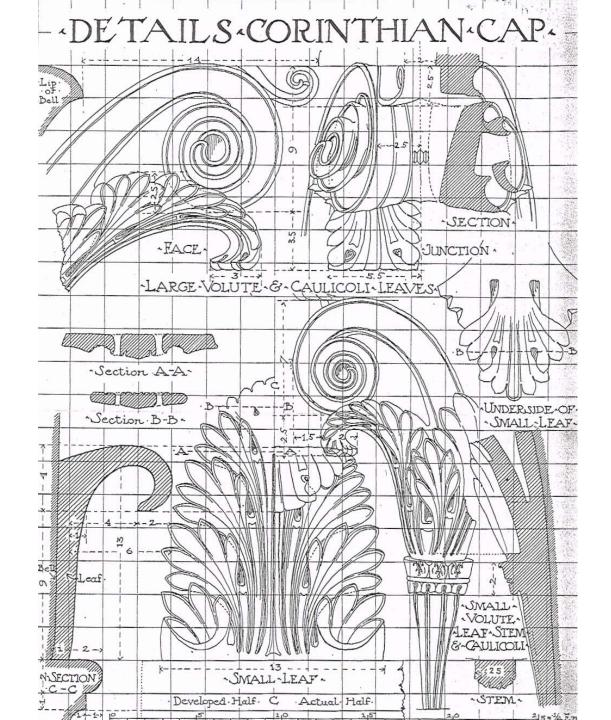




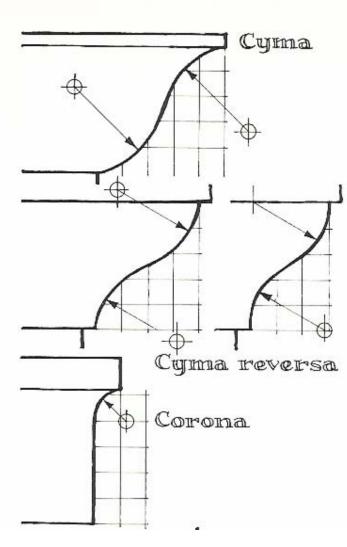


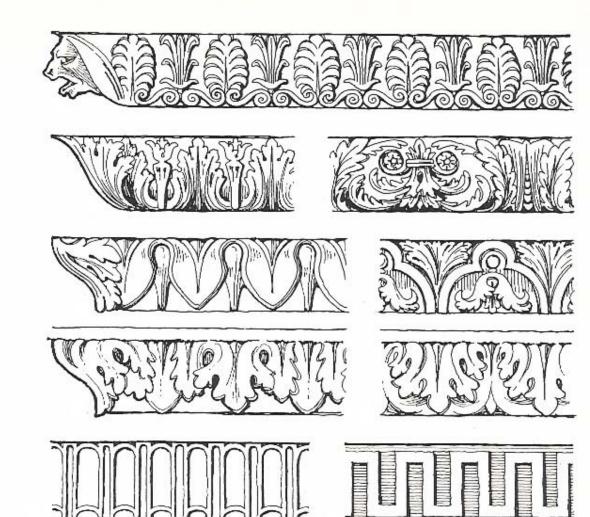


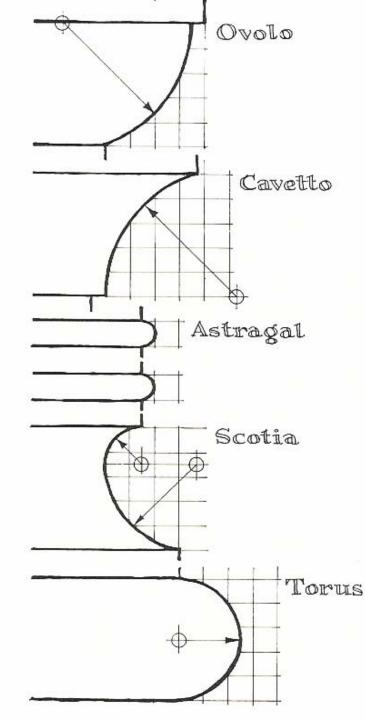




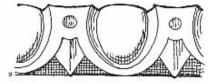
Ornaments and Enrichments

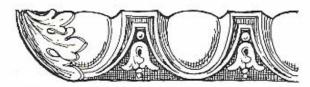














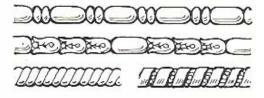


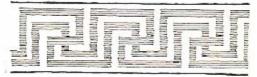
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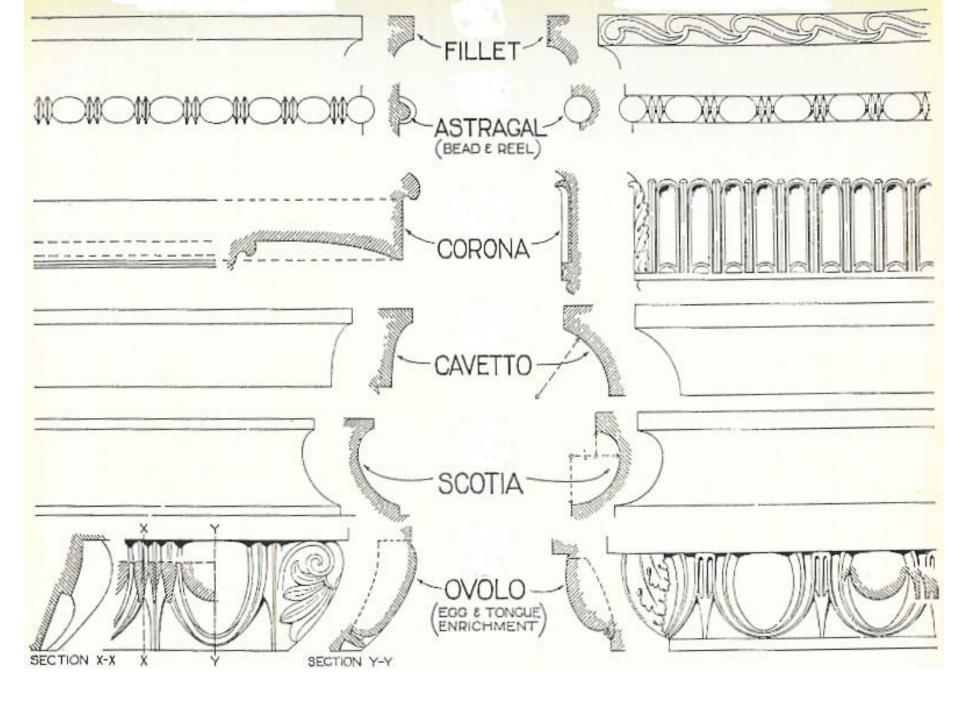


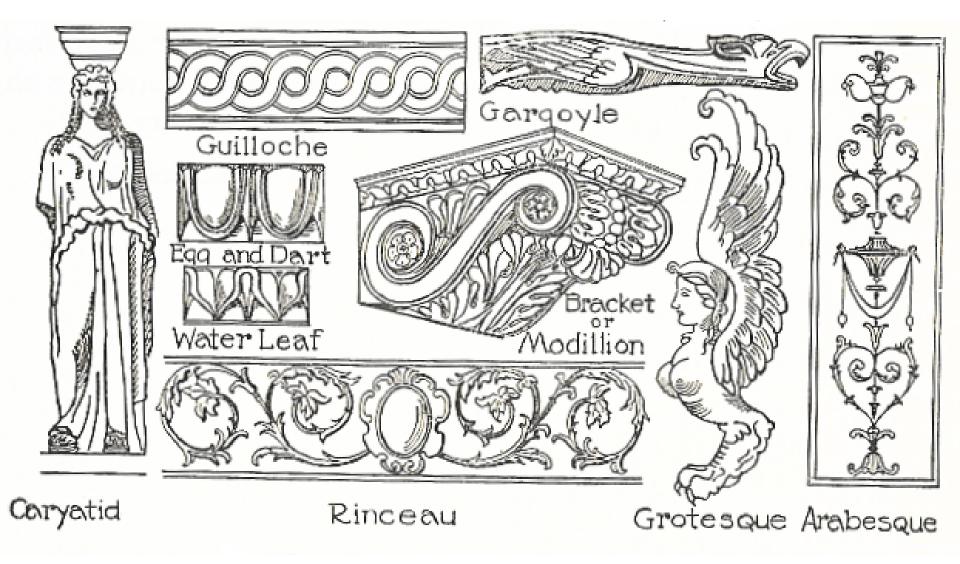


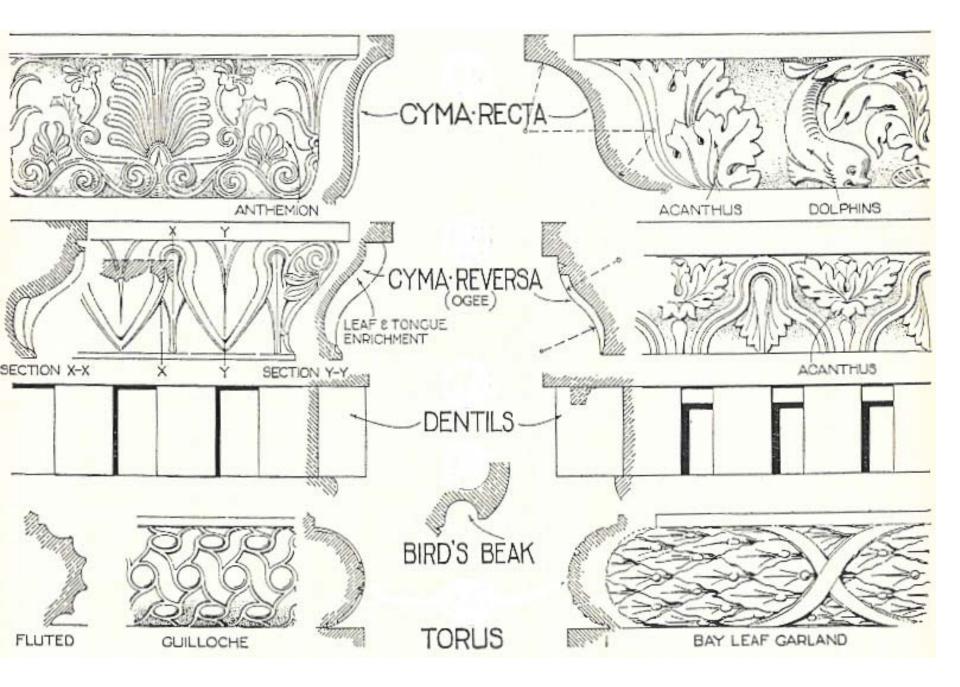


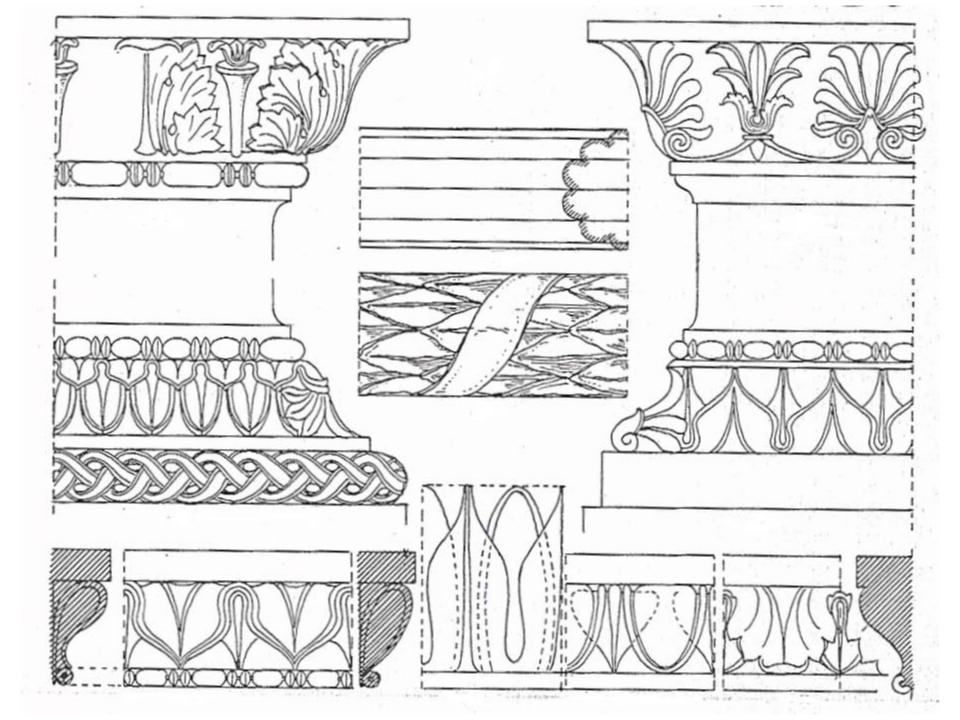


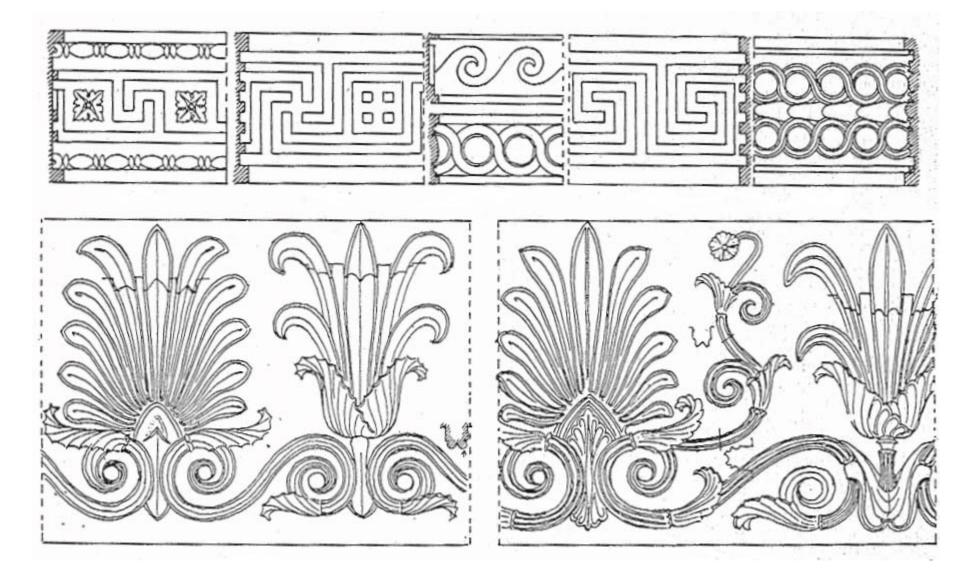














Other Building Types

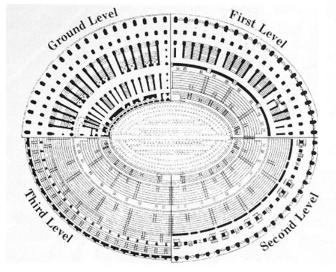
• The Coliseum 72-80 C.E.

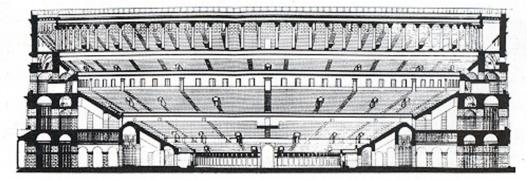
This was the emperor's playground where they could hold events to please the population. The Coliseum is important because it is the perfect examples of using the orders. Doric for the bottom portico, then lonic, Corinthian, & composite. Arches & Vaults are the structural system that holds the whole building up. These same principles influenced future religious design. Impressively they were able to fill it for water battles. The whole floor was false with cells & cages for animals below. Working pulley elevators brought people & animals to the stage.

For the most correct interpretation of the building, the movie Gladiator rebuilt 1/3 of it to scale with detail.



The Coliseum, Rome



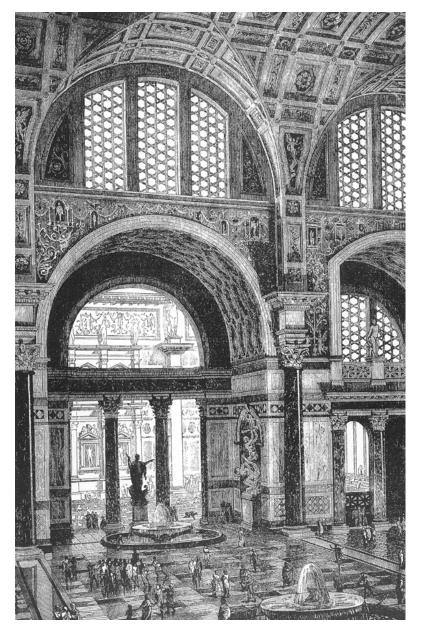


The Coliseum, Rome

• The Baths of Carcalla 211-217 C.E.

Bath houses were created to not only provide healings and cleansing activities but they were also social gathering halls. Residents of Rome would bathe in heated pools known as calderiums. Then after they had soaked long enough they would move to either a frigidarium or tepidarium to cool off and close the pours. There were also rooms where a person could to sit in the steam. These were great meeting places for the men. Some bathhouses had accommodations for women but were not on the same level as the men.

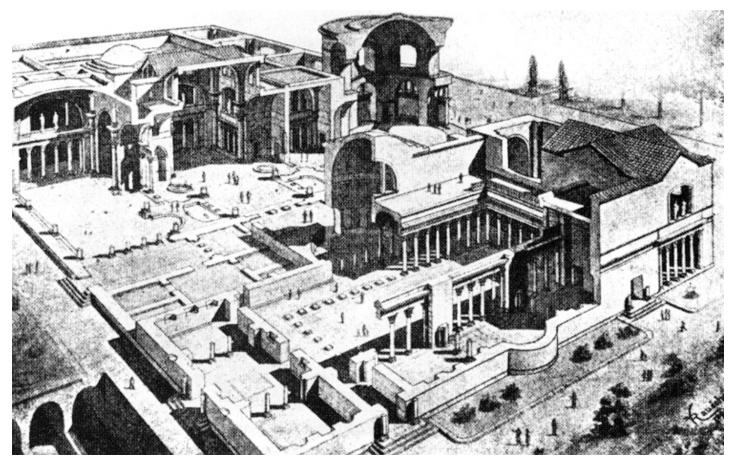
The entire structures were vaulted. Even the floor structures were vaulted to allow for boilers and furnaces beneath the baths. These complexes normally had large gardens accompanying them. Patrons could go for walks and discuss business or politics. Bath houses were typically situated on the outskirts of town. This allowed them the land need for the whole complex.



The Baths of Carcalla

• The Baths of Carcalla 211-217 C.E.

The Baths were immense interior structures constructed by emperors for his wealthy patrons & senators. Floors were typically travertine or mosaic tiles. Walls were adorned with the orders & some fresco paintings. The were monuments to the indulgences of the emperor. They were meant to be a paradise for the wealthy.



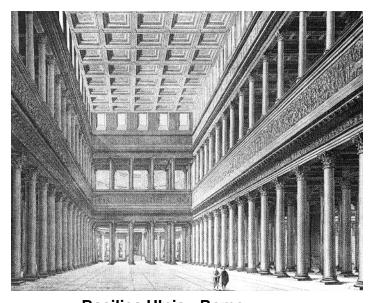
The Baths of Carcalla

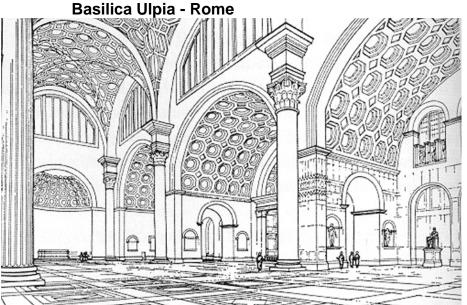
• Basilica

Basilica were the major secular buildings in the Roman world. They housed everything from market space to government assemblies. They were typical grandiose structures that dwarfed its inhabitants.

These buildings were typically vaulted or arched with coffered ceilings for artistic and acoustic reasons. The floors were typically of travertine or Granite. The order typically used was Corinthian. Romans did not use the Greek Doric Column. They preferred the Corinthian and the Tuscan Doric.

These buildings were built by Emperors starting with Julius Caesar as gifts to their growing cities. The Basilica often were created under the guise of urban renewal. Large areas of undesirable land or land owned by undesirable owners was claimed by the republic for civic use.



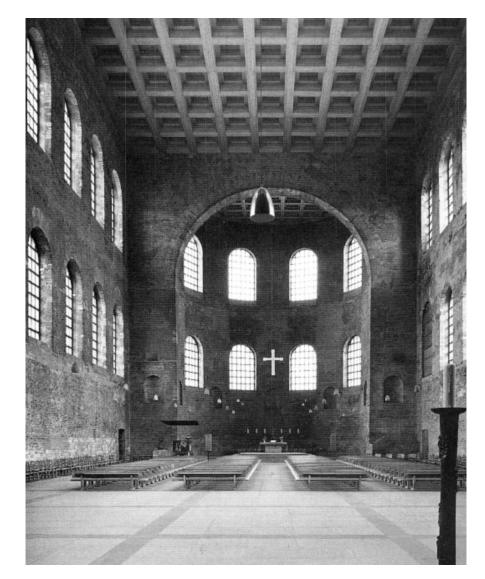


Basilica of Maxentius - Rome

Basilica

Basilica were built out in the colonized world of Rome. The Basilica Trier were often turned into churches after the Roman occupation had ended. Rome's colonization brought forth the spreading of the orders, rigid building practices and engineering principles. These same forms began sprouting up across Europe after the Fall of the Empire.

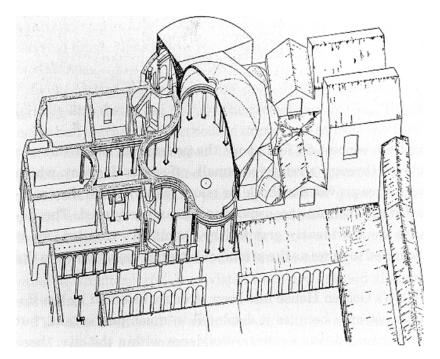
Rome was considered the perfect society. It was romanticized heavily throughout the years. People tended to forget the societal ills. These same ills plagued cities in Europe up until the 19th Century.

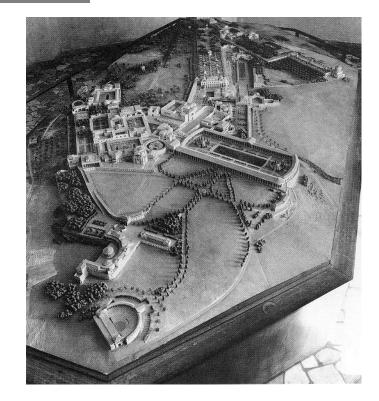


Basilica of Trier

• Hadrian's Villa 118-134 C.E.

Emperor Hadrian was one of the greatest builders of all the emperors. During his reign he completed such structures as the Pantheon, Baths of Carcalla, & Basilica Ulpia. Unlike is ward, the Emperor Trajan who built the Coliseum and Circus maximus, Hadrian preferred comforts over war. Under Hadrian's rule, Rome became a more civil place to stay. He took care of his population.

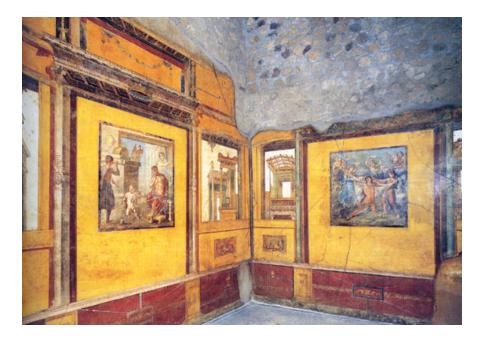




In his own country house, Hadrian brought luxury to the home. His villa had baths, pools sculpture and gardens. The house was structured to in a more free flowing way then other Roman Architecture. Freeflowing curves highlighted the central dome or Canopus. The was more thought put into the secondary and tertiary screen spaces which formed an open environment of complex arches & vaults.

• House of the Vetti – Pompeii 63-79 C.E.

Pompeii has truly become a treasure for studying Roman Life. Pompeii was buried by a volcanic eruption of Mount Vesuvius in 79 C.E. In excavations of Pompeii begun in 1748 to 1875 archeologists have found wonderful examples of interiors encased in volcanic ash. The house of the Vetti is a good example – it belonged to a wealthy family.





The house had a pool in a central court that helped provide relief from the temperatures. The house was symmetrical in nature with rooms flanking the courtyard. Walls were adorned with Frescoes depicting heroic scenes and daily. As it has been uncovered the primary colors of Reds, Blues and Yellows seem to be predominate in this interior.